PARCEL N ARBORFIELD GREEN WOKINGHAM

ECOLOGICAL PERMABILITY REPORT: BIODIVERSITY ACTION PLAN

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QUALITY ASSURANCE

1.1. This report has been prepared in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Report Writing (2nd Edition, December 2017).

1.2. The facts stated in this report are true to the best of our knowledge and belief, and any opinions expressed are held genuinely and in accordance with the accepted standards of the profession. ACD Environmental Ltd is a CIEEM Registered Practice.

Client:	Crest Nicholson
Site/job:	Parcel N, Arborfield Green, Wokingham
Author:	Jake Cranston
Technical review:	John Constable

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1 INTRODUCTION

1.1. ACD Environmental Ltd was instructed by Crest Nicholson in February 2025 to produce an Ecological Permeability Report (EPR) for a parcel of land at Parcel N, Arborfield, Wokingham (OS Grid Reference: SU 7765 0637). This land is hereafter referred to as 'the Application Site'.

1.2. Outline permission for: Demolition of buildings and phased redevelopment of Arborfield Garrison and adjoining land for: Up to 2,000 new dwellings (including up to 80 units of extra care housing). District centre comprising a food store up to 4,000 sq m gross with up to a further 3,500 sq m (gross) floor space within Classes A1, A2, A3, A4, A5, B1, D1 and D2 (with residential above - Class C3), and transport interchange, village square, car parking, servicing and drop off area. Up to a further 1,500sq m (gross) floor space within Classes D1 and D2. Neighbourhood centre to provide up to 300 sq m (gross) floor space within Classes A1, A2, A3, A4, A5, B1, D1 and D2, with parking/servicing area. Secondary school for up to 1,500 pupils (Class D1) including sports pitches, floodlit all-weather pitch, and indoor swimming pool and parking areas. Up to three-form primary school (Class D1) with sports pitch and parking areas. Associated phased provision of: car parking; public open space including sports pitches, informal/incidental open space, children's play areas including multi-use games area (MUGA), skate park, community gardens/allotments; landscaping/buffer areas; boundary treatments; new roads, footpaths, cycleways and bridleways; sustainable urban drainage systems, including flood alleviation works.

1.3. This consent includes the following at **Condition 22**:

"The reserved matters for any phase of the development shall include a detailed scheme to enhance or maintain the ecological permeability of the site (especially with regard to reptiles, amphibians and hedgehogs). The mitigation and contingency measures contained within the plan shall be implemented in accordance with the approved plan unless otherwise approved in writing by the local planning authority."

1.4. BAPs are one of the key mechanisms for identifying and delivering effective measures to further biodiversity conservation in the UK. The UK BAP was developed by the Government in response to the 1992 Convention on Biological Diversity, with Local BAPs since developed across the UK as a means of delivering commitments under the national BAP, but also for delivering actions in relation to local priorities and the wider countryside outside of designated sites. In this instance, this BAP outlines how biodiversity within and in the vicinity of Parcel N is to be safeguarded and enhanced in the long-term.

1.5. The recommendations of any specific BAP should be incorporated within the wider framework of the National BAP and any local BAP's which may be applicable. This BAP should be read alongside:

- The UK BAP;
- Wokingham Borough BAP;
- Berkshire Biodiversity Strategy;
- Parcel N LEMP.

1.6. This BAP must be read with the LEMP, Soft Landscape Plan[1] and the Habitat Creation Plan. The Soft Landscape Plan is provided within **Appendix 2** and the Habitat Creation Plan is provided within **Appendix 3**.

Competence

1.7. This report has been written by Jake Cranston, Assistant Ecologist at ACD Environmental Ltd and Qualifying member of the Chartered Institute of Ecology and Environmental Management (CIEEM). Jake has undertaken various surveys, ranging from Habitat Surveys to Phase 2 surveys for protected species, including bats, badgers and dormice. Jake has written various reports, including Badger Technical Notes, and Landscape and Ecological Management Plans.

1.8. A Technical Review of this report has been undertaken in line with ACD Environmental Ltd's Quality Assurance procedures. The Technical Review was carried out by John Constable, ACD Environmental Ltd.

[1] ACD Environmental (2025). CREST 24802 *Landscape Masterplan.*

2 AIMS AND OBJECTIVES

Aims

2.1. The aims of this BAP and how this relates to specific sections of this report are as follows:

- Retention of valuable features where possible and design of the development accordingly;
- Maintaining green infrastructure connectivity and permeability. A key aspect is to retain and enhance green corridors to maintain permeability for wildlife and links to the wider area, including dark corridors;
- Multifunctional green spaces throughout the scheme and the SANG;
- Integrated naturalised flood alleviation using ecosystem service principals where possible
- Maximising the biodiversity potential of flood attenuation
- Key stakeholder engagement and regular consultation throughout the evolution of the scheme

Objectives

2.2. To ensure the success of the BAP will aim to achieve the following objectives:

- Protect Parcel N's existing habitats and species (with appropriate targets and monitoring).
- Enhance areas which are lacking in significant wildlife interest (with appropriate targets and monitoring).
- Ensure Parcel N's existing and to be created wildlife sites are accessible;
- This BAP outlines how these goals should be achieved in relation to the priority habitats and species.

