



USW Caerleon

**Landscape
and Ecology
Management
Plan**

Prepared by:
**The Environmental
Dimension
Partnership Ltd**

On behalf of:
**Redrow Homes
(South Wales) Ltd**

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Section 1

Introduction

- 1.1 This Landscape Management Plan (LEMP) has been prepared by The Environmental Dimension Partnership Ltd (EDP) on behalf of Redrow Homes (South Wales) Ltd (hereafter referred to as 'the Developer') in relation to USW Caerleon (hereafter referred to as 'the Development Site').
- 1.2 A hybrid planning application for residential development (reference 17/0781) was previously submitted to Newport City Council (NCC) in August 2017, with full permission sought for the partial demolition, refurbishment and conversion of the main building to 42 flats, conversion of the TJ Welby building and Felthorpe House to dwellings, and expanded use of the Kegie building to include office space. In addition, outline consent was also sought for the demolition of all other existing buildings alongside the construction of up to 263 dwellings, 2,400 sqm of flexible non-residential floorspace, a changing room facility, alterations of accesses off Lodge Road and College Crescent, retention of existing rugby pitch and College Road gate piers, alongside proposed open space, landscaping, engineering and infrastructure works, with access to be considered and all other matters reserved.
- 1.3 In light of significant adverse effects upon highway safety, traffic, residential amenity and air quality however, planning permission was refused in October 2018. As such, a new detailed planning application submission was submitted to NCC in December 2019 (planning reference: 19/1212), to comprise:
- The construction of circa 160 dwellings, including new build and the creation of apartments within the listed buildings that are to be converted/retained within the Development Site;
 - Landscaping (including re-grading) and sustainable drainage works;
 - Access/Infrastructure works; and
 - Removal and translocation of specified trees currently subject to a Tree Preservation Order (TPO) (the remainder of the tree stock subject to a TPO will be retained).
- 1.4 To inform the new planning application submission, the Development Site was subject to a detailed ecological assessment completed by EDP during 2019, to determine any material changes occurring over the interim period to those habitats and protected/notable species supported/potentially supported by the Development Site, as previously assessed by Tyler Grange in 2015 and Ecosulis during 2015 and 2016 to inform the initial planning application submission.
- 1.5 The development proposals are illustrated within the Proposed Site Plan provided at **Appendix EDP 1**.

Site Context

- 1.6 The Development Site comprises the former Caerleon Campus of the University of South Wales. It is situated at approximate Ordnance Survey Grid Reference (OSGR) ST 33496 91290 and measures approximately 12.7 hectares (ha) in size. The Development Site is situated in the town of Caerleon, circa 1.1km west and north of the River Usk, beyond which lies the city of Newport.
- 1.7 The Development Site is dominated by hardstanding and buildings which are predominantly vacant, in addition to areas of amenity grassland and ornamental shrub planting. Such areas are now largely unmanaged and subject to encroaching scrub. Landscaped areas located more centrally within the Development Site are, however, still subject to frequent mowing. The north-eastern corner and eastern boundary of the Development Site is characterised by an unmanaged, tussocky grassland sward with scattered non-native and native trees contiguous with a linear belt of semi-natural broadleaved woodland.
- 1.8 Located within the town of Caerleon, the wider landscape is dominated by residential housing. A railway line travelling north to south is circa 180m east of the Development Site, beyond which lies open countryside comprising agricultural grassland and woodland units.
- 1.9 The Proposed Site Plan is provided at **Appendix EDP 1**, with the detailed Landscape Proposals included at **Appendix EDP 2** and **3**. Habitats supported by the Development Site are illustrated at **Appendix EDP 4**.

Planning Context

- 1.10 This LEMP has been prepared to specifically support the Full Planning Application and Environmental Statement (ES) and should be read in conjunction with the Proposed Site Plan illustrated at **Appendix EDP 1** and with the detailed Landscape Proposals provided at **Appendix EDP 2** and **3**. The proposed development and associated landscaping will be undertaken in seven as illustrated at **Appendix EDP 2** and **3**.
- 1.11 This LEMP aims to provide a management framework for the conservation and enhancement of site ecology, specific to all areas of soft landscaping and mitigation areas associated with the detailed design of the development and, in so doing, incorporates those recommendations documented within the Ecology Chapter of the Environmental Statement prepared by EDP which accompanied the planning application submission (planning reference: 10/1212) and subsequent Supplementary Environmental Statement (SES) prepared during October 2020.

Section 2

Scope, Aims and Responsibilities

Scope

- 2.1 This LEMP will extend over the lifetime of the development, requiring subsequent monitoring and review of all operations set out within this document at five-year intervals post-development, so as to take account of any changes to the Development Site or other influencing factors which may become evident as ecological features become established and approach maturity. It will also further the design principles established at the time of the outline application for this development.
- 2.2 The LEMP addresses all habitats and features of ecological value to be affected by the enabling/pre-construction and construction phases of the development works and sets out the management tasks to be undertaken prior to and during the construction phase and post-construction phase of the development. In particular, it details those management recommendations for all features of ecological interest located within the development footprint including areas of green open space, and boundary features to be retained, enhanced and created.
- 2.3 The management scheme defined within this LEMP is structured to take into account the following phases of the development works:
- Enabling and Pre-Construction Phases;
 - Construction Phase; and
 - Long-term management and maintenance.

Aims

- 2.4 The rationale for this LEMP is to facilitate the establishment and management of those ecological components specific to the consented development. Specifically, this LEMP aims to:
- Set out measures for the appropriate and effective protection of retained features of landscape and ecological value during the pre-construction and construction phases;
 - Ensure the appropriate management of any tree/vegetation works including clearance, planting and establishment during each phase of development; and
 - Set out measures for the long-term management and maintenance of all areas of soft landscaping associated with the development to ensure that such features are

protected and enhanced over the long-term such that all benefits to biodiversity and visual amenity are delivered successfully throughout the lifetime of the scheme.

Responsibilities

2.5 The responsibility for carrying out the functions of this LEMP will vary throughout the duration of the management period as follows:

- Enabling and Pre-construction Phases: All management and maintenance works of those features and species of ecological importance are the responsibility of the Principal Contractor appointed by the Developer, and are to be completed by the Principal Contractor until sign-off of the relevant part by the Developer prior to the start of the Construction Works Phase of each development plot;
- Construction Works Phase: All management and maintenance works of all features and species of ecological importance are the responsibility of the Developer, and are to be continued through to practical completion;
- Long-term Management: The responsibility for the management and maintenance works of all features and species of ecological importance associated with the development post-adoption will be the responsibility of the Private Management Company appointed by the Developer; and

The Private Management Company is also responsible for arranging a landscape architect to visit and assess the success of all informal areas of grassland, meadow and bulb planting at years 1, 3 and 5 from the first spring following planting of that phase by the Landscape Architect to ensure the adequate establishment of all plants, identify the presence of any undesirable species and disease and to determine whether remedial action is required, including replacement seeding/bulb planting for any lost/damaged specimens and additional management prescriptions necessary to ensure successful development. Copies of the reports are to be provided to NCC, as a result of the phased program the last report will be issued to NCC 5 years after completion of the last phase (circa 2031).

2.6 All measures detailed within this LEMP covers provision, management, inspection, maintenance, repair and replacement measures as necessary, taking into account factors including ecological, landscape, social, wildlife and amenity use for the land.

Section 3

Biodiversity Interest

- 3.1 This LEMP incorporates pertinent baseline information and recommendations documented within the Ecology Baseline Report (report reference edp5601_r001f), Ecology Chapter of the Environmental Statement prepared by EDP in November 2019 and Supplementary Environmental Statement prepared during October 2020 to inform the planning application submission.

Ecology Baseline

- 3.2 A desk study exercise and Extended Phase 1 Habitat survey was initially undertaken by Tyler Grange in 2015 and subsequently reported by Ecosulis in 2015/2016. To update the ecological baseline and verify the results of previous survey effort, an update Extended Phase 1 habitat survey was undertaken by EDP on 09 May 2019 to inform the development proposals.
- 3.3 The Development Site is dominated by hardstanding and buildings which are predominantly vacant, in addition to areas of amenity grassland and ornamental shrub planting. The north-eastern corner and eastern boundary of the Development Site is characterised by an unmanaged, tussocky grassland sward with scattered non-native and native trees. Such habitats are considered to be of limited/negligible ecological importance although adjacent semi-natural broadleaved woodland and trees with TPOs scattered across the Development Site are considered to be of local importance. Habitats within and adjacent to the Development Site provide opportunities for bats, breeding birds, badger (*Meles meles*), common reptiles, amphibians and notable mammal species including European hedgehog (*Erinaceus europaeus*). As such, further detailed surveys with respect to roosting and commuting/foraging bats, badger, common reptiles and great crested newt (*Triturus cristatus*) were undertaken by EDP throughout 2019 the results of which are documented with an Ecology Baseline Report (report reference edp5601_r001f) submitted to NCC with the ES.
- 3.4 The following valued ecological resources considered of local importance or above were identified for the Development Site during baseline ecological investigations previously undertaken during 2015-2017 and further updated in 2019:
- Statutory designations within the potential zone of influence of the Development Site of International/National level importance, including: the Severn Estuary Special Area of Conservation (SAC)/Special Protection Area (SPA)/Ramsar situated circa 7.3km from the Development Site; and the River Usk SAC/Site of Special Scientific Interest (SSSI), located circa 0.7km from the Development Site;

- Non-statutory designations within the potential zone of influence of the Development Site of County level importance, including: the Afon Llwyd Site of Importance for Nature Conservation (SINC) (located circa 0.4km from the Development Site); and the Afon Llwyd Grasslands SINC, situated circa 0.6km away;
 - Priority habitats¹ within and adjacent to the Development Site comprising semi-natural broadleaved woodland;
 - Habitats of local importance comprising scattered trees, several with Tree Protection Orders (TPO's);
 - Buildings with confirmed bat roosts and trees with low-moderate bat roost potential; and
 - Habitats supporting a foraging and commuting bat assemblage.
- 3.5 In addition, a low population of slow-worm (*Anguis fragilis*) of site level importance was identified in associated with poor semi-improved grassland as well as habitats suitable for badger and a breeding bird assemblage.
- 3.6 Of further pertinence, a pre-demolition visual inspection of buildings **B12/B13** previously undertaken during August 2021 identified new evidence of roosting bats within the loft space comprising scattered pipistrelle bat droppings. A single dusk emergence survey undertaken on 31 August 2021 to characterise the new roost recorded a single common pipistrelle bat emerging from a second story window. The building was, therefore, assessed as supporting a non-breeding common pipistrelle bat roost.

Ecological Features to be Lost/Impacted

- 3.7 Land take associated with the development proposals is predominantly confined to existing development comprising hardstanding and buildings, in addition to pockets of former amenity grassland, shrub planting, dense and scattered scrub, tall ruderal vegetation and ephemeral/short perennial vegetation. Such habitats are considered to be of negligible ecological importance.
- 3.8 This is, however, in addition to the loss of several mature/semi-mature trees across the Development Site, some with TPOs and/or features suitable for roosting bats. A tree Loss/Removal Plan is provided at **Appendix EDP 5**. Of further note, poor semi-improved grassland of value to a common reptile population will be subject to minor re-levelling and excavation to facilitate reinstatement/creation of public footpaths through retained open green space.

¹ Habitats considered of key significance to sustain and improve biodiversity in Wales, as defined under Section 7 of Part 1 of the Environment (Wales) Act 2016

Ecological Features to be Retained and Enhanced

- 3.9 In line with those baseline conditions and recommendations detailed within the Ecology Baseline report (report reference edp5601_r001f) and Ecology Chapter of the Environmental Statement, the development has been designed to retain, protect and further enhance those valued ecological features detailed above within the scheme as far as possible.
- 3.10 This has/will be achieved through the following design principles:
- Minimising pre-construction and construction impacts upon habitats and species through the implementation of sensitive working methods throughout the construction period;
 - Demolition of buildings with confirmed bat roosts in accordance with a European Protected Species (EPS) License from Natural Resources Wales (NRW);
 - Retention of mature trees and broadleaved woodland across the Development Site as far as possible, whilst ensuring their future protection, enhancement and maintenance over the long-term;
 - The long-term retention, enhancement and management of poor semi-improved grassland habitat located within the north-east corner of the Development Site. This is in addition to the retention and enhancement of grassland along the southern boundary of the Development Site and within the west;
 - The creation and long-term management of formal and informal areas of green space, to include tree and grassland planting for the benefit of both public amenity and wildlife whilst further protecting and enhancing ecological connectivity across the Development Site to the wider landscape;
 - The creation of sustainable drainage features (swales) which will be subject to new planting with an appropriate wetland flora, so as to diversify habitats suitable for protected species;
 - The inclusion of formal tree, hedgerow and shrub planting along the frontages of residential housing and roadways; and
 - The inclusion of habitat features to enhance the Development Site for nesting birds and roosting bats.
- 3.11 Subject to implementation of the above, it is considered that the landscape strategy proposed for the Development Site, upon which this LEMP is based, is consistent with those biodiversity objectives previously established.

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Section 4

Ecological Method Statement

- 4.1 This section sets out the appropriate working practices and safeguards to be deployed throughout the pre-construction phase of the development, including all associated enabling works, to protect the ecological and landscape interests of the Development Site as discussed in **Section 3**. Measures relating to ecological supervision, the protection of retained habitats, vegetation clearance and pollution prevention/control, along with specific measures relating to wildlife, are discussed to ensure the appropriate protection, maintenance and management of all valued features prior to and during construction.

