Construction Method Statement

Land Parcels A1, A2, A3, A5, A6, A16 and Northern Infrastructure Works

Great Wilsey Park

Haverhill

Suffolk

Redrow Homes

West Suffolk Council

Doc Ref: 8511/CMS/North

Redrow Homes Eastern
2 Aurum Court
Sylvan Way
Southfields Business Park
Laindon Basildon
Essex SS15 6TU

Issue	Initial	Date
1	GC	08/12/18
2	RF	29/07/19
3	RF	18/09/19
4	RF	04/10/19

INTRODUCTION

The Great Wilsey Park development was granted Outline Planning Permission (OPP) by St. Edmundsbury Borough Council on 15th August 2018 under reference DC/15/2151/OUT.

The outline planning permission is for the creation of a residential development of up to 2,500 units (within classes C2/C3): two primary schools; two local centres including retail, community and employment uses (with use classes A1/A2/A3/A4/A5, B1 and D1/D2; open space; landscaping and associated infrastructure.

The development is proposed to be delivered and marketed as two discrete developments as follows:

The northern element known as Phase 1 is proposed to comprise approximately 1,080 residential units, a mixed-use local centre, a two-form primary school and community allotment gardens. The majority of the residential elements will be delivered by Redrow Homes through the construction of land parcels A1, A2, A3, A5, A6, A7, A8 and A16. The remaining Phase 1 land parcels; A4, B1, D1 and E1 will be delivered by a third party.

The southern element of the site known as Phase 2 is proposed to comprise the residual residential units, a single-form primary school, a mixed use local centre and a Country Park. This element would be delivered by a third party.

Condition 12 of the planning approval states the following:

"No development shall take place within any phase or reserved matters application, including any works of demolition, until a Construction Method Statement (CMS) has been submitted to, and approved in writing by, the Local Planning Authority. The approved Statement shall provide for:

I. *The parking of vehicles of site operatives and visitors*
II. *Loading and unloading of plant and materials*
III. *Site set-up including arrangements for the storage of plant and materials used in constructing the development and the provision of temporary offices, plant and machinery.*
IV. *The erection and maintenance of security hoarding including external safety and information signage, interpretation boards, decorative displays and facilities for public viewing where appropriate.*
V. *Wheel washing facilities*
VI. *Measures to control the emission of dust and dirt during construction*
VII. *A scheme for recycling / disposing of waste resulting from demolition and construction works*
VIII. *Hours of construction operations including times for deliveries and the removal of excavated material and waste.*

IX. *Noise method statements and noise levels for each construction activity including piling and excavation operations*
X. *Access and protection measures around the construction site for pedestrians, cyclists and other road users including arrangements for diversions during the construction period and for the provision of associated directional signage relating thereto.*
XI. *Surface water management plan detailing how surface water and storm water will be managed on site during construction*
XII. *Identification of biodiversity, hedge and tree protection zones, use of protective fences, exclusion barriers and warning signs.*
XIII. *Practical measures (both physical measures and sensitive working practices) to avoid or reduce impacts on habitats and species during construction (this may be provided as a set of method statements).*
XIV. *The location and timing of sensitive works to avoid harm to biodiversity features including but not exclusively site clearance.*
XV. *The times during construction when specialist ecologists need to be present on site to oversee works. Responsible persons and lines of communication and the role and responsibilities on site of an ecological clerk of works (ECoW) or similarly competent person.*

Overview

The CMS covers specific legislative requirements; compliance with British Standards and general aspects of the construction works potentially affecting local residents and the environment. This CMS document covers land parcels A1, A2, A3, A5 A6, A16 and the northern infrastructure works only.

The requirement to meet the obligations of the CMS will be placed by Redrow Homes Limited on all contractors through their building contracts. The Principal Contractor for each project, i.e. the contractor with overall responsibility for the construction site and works, will be responsible for ensuring the implementation of the CMS.

In this CMS, the term 'construction' relates to all activities carried out on the site, relating to all intrusive ground investigations, site preparation, excavations, materials delivery, spoil disposal and removal, waste removal and all related engineering and construction activities.

In this CMS the term 'Contractor' will be either Redrow Homes or a nominated contractor / sub-contractor working on their behalf.

