Document 6.2

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The West Midlands Rail Freight Interchange Order 201X

Ramboll: July 2019

Four Ashes Limited

West Midlands Interchange

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Framework Ecological Mitigation and Management Plan

Document 6.2 (ES Technical Appendix 10.4)

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1. INTRODUCTION

1.1 Proposed Development

1.1.1 This Framework Ecological Mitigation and Management Plan (FEMMP) has been designed to provide an overarching ecology mitigation and management framework for the proposed West Midlands Interchange (WMI) Development (the 'Site'). The Proposed Development comprises:

- An intermodal freight terminal with direct connections to the West Coast Main Line, capable of accommodating up to 10 trains per day and trains of up to 775 m long, including container storage, Heavy Goods Vehicle ('HGV') parking, rail control building and staff facilities;
- Up to 743,200 square metres (gross internal area) of rail served warehousing and ancillary service buildings;
- New road infrastructure and works to the existing road infrastructure;
- Demolition and alterations to existing structures and earthworks to create development plots and landscape zones;
- Reconfiguring and burying of electricity pylons and cables; and
- Strategic landscaping and open space, including alterations to public rights of way and the creation of new ecological enhancement areas and publicly accessible open areas.

1.2 Scope

1.2.1 The objective of the FEMMP is to ensure a joined up cohesive approach to ecology mitigation through multiple phases of development realising the strategic aims of the development with respect to ecology. The strategic aims of the FEMMP are:

- To ensure robust protection for retained habitats on-site;

- To protect off-site sensitive habitats and associated species assemblages e.g. Staffordshire and Worcestershire Canal;
- To ensure permeability through the Site for a range of species via ecological corridors;
- To provide a diverse range of habitats suitable to support a range of species;
- To manage green infrastructure to maximise the benefit to biodiversity; and
- Effectively managing pressures on green infrastructure in the operational phase (e.g. visitor pressure).

1.2.2 The FEMMP sets out minimum requirements to ensure that good practice ecological management is implemented across the development of the Site in a consistent manner to realise the site wide strategic aims above. In due course Ecological Mitigation and Management Plans (EMMPs) will be prepared for each phase of development. These plans will be prepared at the detailed design stage and be in accordance with this FEMMP. The EMMPs will provide additional detailed information to facilitate the delivery of mitigation and management measures and to reflect site conditions and guidance applicable at the specific time (to ensure any changes in baseline are adequately reflected).

1.2.3 This FEMMP should be read in conjunction with the Outline Demolition and Construction Environmental Management Plan (ODCEMP) (ES Technical Appendix 2.3) prepared for the Proposed Development. In due course specific Demolition and Construction Environmental Management Plans (DCEMPs) will be prepared for each phase of development. The Proposed Development will comply with all standards relevant at the time of implementation. The measures set out in this FEMMP meet or exceed these standards.

1.2.4 This FEMMP shall be implemented for all works associated with the construction and operation of the Site excluding, highway works which are governed by Parts 2 and 3 of Schedule 15 of the Development Consent Order (DCO) (protective provisions).

1.3 Environmental Impact Assessment

1.3.1 Potential impacts on ecology and biodiversity which may arise from construction and operation have been assessed as part of the Environmental Impact Assessment (EIA) process and are reported in Chapter 10 of the Environmental Statement (ES) (Document 6.2). The WMI development has been carefully designed to reduce the potential for significant impacts on ecological receptors and to minimise impacts on landscape features and supported species wherever possible. The ecological mitigation and management measures relevant to the construction and operation of WMI are described in the sections below.

2. Key Roles and Responsibilities

2.1.1 Individual parcels of land may be brought forward for development by different contractors (the Contractor[1]). Table 2.1 summarises the key roles required to be filled by all contractors and outlines the responsibilities associated with each role.

Table 2.1: FEMMP Roles and Responsibilities

Role	Responsibilities
Ecologist	To provide ecological support and advice to the Contractor's Site Manager. To implement control measures and ecological mitigation and act as an Ecological Clerk of Works (ECoW). To deliver Tool Box Talk training and work with Site Manager and Foremen to ensure implementation of good practice. Undertake actions as required to ensure animal welfare.
Contractor's Site Manager	Oversight of weekly Site audits. Responsibility for review of Site Environmental Manager appointments, ensuring that the individual or individuals have sufficient time, resources and training to discharge responsibilities. Review implementation of corrective actions. Track progress of EMMP against internal targets and report back to both staff on the ground and to the Contractor.
Contractor's Environmental Manager	Secure ecologist support as required. Overall responsibility for implementation of EMMP. Responsibility for ensuring compliance with ecological legislation.

[1] Please note that references to the Contractor generally refer to both the demolition contractor(s) and the construction contractor(s) unless otherwise stated. For ease a singular term is used, however the Contractor could comprise different entities.

Role	Responsibilities
	Carry out weekly site audits, and assist Site Manager in preparation of detailed monthly audit report.
Site Community Liaison Manager	Responsibility for public liaison, and complaints handling. Will prepare and manage dissemination of information on project programme, noisy works, site contacts and health and safety information to the Site neighbours.

2.2 Toolbox Talks and Communication

2.2.1 Prior to development of the Site, the following must be made known to all Site personnel:

- Contractor responsibilities, procedures and requirements.
- Details of measures to ensure protection and suitable mitigation to all notable and legally protected habitats and species both during construction and post-development. Measures to include consideration and avoidance of sensitive stages of species life cycles, such as the bird breeding season, protective fencing and phasing of works to ensure the provision of advanced habitat areas and minimise disturbance of existing features.
- Where relevant to an individual's role, a summary work schedule table, confirming the relevant dates and/or periods by which the prescriptions and protection measures shall be implemented.
- Details of suitably-qualified personnel responsible for overseeing implementation of the EMMP commitments, such as an Ecological Clerk of Works (ECoW).

3. ECOLOGICAL MITIGATION AND MANAGEMENT MEASURES

3.1 Generic Design Measures

3.1.1 Habitat loss of the most valuable habitats has been minimised through design (for instance to retain ponds, woodland, hedges or veteran trees where possible). These features are the basis for ecological corridors incorporated into the Green Infrastructure Parameters Plan (Document 2.7) and which will provide habitat for a range of species including birds, bats, amphibians, invertebrates and badger.

3.1.2 An operational site speed limit of 30 mph will be set to minimise potential for wildlife road casualties and a travel plan will be implemented to minimise trips so far as practical.

3.1.3 Areas of development (Zones A1-A7, Zone B and Zone C as shown on the Development Zone Parameter Plan (Document 2.5)) would be designed with standard pollution prevention measures included, such that spills are retained by appropriate attenuation facilities with suitable interceptors or equivalent alternative biological treatment measures and water quality in discharged water is of permissible standard. The drainage throughout the Proposed Development will be maintained so that it performs as designed. This commitment to pollution prevention and standard pollution prevention measures will serve to avoid pollutants entering into or through waterbodies including the Staffordshire and Worcestershire Canal and Calf Heath Reservoir.

3.1.4 A sensitive operational lighting design will be developed with input from an ecologist based on the principles of the Lighting Strategy and Lighting Impact Assessment (ES Technical Appendix 12.8). The guidance issued from time to time by the Bat Conservation Trust in conjunction with the Institution of Lighting Professionals will be followed as part of the operational lighting design[2]. The results of the embedded lighting mitigation

[2] Bat Conservation Trust and Institution of Lighting Professionals. Guidance Note 08/18. Bats and artificial lighting in the UK – Bats and the Built Environment series. Online. Available at: https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/

measures are shown on Figure A1.1 (Appendix 1) and have been verified by illustrative modelling. The following parameters will be delivered:

- No increase in lighting levels in Community Park Areas (Calf Heath and Croft Lane) as a result of the Proposed Development;
- The existing dark canal corridor will be maintained. No increase in lighting as a result of the Proposed Development; and
- Retention and creation of dark ecological corridors where lighting levels are below 1 Lux at ground level (shown by shaded areas on Figure A1.1, Appendix 1).

3.1.5 Further embedded mitigation measures with respect to lighting include:

- Provision and use of vegetated bunds, strategic planting, fencing, lowest practical mounting height, luminaires with sharp light cut-off, cowls/shield/louvres/hoods to block unwanted light as necessary;
- During detailed design, plot specific landscaping, SuDS or car parking will be provided adjacent sensitive ecological areas/corridors/parks in preference to service yards where operationally possible (car park lighting columns can be much shorter and also required lighting levels are lower than service yards, this will help to minimise light spill). Detailed lighting design would focus on areas of ecological sensitivity e.g. design lighting in most sensitive areas first and then 'work outwards' to avoid conflict and maximise the ecological value of the lighting strategy; and
- The development of detailed lighting designs will take place in conjunction with an ecologist and such designs will be subject to the approval of Staffordshire County Council's ecologist. Where adoptable lighting is of necessity non-standard, appropriate arrangements will be put in place to ensure that it is maintained and continues to operate in accordance with the design intent.

3.2 Generic Control Measures

3.2.1 The Ecological Clerk of Works (ECoW) will deliver a tool box talk to relevant staff prior to the start of works in each phase or more regularly at the request of the Contractor's Environmental Manager. These talks will be appropriate to the phase of construction being implemented or areas of the Site which are being worked.

3.2.2 Construction phase noise will be controlled through the DCEMP such that effects beyond the Site boundary are minimised. Appropriate measures will include noise barriers (for instance where development plots adjoin sensitive habitats such as the canal, Calf Heath Reservoir or woodland areas). Noise bunds will be included along the boundaries of the development plots and around the Community Parks, as shown on the Green Infrastructure Parameters Plan (Document 2.7), to minimise noise disturbance. These will, where cut and fill balances allow be created prior to commencement of construction. As stated in the ODCEMP (ES Technical Appendix 2.3), construction of the perimeter landscaping bunds, would, where practicable, take place early on in the construction programme, or within each construction phase, so as to provide mitigation for visual and noise effects during construction. The EMMPs to be submitted and approved for each phase of development will, when the design and detailed construction methods are known, establish any ecological sensitivities with respect to noise and timing of the works and define any necessary mitigation.

3.2.3 Pollution prevention measures set out in the ODCEMP will be implemented in full to ensure that the Site is managed to prevent pollution or risk to surface and groundwater resources including Calf Heath Reservoir and the Staffordshire and Worcestershire Canal, avoiding pollutants entering into or through these waterbodies.

3.2.4 The Contractor will be responsible for ensuring that construction phase lighting is designed, installed and maintained to minimise effects on species outside development plots through avoiding light spill on adjacent habitat. Lighting will only be used when necessary for construction operations or for safety reasons and should be directed within the plot, with no upward directed light and suitable cowls as necessary.

3.2.5 The felling of a proportion of Calf Heath Wood will be undertaken with due regard for species confirmed as present or having potential to be supported by the woodland habitats present. The timing and approach to felling will be defined within the appropriate phase specific EMMP(s) taking into consideration the ecological baseline and the results of updated surveys (where applicable).

3.2.6 Construction phase working hours will be limited to 07:00 to 18:30 Monday to Friday and 08:00 to 13:00 on Saturday, except for emergency works or where agreed with the local planning authority.

3.2.7 Throughout the operational phase of the development there will be measures employed to ensure there would be no unauthorised access to Calf Heath Wood in order that this can be maintained as a reserve for nature conservation. Fences around development parcels that prevent access by workers into green infrastructure where this is not intended will be maintained for the duration of the operational phase.

3.2.8 All plots will have a security fence installed around their boundary prior to operation starting to prevent operational activities spreading beyond the plots.

3.2.9 The drainage throughout the Proposed Development will be maintained by the Applicant's management company in the operational phase so that it performs as designed, in particular in relation to interception of run-off from car park and yard areas. All operators will implement and practice pollution prevention and control measures in order to provide ongoing management of the risks to surface water quality[3].

