

Appendix 16-2 Outline Landscape and Biodiversity Management Plan

Future LuToN: Making best use of our runway

Preliminary Environmental Information Report
Volume 3 Appendices
Appendix 16-2 Outline Landscape & Biodiversity Management
Plan

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Contents

	Page	
1	INTRODUCTION	1
2	GENERAL CLAUSES & PRELIMINARIES	3
2.1	Description of the works	3
2.2	Maintenance responsibilities	3
2.3	Standard of work	3
2.4	Location of services	4
2.5	Weather and ground conditions	4
2.6	Biosecurity	4
2.7	Approved chemicals	5
3	SITE SPECIFIC MANAGEMENT REQUIREMENTS	7
3.1	Introduction	7
3.2	General maintenance requirements	7
3.3	Existing habitats	7
3.4	Proposed habitats	10
3.5	Additional habitat measures	19
3.6	Public access	21
3.7	Street furniture	22
4	REPORTING AND REVIEW REQUIREMENTS	23

1 INTRODUCTION

- 1.1.1 London Luton Airport Limited (LLAL) is proposing to expand London Luton Airport (LTN) by submitting a Development Consent Order (DCO) application for works that would allow LTN to grow to accommodate 32 million passengers per annum (mppa). A current planning permission for works at LTN, called Project Curium (LBC ref: 12/01400/FUL), limits passenger throughput to 18mppa.
- 1.1.2 This outline Landscape and Biodiversity Management Plan (LBMP) has been prepared to set out the requirements for the maintenance of proposed landscape and biodiversity areas within the proposed development for which DCO is being sought (The Proposed Development). The plan identifies those landscape and ecological mitigation measures set out in the Preliminary Environmental Information Report (PEIR) and provides outline information on how these measures will be managed during the operation of the Proposed Development.
- 1.1.3 Stakeholder engagement will continue as the Proposed Development progresses and will include further discussion about habitat creation and long-term management with Natural England, Luton Borough Council, Hertfordshire County Council, Central Bedfordshire Council, Herts and Middlesex Wildlife Trust and the Wildlife Trust for Bedfordshire, Cambridgeshire and Northamptonshire. This outline LBMP will therefore be updated with more detailed information during preparation and submission of the Environmental Statement (ES), incorporating feedback received during statutory consultation and stakeholder engagement.
- 1.1.4 During construction of the Proposed Development the Code of Construction Practice (CoCP) would detail specific requirements to be followed in order to protect and manage all identified mitigation measures prior to and during construction as well as contractual, legislative and industry best practice requirements.
- 1.1.5 The overall aim of this report is to adopt a coherent, strategic and integrated approach to the management and maintenance of the soft landscape components associated with the Proposed Development; ensuring the successful establishment of vegetation and overall integration of works within the surrounding landscape, adopting a management approach that is appropriate to nature conservation, the users of the site and its amenity.
- 1.1.6 The main objectives of this plan are:
- to ensure development is effectively screened by vegetation as sought within the landscape proposals;

- to retain and enhance the value of existing landscape features;
- to successfully establish and integrate new landscaping proposals into the surrounding landscape;
- to maximise the nature conservation value of both new and existing habitats on the site;
- to accommodate appropriate public use of the site, by promoting a management regime which is appropriate to the site's role;
- to fulfil legal requirements, including nature conservation, environmental protection and general public safety;
- to ensure the successful establishment and managed growth of all planting and seeded areas; and
- to ensure the mitigation proposed as part of the Proposed Development, as a result of the EIA, remains effective at reducing identified environmental effects as intended.

1.1.7 The LBMP for the Proposed Development would cover a 50-year period from planting commencing on site. However, this current version of the plan primarily covers the initial five-year aftercare period for habitats created and enhanced within the Proposed Development, with some information on the principles of ongoing management. This plan would therefore be reviewed and updated every 5 years to ensure that the management and maintenance that it prescribes remains relevant and appropriate to the habitats as they develop and mature.

1.1.8 Should it be determined that the aims of the management plan are not being met, remedial action will then be identified, agreed and implemented so that the Proposed Development still delivers the fully functioning biodiversity objectives of the approved application.

2 GENERAL CLAUSES & PRELIMINARIES

2.1 Description of the works

- 2.1.1 The requirements within this plan are applicable to the maintenance of proposed trees, shrubs, hedgerows, woodland planting, mown grass, meadow grass and pond habitat areas to be implemented as well as additional habitat measures such as reptile hibernacula, brash/log piles, bat and bird boxes. Any street furniture or paving to be installed; and any existing vegetation to be retained as part of the Proposed Development.
- 2.1.2 Maintenance work within these areas may include ground preparation; minor top-soiling; grass cutting; edge trimming; tree, hedge and shrub pruning; general tree care; watering; treatment of pests and diseases; creation of habitat features; woodland management; tree felling; brash removal; rubbish and debris removal; cleaning and repairing of damaged street furniture and boundary treatments to ensure successful vegetation establishment and functionality.
- 2.1.3 A detailed programme of ecological monitoring will underpin this plan, which will be confirmed in the detailed LBMP. This monitoring will include an annual inspection of all habitats and ecological condition monitoring against the target habitat type.