Pre-Construction and Enabling Works

- 4.2 To facilitate commencement of construction, it is anticipated that site clearance and associated pre-construction/enabling works will commence from autumn/winter 2020, subject to receipt of planning approval and discharge or relevant planning conditions, alongside approval of a Development Licence from NRW, where necessary in respect of bats.

Pre-commencement Site Check

- 4.3 Prior to commencement of all pre-construction and construction works the development footprint shall be checked by a suitably qualified ecologist to ensure there has been no significant material changes to the existing ecological interest of the Development Site and that no protected or notable species, which could be harmed by the development, have moved onsite since the previous surveys were carried out. Should any protected species be found during this check, full details of mitigation measures to prevent their harm shall be submitted to and approved in writing by the Local Planning Authority. Where additional mitigation and/or precautionary working methods are required, this document will be updated accordingly.

Site Briefings and Ecological Clerk of Works

- 4.4 The appointed Ecological Clerk of Works (ECoW) will be responsible for the provision of site briefings and information to the Principle Contractor and all relevant sub-contractors and site personnel, on all potential ecological receptors and constraints associated with the land area comprising the development footprint, including all species-specific control measures to be adhered to during the construction phase.
- 4.5 Specifically, and prior to the commencement of pre-construction and construction phases, 'tool box talks' will be provided by the ECoW to the Principal Contractor appointed by the Developer, and all relevant sub-contractors and site personnel, to ensure that the identification and protection of protected species and their habitats is fully understood and appropriate, and that agreed mitigation is implemented.

- 4.6 Where proposed pre-construction and construction activities comprise licensable actions (i.e. demolition of buildings and/or works to tree confirmed to support roosting bats), a task specific briefing will be given to the Principal Contractor appointed by the Developer by a bat licensed ecologist named on the Development License. The task specific briefing will include all required sensitive working methodologies and legal obligations to be met, particularly with respect to those methodologies and timing constraints set out within any Development Licence granted by NRW, given the presence of roosting bats onsite.
- 4.7 In respect of the sensitivity of the retained tree stock onsite, including presence of trees with TPO's, task specific briefings will also be delivered by a qualified Arboricultural Contractor where necessary.
- 4.8 More generally the ECoW will supervise all pre-construction works impacting upon habitats and species, including vegetation clearance, soft demolition and habitat creation (as required), in addition to undertaking any necessary pre-commencement surveys for protected species, as discussed in further detail below.

Temporary Protective Fencing

- 4.9 Temporary protective fencing will be erected along all habitats to be retained in accordance with the measures detailed within the Tree Report compiled by Steve Ambler and Sons Tree Specialists Ltd. (**Appendix EDP 6**) and *BS5837: 2012 Trees in relation to design, demolition and construction* or similar. Such features to be retained include mature and semi-mature trees comprising a mix of non-native, ornamental and native species along the north-eastern, eastern and southern extents of the Development Site, as well as scattered throughout the site itself. Details of the extent of tree losses proposed are provided at **Appendix EDP 5**.
- 4.10 Protective fencing will incorporate the full root protection area of the feature to be retained, with fencing maintained throughout the duration of all site-enabling and pre-construction activities and remains the responsibility of the Principal Contractor appointed by the Developer.
- 4.11 No works (other than planting), including the storage of materials, plant and machinery, will be carried out within or immediately adjacent to all areas of protective fencing/areas marked for protection as described above, so as to ensure no detrimental impacts to sensitive features arising from physical damage and/or pollution.
- 4.12 Where proposed tree loss overlaps with the root protection zones of retained trees, clearance will be undertaken sensitively and will be overseen by a suitably qualified arboriculturist. Similarly, the digging of trenches and pits for new tree and scrub planting adjacent to areas of protective fencing, where this lies inside root protection areas, will also be carried out by hand only and supervised where necessary, in accordance with best practice guidance as stipulated within *BS 5837:2012*.

Control of Weeds and Invasive Species

- 4.13 Ecological surveys undertaken by EDP did not identify any invasive plant species² within the Development Site. Nevertheless, given their likely presence within the locality and vigorous nature of their spread, a prior inspection of the construction footprint for the presence of invasive species is advised before the commencement of any vegetation clearance onsite. Where identified, such areas will be marked out and subject to prior treatment and control in accordance with those methodologies prescribed by a specialist contractor, so as to avoid accidental disturbance and spread.

Sensitive Vegetation Clearance

- 4.14 Construction of the development footprint will result in the clearance of amenity grassland and selective clearance of tree, shrub and scrub habitat. This is in addition to selective, temporary clearance of poor semi-improved grassland habitat within the north-east corner of the Development Site, necessary to create a new footpath connection. Such habitats have the potential to support protected and notable species, including bats, nesting birds, badger, common reptiles and other notable mammal species including European hedgehog (*Erinaceus europaeus*). As such, precautionary measures will be adopted during clearance to ensure the avoidance of harm/injury and disturbance to such species and are detailed below. Specific measures in respect of badger are also provided.

Grassland Habitat

- 4.15 Clearance of grassland habitat required to accommodate the development footprint, and will be undertaken as follows:
- The clearance of grassland habitat located across the demolition footprint, will be undertaken between April and October (when temperatures are above 9°C) so as to avoid the main hibernation period of common reptiles and mammals. As such works will coincide with the bird breeding season (typically March to August inclusive), a pre-commencement check for active bird nests, particularly with respect to ground nesting birds, will be undertaken by a suitably qualified ecologist/ECoW immediately prior to the commencement of works. Where an active bird nest is identified, a 5-10m buffer (dependent on individual species requirements, and potentially greater, as specified by the ecologist at the time) will be established around the active nest, with no clearance works permitted within this buffer until all young have fledged and the nest confirmed inactive by the ECoW;
 - Should the above seasonal constraint be considered impracticable, then clearance works between November and early March inclusive may require pre-commencement checks and/or supervision by the ECoW to ensure no disruption

² Invasive species comprise those listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), for which it is an offence to plant or otherwise cause these species to grow in the wild. Such species are also classed as 'controlled waste' under the Environmental Protection Act 1990, requiring for their safe disposal at a licensed landfill site if taken offsite.

to potential hibernacula, with the adoption of additional precautionary measures as appropriate;

- Grassland habitat will be subject to directional cutting over two phases to passively encourage common reptiles and small mammals potentially present to move outside of the construction & demolition footprint. Specifically, an initial cut of grassland habitat will be undertaken reducing vegetation height down to a minimum of 175mm, with clearance undertaken in a direction towards adjacent retained habitat (i.e. retained vegetative boundaries). A second cut of the proposed footprint areas will be undertaken immediately thereafter, with vegetation cut to ground level and no greater than 30mm in height;
- In this instance, retained habitat includes grassland and tree/shrub planting within the north west corner of the Development Site, retained woodland along the eastern boundary of the site and grassland/shrub/tree planting along the southern boundary of the Application Site. Such habitat is contiguous with those areas where common reptiles have previously been identified during survey effort with habitats inherent therein to be enhanced through sensitive long-term management;
- During clearance any potential refugia located within the construction footprint suitable for common amphibians, reptiles and small mammals will be carefully dismantled using hand tools, hand-held machinery or untracked, light machinery to facilitate efficient supervision and relocated to reptile receptor areas/retained reptile habitat to ensure suitable refuge/hibernation opportunities are retained across the Development Site;
- All arisings will be removed from the construction footprint and vegetation will be maintained thereafter at a height no greater than 20mm through regular mowing or as bare ground to discourage common amphibians and reptiles from returning; and
- In the event any notable species are identified during site clearance these will either be captured by hand by the attending ECoW and immediately released into retained habitat adjacent or otherwise left to disperse of their own accord.

Tree, Shrub and Scrub Habitat

- 4.16 Further details pertaining to the removal of trees across the Development Site are provided within the Arboricultural Method Statement at **Appendix EDP 6**. With respect to ecological matters, however, a phased approach to the clearance of trees, shrubs and scrub will be undertaken, with above-ground vegetation clearance of woody habitats ideally confined to the period between October and February inclusive, so as to avoid bird breeding season. Trees, shrubs and scrub to be removed will be cut down to heights of between 30cm and 50cm above ground level and in a direction towards retained vegetation. Where this is unfeasible and clearance between March and September is unavoidable, then a pre-commencement check for active bird nests will be undertaken by a suitably qualified ecologist/ECoW immediately prior to the commencement of works. Where an active bird nest is identified, a 5m buffer (dependent on individual species

requirements, and potentially greater, as specified by the ecologist at the time) will be established around the active nest, with no clearance works permitted within this buffer until all young have fledged and the nest confirmed inactive by the ECoW;

- 4.17 Prior to clearance, trees and shrubs considered suitable for future translocation will be identified and marked up prior to commencement. Details pertaining to the locations of trees proposed for translocation are provided within the Arboricultural Method Statement provided at **Appendix EDP 5**.
- 4.18 With respect to the translocation of suitable specimens identified, such material will be excavated to a depth appropriate to root depth during the below-ground clearance works. Identified specimens will be gently lifted to ensure the root ball is fully intact and transferred to the receptor trench for replanting at similar heights as previous. Specimens will be backfilled with topsoil ensuring no roots are left exposed, with area firmed and sufficiently watered in.
- 4.19 Prior to clearance, all mature trees to be felled will also be subject to an update ground-level inspection by a suitably qualified ecologist to determine their current potential to support roosting bats. Where trees are identified as having moderate or greater potential, then such trees will be subject to a further detailed aerial inspection whereby all suitable roosting features will be checked at height for the presence of bats. Aerial surveys will be undertaken by a suitably qualified and NRW bat licensed ecologist, arboricultural contractor with a NRW bat survey licence, or with experience of working with bats and under the supervision of a NRW bat survey license holder.
- 4.20 If any bats are discovered during the aerial inspection, owing to the strict legal protection afforded to bats and their roosts, works are likely to require a Development Licence from NRW before works can continue.
- 4.21 If no evidence of roosting bats is uncovered during the aerial inspection, works may proceed without a Development Licence from NRW. However, regarding those trees identified as having potential to support roosting bats, a 'soft felling' technique' involving the sectional dismantling of the tree will be adopted, involving the following:
- Tree felling will avoid cutting through any cracks, cavities, limb/knot holes or any other potential roosting features – i.e. by cutting above and below the feature when removing sections with suitable features;
 - Any sections to be cut supporting suitable roosting features are to be suitably harnessed and supported before cutting using industry-standard rigging equipment, and gently lowered to the ground once cut, to avoid violent shaking of potential roosting features; and

- Any cut sections with potential roosting features will be retained onsite by one of the following methods:
 - (i) Strapping to existing, retained mature trees and appropriately secured in position;
 - (ii) Retained onsite at ground level within an area of retained woodland; and
 - (iii) Retained onsite for minimum 48 hours, with potential entrances not blocked i.e. facing away from ground, before they are removed or chipped.
- 4.22 Thereafter, trees, shrubs and scrub to be removed will be cut down to heights of between 30cm and 50cm above ground level and in a direction towards retained vegetation.
- 4.23 Following completion of above-ground vegetation clearance, below-ground vegetation clearance, including the removal of roots and/or stumps of shrubs and trees remaining, or of buried rubble and spoil, will be undertaken between the months of April and early October inclusive so as to avoid harm to protected/notable species during the hibernation period.
- 4.24 Below-ground vegetation clearance, including the removal of roots and/or stumps of shrubs and trees remaining, or of buried rubble and spoil, will be undertaken between the months of April and September/mid-October Inclusive (when temperatures are above 9°C) so as to avoid harm to protected species during the hibernation period. Where this is not possible, such works can only be undertaken at the discretion of the ecologist, under supervision and/or following pre-commencement checks to rule out hibernation potential.
- 4.25 The removal of large root balls will be grubbed out in a sensitive manner to ensure no significant disturbance to soil and adjacent, retained planting. Any such excavations that occur within the root protection zone of retained vegetation will be undertaken by hand and backfilled as soon as possible or temporarily lined with polyethylene sheet to reduce evaporation.
- 4.26 All arisings from any vegetation clearance will be taken away from the vicinity of the development footprint as soon as possible following vegetation clearance.
- 4.27 Should there be a delay between the completion of vegetation clearance and commencement of construction such that colonisation of the Development Site by vegetation occurs, then such vegetation will be maintained at heights less than 20mm or as bare ground through frequent mowing or disturbance to deter wildlife from the construction footprint.

Species-specific Measures: Bats

- 4.28 Buildings **B1/B2** (Dolaucothi/Camelot Student Block), **B3/B4** (Blaenavon/Abergavenny Student Block) and **B16** (Felthorpe House) are confirmed to support bat roosts and will

be subject to all prescriptive methodologies detailed within a Development Licence approved by NRW. A Development Licence for buildings **B1/B2** and **B3/B4** specifically has previously been submitted and approved by NRW on 1 September 2021 whilst a modification to the licence following identification of a new common pipistrelle bat roost within building **B12/B13** was approved on 5 November 2021. In brief, a mitigation strategy is based on the following principles:

- Installation of 17 bat boxes (6 Schwegler 2F bat boxes, 6 Schwegler 2FN bat boxes and 5 Schwegler 1FF bat boxes or similar) on suitable retained trees within the Development Site prior to commencement of demolition;
- Pre-demolition inspection of each building for any additional signs of bats with delivery of a toolbox talk to the demolition contractors;
- Soft-stripping of potential roosting features associated with Buildings **B1/B2**, **B3/B4**, **B12/B13** and **B16** under supervision of the named ecologist or accredited agent; and
- Installation of permanent, compensatory roosting features with newly constructed residential houses comprising 12 Schwegler 1FR bat tubes (or similar) in addition to construction of a purpose-built bat loft void provided within a proposed new garage attached to Felthorpe House (**B16**).