BASELINE ECOLOGICAL CONDITIONS

2.3. The Application Site comprises approximately 2.4ha of land. The Ordnance Survey Grid Reference for the approximate centre of the Application Site is SU 77046 65391

2.4. The Application Site is situated in a suburban location surrounded by semi-improved grassland on all aspects but the north where a line of trees is located. The Application Site is 3.04 m to Wokingham train station **Image 1**.

Image 1: Approximate boundary of the Application Site (redline).[2]

2.5. The Application Site has been subject to a range of ecological surveys, which have been undertaken by a combination of AECOM, RSP and ACD Environmental Ltd**.**

2.6. A summary of the results of the previous surveys is provided below for context. For further details, please refer to the Ecology Note and reports from AECOM[3] and RSP[4].

Target habitats and species

2.7. This section outlines the habitats and species that should be included within the Application Sites BAP and details the reasons for their inclusion.

[2] QGIS (2025).
[3] AECOM (2014). Arborfield Garrison Strategic Development Location. Environmental Statement Appendix13.4)
[4] Ecological constraints Parcel N Arborfield Green, Wokingham RSP (2024)

Habitats

2.8. The habitats identified include the following:

- Individual trees;
- Off-site ponds;

Species

2.9. The species of importance within the Application Site include the following:

- Bats;
- Reptiles;
- Great Crested Newts (Amphibians);
- Hedgehogs;

Individual trees

2.10. A line of mature trees (eight) occurred along Tope Crescent along the site's northwest boundary. These included two large oak trees, with knot holes, cracked branches and other features that could be used by roosting bats.

2.11. Reason to include: Provide a number of ecosystem services such as regulating services, heat and flood attenuation and sequestering of carbon and pollutants. Cultural services important to the local community and integral to the character of the area. Health benefits both mental and physical encouraging people to walk within the area. Provisioning services such as pollen, dead wood, nectar, leaves, shelter etc. providing biodiversity benefit to multiple species.

Off-site habitats – Ponds

2.12. A balancing pond for surface water management was located immediately adjacent to the southern site boundary. This was dominated by bull rush *Typha* spp. with locally frequent pond weed *Potamogeton* spp. Water mint and fleabane occurred frequently on the banks.

2.13. Reason to include: Ponds will be created and will provide heat, flood and pollution attenuation, with the potential to provide significant biodiversity benefit if managed appropriately.

Fauna

2.14. For ease of reference, descriptions of relevant fauna have been provided alphabetically below.

Bats

2.15. Several features had the potential to support roosting bats including the mature trees along Tope Crescent and the former stable blocks. The matrix of grassland, scrub, mature trees and water features were considered to provide foraging and commuting potential for bats roosting in the surrounding area.

2.16. Within the Application Site there are no known bat roosts however the site is surrounded by established bat roosts, these were recorded during previous bat surveys during 2006-2012 and 2014. The closest known bat roost is located west of the Application Site and is located within former stables. In addition to the known roosts, due to the mobile nature of bats, the line of trees surrounding the Application site to the north could also contain bat roosts within trees. These trees include two large oak trees, with knot holes, cracked branches and other features that could be used by roosting bats[5].

2.17. As the trees to the north fall within a dark corridor protection zone as set out by AECOM bat mitigation strategy[6] this habitat and its trees are protected. If trees do need to be felled and if they have bat roost potential, they will require a pre-felling inspection and potentially supervised section felling under an ecological Method Statement. This may require the use of a cherry picker or specialised tree climbers.

2.18. The habitat within the Application Site is part of a connected chain of habitats that connect to other parcels with suitable commuting and foraging habitats. The Site also connects to the dark corridors, and as such the lighting on site should aim to achieve as close to 1 lux as possible, as described in the Bat Mitigation Strategy trees within the woodland were identified as being of 'low suitability' to support roosting bats.

2.19. In addition, a sensitive lighting scheme will be implemented to protect bats during the operational phase. Principles of the sensitive lighting scheme are outlined below and are in line with best practice guidance[7] [8].

[5]Ecological constraints Parcel N Arborfield Green, Wokingham RSP (2024)
[6]AECOM (2014). Bat Mitigation Strategy. Arborfield Garrison Strategic Development Location. Environmental Statement Appendix13.4)
[7] LP and BCT. (2018). *Bats and Artificial Lighting in the UK. Bats and the Built Environment.* ILP. Warwickshire
[8] Voigt, C *et al.* (2018). *Guidelines for consideration of bats in lighting projects.* EUROBATS Publication Series No. 8. UNEP/EUROBATS Secretariat, Bonn, Germany, 62 pp.

2.20. Operational lighting mitigation options include:

- Luminaires will not be directed at sensitive habitats, boundary vegetation or onto bat and bird boxes and hedgehog highways. Where required, lights can be fitted with hoods, baffles or louvres to reduce back-spill.
- Only luminaires with an upward light ratio of 0% will be used, and low-level bollard lighting will be used where feasible to retain darkness above the luminaire.
- All external luminaires used on site will lack UV elements and will be warm-white coloured (ideally <2700 Kelvin) to reduce blue-light components.
- LED luminaries will be used due to their sharp cut-off, lower intensity, good colour retention and dimming capability.
- Where security lighting is installed this will be motion-activated.
- For street lighting, consider part night lighting and/or dimming.

Birds

2.21. The scrub and trees within the Application Site provides foraging, roosting and nesting opportunities for birds. Due to the small extent of suitable habitats, it was considered unlikely that the Application Site supports significant assemblages of breeding or wintering birds. The Application Site was considered to have potential to support common and widespread species of nesting birds.