2.2 Maintenance responsibilities

- 2.2.1 The Contractor's aftercare period would extend for two years post-planting. Any defects or other faults because of workmanship (other than those found to be stolen or maliciously damaged), shall be made good by the Contractor during this period.
- 2.2.2 LLAL and its appointed contractors would employ a suitably qualified ecologist to oversee and advise on the establishment of habitats in line with requirements detailed in the Environmental Statement that will accompany the DCO submission.
- 2.2.3 Once the contractor's obligations have ended, the maintenance operations identified below would be carried out by a Landscape Maintenance Contractor capable of delivering the measures prescribed within this document appointed by LLAL.

2.3 Standard of work

- 2.3.1 LLAL and its appointed contractors would comply with the requirements set out in the Code of Construction Practice (CoCP) in conjunction with this document.
- 2.3.2 The site is always to be kept clean and neat and all planting is to be kept in a healthy state. The carrying out of the works shall not cause danger or inconvenience to others, nor would it restrict

other on-site activities from taking place. All operations shall be carried out using only suitable machinery in accordance with best practice, or by hand where impracticable to use machinery.

2.4 Location of services

2.4.1 Before undertaking works on site, contractors would contact service authorities to ascertain the accurate location of all services and apparatus. Contractors shall not interfere with the operation of existing services (gas, water, electricity, telephones, buried cables or drains) without permission of the Client and, in the case of works, the relevant Statutory Authorities and/or private owners.

2.4.2 Any trees, shrubs, seeding or other planting which needs to be removed to enable access to buried services shall be made good.

2.5 Weather and ground conditions

2.5.1 Contractors would order their works to take account of any specific ground or weather conditions required to undertake the maintenance operations and any specific requirements or conditions advised by the facilities management team. All works involving cultivation shall not be carried out in conditions which would result in damage to the soil structure.

2.5.2 Works to woodland areas, native shrub planting areas or hedgerows shall be undertaken outside of the bird nesting season, which is taken to extend between March and August (inclusive), or under the supervision of a suitably qualified ecologist where this is not practicable. All cultivating and grass cutting operations shall be suspended in periods of excessive rain, snow or frost; and herbicide applications shall only be carried out in suitable weather conditions as described by the manufacturer.

2.6 Biosecurity

2.6.1 Biosecurity measures are the practical steps designed to minimise the risk of introducing or spreading pests, diseases and non-native species. Pests are most often transported in soil or organic material, such as plant debris, that can be carried on footwear or by the wheels/tracks of vehicles. Some pathogens are also dispersed in water, so the risk of these being spread increases when conditions are wet.

2.6.2 To avoid the spread of pests, diseases and non-native species on site the following measures would be employed during maintenance works:

- Wear footwear and outerwear that can easily be kept clean;

- Clean footwear and outerwear regularly, ensuring that they are visually free from soil and organic debris;
- If moving between different sections of the site, these should be ordered from low to high risk, to reduce the likelihood of cross-contamination;
- A disinfectant solution such as Agrichlor or Virkon S should be used to clean boots (following removal of any organic material) where there is a risk of spreading any pests, diseases or non-native species during works;
- Avoid vehicular access to any high-risk sites and clean vehicles regularly. Do not let mud and organic debris accumulate on tyres, wheels or under wheel arches; and
- Ensure all tools and equipment are clean, serviceable and free from organic debris.

2.6.3 Contractors shall notify LLAL of any pest or disease problems on site and seek advice from a suitably qualified contractor to manage removal/disposal (where required) in line with relevant legislation.

2.7 **Approved chemicals**

2.7.1 The use of chemicals including pesticides and herbicides should be eliminated or minimised wherever practicable. Where use of chemicals is deemed to be absolutely necessary, care shall be taken to ensure that all chemicals used are non-toxic to humans, birds and animals under normal conditions and shall comply with the Control of Pesticides (Amendment) Regulations 1997 and any relevant Code of Practice issued by Defra.

2.7.2 Up to date information on withdrawn products can also be obtained from the Pesticide Safety Directorate, an Executive Agency of the Department of Environment, Food and Rural Affairs that administers the regulation of agricultural, horticultural, forestry, food storage and home garden pesticides.

2.7.3 Contractors would ensure that the use of chemicals are undertaken in accordance with the appropriate COSHH regulations and manufacturer's guidance. They should ensure that others are not subject to any hazard from the use of chemicals; they would observe all precautions recommended by the manufacturer; and they would remove containers from site immediately after they have been emptied or are no longer required.

2.7.4 Contractors would inform LLAL of their intention to use chemicals; the product to be used; and the dose rates, before commencing operations.

2.7.5 Where work is near water, drainage ditches or land drains, the contractor would comply with Environment Agency requirements for the use of herbicides on weeds in watercourses and lakes.