The contractor(s) appointed for this scheme shall hold and maintain, for the duration for a project, a CMS certified to the international standard ISO14001. It has been agreed that the system would be adopted for implementation during the construction period.

The CMS would fall within the scope of the Contractor's externally certified international environmental management system, and as such would be subject to regular independent audits by the Contractor's certification body. A draft of the CMS would be circulated to all

Statutory Authorities prior to works commencing for information and comments. All works on site would be undertaken in compliance with the CMS.

The CMS will remain in place for the duration of the construction project and the protocol set out in this document will be observed during all construction operations, unless otherwise agreed with West Suffolk Council.

The CMS forms part of the overall project management of the scheme's construction and the measures set out will be integrated with relevant environmental and health and safety management processes and legislation.

Structure of this Document

This CMS is set out in the following sections:

- Section 1 provides background information relating to the CMS and its enforcement;

- Section 2 sets out site arrangements such as:

    - Site access
    - Site Management team contact details
    - Hours of working
    - Welfare facilities
        Car parking provision /temporary hardstanding
    - Site security
    - Traffic Management
    - Community liaison

- Section 3 sets out the minimum standards of construction practice and the mitigation measures for the following:

    - dust and air quality
    - traffic and accessibility;
    - wheel washing facilities
    - noise;
    - ground conditions / contamination
    - groundwater / surface water management;
    - landscape and visual;
    - ecology / biodiversity

- Section 4 provides details of how the demolition /site clearance will be undertaken

- Section 5 sets out how the contractors employed on site will be registered

- Section 6 provides details on the relevant legislation and guidance applicable at the time of writing.

1.0 Commitment to Standards of Implementation

Redrow Homes Ltd are committed to best practice standards of implementation to ensure safe and secure implementation of the project with the minimum possible environmental harm. These commitments are set out generally in the sections below. Project-specific environmental commitments have been made public in the Sustainability Statements accompanying the planning.

We will closely monitor the environmental and health and safety performance of all sub-contractors subject to compliance with the CMS through all normal electronic and written media, telephone conversation and at least weekly visits.

We will seek remedy within the law in relation to any breach of the requirements of this document by any sub-contractor.

1.1 Sustainable Development Policies

Our aim is to deliver a long term sustainable development in accordance with the respective companies' mission statement. A suite of policies have been developed with the guidance and assistance of stakeholders. Details of the following policies are found within this section:

- Environmental Policy
- Climate Change Statement

1.2 Environmental Policy

Redrow is one of the UK's most successful house builders. As well as maintaining and delivering the highest quality products to customers, we aim to be a responsible business with a focus on positive engagement with other key stakeholders.

This policy focuses on the environmental aspect of responsible business and is the cornerstone of our environmental management system, setting out our broad aims and objectives, complemented by our Climate Change Statement.

1.3 Our over-arching principles are to:

- Limit pollution from our activities
- Comply with current environmental legislation and be proactive in anticipating forthcoming requirements.
- Focus on improving resource efficiency.
- Continually monitor and improve our environmental performance.
- Place environmental issues at the core of our business culture through effective communication of environmental issues, both internally and externally.

More specifically we will:

- Reduce the amount of waste we generate, both through product design and on-site management.
- Reduce energy and water use from our activities.
- Provide a continuous programme of communication, information and training for staff, to ensure that they are aware of their responsibilities and their successes.
- Work with sub-contractors and suppliers to ensure they comply with our policies and help them reduce their impact on the environment.
- Continue our strategy of developing land opportunities involving regeneration of brown field sites,
- Implement procedures to protect and enhance biodiversity.
- Reduce the environmental impact of our homes throughout their design construction, use and final disposal.

We will monitor our progress through the setting and reviewing of objectives and targets and publish an annual environmental performance review.

1.4 Climate Change Statement

Redrow Ltd recognise that there is convincing evidence to support the reality of climate change, and that one of the primary influencing factors highlighted by science is the build-up of “greenhouse gases”, which arise from human activities across the globe.

We understand that we have a part to play in ensuring that our businesses and our products have minimum impact on the environment and climate and that we must work towards reducing reliance on fossil fuels, reducing energy demands, carbon emissions and maximising our efficient use of natural resources.