- 4.29 With respect to remaining onsite buildings including buildings **B5 - 15** with potential to support roosting bats an update assessment by an NRW bat licenced ecologist be undertaken prior to demolition, particularly should no works be undertaken within 12 months of the previous assessment. Such pre-commencement surveys will include an update external and internal visual inspection of each building for current potential to support roosting bats and/or evidence of roosting bats. In respect of those buildings assessed as having low to high potential to support roosting bats, further dusk emergence and/or dawn re-entry surveys will be undertaken during the main bat activity season (May-September) as necessary in accordance with best practise bat survey guidelines³, to confirm presence/infer absence of a bat roost.
- 4.30 If roosting bats are discovered during the inspection, owing to the strict legal protection afforded to bats and their roosts it will then be necessary to obtain a Derogation Licence from NRW prior to works commencing, with sufficient replacement roosting habitat provided. If no evidence of roosting bats is uncovered during the update inspection, works may proceed without an NRW Development Licence.
- 4.31 Site contactors will be subject to a 'tool-box talk' by an NRW licenced bat ecologist prior to commencement of any demolition works. The briefing will outline the protected status of bats and breeding birds, alongside relevant legislation, and detail all methods and sensitive working practices to be employed throughout the demolition phase, given the

³ Collins, J. (ed.) (2016). *Bat Surveys: for Professional Ecologists: Good Practice Guidelines* (3rd edition). The Bat Conservation Trust, London

presence of potential roosting features (including hanging tiles) considered suitable for roosting bats. Such features will be sensitively removed prior to demolition and outside of the main bat active and hibernation periods; i.e. with works confined to (early spring (late March/early April) or autumn (September/October).

4.32 The contractor(s) will be advised to carry out all work with care and vigilance for bats and to adhere to the following procedures in the unlikely event bats are found during works:

- In the unlikely event that a bat and/or its roost is located during demolition, works will be halted and the NRW bat licenced ecologist contacted immediately for advice. Bats should be allowed to disperse of their own accord; and
- If the roost has been exposed, and especially if bats have been injured, works will be halted and the NRW bat licenced ecologist contacted immediately for advice.

Species Specific Measures: Badger

4.33 No evidence of badger was identified during ecological surveys of the Development Site completed by EDP during 2019, although amenity and poor semi-improved grassland and broadleaved woodland provides suitable foraging and sett building opportunities for this species.

4.34 Due to the mobility and widespread nature of these species, in addition to the presence of suitable foraging habitat onsite, a badger survey of the Development Site by a suitably qualified ecologist prior to the commencement of development is recommended to determine whether any setts have been established during the interim period.

4.35 If identified, development will avoid direct impacts to, and disturbance of, active badger setts through establishment of an appropriate working buffer (10-30m as advised by an ecologist), in which no vegetation clearance or movement of machinery will be permitted. Where this is not possible, sett closure will be required under licence from NRW and restricted to between the months July and November.

Other Protected/Notable Species

4.36 European hedgehog was identified on-site during ecological surveys whilst habitats inherent within and adjacent to the Development Site provide a foraging resource in addition to offering suitable refugia/hibernacula for this species. Clearance of suitable habitats will be undertaken in accordance with those measures detailed under paragraph 4.14 to avoid harm/injury to protected species that may be present. As above, any suitable refugia for common reptiles as well as European hedgehog will be carefully dismantled using hand tools, hand-held machinery or untracked, light machinery to facilitate efficient supervision. More generally, however, the following precautionary measures will be adhered to during the construction phase:

- All machinery will be operated by trained personnel only;

- Working at night will be avoided as far as possible;
- All trenches/excavations will be covered up overnight and/or a means of escape provided (such as mammal ramps) to avoid wildlife becoming trapped; and
- Any open pipework with an outside diameter of greater 120mm must be covered at the end of each working day to prevent animals entering/becoming trapped.

Maintenance of Areas Cleared of Vegetation

- 4.37 Should there be a delay between the end of the pre-construction phases and the beginning of the construction works phase such that vegetation begins to re-colonise the construction footprint, then such vegetation will be subject to regular cutting to ensure heights are maintained at circa 20mm or less, or else maintained as bare ground to deter the return of wildlife to the construction area.
- 4.38 Any remedial or formative pruning required of trees will be undertaken between October and February inclusive in accordance with good horticultural and arboricultural practice with thinning, trimming and shaping of specimens undertaken as appropriate to species, location, season, and stage of growth. Where such works are required to trees with TPO'S, the LPA will be consulted and any additional permits for such activities sought. All arisings from any vegetation clearance will be taken away from the vicinity of the development footprint no later than the day after vegetation clearance.
- 4.39 Demolition/damage to retained boundary vegetation will be avoided, with exception to small sections where repairs, new planting, or site access is required.
- 4.40 Any spoil, rubble, brash and/or debris collected as a result of the construction works will be removed from site or stockpiled within the centre of the site and away from the vegetated boundaries.

Topsoil and Mulch

- 4.41 To ensure that all available topsoil from the Development Site is protected and retained for future re-use onsite, or for use in a sustainable manner, all temporary topsoil storage will be in accordance with BS3882:2007 *Specification for topsoil and requirements for use*.
- 4.42 Following vegetation clearance in accordance with those measures above, topsoil removal should ideally avoid periods of heavy rain and stripped to a depth of 200mm. Machinery used for earthworks will be selected to minimise disturbance and compaction. Topsoil will not be mixed with subsoil, stone, hardcore or rubbish.
- 4.43 Handling of topsoil will be kept to a minimum and either re-used or stockpiled immediately after stripping. Where stored, loose bunds will be created no more than 2m wide and 1m high. No machine will be permitted to run across the bund at any one time and the bund should be shaped from the side only. Thereafter no other material will be

stored on top of the topsoil. Stored topsoil will be covered and fenced off from construction works as appropriate until reuse.

Pollution Incidents

- 4.44 To protect water quality of the Afon Llwyd and associated land drains within 200m of the Development Site, which in turn are hydrologically connected to the River Usk SAC/SSSI and Severn Estuary Ramsar/SPA/SAC, appropriate pollution control measures will be employed, with reference to available guidance including Pollution Prevention Guidelines (PPGs) and Guidance for Pollution Prevention (GPPs) documents⁴, namely PPG1, *General guide to the prevention of pollution*, PPG5/GPP5 *Works and maintenance in or near water*, PPG6 *Pollution prevention guidance for working at construction and demolition sites* and PPG21 *Pollution incident response planning*, to ensure that detrimental impacts to the watercourse as a result of surface run-off, spillage and pollution arising throughout the construction phase are avoided.

Temporary Lighting

- 4.45 Temporary lighting, if required, will be kept to the lowest permissible level through the use of sensitive lighting design. This will include:
- The reduction in height of lighting columns employed across the construction footprint to allow for low-level lighting or, where appropriate, the use of tall columns designed to allow light to be directed downwards more acutely so as to reduce horizontal spill;
 - The use of light spill accessories such as hoods, shields and filters to allow for lighting to be directed to the intended area only such that light spillage is avoided elsewhere;
 - The use of timed and/or sensor lighting across the construction footprint; and
 - The programming of timed lighting to ensure adequate dark periods between dusk and dawn across the construction footprint, and particularly along site boundaries.
- 4.46 Such sensitive lighting strategies will seek to avoid light spill upon retained vegetated boundaries and scattered trees, particularly along north-eastern and eastern edge of the Development Site, thereby maintaining dark corridors along sensitive habitats to ensure minimum disturbance to notable and protected species utilising those habitats for commuting, foraging and dispersal during the pre-construction and construction phases.

⁴ PPGs were withdrawn in December 2015; however, they remain the main source of information regarding best practice with respect to pollution prevention. A replacement guidance series, comprising Guidance for Pollution Prevention (GPPs), are currently in development. Pollution advice listed at <https://www.gov.uk/government/collections/pollution-prevention-guidance-ppg> should also be referred to.

Section 5

Habitat Creation and Landscape Planting (Construction Phase)

- 5.1 This section sets out the proposed habitat creation and landscape planting works to be completed across the development footprint, with further details and specifications included at **Appendix EDP 2** and **3**, to ensure that appropriate measures to provide biodiversity enhancement and visual amenity are implemented from the early stages of the scheme. Such measures have been designed with reference to those mitigation principles previously set out within the Ecology Chapter H of the ES and SES.

Construction Phase

- 5.2 The construction start date is anticipated to commence from autumn 2020, subject to approval of the planning application and/or demolition consent and discharge of planning conditions, alongside the approval of a Development Licence from NRW where applicable.
- 5.3 Ecological management, habitat creation and planting works to be undertaken during the construction works phase are described further below. Where repeat actions are necessary, the frequency and timings of tasks are specified accordingly.

Habitat Creation and New Planting Areas

- 5.4 A range of new habitats and landscape features will be established during the construction phase of the development or in the first planting season. Public open space area will also be created in the central location of the Development Site. The exact locations, planting densities and species incorporated into the new planting areas are illustrated within the Detailed Soft Landscape Plan and Detailed Soft Landscape Design with Plot Planting at **Appendix EDP 2** and **3** respectively.
- 5.5 Given the potential of the Development Site to support protected species including breeding birds, a bat assemblage, badger, common reptiles and European hedgehog the development has been designed to retain, protect and enhance key habitat for protected species.
- 5.6 Retained and enhanced habitats associated with the northern-eastern, eastern and southern boundaries of the Development Site (comprising poor semi-improved grassland, woodland and tree and shrub planting), in addition to new habitat features including swales, wildflower grassland, trees and shrubs will require ongoing sensitive and appropriate management over the lifetime of the development given the presence of protected and notable species onsite. Sensitive management will seek to enhance the value of foraging, dispersal, breeding and hibernation resources for protected and notable species whilst also providing areas of green open space for new residents.

- 5.7 Planting will be undertaken in accordance with those specifications stated therein. Additional measures are further provided as follows.

General Measures

- 5.8 All work to be carried out in accordance with the following:

- All materials and workmanship are to be to the highest possible standards in accordance with relevant good practice and British Standards;
- All work to be carried out by appropriately skilled, qualified and experienced operatives for the type and quality of the work, and in accordance with good horticultural practice and contemporary Legislation, Regulations and Codes of Practice;
- All work will be undertaken where weather conditions are suitable, avoiding moving, handling and tracking over very wet soils. Soils for planting will be warm, moist, friable and not waterlogged;
- No planting or landscape operations to be undertaken within the root protection zones for trees designated under a TPO (refer to **Appendix EDP 6** for locations of TPOs);
- Planting should be undertaken using topsoil recovered from the construction footprint, incorporating soil conditioner as required;
- Only tools suited to site conditions and work carried out are to be used. Hand tools to be used around existing and newly planted trees and shrubs. Boards to be used where required while working, to protect grass/plant beds;
- Work is only to be carried out while soil and weather conditions are suitable. Planting, turfing, seeding etc., will not be undertaken during periods of frost, strong winds, when topsoil is frozen, snow-covered or waterlogged, or in drought conditions;
- Materials will not to be stock-piled adjacent to newly planted trees or shrubs;
- All waste materials, including plant wrappings and temporary labels, will be removed off site at the contractors' own expense. No waste materials will be buried or burnt onsite;
- All hard and soft landscape materials will conform to the relevant British Standards and Codes of Practice. All plants will be true to name, type and character, and to comply with the National Plant Specification;

- Plants will be vigorous, weed, pest and disease free, and not suffering from drought, waterlogging, windburn, damage or nutrient deficiency. Fresh grass seed and turf produced for the current growing season will be used. Any substitutes will otherwise be approved by the project landscape architect;
- Transport and handling of plants shall comply with 'Handling and Establishing Landscape Plants' (Horticultural Trades Association), including protection from desiccation or any other damage prior to planting out;
- Prior to undertaking planting or seeding, all rubbish, debris and surface stones exceeding 75mm in any direction are to be removed from site. Any substance or materials injurious to plant growth including any rubble, fuel or lubricants will be removed prior to commencement of planting;
- Watering will be undertaken as necessary by the Developer to ensure the establishment and thriving of all planted areas. Typically, watering will be undertaken every week from March to October for the first year, to ensure the establishment and thriving of all planted areas. Watering will be to the full depth of the topsoil. If supply is restricted by emergency legislation, watering will not be carried out unless instructed to do so. When watered, the soil of the base of the tree/shrub should be damped but not waterlogged. During years 2-3, watering should be undertaken as required and particularly during prolonged dry weather;
- All areas where newly planted or translocation trees have failed to thrive (through death, damage or disease), will be identified by the Developer and plants will be removed and replaced with equivalent species to match the size of adjacent nearby plants in the next appropriate planting season, as frequent as necessary. The advice of the project Landscape Architect will be sought wherever possible; and
- All plants will be pruned to promote healthy growth and natural shape, and any dead, dying or diseased wood and suckers will be removed. Overhanging branches will be pruned to ensure that growth is prevented from encroaching onto paths, signs, sightlines and road lighting. Pruning will be undertaken annually or as appropriate to each species between October and February inclusive, to avoid the main bird breeding season, and undertaken according to best practice. All arisings will be removed for composting.