3 SITE SPECIFIC MANAGEMENT REQUIREMENTS

3.1 Introduction

3.1.1 This section details any site-specific management requirements that LLAL and their appointed contractors would manage.

3.1.2 General maintenance requirements that are applicable across the site are detailed in section 3.2 below. The Proposed Development would also include several more specific landscape typologies, which can be divided into existing habitats, proposed habitats and additional habitat measures, as detailed on the green infrastructure plan for 32mppa (see Figure 2-6 within the PEIR). These are discussed in turn in sections 3.3 to 3.5 below. Maintenance measures prescribed for public access and street furniture are detailed in sections 3.6 and 3.7 respectively.

3.2 General maintenance requirements

3.2.1 There are a number of general prescriptions that apply to management of the Proposed Development. These are:

- all legally designated weeds shall be controlled;
- vegetation, which suppresses or otherwise inhibits the development of planted species and proper management of habitats shall be restricted and/or removed;
- any species which colonise the site, and are incongruous with the planting scheme and/or the surrounding context, shall be removed;
- all herbicides would be systemic, biodegradable, and non-residual, and only used where necessary and appropriate; and
- all areas would be subject to a regular system of litter collection and removal.

3.3 Existing habitats

Trees/woodland vegetation

- existing trees to be retained shall be subject to protection and monitoring to ensure their health is maintained throughout the life of the Proposed Development in line with BS5837:2012 Trees in relation to design, demolition and construction;
- all maintenance works would be undertaken in accordance with BS 3998: 2010 Tree Work - Recommendations, and carefully monitored to eliminate undue stress. Contractors should comply with the current Arboriculture and Forestry Advisory Group (AFAG) recommendations;

- the majority of arisings (>95%) that result from works to existing trees would be removed from site, but a small proportion would be retained as dead specimens in situ smaller material as deadwood/brash piles within proposed wooded areas for their biodiversity value; and
- specific existing trees identified within the Arboricultural report (see Appendix 17-3 within the PEIR) would also be managed and maintained differently in order to maintain and enhance their high nature conservation value, such as veteran trees. Such trees may have features of such as dead limbs, hollows, rot-holes, water pools, seepages, woodpecker holes, splits, loose bark, limbs reaching the ground, and epiphytic plants and lichens, which may well be considered as undesirable on a non-veteran tree.

Hedgerows

- existing hedgerows within the Proposed Development would be cut on a 3-year rotation with alternate sides of the hedgerow cut to maintain a constant food source. They would be maintained to a height and width customary to the local landscape, but not less than 2m in height (except when laid or coppiced as part of a regular management cycle);
- no fertilisers, manures or pesticides are to be applied to land within 2m of the centre of the hedgerow; and
- any hedge-laying and coppicing would be carried out in a style customary to the local landscape and should be completed before 01 March (in exceptional circumstances work may continue up to 01 April, provided a survey to ensure that there are no nesting birds present has been carried out). Berry bearing shrubs should be left overwinter to provide a food source for birds between October to February and cut later in February before the nesting season.

Field margin vegetation

- existing rough grass margins would be cut once every three years at a height between 7.5cm to 15cm. Cutting should be undertaken between 15 July and 30 September, to allow mature tussocks to develop and insect populations to build up, and on a rotation so that there are a number of uncut margins every year;
- no fertiliser, manure or pesticides/herbicides are to be applied to existing margins, as these can encourage weeds and remove beneficial plants and associated insects; and
- thistles, docks or ragwort shall be spot treated or weed-wiped whenever they occur in significant numbers as appropriate through the active growing season to avoid

other species being out-competed. Hand pulling should be deployed as a potential method of eradication.

Neutral/semi-improved grassland

- mowing of existing grassland areas would occur in late July – mid August (although the timing of this should remain flexible to ensure cutting does not take place before desirable plant species set seed);
- cuttings would be left to lie and then removed between one and two days after an area has been cut, to help conserve invertebrates and to ensure the seeds are dispersed on site and not removed with the arisings;
- mowing shall avoid times of high reptile activity after hibernation and breeding (March to June inclusive);
- either a centre-out mowing method or cutting from end to end would be used to ensure that wildlife, including birds and reptiles, can escape;
- the grass cutting height of the mower would be varied across different sections of the grassland to improve insect diversity and abundance;
- strimming or herbicide control would be undertaken where grassland areas abut fences, walls etc. and around trees and obstacles (with care not to damage trees within grassed areas) in June and September, or more frequently is deemed necessary;
- a mown strip would be utilised to form a smooth visual transition between grasslands and more intensively managed areas;
- damaged or worn areas would be reinstated during the next available season;
- undesirable herbaceous species or scrub within the grassland sward would be controlled by hand pulling or weed wiping/spot spraying with an appropriate systemic herbicide (if absolutely necessary);
- any large areas of encroaching scrub would be removed from grassland areas during winter months (October to February), but leaving some scrub along the borders of the grassland to act as habitat for wildlife. Scalloped south-facing bays of vegetation would be used to provide sheltered pockets for reptile basking;
- no machinery should access the grassland when ground conditions are damp so as to avoid rutting and vegetation damage;

- ruts and other damage would be repaired as appropriate. Such repairs would be undertaken using techniques and materials sensitive to this component; and
- soil ameliorants would not be used on grassland areas.