2.22. No trees are proposed to be cleared. However, precautionary measures of work with regards to nesting birds and building demolition and/or deadwood removal will be followed.

Great Crested Newt

2.23. The six ponds located off site had the potential to support great crested newt *Triturus cristatus* but the eDNA results issued in May 2025 confirmed their likely absence. The grassland on site is suitable for this species in its terrestrial life phase but none were recorded.

Reptiles

2.24. The surveys carried out between 2008 and 2014 strongly suggest the following about the distribution of reptiles within Arborfield site: common lizard, slow worm and grass snake are present within the surrounding area and only grass snakes are located within the Application Site.

2.25. The distribution of grass snakes is patchy, with a small, isolated area being found to support them within the Application Site, however habitat for reptiles and corridors through which these animals

can commute occur across and into the Application Site and surroundings. These populations of all present reptile species is low where these species occur. The updated survey suggests a small number of grass snakes are likely to be using the Application Site as no other reptiles were recorded during the updated surveys conducted by ACD Environmental Ltd in 2025.

2.26. In order to avoid any significant impacts on reptiles, a sensitive clearing methodology with a trapping and relocation programme will be carried out prior to any ground works or construction.

Hedgehogs

2.27. Although no specific surveys covering hedgehogs were carried out it likely that hedgehogs are using the site as there is suitable habitat within the Application Site.

2.28. To minimise impact and ensure connectivity and foraging habitats across the Application Site the following measures will be applied. Hedgehog highways will be created to allow movement in and around site, wood piles and planting will also be created to attract invertebrates.

3 ROLES AND RESPONSIBILITIES

3.1. This report should be read in conjunction with other environmental reports for Parcel N, Arborfield Green, Wokingham.

3.2. The overall responsibility for the design of the scheme under The Construction (Design and Management) Regulations 2015 is with the Principal Designer.

3.3. The implementation of this BAP (including habitat creation) during site preparation and construction is the collective responsibility of the appointed Project Manager, and the Developer, Crest Nicholson. This collective will ensure that all appointed contractors are aware of the ecological requirements of the Application Site and will distribute this BAP to relevant parties.

3.4. All materials, workmanship, quality and operations should be in accordance with all relevant British Standards, Codes of Practice and legislation including relevant Health and Safety legislation.

3.5. Once the construction phase is complete, the maintenance and management of the habitats on the Application Site and associated funding will be the responsibility of a private management company appointed by the Developer.

Length of agreement

3.6. The minimal length of the initial agreement with the management company will be five years. Following the five years, management practices will be reviewed, and a new contract drawn up as necessary, to ensure the Application Site is managed in line with the aims and objectives of this BAP for a minimum of 30 years. Management should continue in perpetuity.

4 HABITAT CREATION AND ENHANCEMENT

4.1. The following habitats will be retained and enhanced within the Application Site:

- Scattered trees and line of trees.

4.2. The following habitats will be created:

- Gardens.
- Ornamental shrub.
- Modified grassland.
- Urban trees.
- Native hedgerows.

4.3. This section details the measures taken to create new ecologically valuable habitats and to enhance existing habitats in order to provide benefit to wildlife.

4.4. The Soft Landscape Plan at **Appendix 2** provides details and locations of planting. In addition, the Habitat Creation Plan is included within **Appendix 3**.

Habitat Enhancement

Scattered trees and line of trees

4.5. Line of trees located to the northern boundary are due to be retained and enhanced.

4.6. Enhancement will be focused on grassland underneath existing trees being enhanced with wildflower seeds. This planting will be focused on woodland boundaries that are lacking an understory.

4.7. Deadwood within the woodland will be left *in situ* and formed into log piles to provide habitat for a variety of wildlife.

4.8. 75mm of thick mulch will be added to the soil around a retained tree to improve its growing condition. Litter will also be removed and the invasive plants, will be removed during the construction phase.

4.9. Retained trees have been shown within the Habitat Creation Plan **(Appendix 3)**.

Habitat Creation

Gardens

4.10. Small sections of the Application Site will be planted with good quality amenity turf and laid in line with good horticultural practices. New turves are to be laid on, or adjacent to, plot frontages.

Hedgerows

4.11. As part of the proposals, new hedgerow planting will be undertaken throughout the Application Site. The hedgerow will consist of hornbeam *carpinus betulus,* burkwood osmanthus *osmanthus burkwoodii* and Portugal laurel *prunus lusitanica.*

Wildflower grassland

4.12. To enhance sections of grassland, areas will be overseeded with a Emorsgate EH1 Hedgerow mixture, a shade tolerant wildflower and grassland seed mix.

4.13. The EH1 mixture consists of 80% grasses and 20% wildflowers, comprising 30 native species in total. Since this mixture is designed for shade tolerance, it is expected to thrive and increase plant diversity, bringing the grassland's species composition to at least 10 species per square meter.

4.14. As this habitat is to be enhanced, no removal of topsoil is to take place. Seeds should be over-sown onto the existing grassland habitat. For succession of grassland species, seeds are to be sown at 4g/m2. Seeds are best sown in the autumn or spring and are to be watered directly after being planted.

Amenity Grassland

4.15. Grassland to be retained underneath existing trees and enhanced with wildflower seeds. Wildflower mixes from Emorsgate Seeds such as EH1 (Hedgerow Mixture) or similar, with shade tolerant properties and Emorsgate EM4 Meadow Mixture will be used across the site.