Habitat Creation Areas

Grassland

- 5.9 Inherent within the development is the proposed retention and enhancement of poor semi-improved grassland located along the southern boundary of the Development Site. This is in addition to the retention of grassland habitat within the north-east corner of the Development Site, albeit for temporary loss/disturbance associated with re-engineering of levels in this area to accommodate a new footpath link. To maximise the botanical value and further enhance the carrying capacity of such habitats to be retained,

restoration and enhancement measures will include the supplementary seeding of species-poor areas and creation of specie-rich wildflower planting where appropriate.

5.10 Of further pertinence, the former playing field in the centre of the Development Site will be reinstated as public open space and accommodate a Local Equipped Area of Play (LEAP) whilst additional areas or amenity planting will be retained and/or created.

5.11 Grassland planting will include the following mixtures:

- Emorsgate Special General-Purpose Meadow Mixture EM3⁵, incorporating a diverse mixture of wildflower (27 species) and grass species (5 species), to be sown across areas proposed for bulb planting within open space across the western extents of the Development Site;
- Emorsgate Mixture for Hedgrows and Woodland EG9⁶, incorporating 7 grass species, to be sown within the north-east corner of the Development Site adjacent to retained trees and woodland;
- Emorsgate Wildflowers for Woodland EW1F⁷ incorporating 12 woodland to be sown within the north-east corner of the Development Site;
- Emorsgate General Purpose Meadow Grass Mixture EG1⁸, incorporating 5 grass species, to be sown within areas of public open space throughout the development;
- Emorsgate Meadow Grass Mixture for Wet Soils EG8⁹ incorporating a diverse mixture of grass species (8 species) and Emorsgate Hedgerow Mixture EH1 incorporating 19 wildflower species, each to be sown across sustainable drainage features at a 50:50 ratio;
- Emorsgate Strong Lawn Grass Mixture EG22¹⁰, incorporating 5 grass species, to be sown within areas of formal public open space including across the retained playing field; and
- Rolawn Medallion Turf¹¹ mix, comprising amenity grass proposed along the frontage of residential plots and formal open space.

5.12 Preparation of ground will include the removal of weeds and other vegetation, to reduce fertility whilst ensuring its future establishment. Weeds will be controlled by cultivation or herbicide before sowing if necessary. Where required, topsoil will also be reduced by around 150mm, so as to reduce the long-term fertility of the soil and facilitate competition within the established grassland sward aimed at achieving and sustaining

⁵ <https://wildseed.co.uk/mixtures/view/4/special-general-purpose-meadow-mixture>

⁶ <https://wildseed.co.uk/mixtures/view/42/grass-mixture-for-hedgerows-and-woodland>

⁷ <https://wildseed.co.uk/mixtures/view/33/wild-flowers-for-woodland>

⁸ <https://wildseed.co.uk/mixtures/view/36>

⁹ <https://wildseed.co.uk/mixtures/view/41/meadow-grass-mixture-for-wet-soils>

¹⁰ <https://wildseed.co.uk/mixtures/view/19/strong-lawn-grass-mixture>

¹¹ <https://www.rolawn.co.uk/turf/rolawn-medallion-turf>

medium to long term species diversity. Prior to sowing, all large debris, litter, stones and earth clods will be removed.

- 5.13 Cultivation adjacent to established vegetation will take care to ensure no damage to existing root systems, with disturbance kept to the minimum necessary to expose fresh soil. Thereafter, grassland seed mix will be sown in accordance with the supplier's specifications.

Sustainable Drainage Features (Swales and Attenuation Basins)

- 5.14 Sustainable drainage features (including swales) proposed onsite in association with the boundaries of the construction footprint and the site entrance will be planted with Emorsgate Meadow Grass Mixture for Wet Soils EG8 as described above, and where appropriate, will be further enhanced through plug planting of marginal/aquatic species to increase species diversity and improve water quality, including Fools water-cress (*Apium nodiflorum*), lesser pond sedge (*Carex acutiformis*), common spike rush (*Eleocharis palustris*), meadowsweet (*Filipendula ulmaria*), yellow flag iris (*Iris pseudacorus*), and water mint (*Mentha aquatica*).

Tree and Shrub Planting

- 5.15 New tree and shrub planting is proposed along the frontage of residential properties across the development footprint in addition to within and along the boundaries of open green space across the Development Site. This includes the transplanting of suitable specimens otherwise proposed for loss to suitable receptor sites across the Development Site where appropriate. In addition, new structural planting is proposed along the southern boundary of the Development Site.
- 5.16 The proposed planting schedule provided at **Appendix EDP 2** and **3** and includes a diverse mix of native species, and/or those of value as a foraging resource for wildlife.
- 5.17 The installation, maintenance and material standards for the landscape works will be undertaken in line with the following:
- Planting stock will be handled in accordance with the Horticulture Trade Association guidelines and will follow landscape specifications as provided by a Chartered Landscape Architect;
 - Planting of landscaped areas with tree and shrub planting will be undertaken during the optimal window of between November and March or in accordance with the advice of the project landscape architect. Planting outside of this time will require the use of containerised stock and may involve additional irrigation arrangements;
 - Any seeding will be carried out in mid to late spring or early autumn, depending on seasonal variations, in accordance with the advice of the project landscape architect;

- All planting and seeding is to be undertaken in accordance with the construction for that specific development area, and will conform to *BS3936-1 Nursery Stock: Specification for Trees and Shrubs*;
- Cultivation adjacent to established vegetation will take care to ensure no damage to existing root systems, with disturbance kept to the minimum necessary to expose fresh soil;
- There will be no planting operations within the root protection zone for trees designated under a TPO (refer to **Appendix EDP 6**);
- Newly-planted tree and shrub plants to be protected by individual spiral/netting guards, as specified. The condition of all tree stakes, ties and guards will be checked by the Developer and all broken items will be replaced and items regularly adjusted to accommodate plant growth and prevent rubbing. Any bark damage will be cut back neatly with a sharp knife. All plants will be straightened and the ground at the base to be firmed up. All shelters will be hand weeded;
- Watering will be undertaken as necessary by the Developer to ensure the establishment and thriving of all planted areas. Typically, watering will be undertaken every week from March to October for the first year, to ensure the establishment and thriving of all planted areas. Watering will be to the full depth of the topsoil. If supply is restricted by emergency legislation, watering will not be carried out unless instructed to do so. When watered, the soil of the base of the tree/shrub should be damped but not waterlogged. During years 2-3, watering should be undertaken as required and particularly during prolonged dry weather;
- Cultivation adjacent to established vegetation will take care to ensure no damage to existing root systems, with disturbance kept to the minimum necessary to expose fresh soil;
- Within the establishment phase, watering will be undertaken as necessary by the Developer to ensure the establishment and thriving of all planted and translocated areas. Watering will be to the full depth of the topsoil. If supply is restricted by emergency legislation, watering will not be carried out unless instructed to do so;
- Within the first 5 years following planting of each landscape area within each Phase of development, all areas where newly planted/translocated plants or trees have failed to thrive (through death, damage or disease), will be identified by the Developer with specimens removed and replaced with equivalent or more appropriate species to match the size of adjacent nearby plants in the next appropriate planting season, as frequent as necessary. The advice of the project Landscape Architect will be sought wherever possible;
- All plants will be pruned to promote healthy growth and natural shape, and any dead, dying or diseased wood and suckers will be removed. Pruning will be undertaken

annually or as appropriate to each species between October and February inclusive, to avoid the main bird breeding and dormouse active season and undertaken according to best practice. All arisings will be removed for composting;

- Spot weed control of all broad-leaved and injurious weed species listed in the Weeds Act 1959 will be undertaken using a suitable non-residual herbicide as and when required annually. The specification and use of herbicides or pesticides, including their use in proximity to water bodies, to comply with all contemporary Regulations, British Standards and Codes of Practice; and
- Soil debris and arisings will be swept from adjacent hard surfaces after each maintenance operation. All extraneous rubbish not arising from the contract works will be collected and recycled (where feasible) or else removed from site at each maintenance visit.

Hedgerows

- 5.18 Hedgrow planting is predominantly proposed along the frontages of residential housing and formal open space.
- 5.19 Planting instructions for new hedgerow trees will follow those provided above in relation to proposed tree and shrub planting, with new tree whips planted in double staggered rows at 300mm centres.
- 5.20 Ground preparation for hedgerow seeding will rid the soil of perennial weeds, through repeated cultivation or herbicide application, prior to sowing. Cultivation will only go to the minimum depth required to expose fresh soil into which new seeds are to be sown.
- 5.21 Once the ground has been suitably rid of perennial weeds and a fine tilth to sow into has been prepared, seeding will take place in the autumn or spring subject to sufficient soil warmth and moisture to aid germination. Seed will be surface sown by machine or broadcast by hand. Seeds will not be compressed into the soil but will be firmed in with a roller, or by treading. A slow release fertiliser will also be applied where appropriate. Topsoil trench shall be mulched with amenity bark mulch up to a depth of 75mm.

Woodland

- 5.22 In line with those recommendations detailed within the Ecology Chapter of the ES the development has been designed to retain and protect woodland habitat with selective loss of semi-mature/mature trees outright but adjacent to the woodland boundary. Public access will, furthermore, be precluded given the location of woodland on steep bank sloping downwards to an adjacent road offsite. To maintain and enhance the condition of retained woodland habitat, the following management measures will be undertaken:
- Selective removal of encroaching scrub through cutting every 2-3 years on a rational basis between October and February to maintain a ground flora community undertaken. This may be combined with the removal of diseased and dying plants;

- The control and removal of non-native and or invasive species in accordance with the advice of a specialist contractor;
- The removal of any litter on an annual basis; and
- The provision of log piles and deadwood utilising arisings from tree works undertaken onsite, to provide suitable habitat for invertebrates as well as refugia for common reptiles and European hedgehog.

Bat Boxes

- 5.23 New bat roosting features are recommended for installation to further enhance the Development Site for roosting bats. A total of 17 Schwegler bat boxes¹² will be installed upon suitable, mature trees to be retained along the peripheries of the Development Site where appropriate. Boxes will be erected with a south-east/south-west facing aspect where possible at circa 4m- 7m heights, avoiding features that would obstruct access for bats and away from sources of artificial lighting.
- 5.24 Bat box design to be installed across the Development Site will include the following or similar:
- 6 Schwegler 2F (or similar);
 - 6 Schwegler 2FN (or similar); and
 - 5 Schwegler 1FF (or similar).
- 5.25 The maintenance and repair of bat boxes installed upon across the Development Site during the pre-construction and construction phases will remain the responsibility of the Developer.
- 5.26 In addition, installation of permanent, compensatory roosting features with newly constructed residential houses comprising 12 Schwegler 1FR bat tubes (or similar) is proposed, in addition to construction of a purpose-built bat loft void provided within a proposed new garage attached to Felthorpe House (**B16**). The maintenance of the permanent bat mitigation installed onsite will be the responsibility of the Developer during the pre-construction and construction phases of development.
- 5.27 With respect to the bat loft, this feature will be subject to a final check upon completion of construction and prior to handover to the homeowner, by the bat licensed ecologist to ensure that they are incorporated correctly, with any remedial action completed as necessary.
- 5.28 The locations of bat boxes/mitigation, as agreed with NRW, are illustrated at **Appendix EDP 7**.

¹² <http://www.nhbs.com/browse/search?title-type-facet%5B%5D=&term=bat+boxes>.

Bird Boxes

- 5.29 To further enhance bird nesting opportunities across the Development Site, nest boxes will be installed on retained mature trees and/or buildings as appropriate. A variety of new nest boxes are suggested to accommodate different bird species and include:
- Schwegler 1B nest boxes with 26mm holes for blue tit and coal tit;
 - Schwegler 2M nest box with 32mm hole, used by great-, blue-, marsh-, coal- and crested tit, redstart, nuthatch, collared and pied flycatcher, wryneck, tree and house sparrows, and occasionally bats;
 - Schwegler 3S nest boxes for starling;
 - Swift bricks of swift boxes (e.g. Schwegler No 16. Swift Box);
 - House sparrow nest box; and/or
 - House martin nest box.
- 5.30 Bird boxes will be installed in accordance with manufacturer's specifications, on suitable aspects so as to be protected from strong wind, rain and sunlight, and at suitable heights of between 3m and 6m above ground level. Entrances will face away from prevailing winds and sources of light and within or immediately adjacent to good tree or hedge cover to increase the shelter and food source available.
- 5.31 The maintenance and repair of bird boxes installed upon across the Development Site during the pre-construction and construction phases will remain the responsibility of the Developer.

Hibernacula and Refugia

- 5.32 To enhance the Development Site for a common reptile population, hibernacula will be constructed within grassland habitat to be retained within the north-east corner of the Development Site. Hibernacula will be constructed in accordance with the following specifications:
- Finished size approximately 2m long, by 1m wide and 1m high, capped with topsoil and covered with turf;
 - Hibernacula to be partially buried in a pit up to circa 0.5-1m deep and located within uncut areas of rough grassland vegetation;
 - The body of each hibernaculum to contain a range of materials including cut timber, brash, inert hardcore, bricks, rocks, grubbed-up tree roots or building rubble;

- Materials that will decompose will not be placed beneath heavy components such as bricks or rocks, to avoid the risk of collapse;
- Wood chippings or loose topsoil will be incorporated into the construction, to pack some of the larger cavities;
- Hibernacula to be located within uncut areas of grassland and/or woodland edges, covered with topsoil and seeded using a wildflower seed mix;
- Hibernacula to be temporarily fenced off when situated in more accessible areas so as to avoid disturbance whilst vegetation is allowed to develop; and
- Access points for amphibians and other wildlife will be created by ensuring that some timber or rubble protrudes from the edge, creating crevices that allow reptiles and amphibians to get deep inside.