3.4 Proposed habitats

Broad-leaved woodland

3.4.1 The overall aims for new woodland are to improve the landscape, provide new habitats and increase biodiversity, provide screening and to enhance the opportunities for public access and recreation.

3.4.2 The proposed new planting of woodland and native hedgerows would be carried out in line with English Woodland Grant Scheme¹, UK Forestry Standard² and UK Woodland Assurance Scheme guidelines³. This would provide recognised management objectives and techniques to ensure the successful establishment of habitat and to provide long term benefits to biodiversity.

Establishment maintenance

3.4.3 LLAL and their appointed contractors would undertake the following operations as necessary during the five years after planting, to ensure the satisfactory establishment and development of the woodland specimens:

- clearance of any woodland shrub species within a 1m diameter of the base of each tree;
- maintenance of a 1m diameter weed free area around the base of all woodland specimens, through the application of a herbicide;
- spot treatment of pernicious weeds (e.g. brambles, etc);
- treatment against pests and diseases with spraying and dusting;
- application of a slow release fertiliser around the base of all woodland specimens to ensure soil fertility is maintained at appropriate levels;
- inspection, adjustment and maintenance of guards, stakes and ties;

¹ Forestry Commission (2010) English Woodland Grant Scheme: <http://adlib.everysite.co.uk/adlib/defra/content.aspx?doc=122813&id=122814>

² Forestry Commission (2017) UK Forestry Standard: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/687147/The_UK_Forestry_Standard.pdf

³ UKWAS (2006) UK Woodland Assurance Scheme Standards: <http://ukwas.org.uk/wp-content/uploads/2017/09/UKWAS-Second-Edition-2006.pdf>

- re-firming of plants after strong winds, frost heave or other disturbances;
- removal of any vandalised, unhealthy or dead shrubs and replacement with plants of a similar size to those adjacent, during the next available planting season;
- watering of plants to ensure moisture levels are maintained appropriate for optimum growth; and
- mowing of underlying grassed areas to a height of 50mm, whenever the sward achieves a height of 125mm.

Ongoing maintenance

3.4.4 Following initial establishment (and in addition to the tasks listed above) LLAL and their appointed contractors would undertake the following operations as necessary:

- inspect and where necessary remove and replace any tree or shrub found to be dead, dying or diseased;
- inspect the created woodland to ensure the desired diversity of flora is achieved, to be defined in the Environmental Statement and final version of the LBMP. Carry out remedial action, where necessary pruning or removing plants that are dominating or smothering the woodland;
- inspect the structure of the woodland every 5 years, if crowding occurs some trees should be felled to promote the growth of others. Any felled trees should be left within the woodland to provide dead wood habitat;
- formative pruning to achieve optimum growth rates and maintain a good shape, clear of any vehicular or pedestrian circulation routes; and
- removal of redundant guards, stakes and ties at appropriate times to ensure the optimum health of individual plants.

3.4.5 LLAL and their appointed contractors would ensure that:

- most parts of the woodland are structurally diverse and includes dominant / sub-dominant tree species, understory tree & shrub species, low level shrubs, natural regeneration and ground flora;
- there is a good mix of nectar rich herbaceous plants;
- there are glades or open spaces where grass, flowers and tree seedlings can grow;
- invasive or undesirable species such as sycamore, Himalayan balsam and rhododendron are controlled and do not dominate the space;

- deadwood (standing trunks and deadwood/brush piles) has been left wherever safe to do so;
- clearing and coppicing work is limited to specific areas on a rotational basis; and
- unacceptable levels of litter, debris or dog fouling are removed, and additional measures put in place to reduce the likelihood of reoccurrence where applicable.

Species-rich hedgerows

3.4.6 The overall target for hedgerow creation and enhancements is to create hedgerows that achieve the species-rich hedgerow priority habitat type listed on Section 41 of the NERC Act 2006. Species-rich field boundary hedgerows would contribute to the landscape structure of the Proposed Development and provide demarcation, screening, visual interest and ecological value.

3.4.7 The objectives for the management of the species-rich hedgerows would be to:

- promote their sensitive management to meet landscaping and wildlife requirements;
- maintain their structure and integrity;
- maintain their wildlife value;
- promote species-rich hedges, particularly where associated with other wildlife habitats;
- promote satisfactory establishment and growth of new hedge planting; and
- promote hedge form and density appropriate to the location.

Establishment maintenance

3.4.8 LLAL and their appointed contractors would undertake the following operations as necessary during the five-year establishment maintenance period for this habitat:

- replanting should occur as necessary (replacing poorly established and/or dead plants) so there are no gaps (using rabbit spiral guarded 80-100cm whips of appropriate species taken from the proposed native hedgerow planting mix); and
- weed control should be carried out as needed. Plant guards/supports should be straightened where needed and removed if necessary;
- irrigation as necessary to ensure healthy growth;
- cut back 50% of the current year's growth in the autumn to achieve the desired height and shape; and
- controlling of pests and diseases.