Ornamental shrub

4.16. New shrub planting will be incorporated into the Application Site. Planting will take place within front gardens. To increase the value of this habitat for wildlife, shrub and herbaceous species of known value to pollinators have been selected and included within the development[9]. Species lists are provided within the Soft Landscape Plan.

[9] Royal Horticultural Society. (2022). RHS Plants for Pollinators [online]. Available at: https://www.rhs.org.uk/science/conservation-biodiversity/wildlife/plants-for-pollinators

Urban trees

4.17. A total of twenty-seven new trees are included within the Application Site. Species comprising field maple *Acer campestre,* Himalayan birch *Betula utilis jacquemontil,* hornbeam*,* rowan *Sorbus aucuparia and* small-leaved lime *Tilia cordata.*

4.18. The inclusion of these trees will provide additional habitats and food sources for birds, small mammals and invertebrates.

Artificial wildlife habitats

4.19. Locations of artificial wildlife habitats are shown within **Appendix 5**.

Bat boxes

4.20. A total of 23 bat boxes will be mounted on and fixed to existing trees and will also be integrated into new buildings to provide a net increase in bat roosting opportunities. It is recommended the following boxes are installed:

- 3x Schwegler Bat Box will be fixed to existing trees. These boxes should be installed at a southern or western elevation at a minimum height of 4m within close proximity to suitable habitat. Boxes should have clear access into and out of the box. Light-spill onto bat boxes must be avoided.
- 20x 1FR Schwegler bat tubes will be integrated into new builds. This is a summer roost for bat species that inhabit buildings. Fit at least 3m above ground level at a southern or western elevation.

Bird boxes

4.21. A total of ten bird boxes will be fixed to walls and existing trees on site to provide a net increase in bird nesting opportunities. It is recommended the following boxes are installed:

- 4x Schwegler 1SP Sparrow Terraces to be installed to the walls, underneath the eaves of new buildings at northern or eastern elevation at a minimum height of 4m, out of the reach of cats. Sparrow terraces should be installed within close proximity of one another, due to the communal roosting nature of sparrows. Light-spill onto boxes must be avoided.
- 4x Vivara Pro Barcelona Woodstone Open Nest bird boxes will be fixed to existing trees on site at northern or eastern elevations at a minimum height of 4m, out of the reach of cats. Light-spill onto boxes must be avoided.

- 2x Ibstock Swift Eco Habitat boxes to be installed within the masonry of new buildings on north or east facing elevations. Swift boxes should be installed at a minimum height of 5m ideally under the eaves.

- To provide additional habitat for wildlife including invertebrates, reptiles, amphibians and small mammals, six log/brash piles and six hibernacula will be installed within the northern SANG. Where possible, log piles will be created using timber produced as a result of any tree pruning works. Log piles should measure approximately 1m x 1m x 2m (height x width x length) and should be created by stacking logs of various sizes in sheltered spots. The hibernaculum will measure at least 1m x 1m x 10m (above ground H x W x L) and will be buried to a depth of 0.5m, as seen in **Image 2**. This will be created by first digging a 2m x 1m hole to a depth of 0.5m, loosely filling the hole with rubble, hardcore and logs and stacking to a height of 1m before loosely covering with topsoil and sandy turf. The hibernacula will be allowed to colonise with ruderal species which will provide valuable habitats for invertebrates.

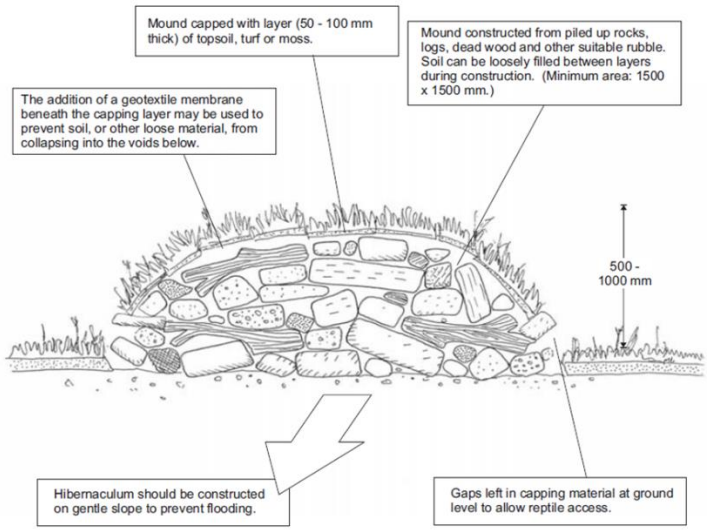


Image 2: Design of the hibernacula.[10]

[10] Design Manual for Roads and Bridges (May 2005). *Nature Conservation Advice in Relation to Reptiles and Roads*. Volume 10 Section 4 Part 7 HA 116/05.

Hedgehog 'Highways'

4.22. The development will contain a number of new gardens that provide habitats for hedgehogs, which are a UK BAP priority species[11]. To ensure hedgehogs are able to utilise the new garden habitats, closed board fencing will include a small hole (13cm x 13cm) cut into the base of the panel to facilitate hedgehog movement by creating a 'hedgehog highway'. This size gap is too small for most pets to fit through. To encourage residents not to block holes, signs can be placed above the gaps to illustrate their purpose. At least 77x locations of hedgehog holes are required, which will form a hedgehog highway.