3.2.10 Access to the community parks will be managed in the operational phase in order to maximise the value of this habitat. For instance, signage will be provided highlighting the value of these areas and promoting their responsible use. The parks will be actively managed by the Applicant's management company to remove litter and seek responsible use of these areas and deter activities that would compromise their use by target species.

3 GOV.UK: Guidance Pollution Prevention for Businesses. Online. Available at: https://www.gov.uk/guidance/pollution-prevention-for-businesses [Accessed 28.02.2018].

3.3 Habitat Retention and Protection

3.3.1 To prevent damage caused by construction activities, it is the responsibility of the Contractor to ensure that retained habitats will be protected with clearly defined fencing at the outset of construction works to prevent Site activity encroaching beyond the plot boundaries. Retained hedgerows and trees will be protected by barriers or ground protection around the calculated Root Protection Area (RPA), in accordance with BS 5837:2012 Trees in relation to design, demolition and construction. The ECoW will undertake a pre-commencement check for each phase to ensure the tree/hedge protection fencing has been installed correctly in the appropriate position. Construction will not begin until the ECoW is satisfied that the tree/hedge protection fencing is adequate for purpose.

3.3.2 Seven veteran tree specimens would be retained, namely T166 (English oak), T167 (Sweet chestnut), T168 (English oak), T169 (English oak), T222 (English oak), T276 (English oak) and T279 (English oak). All references to tree numbers stated in the FEMMP correlate to those presented in Document 6.2 ES Technical Appendix 12.7 – Arboricultural Assessment. The location of these trees is identified on the Green Infrastructure Parameters Plan (Document 2.7). Eighteen (Of twenty-five) 'transitional / future' veteran trees will be retained; T44 (English oak), T57 (English oak), T60 (English oak), T62 (English oak), T70 (English oak), T72 (English oak), T73 (English oak), T76 (English oak), T95 (English oak), T125 (English oak), T129 (English oak), T212 (English oak), T215 (English oak), T216 (English oak), T263 (English oak), T266 (English oak), T286 (English oak) and T296 (English oak). The location of these trees is identified on the FPCR figure 'Retained Veteran and Transitional Veteran Tree Plan, dated June 2019 (Appendix 1). Retained trees will be protected in line with the measures as set out in Document 6.2 Technical Appendix 12.7 – Arboricultural Assessment. Additional protection measures for veteran trees are identified within Document 6.2 ES Technical Appendix 12.7 – Arboricultural Assessment and will be implemented in full. These measures shall be applied equally to the retained 'transitional / future' veteran trees.

3.3.3 Ecologically 'Important' hedgerows identified under the Hedgerow Regulations will, where possible be retained (Hedgerows 26,45,72) and protected. Where retention is not possible it will be the responsibility of the Contractor (with support from the ecologist as required) to translocate the 'important' hedgerows into areas of green infrastructure (Hedgerows 56, 57,

58, 5, 9, 92, 83 & 86). These hedgerows are shown on Figure A1.2, Appendix 1. Guidance for hedgerow translocation is provided in Appendix 2 of this document. A detailed translocation management plan will be prepared and appended to the relevant EMMPs.

3.3.4 The detailed design of the two plot access points shown indicatively on the Green Infrastructure Parameters Plan (Document 2.7) between Zones A7a and A7b and between Zones A7b and A7c will be designed in consultation with an Ecologist. These details would be provided in the appropriate EMMP. The width of the access points would be kept to a minimum, wherever possible existing gaps or areas with existing weaker planting would be utilised. Where appropriate the existing hedgerows would be strengthened and tree planting, for example either side of the access point, would be provided.

3.3.5 Following felling part of Calf Heath Wood (in accordance with the parameter plans, which comprises the less biodiverse part of the wood) a screen of native shrubs will be planted along the new boundary of the wood exposed by site clearance, in order that this can screen the retained woodland adjacent as it grows.

3.4 Invasive Species

3.4.1 A pre-construction walkover survey would be undertaken by a suitably qualified ecologist prior to the commencement of each phase to confirm the location and extent of invasive plant species. It would seek to determine if any of the previously identified areas have spread and if there are any new areas where invasive species have developed. This would be undertaken between April and September.

3.4.2 A detailed method statement / protocol for dealing with invasive species would be prepared by the Ecologist. The plan would be informed by the pre-construction survey and form part of the Phase specific EMMP and include a plan showing the location of identified invasive plant species. This protocol would be used if further invasive species were found during construction activities.

3.5 Habitat Creation

Key Principles for Habitat Creation

3.5.1 The created habitat areas will be designed with connectivity in mind and will form ecological corridors (including a 100m wide ecological corridor between the retained part of Calf Heath Wood and Calf Heath Reservoir) in combination with the existing retained vegetation features across the Site. The landscape design will incorporate the provision of the following habitats:

- Open water – ponds. New ponds will be provided as compensation for any ponds lost because of the Proposed Development. In addition to ponds provided as compensation, a minimum of 10 waterbodies will be provided as enhancement whereby the primary aim is to increase biodiversity and offer suitable breeding habitat for great crested newt (GCN) to include a range of depths, bank profiles, aquatic planting and shade regimes;
- Marshy grassland around ponds created for biodiversity;
- Species rich grassland (lowland meadow);
- Native broadleaved woodland;
- Individual tree planting including fruit trees (approximately 900 individual trees to be planted);
- Native species rich hedgerows;
- Scrub;
- Deadwood;
- Bare sandy exposures;
- Arable - sown with a seed bearing crop including a cereal and kale, linseed or quinoa;

- Amenity grassland; and

- On-plot landscaping will include at least 25% nectar, seed or berry producing species and hybrid or double-flowered cultivars would be avoided to maximise the biodiversity benefit of formal planting.

3.5.2 The following key principles will be adhered to for habitat creation:

- Ensure suitable soil conditions to support successful establishment of created habitats:

    - Take account of the Soil Resource Plans (to be prepared as part of phase specific DCEMPs and Agricultural Land Classification (ALC) data (ES Technical Appendix 6.1);

    - Undertake a soil nutrient test(s) in advance of the landscape design and habitat creation using sampling as per BS 3882(2015) *Specification for topsoil* to be reported in the respective EMMP(s);

    - Where necessary the EMMP will define measures necessary to improve soil conditions, for example remediation which could include the use of yellow rattle as a facilitator species to reduce the grass cover, invert sub and topsoil or strip off top soils for example for use in landscaping bunds where more vigorous growth would be desirable. Measures defined via soil management in the EMMP will seek to achieve a phosphate index of less than 1 (P index < 1 or extractable P (Olsen Bicarbonate method < 10mg / l)) for areas of meadow and wetland or as near as is reasonably practicable without importing soils which is not proposed on sustainability grounds unless otherwise agreed. In the event that the desired phosphate index cannot be achieved via the mechanisms detailed above, the relevant EMMP will define alternative measures. The ecologist will input to the Soil Resource Plan as appropriate.

    - Review soil test results and define appropriate species mixes;

- Consider hydrology – ensure species selected and habitats created are appropriate to local conditions.

- Ensure appropriate seed mixes / species are selected to best represent local prevailing conditions for soils as detailed above and in response to potential shading caused by buildings. Consideration/assessment of shade/shadow paths will be applied/undertaken as relevant as part of detailed design. Any specific requirements would be identified within the respective EMMPs to be prepared in conjunction with detailed design when the configuration of the plots within the Parameters Plans are known.

- Use site won material where possible in habitat creation, for example standing dead wood, log piles etc.

- Tree planting should be of UK provenance comprising native species and including some planting stock of non-local, but still UK provenance, to help increase genetic diversity in new native woods. This is intended to create more resilience in the face of threats such as climate change, pests and diseases.

- Use locally native species e.g. for species rich grassland.

- The landscape design will have due consideration for future climate resilience.

3.5.3 The proposed planting designs/schedules will include extensive habitats that can provide benefit for bats either by providing a food source for insects or roost potential. The Appendix in the Bat Conservation (BCT) publication 'Landscape and Urban Design for Bats and Biodiversity'[4] provides a plant list for encouraging bats and this will be incorporated into the landscape design.

3.5.4 No phase of the development shall commence until a Landscaping Scheme for that phase (including the strategic landscaping included within that

[4] Gunnell K, Grant G and Williams C. 2012. Landscape and urban design for bats and biodiversity. Bat Conservation Trust

phase) has been submitted to and approved in writing by the Local Planning Authority.

Early Habitat Creation

3.5.5 Planting of the 100 m wide wildlife corridor linking the retained portion of Calf Heath Wood to Calf Heath Reservoir as shown on the Green Infrastructure Parameters Plan (Document 2.7) will be completed within 5 years of the commencement of the authorised development, or prior to commencement of development at Development Zones A4a or A4b, whichever is sooner and then safeguarded through future development phases to aid establishment and ecological functionality.

3.5.6 Croft Lane Community Park will be completed within 5 years of development commencement as embedded mitigation. The Community Parks (Croft Lane and Calf Heath) will be designed to provide a range of native habitats including substantial areas of open water, species rich grassland (lowland meadow), native woodland, hedges and scrub. This would address the aims of the LBAP and provide valuable habitat for a range of other species.

3.5.7 The south of Calf Heath Community Park will be completed prior to the commencment of development at Development Zones A4b as shown on the green infrastructure parameters plan (Document 2.7). This is in advance of a proportion of Calf Heath Wood being felled and will be retained as 'Core green infrastructure' i.e. created and then safeguarded through future development. The provisions in the south of Calf Heath Community Park will include significant woodland and individual tree planting, species rich grassland and areas of standing water/SUDS.

Further Embedded Habitat Creation Measures

3.5.8 The development will deliver a biodiversity net gain for native broadleaved woodlands and semi-improved grassland in area terms and native species rich hedgerows in terms of linear metres. These features will be linked together and with existing retained habitats where possible.

3.5.9 Existing trees of the greatest value will be retained and protected prior to commencement of construction works where possible e.g. veteran trees (7

of 11 retained). Individual tree planting will be planned so that a proportion of planted trees can be retained and be allowed to grow to maturity/overmaturity with no potential for conflict from nearby land uses (i.e. in the timescales of hundreds of years) to become future veteran trees. Areas of standing deadwood and log/brash piles will be provided within the new ecological corridor to be provided between Calf Heath Wood and Calf Heath Reservoir (and elsewhere where appropriate) using existing deadwood and retention of stumps and large pieces of timber where this cannot be retained elsewhere on site and providing habitat for saproxylic species.

3.6 Habitat Management

Key Principles for Habitat Management

3.6.1 The habitats described in Section 3.5 will be managed in the operational phase with biodiversity in mind to maintain the habitat value. The detailed management prescriptions with respect to biodiversity will be defined in the Phase specific EMMPs. The EMMPs would detail the management objectives and the prescriptions required to achieve these in relation to biodiversity. Habitat management would include:

- Management of Calf Heath Wood to complement that in the adjoining portion of the woodland being managed in a similar manner as part of the Bericote Development to promote a diverse woodland including trees of a range of ages. The wood will be enhanced by restoring the coniferous or mixed plantation areas (reducing proportion of pines) to native broadleaved woodland (e.g. oak, birch and ash) over time through appropriate silvicultural practices. Non-native species notably rhododendron will be removed over several years in a manner that promotes the native shrub layer, but does not remove all of the structure from the woodland in one operation. Areas of standing deadwood would be retained.

- General hedgerow management practices will aim to benefit hedgerow biodiversity, for instance through phased cutting across the Site and long rotations between cuts to allow shrubs to flower/fruit.

- A Veteran Tree Management Program will be produced, and this will consider their long-term care and management as part of this Site. This will include provision for continual re-appraisal of management operations in the light of tree response and condition. General veteran tree management will be directed towards protecting the veteran tree's longevity, wherever possible, to ensure that there is no avoidable loss of the veteran trees. The relevant EMMPs will cross refer to this document and summarise the key pertinent information.