Ongoing maintenance

3.4.9 Following initial establishment proposed mixed-species hedgerows would be maintained as follows:

- hedgerows would be cut on a 3-year rotation with alternate sides of the hedgerow cut to maintain a constant food source. Hedges should be cut in January or February to avoid the nesting bird season and allow any berry crop to be used by wintering birds.
- hedgerows would be maintained to a height and width customary to the local landscape, but not less than 2m in height (except when laid or coppiced as part of a regular management cycle);
- no fertilisers, manures or pesticides are to be applied to land within 2m of the centre of the hedge; and
- any hedge laying, and coppicing would be carried out in a style customary to the local landscape and should be completed before 01 March (in exceptional circumstances work may continue up to 01 April, provided a survey to ensure that there are no nesting birds present has been carried out).

Hedgerow trees and specimen trees

3.4.10 Hedgerow trees would provide further height and structure within several of the proposed hedgerows. In addition, proposed individual trees would provide landscape structure to the soft landscaping areas within the replacement open space. Trees or groups of specimen trees would also be used to create enclosure, focal points and features.

3.4.11 The objectives for the management of hedgerow trees and specimen trees would be to:

- promote satisfactory establishment and development;
- promote conditions so that the trees are healthy and safe; and
- promote continuity of the design concept and particular effects.

Establishment maintenance

3.4.12 To ensure their survival and optimal development, these trees would be subject to a high standard of establishment maintenance. LLAL and their appointed contractors would undertake the following operations as necessary during the first 5 years after planting:

- treatment against pests and diseases with spraying and dusting;
- application of a slow release fertiliser around the base of all trees to ensure soil fertility is maintained at appropriate levels;
- the removal of any vandalised, unhealthy or dead specimens and replacement with trees of a similar size to those adjacent, during the next available planting season;
- inspection, adjustment and maintenance of guards, stakes and ties;
- re-firming of plants after strong winds, frost heave or other disturbances;
- removal of any vandalised, unhealthy or dead shrubs and replacement with plants of a similar size to those adjacent, during the next available planting season; and
- watering of plants to ensure moisture levels are maintained appropriate for optimum growth.

Ongoing maintenance

3.4.13 Following initial establishment, LLAL and their appointed contractors would undertake the following operations as necessary:

- the formative pruning of specimens to achieve optimum growth rates and maintain a good shape, clear of any vehicular or pedestrian circulation routes; and
- the removal of redundant guards, stakes and ties at appropriate times to ensure the optimum health of individual trees.

3.4.14 LLAL and their appointed contractors would ensure that:

- growth is healthy and vigorous with no sign of disease;
- no inappropriate dead branches;
- no basal or sucker growth;
- no damage to base of tree during maintenance; and
- no dead material or cuttings left in area.

Scrub vegetation

Establishment maintenance

3.4.15 LLAL and their appointed contractors would undertake the following operations as necessary during the five-year establishment maintenance period for this habitat:

- cutting between September and February to avoid impacting nesting birds;
- all cuttings are to be removed to avoid smothering the sward underneath;
- no fertiliser, manure or pesticides/herbicides are to be applied to existing margins, as these can encourage weeds and remove beneficial plants and insects; and
- thistles, docks or ragwort shall be spot treated or weed-wiped whenever they occur in significant numbers as appropriate through the active growing season to avoid other species being out-competed. Hand pulling should be deployed as a potential method of eradication.

Ongoing maintenance

3.4.16 Following initial establishment, the following operations would be undertaken as necessary:

- grass margins would be cut once every three years at a height between 7.5cm to 15cm, between 15 July and 30 September, to allow mature tussocks to develop and insect populations to build up, and would be cut on a rotation so that there are plenty of uncut margins every year;
- all cuttings are to be removed to avoid smothering the sward underneath;
- no fertiliser, manure or pesticides/herbicides are to be applied to existing margins, as these can encourage weeds and remove beneficial plants and insects; and
- thistles, docks or ragwort shall be spot treated or weed-wiped whenever they occur to prevent numbers building up.

Proposed ornamental planting areas (inc. specimen shrub, ornamental shrub and groundcover planting)

Establishment maintenance

3.4.17 To ensure the successful establishment of these planting areas, LLAL and their appointed contractors would undertake the following operations as necessary during the first two years after planting:

- hand weeding of planting beds during the first year;
- application of an appropriate herbicide to shrub planting areas;
- spot treatment, using an appropriate systematic herbicide only (to prevent damage to desired plant material) of herbaceous planting;
- annual replenishment of mulch to agreed contract levels;

- application of a slow release fertiliser to ensure soil fertility is maintained at appropriate levels;
- treatment against pests and diseases with spraying and dusting;
- pruning of shrubs for floral, foliage and stem colour effect and to remove weak, dead and diseased wood;
- training and tying of shrubs and climbers to walls/frames;
- remove dead growth and trim herbaceous perennial plants, avoiding damage to any new shoots that have emerged;
- remove any vandalised, unhealthy, dead or short-living plants and replace with plants of a similar size to those adjacent, during the next available planting season;
- maintain and replace frames, ties and guards; and
- watering of plants to ensure moisture levels are maintained appropriate for optimum growth.