[11] Biodiversity Reporting and Information Group. (2007). *Report on the Species and Habitat Review*. Available at: https://hub.jncc.gov.uk/assets/bdd8ad64-c247-4b69-ab33-19c2e0d63736 [Accessed 1st May 2020]

5 MANAGEMENT, MAINTENANCE AND MONITORING

Management prescriptions

General management

5.1. The following general management measures will be followed throughout the Application Site:

- Small loose objects of litter (e.g. plastic bottles, food packets etc.) should be removed regularly.
- Fly-tipping should be safely removed and reported to Wokingham Borough Council.
- Should planting be found to be in poor health, professional help will be sought and appropriate remedial/replacement measures taken.
- If invasive plant species are discovered, these must be removed using a species appropriate method.
- Herbicide and pesticide use will be avoided, except where required for removal of invasive species.

Scattered trees and line of trees

5.2. All new planted trees are to be planted between October and April and are to be well watered immediately after planting. Post planted trees are to be watered following 10 days without rain.

5.3. Trees will be regularly inspected to ensure the following:

- Trees and stakes are wind-firmed and ties are in good condition (monthly);
- No trees show signs of external damage (e.g. damage by mammals, vandalism by people);
- There is no compaction of the soil or soil capping around the trees; and
- That all grilles, grids, guards and other protective furniture are inspected annually and removed as soon as it is no longer needed to protect the tree or where it is causing damage to the tree.

5.4. Post-planting management and maintenance of trees will be undertaken in accordance with BS8545:2014 section 11 ‘Trees: from nursery to independence’ recommendations, in year five

before hand over to the private management company.

5.5. A formal assessment of young tree health and development will be undertaken annually. This assessment will include foliar appearance, leaf size and leaf canopy density, extension growth and incremental girth development. Trees will also be assessed continually throughout the year on an ad hoc basis. Wherever practicable the performance of young trees shall be assessed by testing leaf fluorescence and leaf chlorophyll content.

5.6. Formative tree pruning is to be undertaken until a permanent structurally sound scaffold system of branches typical of the species and appropriate to the site circumstances is produced. Minor pruning of dead or damaged wood will be carried out annually.

5.7. All stakes and ties will be removed as soon as the developing root system is strong enough to support the tree, usually after two full growing seasons.

Gardens

5.8. During establishment, modified grassland within public areas will be mown regularly during the growing season (generally March to October) to a height of 40-60mm to keep annual weed growth in check.

5.9. Once established (usually after one to two years), amenity grassland will be mown regularly to 25-40mm in height.

Amenity grassland

5.10. This section provides management prescriptions of EH1 Hedgerow mixture.

5.11. For successful establishment of wildflower grasslands, it is essential that ground preparation is appropriate and selection of appropriate sites for each meadow type, ensuring the soil conditions match the requirements and must be semi-shaded for EH1. To prepare seed beds, the area is to be weeded through repeated cultivation, followed by ploughing to bury the surface vegetation, then to be raked at a medium tilth and rolled to produce a firm surface.

5.12. Most sown meadow wildflower and grass species are slow to germinate and grow and will not usually flower in their first growing season. There will often be rapid growth of annual weeds in the first growing season which can shelter the seedlings. This annual weed growth is to be controlled by topping or mowing in early August. The meadow may be mown twice yearly or topped thereafter.

5.13. During the first year of EH1 hedgerow, also monitor for woody saplings that may encroach into the meadow area.

5.14. Ongoing Maintenance: Annually mow all meadows once or twice, preferably in late summer, to maintain species diversity and prevent nutrient build-up. EH1 hedgerow, trim any woody growth to maintain open meadow conditions. Continue to monitor for invasive species and remove them promptly.

5.15. Once established the meadow will be cut twice per year, with one cut in mid-July with all arisings removed to prevent soil enrichment. Arisings are to be left in place to dry for three days to encourage seed setting. A second cut will follow in late October to imitate the effect autumn grazing, and the arisings must be removed to prevent soil enrichment. Ten percent of the sward will be left uncut after each cutting episode on rotation to act as an invertebrate refuge.

5.16. The use of fertilisers is to be strictly avoided on the wildflower grassland.

Hedgerows

5.17. All hedgerow trimming and pruning operations must be timed to avoid the breeding bird season, which runs from March-August inclusive. The optimal time to cut hedgerows is January as this allows birds and small mammals time to utilise fruits throughout the winter months.

5.18. Native hedgerows will be trimmed annually to the specified height and profile using suitable mechanical cutters.

5.19. Native species-rich hedgerows are to be cut on a rotational basis whereby one side of the hedgerow is cut alternatively each year (i.e. year 1 one side, year 2 hedgerow top, year 3 remaining side). Native species-rich hedgerows will be maintained at a minimum height of 2m and minimum width of 1.5m to maximise opportunities for biodiversity. At this size or larger, a hedgerow will provide shelter for nesting birds and foraging habitat for insects, bats and birds.

5.20. All hedgerows will be checked annually for signs of damage, deterioration or distress. If hedgerows are in poor condition, growing conditions will be amended as necessary. If the hedgerow does not recover it will be replaced in the next available planting season.

Ornamental shrub

5.21. Where introduced shrub planting is located within public areas, shrubs will be maintained in a balanced shape and will be annually pruned to achieve this. Any growth that will obscure windows, signs or sight-lines will be removed.