We are meeting these challenges on a number of fronts, from the perspective of our business activity and our products. In both these areas we are setting performance targets and through the efforts of Redrows dedicated Research and Sustainability Team we are ensuring that all our staff are aware of our aims and can play their own part in reducing the impact of our business on the environment.

Development of our products is a continuous process, with full involvement of the Executive Board and the Chairman.

As the Government’s energy strategy has unfolded, we have undertaken significant and invaluable development work in reducing energy demands in the home, which has informed industry and contributed to the shaping of current and future regulation and standards. We continue to build upon the foundations of this work in all aspects of sustainability, developing solutions to enable our core product to meet the demanding performance levels which move us towards the carbon emission targets of 2019 and through our committed and proactive engagement with Government, related industry task groups, our colleagues in

the industry and through response to consultation. At the same time we strive to deliver the highest quality homes consistent with the demands of our customers.

We understand the value of engagement with our supply chain to ensure that we minimise our environmental impact and expect our suppliers and sub-contractors to demonstrate their commitment to the environment through their own codes of practice. These expectations cover issues such as sourcing of materials, transportation and delivery, packaging, health and safety, workforce competency, training and welfare as well as payment and pricing terms. It is incumbent upon supply chain partners that they are compliant with Redrow's Customer Service and Supplier Service Agreements.

Where possible, we specify products and materials which generate the least environmental impact, including timber from properly managed, certified plantations, key materials from our supply partners closest to specific sites and non-toxic paints.

We have an Environmental Policy underpinned by an Environmental Management System based around the themes of resource efficiency, preventing pollution and ensuring legal compliance which incorporates a robust internal auditing system for all sites, where these issues are examined on a regular and continuous basis and the performance of each of our regional Divisions is reported monthly to the Main Board.

To assist us in targeting improvements in our performance we have committed to set benchmarks in the following key areas which complement our Environmental Policy:-

- Our carbon footprint
- Water consumption in our offices and on our sites
- Waste management and recycling
- The products and materials we specify

1.5 Purpose of the CMS

The purpose of this statement is to define the minimum standards of construction practice that are required of the appointed Contractor in so far as they affect the environment, amenity, safety and wellbeing of local residents, the general public and employees of local businesses. It aims to assure local residents and affected parties that potential impacts to the environment will be mitigated in accordance with recognised best practice, guidance and legislative standards.

The CMS will be adopted by the Contractor through discussions with West Suffolk Council and other statutory bodies in particular the Environment Agency. It will apply throughout the construction period.

1.6 Compliance with Relevant Standards, Legislation and Guidance

There are numerous Codes, Standards and Acts of Parliament which cover environmental and related matters and these are referred to as applicable in this CMS. Notwithstanding those references, compliance with this CMS will not absolve the Contractor or its sub-

contractors from compliance with all legislative requirements applicable at the time of construction activities. Wherever this Statement makes reference to Legislation, Standards or Codes it shall be the Contractor's responsibility to ensure that the current versions are used at all times. Examples of key relevant legislation include:

- The Control of Pollution Act 1974;
- Health and Safety at Work Act 1974;
- Environmental Protection Act 1990;
- The Construction (Design and Management) Regulations 2015;
- Management of Health and Safety at Work Regulations 1999;
- Control of Substances Hazardous to Health Regulations 1999.

1.7 Responsibilities and Incident Reporting Procedures

The appointed Contractor will nominate a senior member of staff to supervise the activities on the construction site at all times when the site is operational. The appointed person will be responsible for ensuring the CMS is adhered to and will hold meetings with Redrow, West Suffolk Council and statutory bodies as necessary.

Regular audits would be completed to verify that the project is compliant with the established CMS, contractual requirements and legislation. The project would also fall within the Contractor's ISO14001 Registration and as such would receive regular independent audits by the certification body.

This person must also inform the management teams of any incidents of non-compliance with the CMS as soon as reasonably practicable. Redrow have ultimate responsibility in the event of non-compliance by a Contractor in respect of constructing the development but may apply by contract disclaimers that it would be for a court of law to determine.