Ongoing maintenance

3.4.18 Following initial establishment (and in addition to the tasks listed above) LLAL and their appointed contractors would also undertake the following operations as necessary:

- heavy pruning, usually back to a stool, of overgrown shrubs and climbers;
- ensure pruning is correct for species type and that cuts are sharp and neat;
- ensure shrub beds are free of weeds;
- ensure no dead material or cuttings are left in area. Leaf fall, litter, debris and dog fouling should all be removed;
- ensure the selective removal of shrubs and other plants from planting beds;
- removal of redundant guards, stakes and ties at appropriate times to ensure the optimum health of individual plants;
- ensure a balanced and well-maintained display with a neatly defined edge; and
- if mulched, ensure that this is done evenly and to the correct depth across the area.

Neutral grassland subject to low intensity grazing

3.4.19 Neutral grassland would be created on existing arable fields to compensate for the loss of neutral grassland. The overall target habitat type is the priority habitat type lowland meadow grassland listed on Section 41 of the NERC Act 2006.

Establishment maintenance

- 3.4.20 The general principle would be to strip and re-use the existing topsoil within the site; however, an element of locally harvested seed and standard seed mixes will be sought. Any successful seed collection will be used to supplement standard mixes, the aim being that through the harvesting of local seed and the allowance of natural regeneration, a degree of local provenance will be retained.
- 3.4.21 Depending on the soil fertility the site may require cutting and removal of the cuttings up to four times in the first and second year. The exact details would be determined by a suitably experienced ecologist, upon establishment of the grassland.
- 3.4.22 Supplementary watering may be required depending on weather conditions at time of establishment.
- 3.4.23 Additional management, such as bi-monthly mowing during the first year of establishment, may be required to prevent weeds or early grasses from suppressing the wildflowers. Undesirable species would be controlled by hand (pulling, digging or cutting) or with herbicides depending on the species and the level of the problem.

Ongoing maintenance

- 3.4.24 A conservation grazer will be consulted to confirm an appropriate grazing regime; however, this is likely to comprise low-intensity sheep grazing on rotation across the site. Grazing management should be implemented on the site two years after seeding, or as soon as is reasonably practicable. If grazing not possible during the first year the grassland should be cut, and arisings collected and removed from site.
- 3.4.25 The grassland should be monitored by a suitably qualified ecologist annually to record changes in the sward and recommend changes to management requirements implemented, including changes to the grazing regime if necessary. This would ensure that the sward created is in line with requirements of mitigation specified in the Environmental Statement that will accompany the DCO submission.
- 3.4.26 Undesirable species can be controlled by hand (pulling, digging or cutting) or with herbicides depending on the species and the level of the problem.

Neutral grassland subject to cutting

- 3.4.27 It is acknowledged that it is not suitable to graze all areas of neutral grassland created, therefore a cutting regime would be established in place of grazing where appropriate, as detailed below. The target habitat type would be the same as Neutral

Grassland subject to low intensity grazing discussed within paragraphs 3.3.40-3.3.45.

Establishment maintenance

- 3.4.28 The general principle would be to strip and re-use the existing topsoils within the site; however, an element of locally harvested seed and standard seed mixes will be sought. Any successful seed collection will be used to supplement standard mixes, the aim being that through the harvesting of local seed and the allowance of natural regeneration, a degree of local provenance will be retained.
- 3.4.29 Depending on the soil fertility the site may require cutting and removal of the cuttings up to four times in the first and second year. The exact details would be determined by a suitably experienced ecologist, upon establishment of the grassland.
- 3.4.30 Supplementary watering may be required depending on weather conditions at time of establishment.
- 3.4.31 Additional management, such as bi-monthly mowing during the first year of establishment, may be required to prevent weeds or early grasses from suppressing the wildflowers. Undesirable species would be controlled by hand (pulling, digging or cutting) or with herbicides depending on the species and the level of the problem.

Ongoing maintenance

- 3.4.32 In subsequent years cutting in early/mid-July (similar to a traditional hay cutting date in the lowlands) should be sufficient followed by a second cut in late autumn if needed.
- 3.4.33 The grassland should be monitored by a suitably qualified ecologist annually to record changes in the sward and recommend changes to management requirements implemented, including changes to the grazing regime if necessary. This would ensure that the sward created is in line with requirements of mitigation specified in the Environmental Statement that will accompany the DCO submission.