5.33 Additionally, logs and brash generated from clearance of trees and scrub will be retained where possible and used to create informal hibernacula within wooded areas along the boundaries of the Development Site. Deadwood should also be retained (taking into account any health and safety implications), to provide suitable habitat for invertebrates.

European Hedgehog

5.34 To facilitate the dispersal of European hedgehog across the Development Site during operational phases of development, boundary fences between the curtilage of new development and informal landscaping features will have a 13cm x 13cm gap in the bottom to allow hedgehogs to pass through. Locations for proposed inclusion of hedgehog gaps are illustrated at **Appendix EDP 8**.

Operational Sensitive Lighting Strategy

5.35 A lighting strategy will be implemented to ensure that retained habitats on-site (predominantly habitats along the eastern and southern boundaries of the Development Site) used by light-sensitive species such as bats will not be adversely lit. A sensitive lighting strategy should be designed with reference to those principles established in paragraph 4.41. A strategy should seek to maintain a dark corridor adjacent to retained woodland habitat and across proposed open space in the north-east corner of the Site or otherwise ensure light spill upon these boundary habitats is no greater than 0.5lux.

Section 6

Establishment and Management Regime – Years 1-5 (Operation Phase)

- 6.1 This section details the management which will be undertaken for newly created ecological habitat features including areas of grassland, tree and shrub planting across the Development Site (**Appendix EDP 2 and 3**). The establishment and management regime for all created and enhanced habitats will require subsequent monitoring and review of all management and maintenance operations at five yearly intervals over the lifetime of the development.

General Measures – Establishment and Maintenance

- 6.2 Soil debris and arisings will be swept from adjacent hard surfaces after each maintenance operation. All extraneous rubbish not arising from the contract works will be collected and recycled (where feasible) or else removed from site at each maintenance visit.
- 6.3 Watering will be undertaken as necessary by the developer to ensure the establishment and continued thriving of all planted areas. Watering will be to the full depth of the topsoil. If supply is restricted by emergency legislation, watering will not be carried out unless instructed to do so.
- 6.4 Within the first 5 years following planting of each landscape area within each Phase of development all areas where newly planted/translocated plants or trees have failed to thrive (through death, damage or disease) will be identified and plants will be removed and replaced with equivalent species to match the size of adjacent nearby plants in the next appropriate planting season as frequently as necessary. The advice of the project landscape architect will be sought wherever possible. Any variation of this will only occur upon consent by NCC.
- 6.5 Spot weed control of all broad-leaved and injurious weed species listed in the Weeds Act 1959 will be undertaken using a suitable non-residual herbicide as and when required annually. The specification and use of herbicides or pesticides, including their use in proximity to water bodies, will comply with all contemporary Regulations, British Standards and Codes of Practice.
- 6.6 Bark mulch on all planted areas is to be topped-up to appropriate levels at least once in spring, with a second application in autumn as required.

Long-term Maintenance, Management and Monitoring

Species-rich Grassland (Wildflower and Wetland)

- 6.7 Areas of species-rich grassland planting will be subject to the following management regime to promote a structurally and botanically diverse grassland sward. This includes grassland associated with the north-east corner and southern boundary of the Development Site in addition to drainage features and areas of wildflower and blb planting.
- 6.8 During the first year of establishment, perennial weeds within areas of species-rich wildflower or wetland grassland will be removed through repeated cutting, hand-pulling or spot-spraying. Should a first cut be necessary, this will be undertaken to promote establishment as follows:
- Grassland will be subject to a first cut in May, with a second cut undertaken between end August and October inclusive. Sward heights will not be reduced to less than 75mm height; and
 - Mowing may be undertaken using an appropriate mechanical mower or using a brushcutter/trimmer where access for larger machinery is not possible.
- 6.9 Areas of grassland with bulbs will be left un-mown in early spring. The cut will be made when the bulbs have died down (approximately six weeks after flowering). After this, the management will revert to that of the surrounding grassland.
- 6.10 Cut material will be removed and disposed of away from the grassland areas, e.g. baled as hay or sent for composting. Ideally, material will be cut and left on the ground for two to three days to allow seed and invertebrates to drop out, but it may be necessary to use a mower or collector for practical reasons.
- 6.11 Weed and scrub control by manual or chemical means will be undertaken as required, so as to prevent pernicious perennial weed species from becoming established. During the early developmental stages of the grassland sward, some 'undesirable' broadleaved species are to be expected and should become less dominant as the communities become established and stabilized. Control methods will comprise hand-pulling or spot treatment with a suitable approved selective herbicide, as appropriate; timing will be dependent on the affected species. Control of any invasive species will be carried out in accordance with the advice of a specialist contractor.
- 6.12 In second and subsequent years following initial establishment, areas of species-rich grassland will be subject to a first summer hay cut undertaken in late July to mid-August, followed by a second cut at the end of the growing season (October/November) to no less than circa 75mm heights. Cutting will avoid the months of May to early July, to enable the majority of species to have flowered and set seed. As above, cut material will be removed and disposed of away from the grassland areas, e.g. baled as hay or sent for composting. Ideally, material will be cut and left on the ground for two to three days to allow seed and

invertebrates to drop out, but it may be necessary to use a mower or collector for practical reasons.

- 6.13 More generally, an assessment of all informal areas of grassland, meadow and bulb planting onsite will be undertaken at years 1, 3 and 5 from the first spring following planting by the Landscape Architect to ensure the adequate establishment of all plants, identify the presence of any undesirable species and disease and to determine whether remedial action is required, including replacement seeding/bulb planting for any lost/damaged specimens and additional management prescriptions necessary to ensure successful development. Additional monitoring will also be necessary during prolonged dry periods when new planting has a greater chance of failure. Thereafter, management measures will require subsequent assessment at five yearly intervals.

Amenity Grassland

- 6.14 Amenity grassland will be cut as and when necessary between March and the end of October to required heights of circa 30-50mm. Cutting will be suspended in periods of drought. All litter and debris to be removed before each cut.
- 6.15 At the time of each cut, all grass edges round the base of trees, manholes, etc. will be trimmed, taking precautions not to damage the tree trunks. All arisings will be removed, and all adjoining hard areas will be swept clear of cuttings and swept material removed.
- 6.16 The sward will be kept substantially free of broadleaved weeds where required, by applying a suitable approved selective herbicide. Fallen leaves will be removed in autumn.
- 6.17 Grassland will be watered as necessary to ensure a healthy sward until it has become established. Any areas of extreme wear, bare patches or wheel ruts will be reinstated by means of re-cultivation and re-seeding.

Sustainable Drainage Features (Swales and Attenuation Basins)

- 6.18 Management of newly created swales and attenuation basins throughout the establishment phase will involve annual inspections for the presence of invasive alien plant species, and aggressive native/naturalised plant species. The inspection will be undertaken by a suitably qualified specialist, with remedial works required to control the spread of these species, should they be present, implemented immediately. Control measures will involve cutting and removal, mechanical control through excavation if plants become well-established, hand removal for shallow-rooted plants, or treatment by herbicides suitable for use near water following guidance from the NRW.
- 6.19 The extent of colonisation of swales in particular will be reviewed every two years following creation by a Chartered Landscape Architect/Contractor. In the event that colonisation by target habitats of such features has been slow to the extent that margins remain as bare mud and/or devoid of desirable plants, then low-density plug planting of native flora will be undertaken where this will not interfere with drainage and attenuation.

- 6.20 Bankside cutting of swale features is best carried out in late summer (mid-July to mid-September), with the flail cutters set to retain vegetation at circa 15cm heights. Variable cutting will encourage diversity, thereby increasing the ecological value of this attenuation features. In addition, the following measures will be adhered to:
- Ensure a fringe of vegetation is left along the water's edge on at least one of the swale banks;
 - Leave sections of swales uncut in any one year;
 - De-silting without interfering with banks using appropriately sized machinery where required; and
 - At least one third of the swale will remain untouched at any one time.
- 6.21 Vegetation cutting is best carried out in short sections in different years. For bank vegetation, a late autumn cut every one or two years would simulate a rich grassland sward, without affecting the drainage function of the swales.
- 6.22 With respect to attenuation features comprising a wetland grassland mix, management will be undertaken in accordance with those measures for species-rich grassland above.
- 6.23 Encroaching scrub will be removed from swales and attenuation basins on an annual basis to prevent terrestrial succession, whilst maintaining their drainage function.

Woodland, Tree, and Shrub Planting

- 6.24 All newly planted tree and shrub planting will be managed to ensure the stock establishes and thrives in accordance with the detailed landscape scheme provided at **Appendix EDP 2** and **3**. New planting will be watered as required, particularly during the first three years of establishment.
- 6.25 Where management works including pruning are required for TPO trees/tree groups, TPO consent will be applied for and agreed with the LPA prior such works being carried out.
- 6.26 All planting will be maintained in such a way as to exclude aggressively competitive plants from around the base of each plant for a period of three years from the end of the season in which the stock was planted. Any herbicides should avoid areas of newly established grassland.
- 6.27 Weeding will be undertaken during the main growth period (April to June, inclusive) for three years, achieving and maintaining a weed-free area around each of a minimum of 1m radius. Weed control will be by strimming (using appropriate guards to avoid damage to the plant) and/or herbicide application. Care will be taken to avoid damage to trees themselves.

- 6.28 Shelters and guards will be checked during each monthly maintenance visit. Plants are to be maintained upright and adjustments will be made following strong winds.
- 6.29 The condition of all stakes, ties and guards will be regularly checked by the Managing Agent or relevant appointed subcontractors, and all broken items will be replaced, and items regularly adjusted to accommodate tree /shrub growth and prevent rubbing. Any bark damage will be cut back neatly with a sharp knife. All plants will be straightened and the ground at the base to be firmed up.
- 6.30 An assessment of the condition of all retained and newly planted tree, hedge, shrub and scrub plants will be made by a qualified and experienced arboriculturist annually for a period of five years from the first spring following planting to ensure the adequate establishment of all plants, identify the presence of any undesirable species and disease and to determine whether remedial action is required, including replacement planting for any lost/damaged specimens and additional management prescriptions necessary to ensure its successful development. Additional monitoring will also be necessary during prolonged dry periods when new planting has a greater chance of failure. Thereafter, an assessment will be undertaken by a suitably qualified arboriculturist every two years.
- 6.31 Specific to those areas of woodland, trees and shrubs abutting construction areas or access routes, an annual inspection for damage will also be undertaken throughout the construction period. Where damage has occurred, appropriate and immediate action will be necessary, together with the revision and reinstatement of buffer zones and protective fencing, alongside the provision of toolbox talks to contractors.
- 6.32 All areas where newly planted/translocated plants have failed to thrive (through death, damage or disease) will be identified and plants will be removed and replaced with equivalent species to match the size of adjacent nearby plants in the next appropriate planting season, as frequent as necessary. The advice of a Chartered Landscape Architect or suitably qualified arboriculturalist will be sought wherever necessary.
- 6.33 All plants will be pruned to promote healthy growth and natural shape, and any dead, dying or diseased wood and suckers will be removed. Overhanging branches will be pruned to ensure that growth is prevented from encroaching onto paths, signs, sightlines and road lighting. All pruning will be undertaken in accordance with BS 7370-4.
- 6.34 The requirement for selective thinning of all newly planted trees/shrubs will be assessed and undertaken as necessary to ensure that overcrowding is reduced with increasing species maturity; that slower growing climax species are not outcompeted, and that diseased and dying plants are removed.
- 6.35 Where remedial work to mature trees is required, an update ground-level inspection by a suitably qualified ecologist will be undertaken to determine its current potential to support roosting bats. Where remedial works proposed are considered likely to impact upon potential bat roosting features, a detailed aerial inspection will be undertaken to further inspect suitable roosting features to be impacted for the presence of bats, prior to any commencement of tree works. Aerial inspections will be undertaken by a suitably

qualified and NRW bat licensed ecologist, an arboricultural contractor with an NRW bat survey licence, or with experience of working with bats and under the supervision of an NRW bat survey licence holder. Thereafter, works will only progress in accordance with the advice of the suitably qualified and NRW bat licensed ecologist.

- 6.36 All tree works are to be undertaken in accordance with BS3998:2010 *Tree Work*. Retained trees will be allowed to develop naturally where feasible, subject to Health and Safety considerations.
- 6.37 With respect to proposed hedgrows these will, management will be undertaken in accordance with those measures above during the construction phase of development (to ensure establishment), until conveyed the residential property. For those hedgrows associated with formal open space responsibility for management will remain with the Developer and/or appointed Managing Agent. In addition to the above, hedgrows will be cut annually to maintain a maximum 1.2m height.
- 6.38 All management and remedial work should avoid the main bird nesting season (March to August inclusive). Where this is not possible, a pre-commencement check for nesting birds to be undertaken by a suitably qualified operative will be required prior to commencement of management/remedial works. Minor works required during this period should otherwise follow the advice of a suitably qualified ecologist, landscape architect or arboriculturalist.