- 25 'transitional / future' veterans were identified. Up to seven specimens would need to be removed thus retaining a minimum of 18. As mitigation for their loss, it is proposed to also undertake a similar suite of measures as for the 'true veterans' which will consist of propagation of hard wood cuttings and growing acorns from retained specimens in order to retain the local oak gene pool, strategically planting these off-spring trees to form new veteran tree communities / habitats in close proximity to retained specimens and retaining large sections of felled trunks close to retained specimens for their biodiversity. The eighteen retained trees are grouped together in several parts of the Site and are all positioned within proposed areas of green infrastructure. These trees will be afforded the same protection as the true veteran trees.

- Landscape management and maintenance will be carried out at times of year that do not compromise seeding/fruiting/nectar production. This will be defined in the EMMP when the detailed planting specification for a given phase is confirmed.

- Establishing a schedule for the timing and extent of grass cuts in the community parks for the benefit of ground nesting birds, invertebrates and harvest mice. Mowing regime for species rich grasslands to be defined in the respective EMMPs. Arisings to be removed where appropriate to encourage low fertility species rich grassland.

- Prevent excessive over-shading (< 60%) of retained/new waterbodies by cutting back over-hanging woody vegetation annually each autumn.

- Assess development of macrophyte vegetation in waterbodies at five-yearly intervals and put into effect staggered cut-back/clearance

operations where vegetation deemed to be too dense and/or affecting surface water drainage function – Approximately 30% open water should be maintained. All maintenance to be carried out in accordance with current best practice to minimise effects on ecology and ensure legal compliance in respect of protected species. Encourage the establishment and development of woodland, trees and transitional woodland edge planting on bunds to support visual screening and filtering of views. Management during the establishment period to include replacement of plant failures.

- The respective phase specific EMMPs will include pertinent design guidance taking account of the engineering requirements and will define management stipulations for the SUDs and reinforced earth slopes (where applicable) to maximise and maintain the ecological value (with due regard for species potentially supported by the created habitats).

3.7 Species Specific Measures

3.7.1 In addition to the habitat protection, retention, creation and management measures detailed above (which will benefit a wide range of protected and notable fauna), the following species-specific measures form part of the Proposed Development. These are aimed at minimising impacts on these species or species groups and ensuring compliance with relevant legislation.

a) Native Black Poplar

3.7.2 A comprehensive mitigation strategy will be produced to ensure continuation of native black poplar growing on-site. In outline, the mitigation proposed will consist of the following:

- The chosen method for propagating the native black poplar is through hard wood cuttings as this is the most reliable method to achieve the highest likelihood of success and retain genetic blueprint of this specimen.

- A specialist contractor, Whiting Landscape Ltd (WLL) has been instructed to undertake the propagation of material from the native black poplar.

- The first stage of the process will involve harvesting of the cuttings from the tree at the next available optimum time, this being autumn 2019.

- The work will involve careful removal of various limbs from the tree deemed viable to provide suitable hard wood cuttings and transport back to WLL nursery site to prepare for growing. Due to the fragile condition of the tree, this work will be done from a mobile work platform to maximise harvesting opportunity and limit wastage.

- It is intended to take a sufficient amount of material to provide a minimum of 100 cuttings.

- The tree will remain in situ as a reserve, should more cuttings be required as a contingency.

- The cuttings will be planted into compost and then maintained by WLL in their nursery for up to 7 years until required for planting on site.

- Once ready for planting, the appointed landscape contractor will take the trees and plant at chosen locations within the Site.

- Full details of the young native black poplar management and maintenance will form part of the relevant phase specific EMMP(s) to ensure success in the long term. For example, these will include a record of the locations of each tree so they can be found, details of protection from animal damage such as tubes, means of supporting growth, watering and mulching.

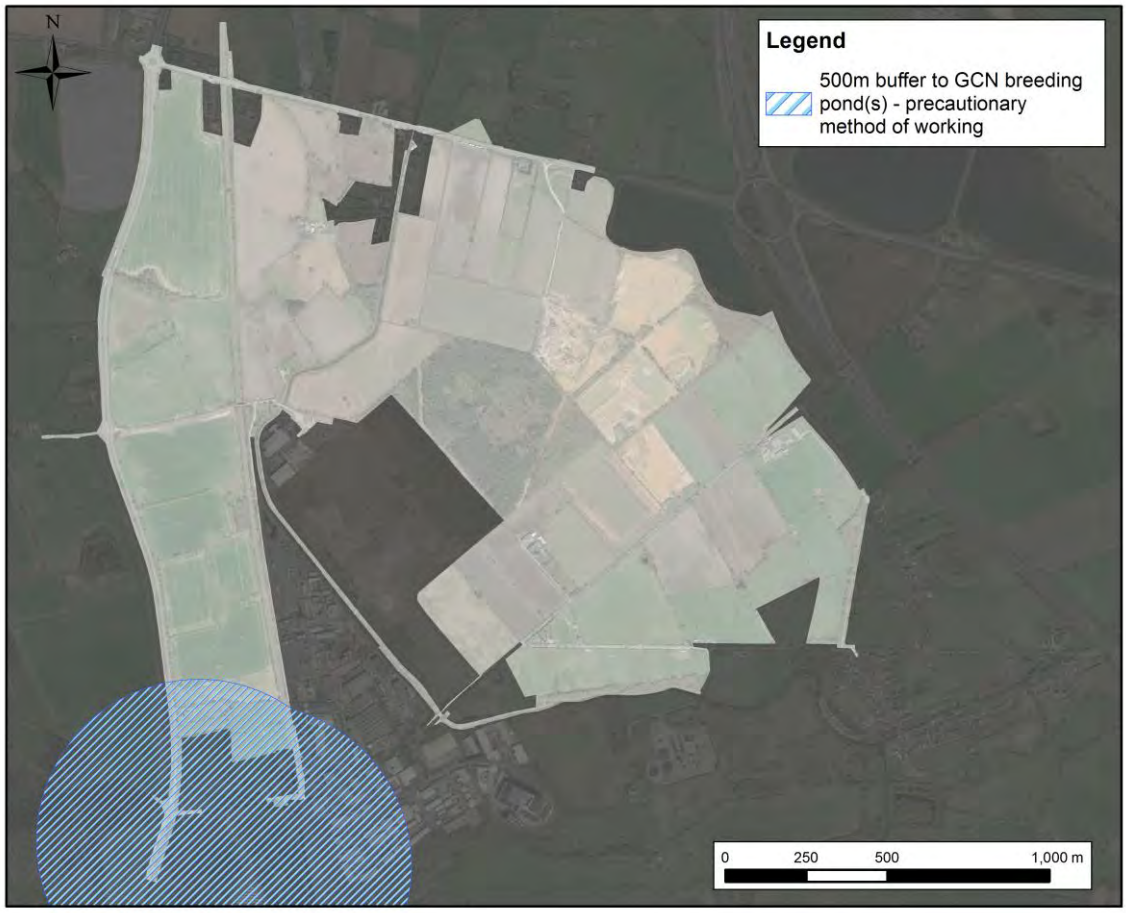
b) Amphibians

3.7.3 Great crested newt (GCN) survey data is typically valid for a period of 2-3 years. Where up to date survey information is not available for ponds within a given construction phase (or within 500 m of a given phase and not subject to a barrier to movement) a pre-construction presence and absence survey would be undertaken. This would be undertaken between mid-April to late

June for e-DNA or mid-March to mid-June for traditional survey techniques (egg search, bottle traps, netting and torch survey). If great crested newts are detected in these surveys, six population surveys must be undertaken, three of which would be undertaken between mid-April and mid-May. Surveys should be undertaken at least six months prior to the development of each plot to provide sufficient time to formulate a mitigation strategy if great crested newts are detected.

3.7.4 A risk-based non-licensed precautionary method statement will be adopted for enabling and construction works within 500 m of the off-site GCN breeding ponds (Pond 16 and 17) as shown in Figure 3.1 below.

Figure 3.1: Areas Requiring Specific Precautionary Great Crested Newt Mitigation



Google Earth © 2017 Google

3.7.5 The risk-based precautionary method statement is provided in Appendix 3. In the unlikely event that great crested newts are encountered during the precautionary habitat clearance, work should stop and the mitigation strategy reviewed by an ecologist. If deemed necessary further surveys or a license from Natural England may be required prior to works recommencing.

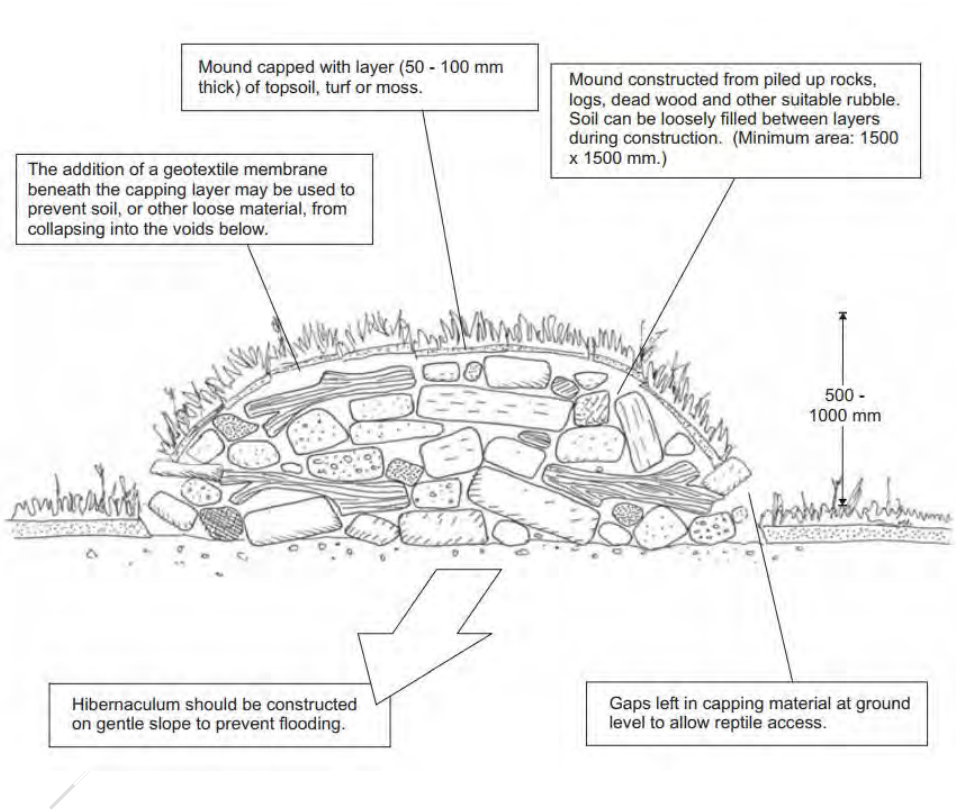
3.7.6 The mitigation steps described in section 3.7.5 will be implemented during the removal of all hedgerows and trees within 100 m of the ponds located throughout the wider Site to provide mitigation for other species of amphibian, such as common toad. A licensed GCN ecologist is not required for habitat removal in locations over 500 m from Ponds 16 and 17 the locations of which are shown in Figure 3.2. below.

Figure 3.2: Location of GCN Breeding Ponds 16 and 17

3.7.7 Amphibians that are encountered (non-GCN) should be moved to an area of the Site that has been enhanced for amphibians e.g. to ponds to be created within Croft Lane Community Park which will be provided at the development outset.

3.7.8 Hibernacula will be provided next to the new ponds. These will be created and managed for biodiversity e.g. log/rubble piles reusing timber from felled trees / demolition rubble, as shown in Figure 3.3 below.

Figure 3.3: Hibernacula Design (Taken from DMRB Volume 10, Part 7 HA 116/05)



3.7.9 The use of amphibian friendly gully pots, ladders and amphibian wildlife kerbs across the Site will be a standard specification to prevent harm to amphibians. The drainage designer should consult an ecologist.