Calcareous grassland subject to low intensity grazing

- 3.4.34 Calcareous grassland would be created to compensate for the loss of calcareous grassland as a result of the Proposed Development. Calcareous grassland occurs within mostly shallow, infertile lime-rich soils over chalk and limestone bedrock. There are two locations where LLAL would have control over the reinstatement of soil and these conditions thereby enabling this habitat to be created (as shown on Figure 2-6 within the PEIR). The overall target habitat type is the priority habitat type lowland calcareous grassland listed on Section 41 of the NERC Act 2006.

Establishment maintenance

- 3.4.35 Ground conditions and soil type would be made suitable by LLAL and their appointed contractors in consultation with a suitably qualified ecologist, prior to seeding with a calcareous grassland seed mix to be defined within the Environmental Statement that will accompany the DCO submission. This seed mix would be supplemented by locally harvested seed where possible to retain a degree of local provenance.
- 3.4.36 Supplementary watering may be required depending on weather conditions at time of establishment.
- 3.4.37 Additional management, such as bi-monthly mowing during the first year of establishment, may be required to prevent weeds or early grasses from suppressing the wildflowers. Undesirable species would be controlled by hand (pulling, digging or cutting) or with herbicides depending on the species and the level of the problem.

Ongoing maintenance

- 3.4.38 A conservation grazer will be consulted to confirm an appropriate grazing regime; however, this is likely to comprise low-intensity sheep grazing on rotation across the site. Grazing management should be implemented on the site two years after seeding, or as soon as is reasonably practicable. If grazing not possible during the first year the grassland should be cut, and arisings collected and removed from site.
- 3.4.39 The grassland should be monitored by a suitably qualified ecologist annually to record changes in the sward and recommend changes to management requirements implemented, including changes to the grazing regime if necessary. This would ensure that the sward created is in line with requirements of mitigation specified in the Environmental Statement that will accompany the DCO submission.
- 3.4.40 Undesirable species can be controlled by hand (pulling, digging or cutting) or with herbicides depending on the species and the level of the problem.

3.5 Additional habitat measures

Exposed chalk slopes

- 3.5.1 Exposed chalk slopes would be created as a result of engineering works. It is recommended that no top soil is placed on these slopes and the chalk is left exposed. This should then self-seed with calcareous species from the local seed-bank, without the need for additional seed to be sown upon it.

- 3.5.2 Given the steepness of the slope and the poor nutrient level it is anticipated that only small calcareous tolerant wildflowers and grasses would grow on these slopes. As a result, no future maintenance is anticipated on this habitat type.

Wildlife pond

- 3.5.3 One pond would be created in a fenced off area surrounded by neutral grassland and woodland habitat. The design of the pond (including size, depth, area, bank profile, and planting program) should be based on the guidance set out in Section 8.3.1 of Great crested newt mitigation guidelines⁴, and the Freshwater Habitats Trust: Pond Creation Toolkit Factsheets 2 to 8⁵ (Supplementary Advice Factsheets, Designing wildlife ponds in areas with public access and Designing wildlife ponds to minimise the risk of bird-strike; and Species Dossier, Creating ponds for amphibians and reptiles.) Given the geology in this area the pond would need to be lined for it to retain water.
- 3.5.4 The pond should be left to fill up with rain water or filled from a rain water source.

Establishment maintenance

- 3.5.5 During the first year of establishment the pond should be monitored on a bi-monthly basis to check water levels (ensuring that the pond retains water) and monitor the establishment of aquatic planting, recommending remedial action as needed including replanting of any failed plants.

Ongoing maintenance

- 3.5.6 Water levels should be checked annually to ensure the pond retains water, remedial action should be taken as needed. Aquatic planting should also be monitored during these checks, and replanting should occur as necessary.

Farmland bird strips

- 3.5.7 Within the neutral grassland subject to cutting, approximately five 10m wide farmland bird strips would be created to provide a replacement foraging resource for local over-wintering farmland bird populations and comprise strips of rough grassland to provide suitable cover and foraging for these species. The management will be aimed at small passerine bird species such as finches and buntings and will focus on the outer areas of the

⁴ English Nature. 2001. Great crested newt mitigation guidelines, English Nature, Peterborough.

⁵ <https://freshwaterhabitats.org.uk/projects/million-ponds/pond-creation-toolkit/#Corefactsheets> (accessed on the 05/09/2019)

habitat creation fields at greatest distance from the runway and flight lines to minimise the risk of increasing bird strike.

- 3.5.8 These areas would only be partially seeded with a suitable mix with areas of bare earth left exposed to replicate arable farmland and provide an area for arable weeds to colonise.