Bird and Bat Boxes

- 6.39 Bird and bat boxes will be checked two years following installation. In the case of the latter, boxes will need to be inspected by a bat licensed ecologist, with damaged boxes repaired/replaced where necessary. The maintenance and repair of bat boxes installed across the Development Site will remain the responsibility of the Developer, or any appointed Management Company. Five-yearly replacement checks will continue long term.
- 6.40 With respect to Schwegler 1FR bat tubes (or similar) maintenance will be the responsibility of the Developer during the pre-construction and construction phases of development. Thereafter, no further maintenance is proposed or required. With respect to the bat loft, this feature will be subject to a final check upon completion of construction and prior to handover to the homeowner, by the bat licensed ecologist to ensure that they are incorporated correctly, with any remedial action completed as necessary.

Overarching Maintenance Objectives for Sustainable Drainage Features

- 6.41 Contribute to an attractive setting for the development through the provision of a range of landscape features that control the flow, volume and frequency of water leaving the development area to minimise impacts downstream.

- 6.42 Prevent pollution by intercepting silt and cleaning run-off from hard surfaces before it enters the agreed discharge point (potentially existing water course).
- 6.43 Provide opportunities for habitat provision throughout the development.
- 6.44 Sustainable Drainage System (SuDS) features have been incorporated within the development which include source control features such as permeable paving to driveways and bioretention planters along the road edge, conveyance swales within verges and detention basins as a site control feature at the end of the management train (update as required).
- 6.45 The SuDS have been designed for easy maintenance to comprise:
- Regular day to day care in line with soft landscape maintenance requirements elsewhere on site;
 - Litter collection/grass cutting, but also to include checking of inlets and outlets of SuDS features;
 - Occasional tasks such as managing vegetation and removing any silt that builds up within the features; and
 - Remedial work such as repairing damage where necessary.

Swales

- 6.46 Swales are included within the development. These are shallow features with gentle sloping banks and a flat bottom that have grass to banks to keep a neat and tidy appearance within the development. Wildflower turf to base of swales to provide interception and pollution control, as well as marginal planting. Check dams have been included, due to the level changes along the length of the swale.

Management Objectives

- 6.47 To maintain a route for the conveyance/storage/infiltration of surface water which slows the flow and deals with pollution, whilst contributing to an attractive setting for the development.

Management Perspective

- 6.48 Regular tasks to comprise the following:
- Maintain grass banks and access areas around swales through regular cutting to keep grass at 35-50mm minimum and 75mm maximum;
 - Remove any litter from banks/base of swale; and

- Inspect infalls and outfalls and remove litter/leaves to prevent blockages.

6.49 Occasional tasks to comprise the following:

- Where wildflower grass is sown to base, cut annually;
- Where marsh conditions establish in the base of a grassed swale due to wet conditions, cut annually or as required removing to wildlife piles on-site; and
- Where there is a build-up of silt on the swale at 50mm or above the design level, remove (through gentle scraping of surface) and spread on-site to the agreed area to top of banks in accordance with Environment Agency (EA) waste exemption guidance. Undertake when the ground is damp in autumn or early spring, and transplant turf and overseed to the original design levels.

Detention Basin

6.50 One detention basin has been included within the areas of public open space, as attenuation features for larger storm events. These are generally dry but will be inundated with surface water run-off and hold water for a short period before releasing at a slower rate to the final discharge point. The basin is seeded with a matrix of grasses including areas of amenity grass to allow banks of basins and wildflower turf to bases. Marginal species have been included to the base of the basin to encourage colonisation.

Management Objective

6.51 To maintain open areas for the storage of surface water run-off whilst providing amenity and biodiversity.

Management Prescriptive

6.52 Regular (monthly or as stated), to comprise the following:

- Grasses within the basin to be maintained as per the management prescriptive for various vegetation typologies in the soft landscape section;
- Maintain grass banks and access areas around the basin through regular cutting (approximately fortnightly through the growing season) to keep grass at 35-50mm minimum and 75mm maximum;
- Remove any litter from banks/base of the basin; and
- Inspect infalls and outfalls and remove litter/leaves to prevent blockages.

6.53 Occasional (annually or as required), to comprise the following:

- Wildflower turf to be maintained with two cuts annually in July and September OR one cut annually in September (to be agreed with ecologist);
- Where marsh conditions establish in the base due to wet conditions, cut annually or as required removing to wildlife piles on-site;
- Marginal planting to be allowed to colonise the base of the pond aside from where amenity grass is indicated and public access to be allowed for informal recreation. Should vegetation require cutting back at any time to encourage regrowth from the base, cut to 100mm with cuttings removed to wildlife piles during September/October. Only 25-30% to be cut in any one year;
- Where there is a build-up of silt in the basin which accumulates to more than 150mm, undertake a phased removal of silt subject to client approval. Remove no more than 30% of the area at any one time to an agreed depth but not subsoil layer. Retain as much representative vegetation as possible to ensure rapid recolonisation;
- Spread on-site to an agreed area to top of banks to allow de-watering of silt and then remove in accordance with EA waste exemption guidance. Undertake when ground is damp in autumn or early spring; and
- Should invasive species such as bull rush (*Typha*) self-colonise the basin through natural seed dispersal, do not allow it to colonise more than 50% of the base of the pond to prevent out competing other native species. Undertake removal during September/October to minimise damage to protected species and allow re-growth of other marginal vegetation. Review bi-annually.

Bioretention Planters/Rain Gardens

- 6.54 Bioretention planters are planted areas with engineered topsoil over drainage layers that allow water to soak into the ground. They have been provided along road verges/to front gardens/adjacent to areas of hard standing within areas of public open space.

Management Objective

- 6.55 To maintain the feature's ability to provide source control and interception of storm water run-off and to provide treatment and slow flow by providing attenuation, whilst creating attractive planted areas within the development.

Management Prescriptive

- 6.56 Regular (monthly visit) to comprise the following:
- Remove litter, surface debris and weeds;
 - Inspect inlets and outlets for blockage; and

- Remove sediment, litter and debris build-up from around inlets or from forebays.

6.57 Occasional (quarterly) to comprise the following:

- Inspect infiltration surfaces for silting and ponding, record de-watering time of the facility and assess standing water levels in underdrain (if appropriate) to determine if maintenance is necessary;
- Check operation of underdrains by inspection of flows after rain;
- Assess plants for disease infection, poor growth, invasive species, etc., and replace as necessary;
- Replace any plants, to maintain planting density; and
- Infill any holes or scour in the filter medium, improve erosion protection if required.

6.58 Remedial actions to comprise the following:

- Remove and replace filter medium and vegetation above storage layer - as required but likely to be >20 years.

Section 7

Monitoring and Timetable of Works

Monitoring

- 7.1 The responsibility for the undertakings set out within this LEMP rests with Developer and/or appointed Principal Contractor for the duration of the pre-construction and construction phases.
- 7.2 Upon completion of development, land ownership and responsibility of managed areas will be transferred to the Private Management Company appointed by the Developer.
- 7.3 For each phase of development, an assessment of all informal areas of grassland, meadow and bulb planting onsite will be undertaken at years 1, 3 and 5 from the first spring following planting of that phase by the Landscape Architect to ensure the adequate establishment of all plants, identify the presence of any undesirable species and disease and to determine whether remedial action is required, including replacement seeding/bulb planting for any lost/damaged specimens and additional management prescriptions necessary to ensure successful development.
- 7.4 This is in addition to an assessment of the condition of all retained and newly planted tree, hedge, shrub and scrub plants to be made by a qualified and experienced arboriculturist annually for a period of five years from the first spring following planting of each development phase to ensure the adequate establishment of all plants, identify the presence of any undesirable species and disease and to determine whether remedial action is required, including replacement planting for any lost/damaged specimens and additional management prescriptions necessary to ensure its successful development.
- 7.5 Copies of monitoring report derived from such actions will be made available to NCC at the end of each monitoring year, as a result of the phased program the last report will be issued to NCC 5 years after completion of the last phase (circa 2031).
- 7.6 The provisions and responsibilities for this LEMP will be reviewed on an annual basis during the first five years by those responsible for landscape management and maintenance, and every five years thereafter (or as required). Any substantial amendments will be approved in writing by the Local Planning Authority.

Timetable of Works

- 7.7 The pre-construction works phase has commenced following approval of the planning application, discharge of relevant pre-commencement conditions and approval of a Development Licence from NRW.

- 7.8 The proposed development and associated landscaping will be undertaken in seven as illustrated at **Appendix EDP 2** and **3**. Soft landscaping works will be undertaken within the first available season following completion of the construction period for each specific phase, where appropriate.
- 7.9 **Table EDP 7.1** illustrates optimal times of year to undertake site clearance and habitat creation. **Table EDP 7.2** illustrates optimal times of year to undertake subsequent monitoring and management of created/enhanced habitats.

Table EDP 7.1: Optimal Timings to Undertake Tasks Anticipated in Relation to Consented Development

Task	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Vegetation clearance – Trees, scrub and shrub ¹³												
Tree, shrub and scrub stump removal ¹⁴												
Vegetation clearance – grassland ¹⁵												
Installation of tree protection fencing												
New tree and shrub planting)												
Seeding: species-rich grassland												
Seeding: amenity grassland												

Table EDP 7.2: Schedule of Works for Monitoring and Maintenance of Retained and Newly Created Habitats within Consented Development

Task	Frequency	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Assessment and remedial works to areas of informal grassland and bulb planting	Years 1, 3 and 5 from the first spring following planting. Every five years thereafter.												
Inspection, management and remedial works to tree, hedge and shrub planting	Annually for the first five years, with any clearance undertaken outside of bird nesting season. Every five years thereafter.												

¹³ Outside of bird nesting season unless vegetation is inspected by an ECoW immediately prior to clearance and no active bird nests present.

¹⁴ Assuming hibernating habitats exist and these cannot be reasonably hand searched to confirm likely absence of protected/notable species prior to removal.

¹⁵ Timed to coincide with the active reptile season to enable passive displacement of individuals potentially present. Prior inspection for ground nesting birds by an ECoW immediately prior to clearance is advised to ensure impacts to ground nesting birds are avoided.

Task	Frequency	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Species-rich Grassland Management (including attenuation basins)	Year 1: Single cut in May, excluding areas of grassland with bulbs (delay till circa 6 weeks after flowering). Second cut between end August and October inclusive.												
Species-rich Grassland Management (including attenuation basins)	Years 2-5: First cut during late July to mid-August; second cut during October/November.												
Amenity Grassland Management	Regular cutting during the growing season; cutting likely required on a fortnightly basis during summer, except in periods of drought.												
Sustainable Drainage Features (Swales)	Annual inspections with rotational cutting each year following establishment.												
Inspection of bat boxes	Maintenance inspection to be undertaken 2 years post-installation, with subsequent inspections undertaken every 5 years.												
Inspection of bird boxes	Maintenance inspection to be undertaken 2 years post-installation, with subsequent inspections undertaken every 5 years.												

Task	Frequency	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Permanent roosting features (bat tubes and loft void)	Features will be subject to a final check upon completion of construction and prior to handover to the homeowner, by the bat licensed ecologist to ensure that they are incorporated correctly, with any remedial action completed as necessary.												

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Section 8

Summary and Conclusions

- 8.1 This LEMP details the management and maintenance measures specific to consented development considered necessary to protect and conserve the ecological and landscape interest features of the Development Site. Detailed measures have also been provided to ensure that existing and retained features of ecological interest, namely the woodland and trees bounding the development footprint as well as poor semi-improved grassland, are suitably protected during the construction phase of the development.
- 8.2 Management prescriptions for the maintenance of the viability of retained and newly created habitats located across the development footprint and with respect to the woodland and trees forming the peripheries of the Development Site have been provided, including timings for when operations should occur. Such prescriptions are considered to be in line with the broader recommendations made for the continued long-term maintenance and protection of the Development Site's ecological interests.
- 8.3 The responsibility of the undertakings set out within this LEMP rests with the Principal Contractor and/or Developer for the pre-construction and construction works phases and for the period up to handover to the Private Management Company. Any deviation from that prescribed within this LEMP is to be agreed in writing with the Local Planning Authority.

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Appendix EDP 1
Proposed Site Plan
(Drawing Number: 18137(05) 1101 Rev AA, Powell Dobson, May 2022)

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12	8%	LEITCHWORTH (TOOLBOX)	2 st	3 bed	584	11,808
20	14%	WARWICK	2 st	3 bed	1080	21,600
12	9%	AMBERLEY	2 st	4 bed	1130	13,832
21	14%	STRAITFORD	2 st	4 bed	1197	28,132
15	10%	OXFORD	2 st	4 bed	1340	20,100
15	10%	OXFORD Lifestyle	2 st	3 bed	1360	26,100
18	12%	CAMBRIDGE	2 st	4 bed	1404	25,272
17	11%	WELLYN	2 st	4 bed	1557	26,489
13	8%	HENLEY	2 st	4 bed	1769	22,997
5	3%	RICHMOND	2 st	4 bed	2031	10,155
sub total						197,270
Net Developable Area					5.4	hectares
Density/cverage					13.33	acres
Density/cverage					14,798.95	Sq ft/acre
Affordable 'Neutral tenure'						
8		2.1.3 Flat	2 st	1 bed	556	4,448
4		4.2.2 House	2 st	2 bed	893	3,572
4		5.3.3 House	2 st	3 bed	1068	4,272
sub total						12,292
Affordable 'LCHO'						
4		AVON	2 st	2 bed	635	2,540
2		DART HOUSE	2 st	3 bed	891	1,782
sub total						4,322
sub total						16,614
Net Developable Area					0.4	hectares
Density/cverage					0.97	acres
Density/cverage					17,127.84	Sq ft/acre
SUMMARY TOTAL						
NUMBER OF UNITS					170	Units
COVERAGE					213,884	sq ft
Net Developable Area					5.8	hectares
Density/cverage					14,956.92	Sq ft/acre
Density/cverage					29.41	sq ft
CAERLEON CAMPUS: CONVERSIONS WITHIN EXISTING BUILDINGS						
No. of Units	%	House Description	storey	beds	Gross	Total net
MAIN BUILDING						
23		1 bed flats		tbc	tbc	
18		2 bed flats		tbc	tbc	
1		3 bed flats		tbc	tbc	
Listed Building Outbuilding						
2		2 bed flats		tbc	tbc	
sub total						tbc
TJ WHELEY						
1		2 bed house		tbc	tbc	
1		3 bed house		tbc	tbc	
sub total						tbc
TYHYWEL						
1		1 bed flat		tbc	tbc	
1		4 bed house		tbc	tbc	
sub total						tbc
FELTHORPE HOUSE						
1		5 bed house		tbc	tbc	
TOTAL						tbc
SUMMARY TOTAL NEW BUILD AND CONVERTED UNITS						
OPENMARKET						
REDROW HERITAGE						
49				49		
148				148		
22				22		
sub total						219 Units
AFFORDABLE						
REDROW AFFORDABLE						
10%				22		
sub total						219 Units
NUMBER OF UNITS						



Figured dimensions and levels to be used. Any inaccuracies must be notified to the architect. Detail drawings and large scale drawings take precedence over smaller drawings.