3.7.10 Development plots will be designed to separate areas posing potential hazard to amphibians from areas of mitigation e.g. ponds and high quality terrestrial habitat.

3.7.11 All waterbodies on the Site will be managed sympathetically in the operational phase to maximise the habitat value for amphibians e.g. maintaining areas of open water. Full management prescriptions will be included in the relevant EMMP following detailed design. Wider landscape maintenance will be carried out with reference to the relevant EMMP so that impacts on amphibians are avoided and legal compliance is ensured. Measures will include landscape maintenance in sensitive habitats at times of year to avoid direct impacts on amphibians.

c) Birds

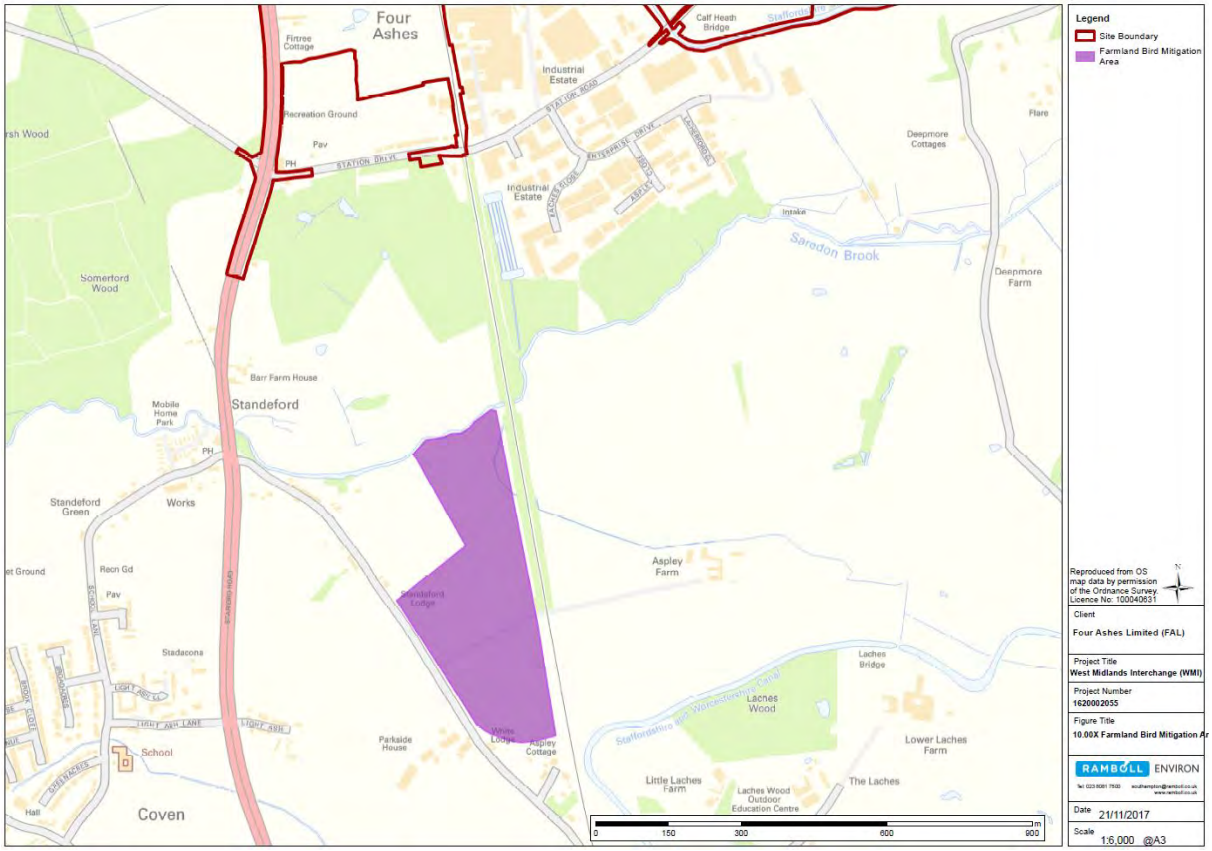
3.7.12 Where clearance of vegetation or stripping of soil on the Site is required during enabling or construction works, this will take place between the September and February inclusive, which is outside of the bird breeding season. In the event that vegetation removal, topsoil stripping or building demolition needs to be undertaken between March and the end of August, this will be preceded by a check for nesting birds by an experienced ecologist and/or be undertaken under an ecological watching brief depending on the extent and duration of the works. Checks of any stockpile areas that have been present should also take place because such features may be attractive to ground nesting birds such as lapwing or skylark. The tool box talk will oblige site staff to be observant for nests in the construction phase. Should a bird nest of any species be discovered during demolition, site clearance or construction the ecologist shall advise on how to proceed. This could include temporary suspension of works, visually marking out a no-go area around the nest or use of less disturbing machinery in the vicinity of the nest, until the young have fledged and no longer rely on the nest.

3.7.13 The main embedded mitigation for habitat loss on birds is the enhancement of existing habitats, creation of a range of new habitats and the subsequent long term management of such habitats for the benefit of birds including:

- Enhancement and management of 12 ha of existing intensively managed arable farmland off-site (within 1 km) dedicated for the benefit of farmland birds secured via a Section 106 (s106) agreement. The land to be subject to enhancement and management (for a period of 15 years) is shown in Figure 3.4. Enhancement measures across the 12 ha will include a buffer to Saredon Brook, wider headlands and margins, management including rotation and use of seed mixes intended to be of benefit for farmland birds, provision of skylark plots

and planting of new hedgerows in place of or in addition to existing fences. An EMMP specific to the Bird Mitigation Land will be produced and submitted to the County Council;

Figure 3.4: Off-site farmland bird mitigation land



- Further parcels of land have been identified for farmland bird mitigation in Calf Heath Community Park adjacent to Straight Mile (central area shown in Figure 3.5). This will be managed in the operational phase by periodic harrowing or ploughing. This area will be sown with a seed bearing crop including a cereal and kale, linseed or quinoa to maximise the habitat value to birds. This would address the aims of the Local Biodiversity Action Plan (LBAP) to expand the area of arable field margins to include cultivated low-input field margins, wild bird seed, flower-rich field margins and permanent grass margins. The grassland shown in the east of Figure 3.5. will be subject to restricted access and also be manged for the benefit of farmland birds; and

- Provision of wetland features for the benefit of water birds e.g. provision of swales and reed beds.

Figure 3.5: On-site farmland bird mitigation land

3.7.14 Bird boxes will be provided in suitable areas across the Site to include:

- Boxes on the new bridge crossing (on completion of construction) the canal targeted toward grey wagtail;
- Boxes provided on buildings or suitable north or east facing retaining structures for house sparrow, starling, house martin and swift;
- Boxes to be provided on suitably mature retained trees for stock dove, kestrel and generalist species; and
- Sand martin colonies or kingfisher tubes will be created in the Croft Lane Community Park.

3.7.15 In addition to nest boxes, deadwood (stumps) will be provided to create standing deadwood. A proportion of existing mature retained trees will be

ring barked to provide nesting habitat for species such as woodpeckers, marsh tit and willow tit, however, priority would be given to retention and use of existing deadwood to deliver continuity of deadwood habitat.

3.7.16 In the operational phase vegetation management (particularly trees, hedgerows and shrubs) will be carried out outside of the bird breeding season, which is March to August inclusive. Where essential works occur within that timeframe, an ecologist will carry out a check of vegetation to ensure no nesting birds are present.

d) Invertebrates

3.7.17 The following habitat enhancements for Croft Lane Community Park will be provided for the benefit of invertebrates within 5 years of development commencement (the remaining relevant areas as per the landscaping phasing outlined in the DCO Requirements):

- Provision of shallow ephemeral ponds and ponds managed for biodiversity with vegetated (native) margins and ponds that retain some water all year round to support the range of species currently found across the landscape and make provision to increase the diversity of species present. A minimal number of trees will be provided around the ponds to allow light onto the water;

- Provision of species rich grassland using an appropriate proprietary seed mix (to be determined during detailed design) of value for foraging invertebrates. A range of species will be incorporated providing a variety of structure such as flat-daisy type flowers to deep corolla-types such as trefoils and labiates; and

- Provision of south facing, bare sandy exposures adjacent foraging areas for ground-nesting bees and wasps. These will be designed to be exposed to full sun between the hours of 10:00-16:00.

3.7.18 Areas of green infrastructure will be managed in the long term to maintain and where possible continue to enhance their value for invertebrates. This will be delivered through each relevant EMMP which will for example include details of how to provide a succession of old trees across the Site to benefit saproxylic (deadwood) species and the management of areas of

wildflower whereby these areas will be cut after the flowering plants have set seed but leaving some areas of vegetation uncut every year to provide overwintering invertebrate habitat.

e) Bats

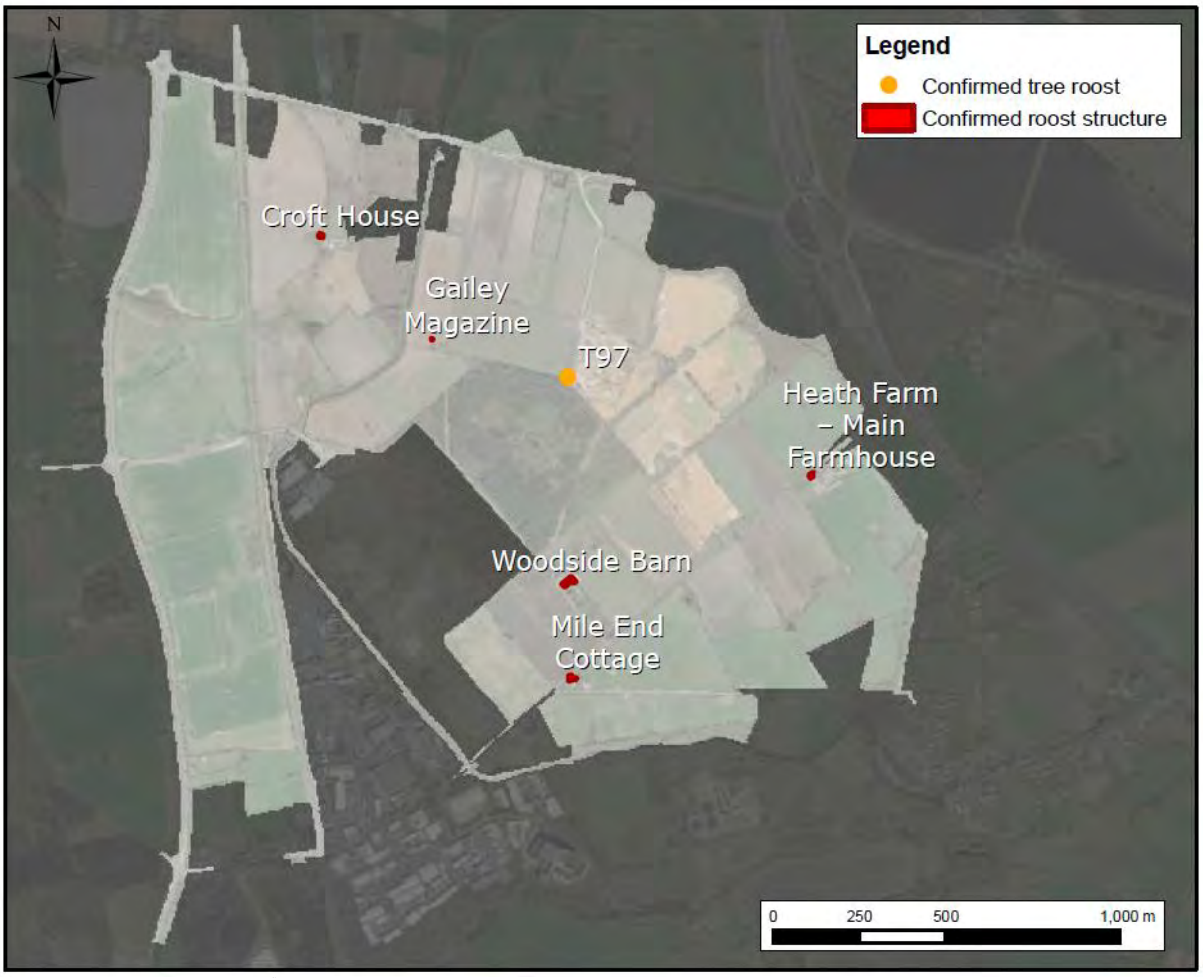
3.7.19 Lighting mitigation measures with respect to bats (and other species) are provided in Section 4.3 and shown in Figure A1.1, Appendix 1.