5.22. All shrubs will be checked annually for signs of damage, deterioration or distress. If shrubs are in poor condition, growing conditions will be amended as necessary. If the shrubs do not recover, they will be replaced in the next available planting season.

Native Scrub

5.23. Long-term retained and established planted shrubs will be managed to encourage species diversity and a good age-range of species to include suckering growth and some natural colonisation from species such as bramble.

5.24. Where scrub meet grassland and/or a scalloped edge should be maintained to provide a diversity of habitat niches suitable for use by invertebrate species and reptiles. Ruderal growth within this area should be encouraged by leaving a 1m margin of uncut grass where this meets scrub. However, if there is vigorous growth of undesirable species such a common nettle then selective removal should take place.

5.25. Coppicing and some removal of small sections of shrub should be undertaken over a long rotation (e.g. every 5-7 years) to maintain this habitat as scrub. During management, no more than 20% of scrub should be removed/coppiced at any one time. In order to maintain a balance of species, it may be necessary to selectively thin vigorous scrub species.

Urban trees

5.26. Post-planting management and maintenance of trees will be undertaken in accordance with BS8545:2014 section 11 'Trees: from nursery to independence'.

5.27. A formal assessment of young tree health and development will be undertaken annually. This assessment will include foliar appearance, leaf size and leaf canopy density, extension growth and incremental girth development. Trees will also be assessed continually throughout the year on an *ad hoc* basis.

5.28. Formative tree pruning is to be undertaken until a permanent structurally sound scaffold system of branches typical of the species and appropriate to the site circumstances is produced. Minor pruning of dead or damaged wood will be carried out annually.

5.29. If the young trees are not thriving or are in poor condition, then growing conditions should be amended as necessary. If the specimen does not recover, the tree will be replaced in the next available planting season.

5.30. All stakes and ties will be removed as soon as the developing root system is strong enough to support the tree, usually after five full growing seasons.

Artificial wildlife habitats

5.31. Once installed, the artificial wildlife habitats will require minimum maintenance.

5.32. Bat and bird boxes and hedgehog highways will be subject to an annual external visual check to assess for any damage. Damaged or missing features will be repaired and/or replaced as necessary. Bat boxes must only be disturbed by a Natural England Class 2 bat licence holder as bats and their roosts are protected under wildlife legislation.

5.33. Bat boxes should be internally checked at least every five years by a Natural England Level 2 bat licenced ecologist. Where possible, bird boxes should be emptied of old nesting material annually during the autumn/winter months (September - January). Disinfectant must not be used in any bat or bird boxes.

5.34. It is recommended that the local bat group are approached and given the opportunity to undertake monitoring of bat and bird boxes with volunteers from the local community. This approach will help to encourage community engagement with the wildlife within the Application Site and to foster a sense of responsibility.

Monitoring and feedback into BAP

5.35. On completion of the construction phase, the Application Site will be inspected by an ecologist to confirm the development has adhered to the BAP. Where discrepancies are identified, these are to be reported to Crest Nicholson and Wokingham Borough Council. The discrepancies will be corrected under the supervision of the ecologist where required. Discrepancies can include missing bird and bat boxes, hedgerow or tree failure etc.

5.36. Following this, the Application Site will be monitored every three years by an ecologist, and management regimes amended as required to meet the management aims and objectives.

5.37. The LEMP will be reviewed after five years by an ecologist and will be amended as necessary. Following this, the Application Site will continue to be monitored by an ecologist every three years and adjusted as considered necessary. Relevant data from the surveys will be sent to the following organisations where necessary:

- Wokingham Borough Council.
- Local Records Centre.
- Relevant national recording scheme.
- ACD Environmental Ltd (if required).

6 SCHEDULE OF WORKS

6.1. The work schedule for monitoring, maintenance and management activities are set out within **Table 2**. The works schedule below may be subject to changes in timings subject to the construction phase schedule. In the instance that any changes in timings are required, the Developer and/or the appointed management company is to contact an ecologist at ACD Environmental Ltd to confirm agreement to any amendments.

6.2. The colour coding within **Table 2** is as follows:

	Optimal months
	Sub-optimal months (may be acceptable if appropriate mitigation/supervision undertaken)
	Unsuitable months

Table 2: Work schedule for management, maintenance and monitoring schedules.

Action		J	F	M	A	M	J	J	A	S	O	N	D
POST COMPLETION - YEAR 1													
Year 1	**Year 1 monitoring survey undertaken by an ecologist. Results used to feedback into BAP as required and to rectify any issues.**												
	Regular removal of litter and check for invasive species.												
	Amenity grassland areas mown regularly to 40-60mm.												
	Annual visual inspection of artificial habitats for any signs of damage. Remedial action/replacement undertaken as necessary.												
	Annual check of habitats to include woodland, hedgerows, shrub and trees to check for signs of damage, deterioration or distress.												
	Annual pruning of hedgerow, introduced shrub, and developing trees as required.												
POST COMPLETION - YEAR 2 ONWARDS													
Weekly-Monthly	Regular removal of litter and check for invasive species.												
	Amenity grassland mown regularly to 25-40mm in height.												
Annual	Annual check of habitats to include woodland, hedgerows, scrub and trees to check for signs of damage, deterioration or distress.												
	Annual visual inspection of artificial habitats for any signs of damage. Remedial action/replacement undertaken as necessary.												
	Annual pruning of native hedgerow, introduced shrub and developing trees as required.												
	Suitably experienced person to remove bird nesting material from nests annually.												
2-3 years	Monitoring surveys undertaken by an ecologist every three years. Results used to feedback into LEMP as required and to rectify any issues.												
	Prune native species-rich hedgerows in January once every three years; or on a rotation of one side/top per year.												