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Rev: K L M N O P Q

Plots 1-9 changed. Entrance road re-aligned. Parking amended to north and east of listed building. Cycle stands added to gardens of listed building. **AJJP 04.08.2020**

Plot 8A house type changed. Area for future cycle stands and vehicle maintenance zone added by LEAP. Trees removed by Plot 106 and pedestrian route on north-western boundary. Entrance road narrowed. Paths added to grounds of listed building. Car charging points indicated to 4 parking spaces by listed building. AMBY, CAMB, LETC, WARW house types updated. **AJJP 04.08.2020**

Plots 137-139 Amended. **AJJP 04.08.2020**

Plots 78-87, 91-98, 159-160 Amended. New attenuation pond. Stairs removed. Northern attenuation pond omitted and path revised to engineers design. **MLAF 06.08.20**

Avon house type updated. **ML 08.10.20**

4.2.2, 5.3.3, Oxford, Oxford Lifestyle, Wellyn & Henley footprints revised. **CL 20.11.20**

Revised drainage assessment between plots 40&41 accommodated. **AF 09.12.20**

Chk'd: -

Rev: R S T U V W X

Fire access added to St Cadoc's Close. On-street visitor parking and main road traffic calming added. **AF 10.12.20**

Sub Station amended and path leading to it added in accordance with instructions from the Client. **MB 12.01.21**

Amendments to private drives to accommodate engineering fire tracking. **AF 25.01.21**

Amendments to walls on Plots 10, 13, 15, 104, 106, 130 and 83 in accordance with Client's instructions. **MB 02.02.21**

Amendments to Leitchworths parking and gardens arrangements. Minor boundary and path configurations. **AF 29.04.21**

Sheds removed from Leitchworths. **AF 29.04.21**

Parking numbers revised for numbers 17-24. Enclosures for plots 106-113, 135-139 & 160-170 updated. **ML 06.08.21**

Chk'd: Y

Rev: Z AA

Entrance to Plot 140-144 private drive and Lodge Road junction & Western footpath to turning head and Plots 72 & 78 amended. Parking to Plots 91 & 103 revised. Private Drive footpath Plot 20 revised & raised boxes added to junctions adjacent Plots 127 & 152 and Plots 31 & 44. Water butts added to all Plots. **CL 21.09.21**

Swale behind Plots 16 & 17 adjusted to avoid RPA of existing trees. Rear boundary to these Plots adjusted accordingly. **CL 04.10.21**

Bin store sizes revised in accordance with instructions from the Client. **MB 03.05.22**

PRELIMINARY	
PLANNING	✓
DESIGN	
TENDER	
CONSTRUCTION	

powelldobson
ARCHITECTS

Contract: Redrow Homes
Caerleon Campus Redevelopment

Title: Proposed Site Plan

Drawing No. 18137(05) 1101

Rev. AA

Scale: 1:500@A0

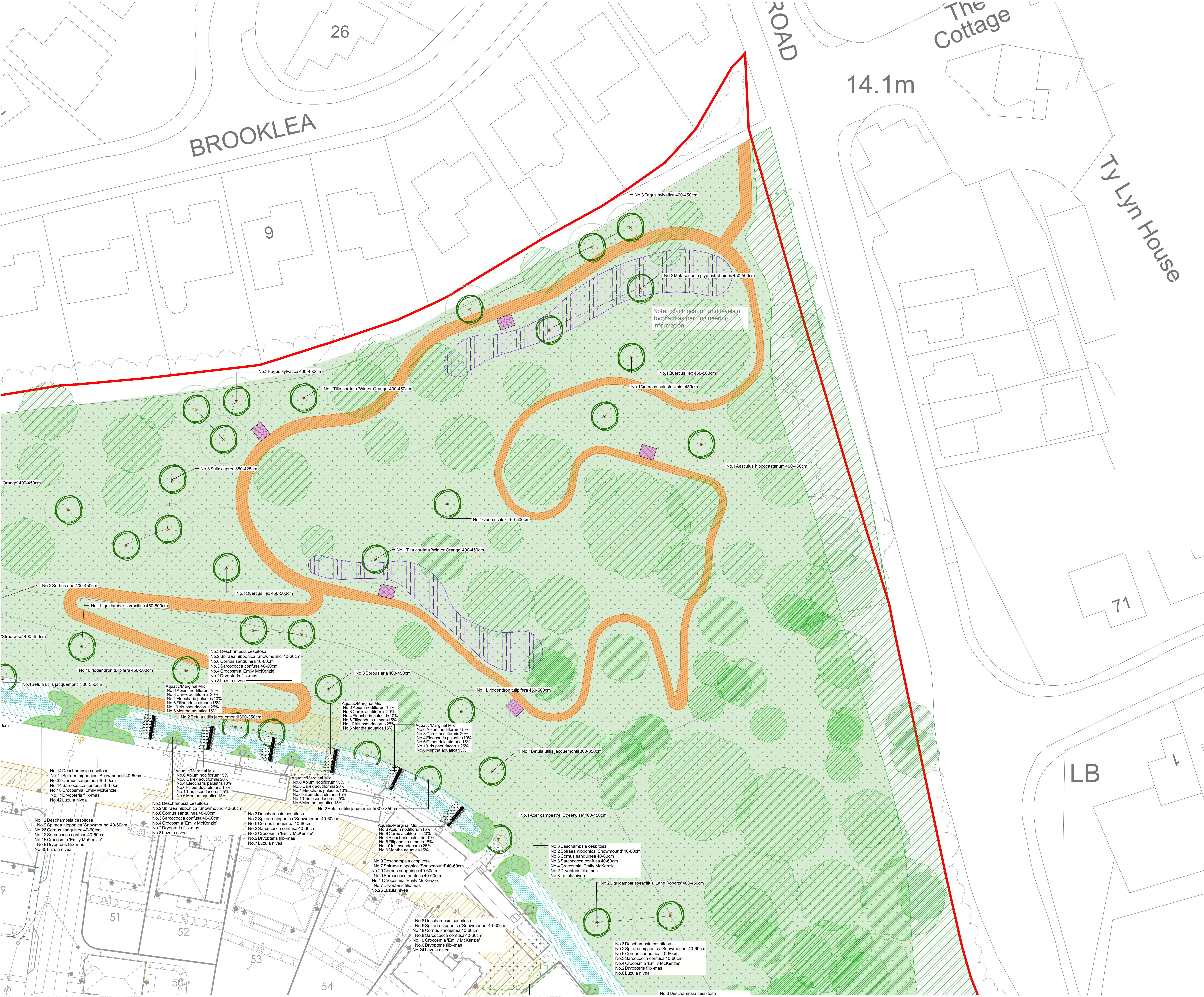
Date: 16/09/2020

Drawn: ML

Checked: AF

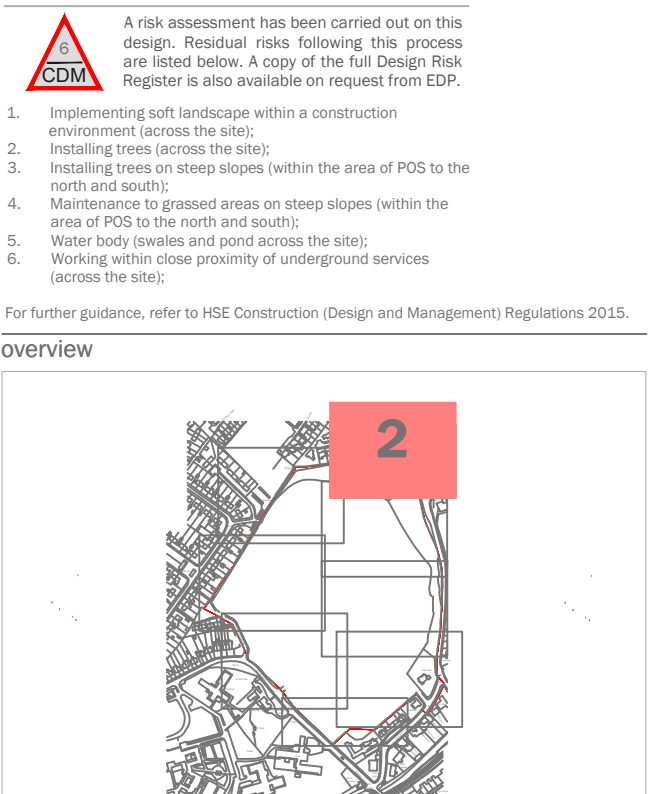
Appendix EDP 2
Detailed Soft Landscape Plan
(edp5601_d025ac 12 December 2024 LCH/DR)

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- Site Boundary
- Existing Vegetation to be Retained
- Existing Grass to be Retained and Enhanced with Species Rich Grass
- Proposed Trees
- Proposed Translocated Trees
- Proposed Turf
- Proposed Amenity Grass
- Proposed Species Rich Grass
- Proposed Meadow Grassland within Rain Garden
- Proposed Meadow Grass Mixture to Ponds and Swales
- Proposed Wildflower Turf to base of Swales
- Proposed Aquatic Mix
- Proposed Aquatic-Edge Structural Planting
- Proposed Ornamental Planting
- Proposed Structural Planting
- Proposed Planting Bed
- Proposed Rain Garden Planting
- Proposed Hedgerow
- Proposed Wildflower Grassland
- Proposed Shade Tolerant Wildflower Grassland and Bulb Planting
- Proposed Gravel Footpath
- Proposed Location for the Trim Trail Equipment
- Proposed Location for the Local Equipped Area for Play (LEAP)
- Proposed Gravel to Front Gardens
- Proposed Boundary Treatments
- Proposed Lighting Column
- Location of Underground Services
- Easement

NOTE:
No planting operations to be undertaken within RPAs for trees designated under a TPO. Refer to arboricultural report and plans for details on locations of such trees.



purpose of issue		PLANNING			
atc	Updates following LO comments	12-12-2024	MMin		
ab	Updates to details following client comment	18-10-2024	MMIn		
	Original	08-10-2020	DR		
rev	description	date	by		
client					
Redrow Homes (South Wales) Ltd					
project title					
Caerleon University Campus					
drawing title					
Detailed Soft Landscape Plan					
date		12 DECEMBER 2024		Sheet 2 of 9	
drawing number	edp5601_d025ac	drawn by	LEH	checked	DR
scale	1:200 @ A1	QA	JTF		
 the environmental dimension partnership					
Registered office: 01285 740421 - www.edp-uk.co.uk - info@edp-uk.co.uk					