3.7.20 A European Protected Species Mitigation Licence (EPSML) from Natural England (NE) is required to fell T97 (Oak) which supports a soprano pipistrelle roost, to disturb two off-site Daubenton's roosts in Calf Heath Wood (Figure A1.3, Appendix 1) and demolish the following buildings:

- Gailey Magazine – Common and soprano pipistrelle;
- Woodside Barn – Common pipistrelle, soprano pipistrelle, Myotis, brown long-eared;
- Croft House – Common pipistrelle;
- Mile End Cottage – Common pipistrelle; and
- Heath Farm – Main Farmhouse – Brown long-eared.

3.7.21 The bat roosts identified on-site are shown below in Figure 3.6 below.

Figure 3.6: Confirmed on-site bat roosts



3.7.22 A draft EPSML was submitted to Natural England. A 'Letter of No Impediment' has been issued stating that Natural England see no impediment to a licence being issued should the DCO be granted. This letter is included at Appendix 4. The measures detailed below provide details of the current mitigation strategy as submitted to Natural England. The approach and strategy may be updated in consultation with Natural England in the preparation of any future licence application(s). The relevant EPSML would be appended to the EMMP for any given phase.

3.7.23 A comprehensive range of bat boxes will be provided on retained suitably mature trees and in woodland. A minimum of 80 bat boxes will be provided across the Site. The distribution of the bat boxes will be detailed within the EPSML. The following Schwegler (or similar subject to availability) would be

appropriate: General Purpose Bat Box 2F, Bat Box 1FF, Bat Box 1FW and Bat Box 1FD. Schwegler 1FW will be provided to offer hibernation habitat for bats. The boxes would be fixed at a minimum height of 3m to help prevent predation and disturbance from contractors during demolition and construction and each bat box will be sited based on its proximity to suitable foraging habitat and its connectivity to the surrounding area. The boxes would be placed in clusters at the same height around the tree providing a variety of aspects, ideally facing south-east, south-west and south. Clusters of three bat boxes to a tree is targeted where appropriate. Hibernation boxes will be north facing. The boxes will be affixed clear of obstacles (e.g. over-hanging branches) so the bats have easy access and exit, though not in an overly exposed position. Boxes will be attached to the tree using an aluminium nail or tied in position using wire/leather.

3.7.24 Roosting enhancements will be provided on/in retained buildings within Croft Lane Community Park e.g. Buildings at Gravelly Way adjacent the canal within 5 years of development commencement. The Farmhouse is the only one of these buildings which includes a roof void, which would be cleared of any stored materials to allow use by bats. Access for bats will be provided to the roof void, for example via purpose built roof tiles, holes made in the wall or by access points made under ridge tiles or soffits where present. Aspects of the buildings will be clad, for example with tile hung or feather boarded elevations. Traditional bitumen lining would be used within the roofs. Enhancements would be suitable for crevice and roof-void dwellers. Serotine roost provision will be provided. This will be provided through suitable access points into the Gravelly Way buildings and augmented with provision of suitable bat boxes such as the Schwegler 1WQ Summer & Winter Bat Roost or equivalent. The relevant EMMP will include measures for appropriate management of these buildings that considers legal implications of roosting bats. The potential presence of roosting bats will require consideration for on-going building maintenance. A precautionary method of working is detailed in Appendix 5.

3.7.25 The draft EPSML includes detail on:

- comprehensive monitoring and resurvey requirements to ensure the baseline is up to date and to inform mitigation measures and ensure legal compliance;

- precautionary method of working with respect to works affecting known bat roosts including: emergence or re-entry surveys to be undertaken of each building with a confirmed roost the evening/morning prior to demolition, an internal inspection will be undertaken immediately prior to works commencing, a tool box talk provided to all operatives by the Ecologist, buildings demolition to be supervised by a licensed bat ecologist, features suitable for use by roosting bats will be inspected and removed by hand by the licensed ecologist. Any bats captured by hand will be transferred to a bat box on site or taken into care and released in the same location at dusk. Building specific measures are defined in detail within the EPSML.

3.7.26 Construction activity that creates noise, vibration or emits light within 30m of known roosts, hedgerows and woodland will cease at sunset between the period March to September inclusive when bats are active, if not before, to avoid delaying the emergence of locally roosting bats. Construction activity will not commence again until after sunrise to ensure that impacts to bats returning to local roosts does not occur.

3.7.27 Bat 'hop-over' habitat features will be provided where key bat corridors are bisected by roads. The locations of the bat hop-overs and how these link with the dark corridors are shown in Figure A1.1, Appendix 1. Table 3.1 below details the bat hopovers to be provided.

Table 3.1: Bat Hop-over details

Hop-over Reference (Figure A1.1)	Description
1	Calf Heath Wood to Calf Heath Reservoir
2	Calf Heath Wood to Staffordshire & Worcestershire Canal
3	Calf Heath Wood south
4	Vicarage Road
5	Straight Mile

3.7.28 The lighting columns at the bat hop-overs will be a maximum of 6m in height.

3.7.29 The bat hopovers as shown in Figure A1.1. Appendix 1. will be a minimum of 50 m wide with the exception of the link from Calf Heath Wood to Vicarage Road which will be a minimum of 30 m wide.

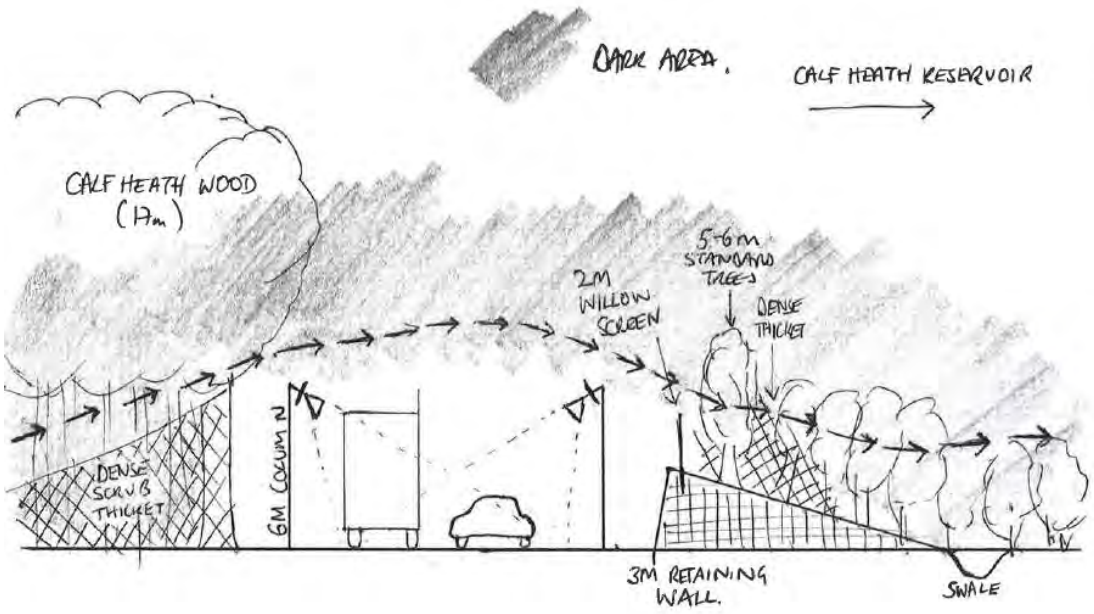
3.7.30 An indicative design of a bat hopover is provided below in Figure 3.7 as agreed with Staffordshire County Council's (SCC) principal ecologist (relates to the corridor linking Calf Heath Wood and Calf Heath Reservoir). The detailed deisgn will be subject to approval by SSC's ecologist. The hop-over would include:

- Maximum 6 m high lighting columns;
- Directional lighting with sharp light cut-off, cowls/shield/louvres/hoods – ensuring minimal back spill;
- Specification of lighting which emits no upwards light;
- Planting of dense thickets on the edge of Calf Heath Wood and in the new ecological corridor to force the bats (especially low flying species such as natterer's and brown long-eared) to fly high over the trafficked area and reduce light spill into the corridor to negligible; and
- Provision of a soil reinforced / bio engineered retaining wall plus a willow screen for the new ecological corridor in combination with use of sporadic standard trees to assist functionality of the hop-over from the outset and deter bats that fly at low level in clutter from entering the potential collision zone.

Table 3.2. Example Images of Willow Screens used to assist functionality of the hop-over

	
Willow screen as planted	**Willow screen establishing**

Figure 3.7: Bat hop-over indicative design



f) Badger

3.7.31 Prior to construction in each phase, the area would be resurveyed for badger setts or badger activity. The best time to undertake surveys is November to March, when vegetation is less likely to screen setts. This should be undertaken by suitably-qualified ecologist. If setts are found a

license may be required to close the sett, therefore surveys should be undertaken at least six months prior to the development of each plot to provide sufficient time to formulate a mitigation strategy.

3.7.32 In line with current guidance[5], wherever possible heavy machinery and excavation work will be undertaken away from the identified setts. The Ecologist will define appropriate working distances for activities that might either damage the sett or disturb badgers in the sett in the relevant EMMP. This will take account of local conditions and the proposed works. In addition, the following measures will be adhered to:

- Not using fire or chemicals within 20 metres of a sett entrance;
- Felling trees so they fall away from active sett entrances;
- Clearing felled trees away from badger paths and sett entrances; and
- Avoiding loud noises and vibrations near active setts, over and above what the badgers would be used to.

3.7.33 Where impacts on badgers are unavoidable a license will need to be obtained from Natural England.

3.7.34 On the basis of current survey information, one main sett (K), one annex sett (C) and six outlying sets (B, J, L, M, N, P) will require closure under licence to allow construction if active at the time. See confidential badger report for the location of each sett (Confidential ES Technical Appendix 10.2). An artificial sett of equivalent form and capacity to Sett K shall be created in the Croft Lane Community Park the details of which will be provided in the relevant EMMP. The remaining setts (within the primary green infrastructure) will be protected from disturbance through procedural controls. These will be secured as part of the phase specific EMMP and be informed by a pre-construction survey. The closure of setts shall only take place from 1 July to 30 November to prevent the risk of separating a breeding sow from her dependant cubs.

[5] GOV.UK Guidance Badgers: surveys and mitigation for development projects. Available at: https://www.gov.uk/guidance/badgers-surveys-and-mitigation-for-development-projects#mitigation-and-compensation-methods [online] Accessed 03/04/2019

3.7.35 The Contractor would put in place the following precautionary measures to ensure the safety of badgers during each phase of construction to address the low risk of individual badgers accessing the Site from the surrounding area:

- During clearance and construction works, any deep excavations left open overnight will be provided with a timber scaffold plank or similar timber plank to create a ramp allowing badgers to escape the excavation;
- Where appropriate open excavations will be fenced with Heras or similar temporary fencing with minimal gap at the bottom to deter badgers from entering the area of the excavation;
- Open pipework above 150mm outside diameter will be closed off at the end of the working day by either backfilling the opening with spoil or by blanking off with a timber panel; and
- Workers on Site are advised not to handle badgers, if they become trapped or fall victim to site conditions. Staffordshire Badger Group includes experienced badger rescue workers who can be contacted on 01543 503236 should the need arise.