5 years	**Five-year review of BAP undertaken. Results provided to Wokingham Borough Council, Local Records Centre and Developer as required. BAP updated and monitoring continued in line with BAP.**	
	Five-year check of bat boxes undertaken by level 2 licenced bat ecologist.	
	Selective thinning of small sections of understory planting undertaken on a long rotation of 5-7 years. No more than 20% of understory to be pruned at one time.	

7 CONCLUSIONS

7.1. This BAP has been produced for Outline permission for: Demolition of buildings and phased redevelopment of Arborfield Garrison and adjoining land for: Up to 2,000 new dwellings (including up to 80 units of extra care housing). District centre comprising a food store up to 4,000 sq m gross with up to a further 3,500 sq m (gross) floor space within Classes A1, A2, A3, A4, A5, B1, D1 and D2 (with residential above - Class C3), and transport interchange, village square, car parking, servicing and drop off area. Up to a further 1,500sq m (gross) floor space within Classes D1 and D2. Neighbourhood centre to provide up to 300 sq m (gross) floor space within Classes A1, A2, A3, A4, A5, B1, D1 and D2, with parking/servicing area. Secondary school for up to 1,500 pupils (Class D1) including sports pitches, floodlit all-weather pitch, and indoor swimming pool and parking areas. Up to three-form primary school (Class D1) with sports pitch and parking areas. Associated phased provision of: car parking; public open space including sports pitches, informal/incidental open space, children's play areas including multi-use games area (MUGA), skate park, community gardens/allotments; landscaping/buffer areas; boundary treatments; new roads, footpaths, cycleways and bridleways; sustainable urban drainage systems, including flood alleviation works.

7.2. PART 2 - FULL PERMISSION FOR phased development of: Creation of two new areas of Suitable Alternative Natural Greenspace (SANGS) (In the north-eastern part of the application site ("Northern SANGS") and at West Court ("West Court SANGS") including car parking areas, path/walkways, fencing and associated landscaping; re-use of existing MoD gymnasium for sports/community uses/centre (Classes D1/D2; new roundabout junction to A327 Reading Road; junction improvements to Langley Common Road, Baird Road and Biggs Lane; junction improvements and new access at Biggs Lane/Princess Marina Drive; re-use and improvements to existing site accesses from Biggs Lane was granted by Wokingham Borough Council on 1st April 2015 (planning ref: **O/2014/2280**).

7.3. The Developer and Site Manager will be responsible for ensuring that the habitats are created, as described within this report and detailed within the Soft Landscape Plan. Once the construction phase is complete, the maintenance and management of the habitats on the Application Site will be the responsibility of a private management company appointed by the Developer and the residents.

7.4. This BAP sets out the ongoing maintenance, management and monitoring programme to be undertaken at the Application Site post-completion.

7.5. With implementation of the measures outlined within this report, it is considered that the ecologically impact will be in a favourable condition in perpetuity.

APPENDIX 1: PRE-CLEARANCE PHASE 1 HABITAT MAP

LEGEND

- Line of trees
- Scattered trees
- g3 - Semi-improved grassland
- h3 - Dense scrub
- Redline