Planting Schedule

Trees					
Number	Common Name	Species	Girth	Height	Specification
12	Common Maple	Acer campestre		175-200cm	B-2x Feather: 5 brks
49	Common Maple	Acer campestre		60-80cm	BR :1+1 : Transplant
22	Field Maple 'Streetwise'	Acer campestre 'Streetwise'	12-14cm	400-450cm	Half Standard : Clear Stem min. 200 : 3x : RB
4	Common Horse Chestnut	Aesculus hippocastanum	12-14cm	400-450cm	Heavy Standard : Clear Stem min. 200 : 5 brks : 3x : RB
5	Common alder	Alnus glutinosa	12-14cm	350-400cm	RB : Heavy Standard : Clear Stem min. 200
10	White-barked Himalayan Birch	Betula utilis jacquemonti		300-350cm	RB : Multi-Stemmed : 3/5 brks
36	Hornbeam 'Frans Fontaine'	Carpinus betulus 'Frans Fontaine'	16-18cm	400-450cm	BR : Extra Heavy Standard : Clear Stem min. 200
39	Common Hawthorn	Crataegus monogyna		60-80cm	BR : Transplant
12	Common Beech	Fagus sylvatica	14-16cm	400-450cm	Extra Heavy Standard : Clear Stem 175-200 : 5 brks : 3x
10	Common Beech	Fagus sylvatica		175-200cm	B-2x Feather: 5 brks
13	American sweetgum	Liquidambar styraciflua	16-18cm	450-500cm	Extra Heavy Standard : Clear Stem min. 200 : RB
2	Liquidambar styraciflua 'Lane Roberts'	Liquidambar styraciflua 'Lane Roberts'	12-14cm	400-450cm	Heavy Standard : Clear Stem min. 200 : 5 brks : 3x : RB
3	Tulip tree	Liriodendron tulipifera	16-18cm	450-500cm	Extra Heavy Standard : Clear Stem min. 200 : RB
4	Southern magnolia	Magnolia grandiflora	12-14cm	350-425cm	Heavy Standard : Clear Stem 175-200 : Trees to be translocated as per drawing edp5601
4	Apple	Malus domestica esp.	8-10cm		RB : 3 brks : Bushy
2	Dawn Redwood	Metasequoia glyptostroboides	16-18cm	450-500cm	Extra Heavy Standard : Clear Stem min. 200 : RB
1	Parrotia persica 'Vanessa'	Parrotia persica 'Vanessa'	12-14cm	350-425cm	Heavy Standard : Clear Stem 175-200 : Trees to be translocated as per drawing edp5601
8	Double Glean	Prunus avium 'Plena'	12-14cm	350-425cm	Heavy Standard : Clear Stem 175-200 : 5 brks : 3x : RB
4	Plum 'Victoria'	Prunus domestica 'Victoria'	12-14cm	350-425cm	Heavy Standard : Clear Stem 175-200
5	Bird Cherry	Prunus padus	12-14cm	350-425cm	Heavy Standard : Clear Stem min. 200 : 5 brks : 3x : RB
3	Chanticleer Pear	Pyrus calleryana 'Chanticleer'	14-16cm	400-450cm	Extra Heavy Standard : Clear Stem 175-200 : 5 brks : 3x : RB
1	Holly oak	Quercus ilex	16-18cm	450-500cm	Extra Heavy Standard : Clear Stem min. 200 : RB
1	Pin oak	Quercus palustris	min. 400cm		RB : Extra Heavy Standard : Clear Stem 175-200
10	Common Oak	Quercus robur		175-200cm	BR : 2x : Feather: 5 brks
29	Common Oak	Quercus robur		60-80cm	BR : 1+1 : Transplant
4	Cypress Oak	Quercus robur 'Fastigiata'	12-14cm	350-425cm	Heavy Standard : Clear Stem min. 200 : 5 brks : 3x : RB
7	Goat Willow	Salix caprea	12-14cm	350-425cm	Heavy Standard : Clear Stem min. 200 : 5 brks : 3x : RB
7	Whitebeam	Sorbus aria	14-16cm	400-450cm	Extra Heavy Standard : Clear Stem min. 200 : 5 brks : 3x : RB
7	Green Spire Lime	Tilia cordata 'Green Spire'	14-16cm	400-450cm	Extra Heavy Standard : Clear Stem min. 200 : 5 brks : 3x : RB
13	Small-leaved Lime 'Winter Orange'	Tilia cordata 'Winter Orange'	14-16cm	400-450cm	Extra Heavy Standard : Clear Stem 175-200 : 5 brks : 3x : RB

Total :330

Shrubs						
Number	Common Name	Species	Height	Pot Size	Specification	Density
209	Japanese Laurel 'Rozannie'	Aucuba japonica 'Rozannie'	30-40cm	3L	Bushy : C	3/m²
83	Mexican Orange Blossom 'Aztec Pearl'	Choisya 'Aztec Pearl'	40-60cm	5L	Bushy : 5 brks	4/m²
209	Mexican Orange Blossom 'Aztec Pearl'	Choisya 'Aztec Pearl'	40-60cm	5L	Bushy : 5 brks	3/m²
16	Common Dogwood	Cornus sanguinea	60-80cm		1+2 : 3 brks : B	1/Ctr
467	Common Dogwood	Cornus sanguinea	40-60cm	3L		3/m²
234	Red Osier Dogwood 'Kelsey'	Cornus stolonifera 'Kelsey'	30-40cm	2L	Several shoots : 3 brks	3/m²
39	Common Hazel	Corylus avellana	60-80cm		BR : Transplant	1.5/Ctr
15	Common Hazel	Corylus avellana	60-80cm		Branched : 1+1 : BR	1/Ctr
30	Eucynurus 'Silver Queen'	Eucynurus fortunei 'Silver Queen'	20-30cm	5L	Bushy : 7 brks	4/m²
30	Shrubby Veronica 'Great Orme'	Hebe 'Great Orme'	30-40cm	5L	Bushy : 5 brks	4/m²
17		Hebe albicans 'Red Edge'	40-60cm	2L	Bushy : 3 brks	3/m²
209	a Shrubby Veronica	Hebe rakaiensis	40-60cm	5L	Bushy : 5 brks	3/m²
165	a Shrubby Veronica	Hebe rakaiensis	40-60cm	5L	Bushy : 5 brks	4/m²
209	St John's Wort 'Midcote'	Hypericum 'Midcote'	30-40cm	3L	Bushy : C	3/m²
124	English Lavender	Lavandula angustifolia	40-60cm	5L	Branched : 5 brks	4/m²
42	Privet Honeysuckle	Lonicera pileata	30-40cm	7.5L	Bushy : 6/9 brks	4/m²
209	Privet Honeysuckle	Lonicera pileata	30-40cm	7.5L	Bushy : 6/9 brks	3/m²
15	Oregon Grape 'Apollo'	Mahonia aquifolium 'Apollo'	20-30cm	3L	Branched : 2 brks	4/m²
15	Purple-osier Willow	Salix purpurea	60-80cm		Branched : 1+1 : BR	1/Ctr
15	Common Osier	Salix viminalis	60-80cm		Branched : 1+1 : BR	1/Ctr
215	Sweet Box	Sarcococca confusa	40-60cm	4L		4/m²
163	Japanese Spiraea 'Snowmound'	Spiraea nipponica 'Snowmound'	40-60cm	3L		4/m²
30	Viburnum	Viburnum davidii	30-40cm	5-7.5L	Bushy : 4 brks	4/m²
15	Wayfaring tree	Viburnum lantana	60-80cm		Branched : 1+1 : BR	1/Ctr
8	Guislder Rose	Viburnum opulus	40-60cm		BR : Transplant	1.5/Ctr

Total :2782

Herbaceous						
Number	Common Name	Species	Height	Pot Size	Specification	Density
234		Crocossia 'Emily McKenzie'		2L	Full Pot	3/m²
272		Crocossia 'Emily McKenzie'		3L	Full Pot	5/m²
278	Tufted Hair Grass	Deschampsia cespitosa		3L	Full Pot	4/m²
124	Globe Thistle	Echinops ritro		3L	Full Pot	6/m²
180		Epidemum 'Amber Queen'		2L	Full Pot	3/m²
12		Euphorbia martini		2L	Full Pot	3/m²
184	Balkan Cranesbill	Geranium macrorrhizum		3L	Full Pot	6/m²
17	Cranesbill Rozanne	Geranium Rozanne		2L	Full Pot	3/m²
620	Snowy Wood Rush	Luzula nivea		3L	Full Pot	6/m²
234	Snowy Wood Rush	Luzula nivea		2L	Full Pot	3/m²
12		Penicaria simplexcaulis 'Tiretail'		2L	Full Pot	3/m²
63		Polemonium caeruleum		3L	Full Pot	6/m²
124	Black-eyed Susan 'Goldsturm'	Rudbeckia fulgida sultivanti 'Goldsturm'		3L	Full Pot	6/m²
12	Black-eyed Susan 'Goldsturm'	Rudbeckia fulgida sultivanti 'Goldsturm'		2L	Full Pot	3/m²
8		Seyrinchium striatum		2L	Full Pot	2/m²
48	Giant Feather Grass	Stipa gigantea		3L	Full Pot	3/m²

Total :2422

Ferns					
Number	Common Name	Species	Pot Size	Specification	Density
163	Common Male Fern	Dryopteris filix-mas	3L	Full Pot	3/m²
180	Common Male Fern	Dryopteris filix-mas	2L	Full Pot	3/m²
12	Common Polypody	Polypodium vulgare	2L	Full Pot	3/m²

Total :355

Marginal / Aquatics				
Number	Common Name	Species	Specification	Density
150		Apium nodiflorum	Well Rooted	0.4/Ctr
198		Carex acutiformis	Well Rooted	0.4/Ctr
101	Common Spika Rush	Eleocharis palustris	Full Pot : June to Sept planting: British Native-origin: C	0.4/Ctr
150	Meadowweet	Filipendula ulmaria	Full Pot : Sept to April planting: British Native-origin: C	0.4/Ctr
245	Yellow flag iris	Iris pseudacorus	Plug: Well Rooted	0.4/Ctr
150	Water mint	Mentha aquatica	Full Pot: C	0.4/Ctr

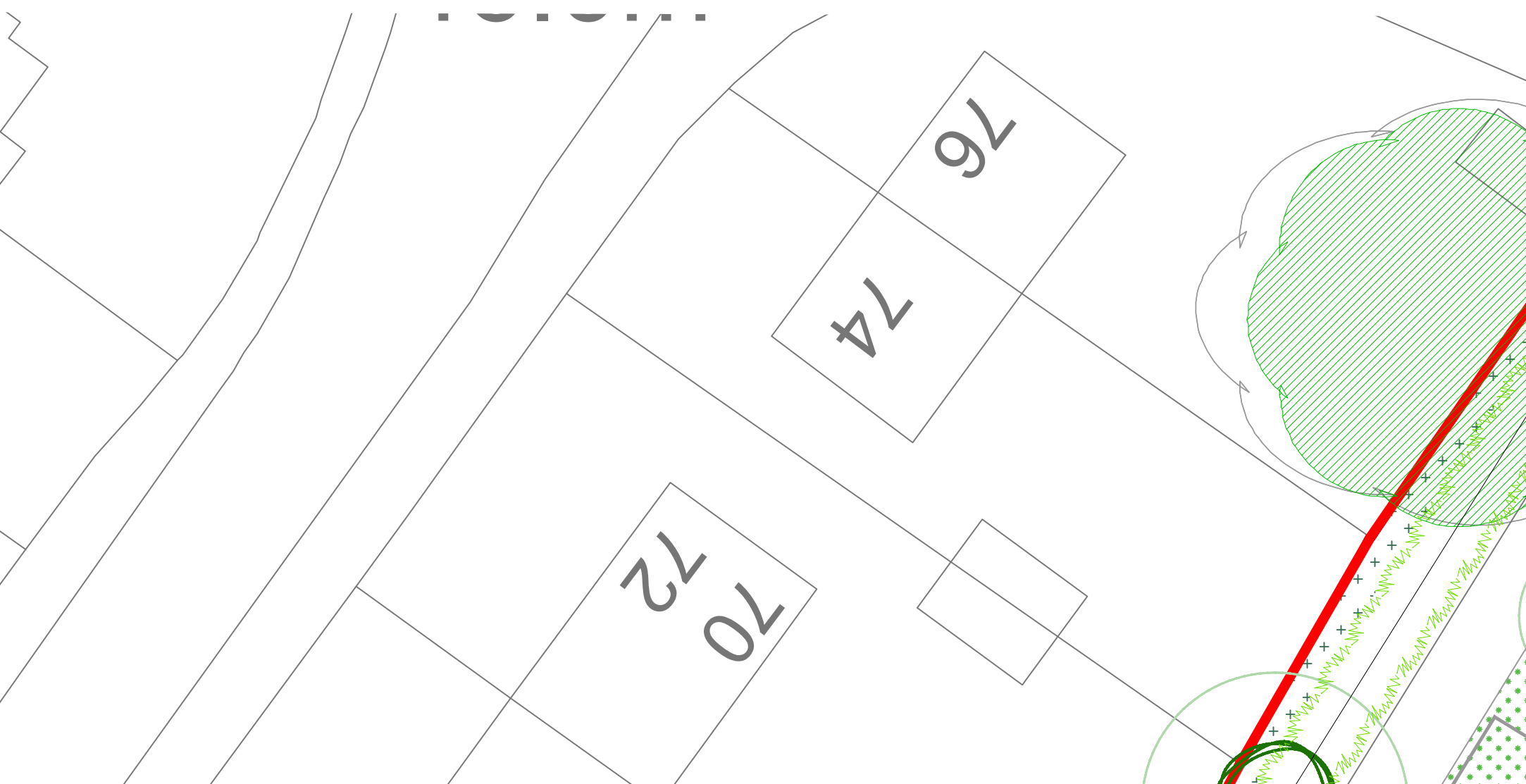
Total :994

Grasses				
Number	Common Name	Species	Specification	Density
234	Tufted Hair Grass 'Goldtau'	Deschampsia cespitosa 'Goldtau'	Full Pot	3/m²
17	Mexican Feather Grass	Stipa tenuissima	Full Pot	3/m²

Total :251

Hedges					
Number	Common Name	Species	Height	Pot Size	Specification
142	Common Maple	Acer campestre	80-100cm		1+1 : Transplant - seed raised: B
188	Common Hazel	Corylus avellana	80-100cm		1+2 : Transplant - seed raised: Branched: 4 brks: B
283	Common Hawthorn	Crataegus monogyna	80-100cm		1+2 : Transplant - seed raised: B
142	Common Spindle Tree	Euonymus europaeus	60-80cm		1+2 : Transplant - seed raised: Branched: 5 brks: B
188	Common Holly	Ilex aquifolium	60-80cm	3L	Leader with Laterals: C
143	Common Privet	Ligustrum vulgare	80-100cm		B : 1+2 : Transplant - seed raised
717	Box Honeysuckle	Lonicera nitida	60-80cm	10L	Bushy : 7 brks : C

Total :1803



Sinks

Issues