3.7.36 The following embedded mitigation measures with regard to badgers have been built in to the masterplan:

- An artificial sett of equivalent form and capacity to Sett K shall be created in the Croft Lane Community Park. Low level scrub planting will be provided over the artificial sett to screen it from members of the public and other disturbances;
- Mammal tunnels under new roads parallel to / dissecting areas of green infrastructure – designed to maintain suitability e.g. preventing standing water. Three crossings provide links from Calf Heath Wood to the north, south and east and one is provided in the north of the Site adjacent the A5 under the new road link;

- Provision of bunds within Community Park Areas which would allow badgers to dig and create setts, 'blind' tunnels shall be included to encourage the natural creation of setts by badgers;

- Early provision on mitigation habitats e.g. Croft Lane Community Park;

- Landscape design (and future maintenance) to incorporate planting of suitable species and form to assist in leading badgers to use the mammal tunnels; and

- Landscape design of Community Park Areas to provide suitable foraging resource for badgers e.g. areas of deciduous woodland and grassland managed in part for amenity i.e. habitats that support the highest earthworm biomass. Retention / planting of native fruit bearing tree species in green corridors e.g. rowan/elder.

g) Otter

3.7.37 Measures will be incorporated into the final design for each phase to minimise the likelihood of otters straying on the roads to minimise potential road causalities e.g. tunnels where appropriate.

3.7.38 Any vegetation removal beside the Staffordshire and Worcestershire Canal should be preceded with a pre-construction check by an ecologist to ensure otters are not using the habitat as a rest site. This would be undertaken in winter at a time when vegetation is less dense and signs of otter are easier to define. Once the Ecologist is satisfied otters are not present, vegetation would be carefully removed using hand tools and suitable measures to avoid contaminating the canal would be employed including silt traps, where applicable.

3.7.39 Measures defined for preventing badgers from getting trapped in excavations in section 3.7.35 apply equally to otter.

3.7.40 If an otter rest site is found close to the working area, a Natural England license may be required before work can commence. Otters will also be protected through dust and surface run-off control measures. The drainage throughout the Proposed Development will be maintained so that it performs as designed, in particular in relation to interception of run-off from car park

and yard areas. All operators will implement and practice pollution prevention and control measures in order to provide ongoing management of the risks to surface water quality in the adjacent River Penk and Staffordshire and Worcester Canal.

3.7.41 Artificial otter holt(s) will be provided within woodland along the canal in the south of Calf Heath Community Park.

h) Hedgehog

3.7.42 Suitable avoidance measures will be employed to minimise the risk of accidental death or injury to hedgehog, which may utilise the hedgerows, woodland and scrub on the Site. The potential presence of hedgehogs would be covered in the tool box talks. Measures would involve a hand search of suitable vegetation as determined by the ecologist prior to construction by an ECoW. If present, individuals would be transferred to suitable habitat outside the construction footprint, such as an area of retained woodland.

3.7.43 Works would where possible avoid the hibernation period. If works cannot occur during this period and hibernating hedgehogs are discovered by the ECoW, translocated individuals would be placed into a hibernation box[6] located around the base of a retained tree within the woodland.

i) Unexpected Species Plan

3.7.44 An Unexpected Species Plan should be prepared to consider cases where species occur in situations in which they are not expected, or where species not expected on the Site (based on existing understanding of the baseline conditions) occur. The Unexpected Species Management Plan shall be enacted whenever suspected protected or rare species are encountered during construction. The plan shall be enacted on all occasions, whatever the source of sighting/information. The Unexpected Species Management Plan is shown in diagrammatic form in Appendix 6.

[6] http://www.nhbs.com/title/180977/hedgehog-hibernation-box Accessed 14/11/2017

4. Ecological Auditing, Monitoring and Inspections

4.1 Monitoring

4.1.1 A monitoring and reporting plan would be implemented for the construction and operational phases of development. Construction phase monitoring would be defined in the phase specific EMMP. Management of the habitats on site will continue for the life of the development, unless and as agreed otherwise by Staffordshire County Council in consultation with Natural England. It is not possible to establish quantitative objectives until such a time as the detailed design and landscaping plan is bought forward. The EMMPs will include quantitative habitat monitoring objectives from which the success of the landscaping and habitat creation can be assessed via the following mechanisms.

4.1.2 The programme of operational phase monitoring would include:

Habitats

- Habitats will be subject to an annual walkover inspection by a suitably qualified ecologist. These walkovers will be undertaken for a period of 10 years post completion of each respective phase. This inspection will be additional to those discussed (e.g. as required to ensure establishment of tree and shrub planting and the maintenance of appropriate condition in retained mature trees) and in addition to any follow-up monitoring surveys or inspections required by the applicable protected species licences (i.e. for bats, or badgers). Measures for habitat monitoring are to be defined in the EMMP(s) but will include; cover of bare ground, cover of undesirable species, cover of wildflowers and sedges and presence of indicator species, for example lowland species for each habitat appropriate to Staffordshire. Following the walkover inspection, an annual monitoring report will be produced detailing any remedial actions or interventions determined to be necessary in order to meet the relevant species or habitat objectives to be defined within the EMMP(s).

- The performance of the retained and created habitats in relation to their target objectives (to be defined in the respective EMMP(s)), will be assessed by means of more involved surveys at five-yearly intervals (or other intervals in relation to species detailed below), the first to be undertaken five years after the cessation of Site wide construction or habitat creation activities. The results of the surveys will be analysed in order to identify any revisions to the management prescriptions deemed to be required in order to meet the objectives for respective habitats and/or address any problems. Revised prescriptions would then be produced to guide the next five years. This information would be presented as a 'Five Year Monitoring Report' to be shared with relevant stakeholders, including Staffordshire County Council.

- Annual post construction monitoring in areas where hedgerows have been translocated until fully successfully established. Monitoring reports are to be provided making recommendations for any remedial measures deemed necessary; and

- Annual post construction monitoring in areas where invasive species have been treated/removed to ensure successful eradication. Monitoring reports are to be provided making recommendations for any remedial measures deemed necessary.

Species

- New and retained waterbodies will be monitored for amphibians at intervals of five years and findings will be incorporated into the relevant EMMP so that amphibians can be considered in on-going facilities and landscape management;

- The bird boxes installed will be inspected every two years, between September and February, to ensure they remain fit for purpose. Any damaged boxes will be replaced;

- A Site wide breeding bird survey will be carried out periodically (for instance every five years) to include the green infrastructure, community parks and operational parcels of the Site in order that baseline conditions can be understood and facilities and landscape management can be adapted to reflect any findings of the monitoring.

- A Site wide badger survey periodically in the operational phase (for instance every two years). This should include retained setts, any artificial setts created and monitoring of use of badger tunnels. This will enable the baseline conditions to be understood and facilities and landscape management can be adapted to reflect any findings of the monitoring, for instance to deter badger activity in any part of the Site.

- Monitoring / checks of bat boxes and enhanced buildings will be carried out every five years from installation for a period of 20 years within the active season (May to September)). This is considered an appropriate frequency given the low numbers of common species identified within the roosts to be lost. This may be updated based on requirements in EPSML(s).

- General bat activity surveys will be undertaken every five years from installation for a period of 20 years within the active season to enable comparisons to be made to pre and post development bat activity/species assemblage using the Site.

4.2 Auditing and Reporting

4.2.1 Compliance with the requirements of this FEMMP and statutory legislation with regard ecological protection will be monitored through routine auditing and inspections. Periodic checks and inspections will be carried out by appointed specialists to ensure the mitigation measures, specific protected species licence conditions and all control measures detailed in this FEMMP are being complied with.

4.2.2 Species records from scheduled operational phase monitoring will be submitted annually to Staffordshire Ecological Record Centre.

Appendix 1: Figures

Zone A1-A7 - Development Areas

Zone B - Rail interchange, Container storage, Parking area and associated welfare facilities.

Zone C - Rail corridor including new rail lines and landscaping.

New road infrastructure and improvements to existing infrastructure.

Primary green infrastructure.

Estate Management Offices / Amenity and Welfare Facilities

Residential Property and Curtilage

Plot Access Points through Green Infrastructure. (precise location and extent to be approved at time of submission of details for approval post DCO approval)

Canal crossings to be demolished

Existing Overhead Electricity Cables

Existing Overhead Electricity Cables to be re-routed underground

ZONE A1

ZONE A2

ZONE A3

ZONE A4a

ZONE A4b

ZONE A5a

ZONE A5b

ZONE A6

ZONE A7a

ZONE A7b

ZONE A7c

ZONE B

ZONE C

A5

M6 Junction 12

A449

Croft Lane

Calf Heath Reservoir

Straight Mile

Vicarage Road

Station Road

Station Drive

sheet cut lines

Bat Hopover 1

Bat Hopover 2

Bat Hopover 3

Bat Hopover 4

Bat Hopover 5

0 225 450 900 1,350 m

Legend

Dark canal corridor to be maintained. No increase in lighting as a result of the Proposed Development

Dark ecological corridors where lighting levels are below 1 lux at ground level

No increase in lighting as a result of the Proposed Development

Bat Hopover

ILLUSTRATIVE

chetwoods

Project WEST MIDLANDS INTERCHANGE STAFFORD

Job Number 4049

Client West Midlands Interchange

N

Client

Four Ashes Limited (FAL)

Project Title

West Midlands Interchange (WMI)

Project Number

1620002055

Figure Title

A1.1 Lighting Mitigation

RAMBOLL

Tel: 023 8081 7500 southampton@ramboll.co.uk www.ramboll.co.uk

Date 27/03/2018

Scale 1:9,000 @A3

Legend

- Veteran trees

Hedgerow Regulations Assessment

- 'Important' hedgerow
- Borderline 'Important'

HEGS Hedgrow Evaluation

Class

- Moderately high / High value

N W E S

Client
Four Ashes Limited (FAL)

Project Title
West Midlands Interchange (WMI)

Project Number
1620002055

Figure Title
Figure A1.2 Veteran Trees and Important Hedgerows

RAMBOLL
Tel: 023 8081 7500 southampton@ramboll.co.uk
www.ramboll.co.uk

Date 06/03/2018

Scale 1:8,000 @A3

Legend

Daubenton's roost

N

Client

Four Ashes Limited (FAL)

Project Title

West Midlands Interchange (WMI)