The designated person from the Contractor will be the first point of contact for members of the public in the event that there are complaints or disturbance. Contact details should be clearly displayed on hoardings around the site. All complaints must be logged and appropriate action taken within two days. A written response must be provided within 5 days.

Site Arrangements

2.0 Site Access

The overall development site is located to the north east of Haverhill with approved access locations from the A143 (Haverhill Road) to the north and Chalkstone Way to the south. Both accesses are situated within the Phase 1 development area and are to be constructed by Redrow Homes as primary works.

The development site is currently used for agriculture and contains significant areas of mature woodland and a substantial more recently planted tree belt. The site predominantly falls from north and south into a central valley in which an Ordinary Watercourse flows from the north western boundary to the south eastern boundary. The overall site is split into a number of individual fields which are divided by small watercourses and hedgerows / mature trees.

A temporary construction access is proposed from Haverhill Road to facilitate the construction of the main site roundabout access. This temporary access is situated immediately to the east of the proposed site access through the vendors retained land. The consented roundabout site access will be utilised as a joint construction, sales and residents access.

2.1 Construction Overview / Traffic Management

The residential development will be constructed over a number of years. Once the main site access has been established off Haverhill Road it is the intention to construct the primary infrastructure roads from north to south. In addition, the access could also provide an initial reception area for construction traffic destined for a separate construction access to the south of the site, which is the subject of a separate planning application.

A Traffic Management Plan will be developed during the course of construction which will set out the development's pedestrian and plant segregation and illustrate other key information to all personnel visiting and working on the development. The traffic management plan will be a live document made available at key location within the site to enable to enable all site personnel and visitors to view on a daily basis.

Pedestrian and cyclist safety around the development will be paramount and as such signage will be situated at entrance and exit points to the site to ensure any traffic entering or leaving the site are aware of potential pedestrians and cyclist.

The contractor shall ensure that a traffic marshal or banksman is utilised when necessary.

2.2 Site Management team contact details

At the time of writing this CMS the Site Manager for the development has yet to be appointed. Until such appointment is made any representations should be directed to the following personnel:

Gary Cheek (Construction Director –Redrow Homes) – 07990 442681

2.3 Hours of Working

The working hours on site will be as follows:

- Monday to Friday 08:00 to 18:00 hours
- Saturdays 08:00 to 13:00 hours.

No works are to be undertaken on Sundays or bank holidays unless in exceptional circumstances, for example for highway or health & safety reasons. These works where practicable will be agreed prior to being carried out with West Suffolk Council.

Where piling works are required these operations will only take place between the hours of 09:00 to 18:00 on weekdays.

2.4 Welfare facilities

Portable cabins providing temporary offices, rest rooms, lockers, showers and toilets will be provided as part of the compound facilities. Also included will be secure storage containers for materials. Plant and machinery will be locked behind secured gates within the compound following the completion of each day.

A single compound is proposed for the northern development parcels. The location and size of the compound is shown on the Northern Compound layout drawing provided at Appendix A.

The compound will be connected to the on-site FW drainage system once this has been established. In the interim a tank will be installed that will hold the effluent and be emptied as and when necessary.

The Contractor shall ensure that the risk of infestation by pests or vermin is minimised by adequate arrangements for the disposal of food waste or other material attractive to pests. If infestation occurs the Contractor shall take such action to deal with it as required by the local authorities.

Hardstanding for contractors car parking will be provided adjacent to the compound facility. As a minimum the hardstanding will consist of compacted stone over a layer of geotextile to provide a clean and firm base suitable for cabins and heavy traffic.

On completion of the project, the Contractor shall clear and clean all working areas and accesses as work proceeds and when no longer required for the works.

All surplus soil and materials, plant, sheds, offices and temporary fencing shall be removed when they are no longer required on site.