3.6 Public access

Public rights of way

- 3.6.1 LLAL and their appointed contractors would reinstate and clearly mark a ploughed-up footpath or bridleway within 14 days and any subsequent operations would be reinstated within 24 hours and would seek permission from the relevant highway authority to erect any type of structure on or across a public right of way.
- 3.6.2 LLAL and their appointed contractors would ensure that the minimum width (2m for footpaths / 4m for bridleways) of all rights of way in their ownership are kept clear of obstructions and with nothing overhanging the path.
- 3.6.3 LLAL and their appointed contractors would ensure that the surface of the path is kept level and firm, where necessary making good defective areas, in accordance with the HCC Rights of Way Good Practice Guide⁶.
- 3.6.4 LLAL and their appointed contractors would ensure the condition of gates are maintained in accordance with Defra guidance⁷.
- 3.6.5 LLAL and their appointed contractors would maintain vegetation around directional sign posting and way marking sufficiently to show clearly the line of the path on the ground and in accordance with all relevant highway authority guidance.

Public open space

- 3.6.6 LLAL and their appointed contractors would manage and maintain areas of public open space to the standard of at least 'Good' and target 'Excellent' where feasible as set out within the '*Green space Quality Manual*' v2018-04 (Produced by Parks for London/London Parks Benchmarking Group), to which LLAL subscribes.

⁶ HCC Rights of Way Good Practice Guide: <https://www.hertfordshire.gov.uk/media-library/documents/environment-and-planning/countryside-access-and-management/rights-of-way/drainage-and-surfacing-specifications.pdf>

⁷ Defra (2011) Understanding the Defra Guidance on public Path Structures: <https://www.oss.org.uk/wp-content/uploads/2011/06/Understanding-Defra-3b-20110702.pdf>

3.7 Street furniture

General maintenance

3.7.1 LLAL and their appointed contractors would undertake the following operations to all street furniture items throughout the life of the development:

- surface cleaning (in accordance with guidance below);
- inspect and repair any superficial or physical damage to street furniture items;
- inspect and tighten (as necessary) all fixtures and fixings;
- remove graffiti, bird droppings or algae if present;
- check that the surrounding surface is sound;
- ensure paintwork/finish is weather protected with no marks where applicable; and
- manage litter, debris or dog fouling around street furniture.

Cleaning requirements

3.7.2 LLAL and their appointed contractors should undertake the following cleaning regimes according to the surface type, as listed below:

- timber surfaces - to be cleaned annually with a stiff brush to prevent a verdigris type build up, removing sand, splinters and graffiti with 100 grit sandpaper to ensure an even and smooth surface finish;
- galvanised surfaces - to be cleaned annually using a damp cloth and warm soapy water only (scourers and abrasive cleaners are NOT suitable for these types of finish and may damage them);
- Polyporpylene carbonate (PPC) surfaces - to be cleaned quarterly using a damp cloth and warm soapy water only (scourers and abrasive cleaners are NOT suitable for these types of finish and may damage them);
- stainless steel - to be cleaned annually using a stainless-steel polish and a lint free cloth (to remove ground in dirt a stainless-steel finishing pad may be required); and
- concrete - to be cleaned annually using an abrasive sponge and warm soapy water only (to remove ground in dirt a stainless-steel finishing pad may be required).

4 REPORTING AND REVIEW REQUIREMENTS

4.1.1 An annual monitoring report would be compiled to summarise the results of monitoring visits across the site, to be submitted in December each year as part of LLAL and their appointed contractors Environmental Management Systems (EMS) and contract requirements. This report would record any corrective actions taken and monitor the condition of habitats against that prescribed within the Environmental Statement that will accompany the DCO submission. and biodiversity net gain calculations to ensure that the requirements of the assessment are met in the long term.

4.1.2 A detailed programme of fauna species monitoring would also be prescribed within the detailed LBMP during preparation and submission of the Environmental Statement. However, this is likely to include monitoring of the following species/species groups:

- Badgers;
- Bats;
- Birds (including Schedule 1 species);
- Reptiles; and
- Invertebrates.

4.1.3 Table 1 below outlines the proposed schedule of ecological monitoring on site, which will be refined during preparation of the detailed LBMP.

Table 1: Outline schedule and responsible parties for monitoring on site

Feature	Activity	Timing	Responsible Party
All habitats	Ecological survey to be carried out to Phase 1 Habitat Survey methodology, included targeted orchid species counts in suitable habitats.	May	Appointed Ecologist
All habitats	Photographic monitoring to be carried out using fixed-point photography to keep record of developing habitats and results of habitat management works.	May	Appointed Ecologist
All habitats	Monitoring and correction/replacement as necessary.	September to December	Appointed Ecologist and Landscape Contractor

Feature	Activity	Timing	Responsible Party
Refugia/ hibernacula	Monitor condition of hibernacula and undertake remedial action where necessary to ensure that features remain in good condition and maintain their biodiversity value.	September	Appointed Ecologist
Bat boxes on trees/ buildings	Condition of bat roost features to be checked each year, with remedial action to be recommended and implemented where required to ensure that the features are fit for purpose.	September	Appointed Ecologist
Bird boxes	Annual monitoring to assess condition of boxes, with replacement required for any failed boxes.	September	Appointed Ecologist

4.1.4 This LBMP would be reviewed and updated every five years to ensure its suitability and effectiveness for managing habitats on site. Any changes to maintenance measures required in the interim will be prescribed and recorded within the annual monitoring reports.