Project Number

1620002055

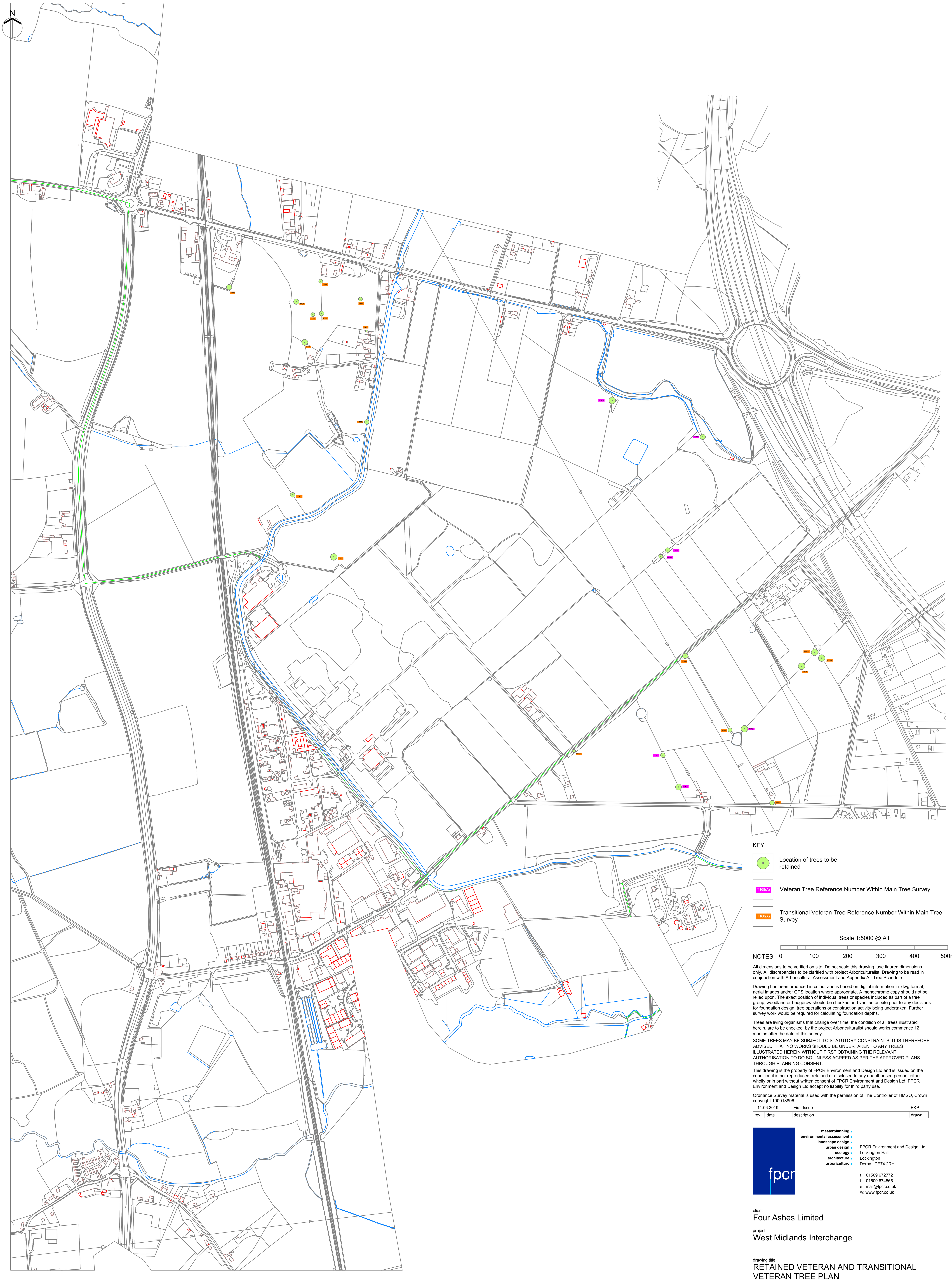
Figure Title

Figure A1.3 Off-site Daubenton's Roosts in Calf Heath Wood

RAMBOLL
Tel: 023 8081 7500 southampton@ramboll.co.uk
www.ramboll.co.uk

Date 06/03/2018

Scale 1:8,000 @A3



KEY

Location of trees to be retained

T168(A) Veteran Tree Reference Number Within Main Tree Survey

T168(A) Transitional Veteran Tree Reference Number Within Main Tree Survey

Scale 1:5000 @ A1

0 100 200 300 400 500m

NOTES

All dimensions to be verified on site. Do not scale this drawing, use figured dimensions only. All discrepancies to be clarified with project Arboriculturalist. Drawing to be read in conjunction with Arboricultural Assessment and Appendix A - Tree Schedule.

Drawing has been produced in colour and is based on digital information in .dwg format, aerial images and/or GPS location where appropriate. A monochrome copy should not be relied upon. The exact position of individual trees or species included as part of a tree group, woodland or hedgerow should be checked and verified on site prior to any decisions for foundation design, tree operations or construction activity being undertaken. Further survey work would be required for calculating foundation depths.

Trees are living organisms that change over time, the condition of all trees illustrated herein, are to be checked by the project Arboriculturalist should works commence 12 months after the date of this survey.

SOME TREES MAY BE SUBJECT TO STATUTORY CONSTRAINTS. IT IS THEREFORE ADVISED THAT NO WORKS SHOULD BE UNDERTAKEN TO ANY TREES ILLUSTRATED HEREIN WITHOUT FIRST OBTAINING THE RELEVANT AUTHORISATION TO DO SO UNLESS AGREED AS PER THE APPROVED PLANS THROUGH PLANNING CONSENT.

rev	date	description	drawn
	11.06.2019	First Issue	EKP

masterplanning
environmental assessment
landscape design
urban design
ecology
architecture
arboriculture

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w: www.fpcr.co.uk

client
Four Ashes Limited

project
West Midlands Interchange

drawing title
RETAINED VETERAN AND TRANSITIONAL VETERAN TREE PLAN

scale 1:5000@ A1 | drawn EKP | date June 2019

drawing number
7121-T-05

rev
-

CAD file: J:\7100\7121\ARB\Plans\Veteran Tree Plan for DAS.dwg

Appendix 2: Hedgerow Translocation Guidance

Guidance
• Coppicing height should be 150 – 200mm. If too tall (450-600mm), the new growth will be top heavy and there will be a weakness in the hedge, making it difficult for future hedge management works. Low coppicing encourages strong shoots to grow from lower down and ultimately a thicker hedge to develop. • Coppicing should be carried out with clean cut and be angled down and away from the centre in order to shed rain and reduce risk of rot. • Use a sharp, bladed bucket – the aim is to cut through the roots and keep the roots / soil as intact as possible. A toothed bucket will break up the soil. • If practicable, remove ground flora in horizontal slices. This will ensure the top layers, with seeds and plants, are kept as intact as possible. This should be replaced on the banks of the "new" hedge to reinstate and help protect the soil from erosion. It will need to be kept watered. • If not practicable to remove slices of vegetation, remove & store the good hedgerow soil in top layers (with seeds & ground flora) separately and use this to fill in around coppice stools in their new location. • Excavate the receptor trench and make sure it is the correct depth for the translocated stools (i.e.: ensure majority of roots are buried but don't bury too deep (above coppice height) as this will reduce the re-growth). If excavated too deep, place soil in trench to raise the height. There is no need for fertiliser. The receptor trench must be dug out, and the section of hedge excavated and placed all on the same day. This is to preserve soil moisture around the root ball and in the trench. • Large tree stools maybe difficult to move and will not regenerate as well as smaller hedge plants but they will provide valuable, deadwood habitat in the hedge. • Place friable soil around the roots and make sure it is well settled in, using a shovel to reduce voids. Avoid using lumps of subsoil. • Good forward planning is essential, especially where additional environmental and engineering issues occur in the same area, e.g.: protected species, archaeology or drainage features. Clear identification of hedges to be translocated and an agreed timescale for the translocation works is essential. • Ensure the re-located hedge is protected (Netlon fence) and signed to avoid damage during construction.

Example Images

Newly translocated hedge

Newly translocated hedge

Removing slab of hedgerow ground flora

Translocated hedge

Hedge 6 months after translocation

Ground flora on translocated hedge

Appendix 3: Great Crested Newt Precautionary Method of Work (PMoW)

The precautionary method of work below will be enacted in suitable habitats for works within 500 m of Ponds 16 and 17 (GCN breeding ponds) during the construction phase. This PMoW would also be enacted for works affecting suitable habitats within 100 m of non-GCN ponds, these works should be undertaken by a suitably experienced ecologist but would not require them to hold a GCN licence.

Terrestrial Habitats

- a licensed GCN ecologist will inspect potential amphibian habitat prior to the commencement of habitat removal works (e.g. scrub, grassland, ruderal habitat and rubble and brash piles) and highlight to the Contractor any potentially sensitive areas that are considered to provide potential great crested newt or other amphibian habitat. A toolbox talk to Site personnel will also be provided;

- any obvious refugia will be searched by hand. Amphibian species (other than GCN) encountered will be placed in secure artificial refuge habitats or within one of the new hibernacula, which will have been placed on the edge of the working area of the Site;

- in the unlikely event that great crested newt are found during works at this, or any other stage, work would stop and advice sought from an ecologist on how to proceed.

- following initial hand search, the removal of habitats which cannot be searched by hand will proceed under ecological supervision in a phased approach. An initial cut will be made under an ecological watching brief to 150 mm above ground / water level by hand-held machinery (e.g. strimmers);

- up to three days later (to allow wildlife to move away from the cut areas) the vegetation will be hand searched by an ecologist before being completely uprooted using a large excavator with a toothed bucket

under the supervision of an ecologist; this will reduce vegetation to below ground level and create bare earth;

- cut vegetation or brash will be removed from the working area in order to avoid creating additional habitat suitable for use by amphibians and other wildlife;

- trenches and other excavations will be backfilled before nightfall, where possible, or a ramp should be left to allow amphibians to easily exit excavations. Where possible stored materials (that might act as temporary resting places) will be raised off the ground, e.g. on pallets;

- material to be removed to be checked by a suitably licensed ecologist for the presence of great crested newt prior to removal. If none are encountered, the material removal works may proceed;

- works are to proceed in a controlled manner with regular inspections of the work area to be made by the ecologist;

- the above strategy will only be carried out between March and October when temperatures are at least 10°C and would avoid the early part of the working day when temperatures are lowest; and

- at all stages, the supervising ecologist will continue to undertake fingertip searches of all potential habitat, for example, root masses, excavated stones/rocks etc. as this becomes accessible. Localised hand working may be required (as directed by the ecologist).

Aquatic Habitats

Ponds that require removal to facilitate the development will be drained down in order to ensure no amphibians remain within the pond immediately prior to infilling. The below procedure will be followed:

- pumps will be fitted with a screen with a fine (<1.5mm) mesh to prevent newts and other amphibians from being drawn into the pump;

- in order to avoid silt blocking the pump, the water will initially be drawn from the pond's surface;

- as the pond becomes dewatered; plants, debris and silt will be hand searched for amphibians;

- newts or other animals found during the course of the draining works will be transferred to a safe area that has already been enhanced for amphibians and is away from the development; and

- works will take place in the autumn, when impacts on aquatic species communities are likely to be at the lowest.

Appendix 4: Bat Mitigation: EPSML – Natural England Letter of No Impediment

Date: 06 November 2017
Our ref: 2017-31591-EPS-AD1
(NATIONALLY SIGNIFICANT INFRASTRUCTURE PROJECT)

Mr Peter Frost
Four Ashes Ltd
peter.frost@kilbridegroup.com

Sent by e-mail only

Worcestershire
County Hall,
Spetchley Road,
Worcester,
WR5 2NP

Tel: 0300 060 3900

Dear Mr Frost

DRAFT MITIGATION LICENCE APPLICATION STATUS: Initial draft application
LEGISLATION: The Conservation of Habitats and Species Regulations 2010 (as amended)
NSIP: West Midlands Interchange, Four Ashes, Wolverhampton, Staffordshire, WV10 7BU
SPECIES: Common pipistrelle, Soprano pipistrelle, Natterer's, Brown long-eared and Daubenton's bats

Thank you for your subsequent draft bat mitigation licence application in association with the above NSIP site, received in this office on 15th September 2017. As stated in our published guidance, once Natural England is content that the draft licence application is of the required standard, we will issue a 'letter of no impediment'. This is designed to provide the Planning Inspectorate and the Secretary of State with confidence that the competent licensing authority sees no impediment to issuing a licence in future, based on information assessed to date in respect of these proposals.

Assessment

Following our assessment of the resubmitted draft application documents, I can now confirm that, on the basis of the information and proposals provided, Natural England sees no impediment to a licence being issued, should the DCO be granted.

However, please note the following issues have been identified within the current draft of the method statement that will need to be addressed before the licence application is formally submitted. Please do ensure that the Method Statement is revised to include these changes prior to formal submission. Our Wildlife Adviser Karen Watson has the following points to raise:

General comments

Overall the level of baseline survey data is considered to be comprehensive and has given a thorough assessment of current bat activity across the site. Given the vast quantity of survey information, the presentation of the data and completion of the Method Statement has been executed in an easy to understand way

Based on the current level of bat activity on site, the proposals are considered to maintain the Favourable Conservation Status (FCS) of the bat assemblage and populations present on site.