ACD ENVIRONMENTAL

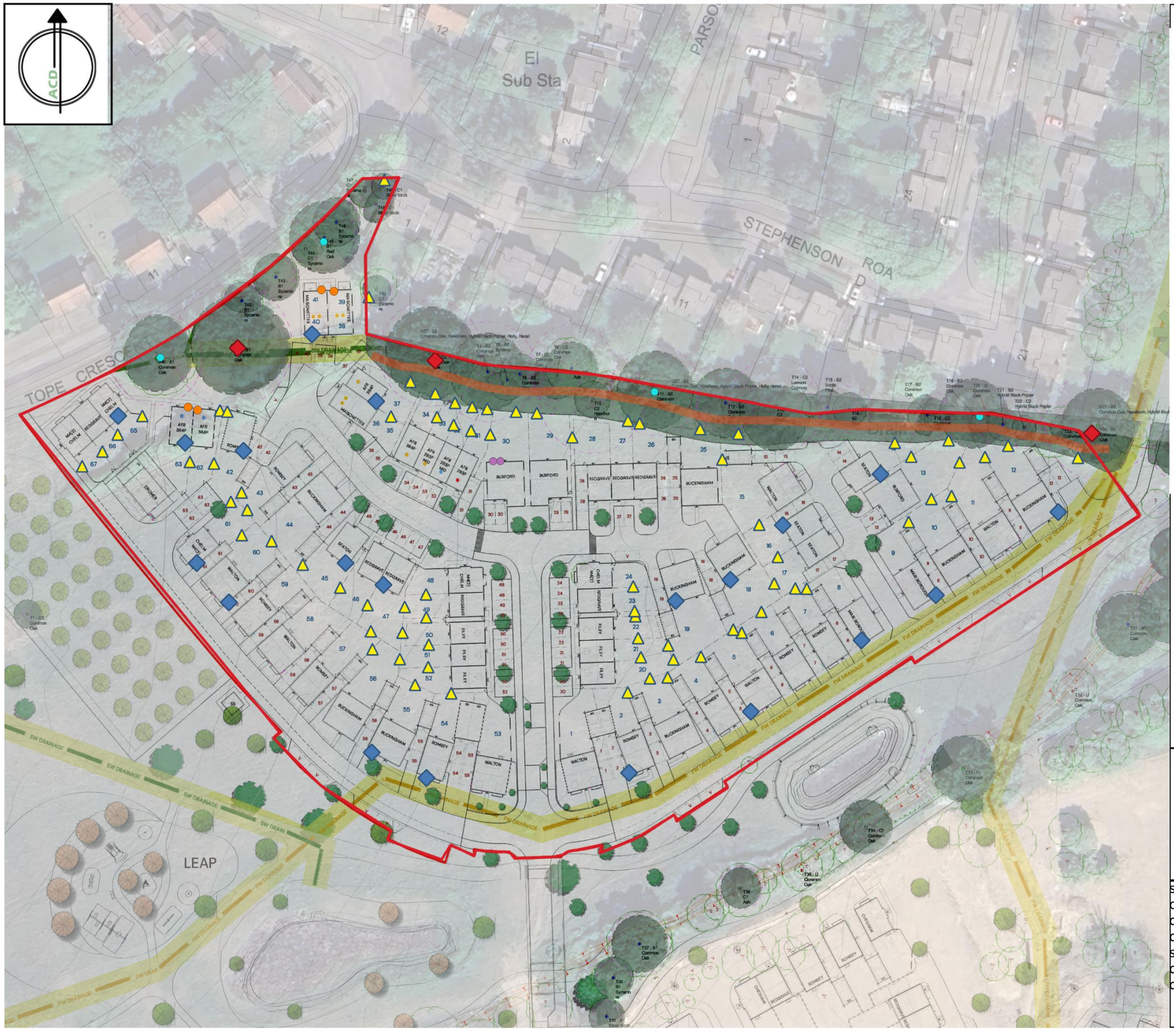
CREST NICHOLSON

scheme: Parcel N Arborfield, Wokingham
client: Crest Nicholson
drawing: Baseline Habitat map
date: 3.7.25
scale: NTS@A3
drawing no: CREST24802_60
drawn: JC

APPENDIX 2: SOFT LANDSCAPE PLAN

APPENDIX 3: HABITAT CREATION PLAN

APPENDIX 4: ECOLOGICAL ENHANCEMENT PLAN



LEGEND

- Boundary
- Schwegler 2FN Bat Box- for woodland specialist such as noctules and other bats requiring a larger cavity. Install 5m above ground facing SW or SE.
- Hedgehog highway-a small hole (13cmx13cm) cut into the base of fences.
- Ibstock Swift Eco Habitat-to be installed within the masonry of new buildings on N or E elevations. Install 5m under the eaves.
- Vivara Pro Barcelona Woodstone-fix to existing trees on site at N or E elevations at a minimum height of 4m.
- Schwegler 1SP Sparrow Terraces- install to the walls, underneath the eaves at northern or eastern elevation at a minimum height of 4m.
- Schwegler 1FR Bat Tube- a summer roost for bat species that inhabit buildings. Fit at least 3m above ground level, facing SW or SE.

ACD ENVIRONMENTAL

CREST NICHOLSON

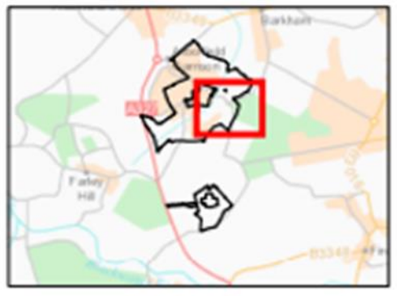
scheme: Parcel N, Arborfield, Wokingham
client: Crest Nicholson
drawing: Ecology Enhancement Plan
date: 4.7.25
scale: NTS@A3
drawing NO: CREST2802_67
drawn: JC

LEGEND

- SANG Boundary
- Bat Barn Location
- Brash Pile/ Egg Laying Site
- Hibernacula
- Log Pile
- South Facing Mound

Phase 1 Habitat

- Broadleaved Semi-natural Woodland (not reptile habitat)
- Broadleaved Plantation Woodland (not reptile habitat)
- Scrub
- Semi-improved Neutral Grassland
- Standing Water - Pond (not reptile habitat)



The area of additional broadleaved plantation woodland and dense scrub cover within the SANG is indicative and actual areas and volumes will depend on "on the ground" conditions and liaison with relevant stakeholders, while maximising the multifunctional benefits to biodiversity and recreational value. There will be no net loss of woodland.

Individual Trees to be retained are presented within the Tree Report and associated figures (ES Appendix 13.7), trees to be planted are indicated within the Green Infrastructure Strategy.

Detail on the Hedgerows to be retained are presented within the Hedgerow Survey Report and Strategy and associated figures (ES Appendix 13.6).

Client: Crest Nicholson

Project: ARBORFIELD GARRISON EIA

Title: HABITAT CREATION - NORTHERN SANG

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Design:	BM	Drawn:	ST
Chk'd:	BM	App'd:	MG
Date:	02/10/2014	Scale at A3:	NTS
Drawing Number:	FIGURE C		A3

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