Points of clarification required

The following points relate to the more detailed specifics when it comes to formally submitting a licence application

1. Masterplan

The current format of the Method Statement, to include all works under all phases has been a useful way to present the information for the purpose of this assessment. However, when it comes to submitting the formal licence application, this should be on a phase by phase basis (i.e. separate licences for each phase) with each licence application being accompanied by a 'Masterplan' document which provides the detail of the scheme in its entirety. Masterplan documents should summarise habitat losses/gains for each phase and will take into account 'up front' mitigation for future impacts. Hence, the Masterplan document is updated prior to the onset of the next phase of works. Details can be found here (note: this document was written for Great Crested Newts but the general principles are the same)

2. Updating survey information

With the construction period operating over 15 years then, as you have also identified, the bat survey work will need to be updated prior to each phase/licence application

3. Gravelly Way buildings to be improved

It is not clear if these buildings will be occupied as residential properties (in private ownership) in the future or will be owned/managed as part of the green infrastructure. This information should be made clear to ensure that the necessary protection, management and monitoring can be undertaken.

4. Creation of Community parks

Natural England welcomes the creation of the Country Parks which will occur in the early stages of the development. It is essential that this is carried out early enough to enable sufficient time for the vegetation to mature, becoming functional as foraging and commuting habitat, and to eventually provide natural roosting features.

5. Bat boxes

We note the provision of 120 bat boxes which may be disproportionately high compared to the number of bats confirmed roosting within the site. Over use of bat boxes may change the bat species present (English Nature Report Number 658 Woodland management advice for Bechstein's bat and barbastelle bat). This may not be directly applicable to the application site, due to the species assemblage representing the more common species, than those referenced in the paper. However, the provision/quantity of bat boxes should be reconsidered, with resources concentrating on planting schemes and habitat establishment which will provide longer term mitigation/compensation.

6. Work Schedule

When it comes to submitting a formal licence application this will need to be amended to reflect the phase the licence application is for - please refer to the text above regarding a Masterplan.

The Work Schedule also needs to include site maintenance and habitat management (Section E5b).

7. Monitoring

Consideration should be given to undertaking some general bat activity surveys, given the scale of the project, so that comparisons can be made to pre and post development bat

activity/species assemblage using the site. This would be in addition to the monitoring of the roosts created at Gravelly Way and the bat boxes.

8. Future Long Term Management

When submitting the formal application details of the long term and site-wide habitat management, including bat mitigation features should be included. It is assumed this will be via a Section 106 agreement or similar mechanism.

9. Adjacent Bericote Site

It is noted that the two Daubenton's tree roosts are located off site, within the adjacent development site. Please ensure the data you have obtained has been shared with this development to ensure that the tree roosts are given the necessary protection.

10. Heath Farm – Converted Buildings

I assume that the bat features (boxes and loft) already installed in these properties was a general planning requirement? (Seeing as the search for nearby licences didn't include this site).

Next Steps

Should the DCO be granted then the mitigation licence application must be formally submitted to Natural England. At this stage any modifications to the timings of the proposed works, e.g. due to ecological requirements of the species concerned, must be made and agreed with Natural England before a licence is granted. Please note that there will be no charge for the formal licence application determination, should the DCO be granted, or the granting of any licence.

If other minor changes to the application are subsequently necessary, e.g. amendments to the work schedule/s then these should be outlined in a covering letter and must be reflected in the formal submission of the licence application. These changes must be agreed by Natural England before a licence can be granted. If changes are made to proposals or timings which do not enable us to meet reach a 'satisfied' decision, we will issue correspondence outlining why the proposals are not acceptable and what further information is required. These issues will need to be addressed before any licence can be granted.

Full details of Natural England's licensing process with regards to NSIP's can be found at the following link:
http://webarchive.nationalarchives.gov.uk/20140605090108/http:/www.naturalengland.org.uk/Images/wml-g36_tcm6-28566.pdf

As stated in the above guidance note, I should also be grateful if an open dialogue can be maintained with yourselves regarding the progression of the DCO application so that, should the Order be granted, we will be in a position to assess the final submission of the application in a timely fashion and avoid any unnecessary delay in issuing the licence.

I hope the above has been helpful. However, should you have any queries then please do not hesitate to contact me.

Yours sincerely

Karen Watson, Wildlife Adviser
Tel: 02082256831 Mob: 07785 720919
E-mail: karen.watson@naturalengland.org.uk

Annex - Guidance for providing further information or formally submitting the licence application.

Important note: when submitting your formal application please mark all correspondence 'NSIP: FORMAL LICENCE APPLICATION 2017-31591-EPS-AD1 – WEST MIDLANDS INTERCHANGE BATS for the attention of Karen Watson'.

Submitting Documents.

Documents must be sent to the Customer Services Wildlife Licensing (postal and email address at the top of this letter).

Changes to Documents –Reasoned Statement/Method Statement.

Changes must be identified using one or more of the following methods:

- underline new text/strikeout deleted text;
- use different font colour;
- block-coloured text, or all the above.

Method Statement

When submitting a revised Method Statement please send us one copy on CD, or by e-mail if less than 5MB in size, or alternatively three paper copies. The method statement should be submitted in its entirety including all figures, appendices, supporting documents. Sections of this document form part of the licence; please do not send the amended sections in isolation.

Appendix 5: Bat Mitigation in Enhanced Buildings Precautionary Method of Work (PMoW)

A precautionary method of working must be followed to avoid the potential to impact roosting bats, which in future during the operational phase, may utilise the bat enhancements at the Gravelly Way buildings. This will include the following:

- All contractors should be informed of the potential presence of roosting bats in the building before works proceed, and instructed to work in accordance with this Precautionary Method Statement.

- Access to the loft should be restricted. Keys are only to be provided following submission and approval of a method statement and any suitable conditions imposed.

- No internal lighting to be installed within roof void – where access is necessary torches are permissible, works are to be undertaken in line with the approved method statement.

- Potential access points for bats into the loft or roof tiles, including the vents, must not be blocked. These will be clearly signed internally and externally and their locations will be included in the relevant facilities management manual.

- If bats are seen within the buildings, works must cease immediately and a suitably qualified ecologist contacted for advice.

- On no account must bats be handled or moved by contractors or Site staff. A licence is required to handle and disturb bats and to move a bat without a licence would constitute a criminal offence. Some bat species also carry European Bat Lyssavirus (EBLV), a rabies virus. Although the risk is extremely low and can only be transmitted via a bite or scratch from an infected animal, or from its saliva coming into contact with your mucous membranes, handling must be avoided.

Further inspections and likely bat emergence/re-entry surveys will be required before work meeting the following criteria is undertaken:

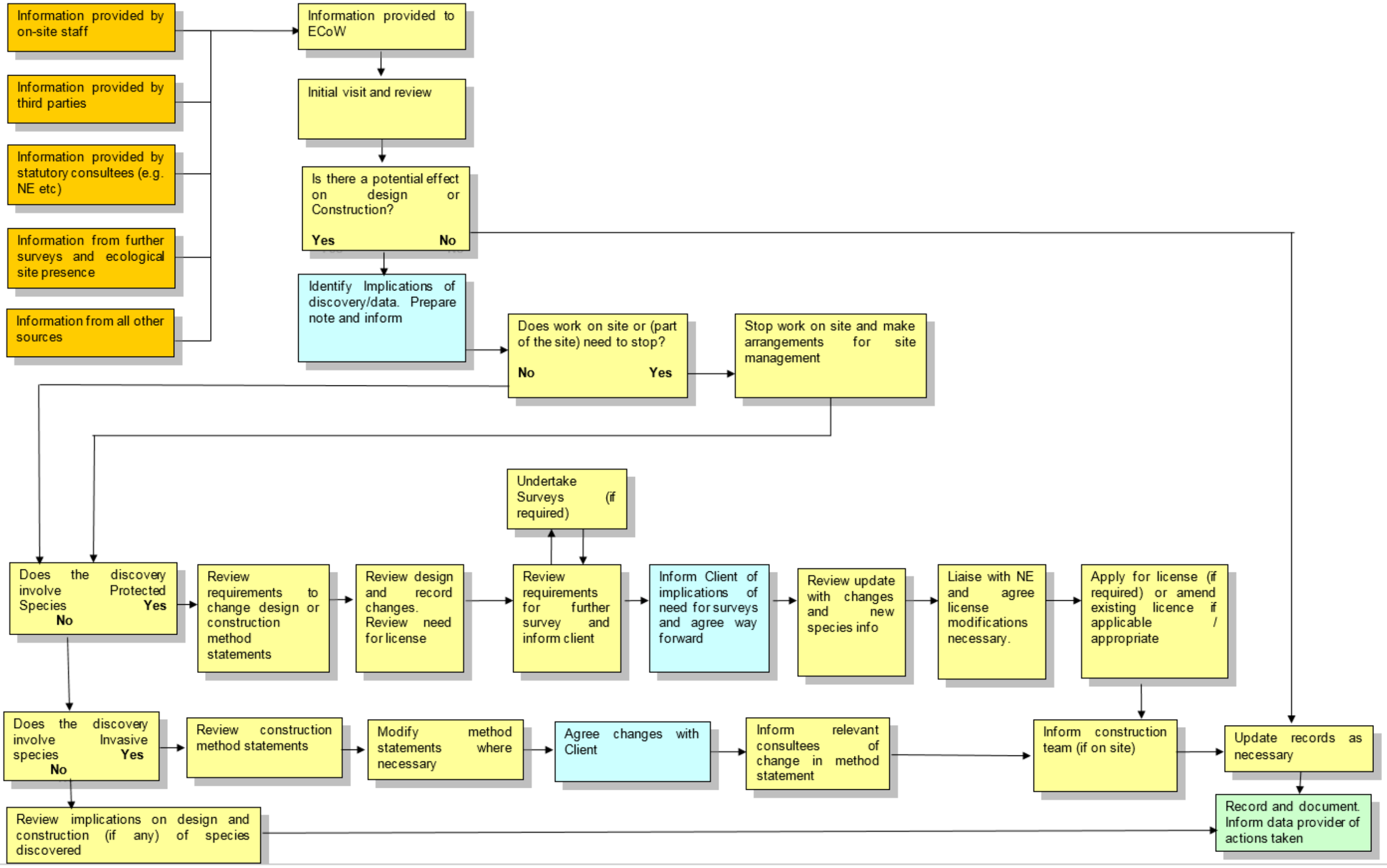
- Significant structural alterations or repairs inside the loft, especially to the internal walls.

- Significant structural alterations or repairs to the external fabric of the building, particularly any works which will disturb, remove or repair areas of membrane with gaps of more than 1cm or affect the vents and louvre entrance locations.

- Any works which require prolonged access into the loft, i.e. more than one day and requiring the internal lighting to be switched on.

- Demolition, extension or major roofing work.

Appendix 6: Unexpected Species Plan


Information provided by on-site staff
Information provided by third parties
Information provided by statutory consultees (e.g. NE etc)
Information from further surveys and ecological site presence
Information from all other sources
Information provided to ECoW
Initial visit and review
Is there a potential effect on design or Construction?
Yes
No
Identify Implications of discovery/data. Prepare note and inform
Does work on site or (part of the site) need to stop?
No
Yes
Stop work on site and make arrangements for site management
Undertake Surveys (if required)
Does the discovery involve Protected Species
Yes
No
Review requirements to change design or construction method statements
Review design and record changes. Review need for license
Review requirements for further survey and inform client
Inform Client of implications of need for surveys and agree way forward
Review update with changes and new species info
Liaise with NE and agree license modifications necessary.
Apply for license (if required) or amend existing licence if applicable / appropriate
Does the discovery involve Invasive species
Yes
No
Review construction method statements
Modify method statements where necessary
Agree changes with Client
Inform relevant consultees of change in method statement
Inform construction team (if on site)
Update records as necessary
Review implications on design and construction (if any) of species discovered
Record and document. Inform data provider of actions taken