2.5 Site Housekeeping

A 'good housekeeping' policy shall be applied on the site at all times. This shall include, but not necessarily be limited to, the following requirements:

- All working areas to be kept in a clean and tidy condition.
- All working areas shall be no-smoking.
- Open fires shall be prohibited at all times.
- All necessary measures shall be taken to minimise the risk of fire and the Contractor shall comply with the requirements of the local fire authority.
- Audio equipment (radios), other than for communication purposed shall not be operated on site.
- Waste is to be stored in designated and enclosed containers and removed at frequent intervals.
- Toilet facilities will be provided for all site staff.
- Food waste will be removed frequently.
- Working areas will be inspected frequently and Redrow Homes will carry out site inspections at any time without prior notice.
- Boundaries will be inspected regularly and appropriate warning signs erected indicating emergency and out of hours contracts

2.6 Site Security - Fencing and Hoardings

The Contractor shall ensure that all working areas are sufficiently and adequately fenced off from members of the public and to prevent animals from straying on to the working area. Temporary hoardings will be erected as shown on the Build Strategy Plan and will consisting of either:

- a wire mesh fence, where appropriate for minimum security needs; or

- a 2.4 m minimum height, plywood faced, timber framed boundary hoarding or other hoarding providing equivalent security and noise attenuation, in the vicinity of noise sensitive neighbours.

All hoardings shall be maintained in a neat and tidy condition and will be regularly inspected for damage and security integrity. Any damage will be repaired without delay. All fencing and hoarding shall be removed as soon as reasonably practicable after completion of works.

Trees as indicated on the Tree Protection Plan will be fenced off in accordance to BS standards BS5837

There are a number of Public Rights of Way (PROW) that cross the development and will remain in operation throughout the construction process. Adequate protection will be provided along the route of the PROW with designated crossing points as required to ensure that members of the public are kept away from the construction area (See Appendix D).

2.7 Lighting and Security

Construction equipment and lighting shall be sited so as to minimise visual intrusion and light spillage at nearby residential properties, in so far as is consistent with site safety.

Site lighting shall be positioned and directed to minimise nuisance to residents and disturbance to wildlife.

The Contractor shall comply with the Institute of Lighting Engineers document Guidance Notes on Reduction of Light Pollution (2000) in so far as is reasonably practicable and applicable to the construction works.

Adequate security shall be exercised by the Contractor to prevent unauthorised entry to or exit from the site. Site gates shall be closed and locked when there is no site activity and site security measures shall be implemented. Lighting for security purposes will be sited so as to minimise visual intrusion and light spillage.

2.8 Site Safety

The Contractor shall prepare and maintain a set of Emergency Procedures and Contacts which should be prominently displayed on the site at all times. Such procedures must be followed in the event of a site emergency.

They shall contain emergency phone numbers and the method of notifying emergency services. Copies of the Procedures will be issued to West Suffolk Council, the Fire Brigade, the Police, the Ambulance Service and the relevant statutory bodies.

Special precautions in relation to contaminated material (including asbestos) shall be displayed on a Safety Information Sheet to be prominently displayed in rest/mess rooms and wash rooms covering hygiene, work practices, clothing requirements etc. Further information concerning disposal of contaminated materials is described in Section 3.5.

All site work will be carried out under the provisions of the Health and Safety at Work Act 1974. Health and Safety briefings will be made to all staff before they enter the development, through signage and all workers and visitors will be specific site inducted.

2.9 Community liaison

As noted within section 1.7 the Site Manager will be the first point of contact for members of the public in the event that there are complaints or disturbance. All complaints will be logged and appropriate action taken within two days. A written response will be provided within 5 days where possible.

3.0 MANAGING THE ENVIRONMENTAL IMPACT OF CONSTRUCTION

3.1 Introduction

This section sets out the mitigation measures that are proposed in relation to the development in order to minimise and to manage the potential environmental impact of construction.

3.2 Dust and Air Quality

Measures to reduce the levels of dust and prevent the deterioration of local air quality are included in a CMS as best practice and ensure that levels do not become significant.

Dust

The Contractor shall take all necessary measures to avoid creating a dust nuisance during construction. Best Practicable Means will be used to minimise the creation and emission of dust, the following measures take into account guidance prepared by the Buildings Research Establishment (BRE) on the Control of Dust from Construction and Demolition Activities. These include:

- water suppression or dust extraction technology to be fitted to drilling and grinding equipment;
- where appropriate, drilling and excavation surfaces will be wetted;
- during dry conditions, debris piles will be kept watered as necessary so that no dust nuisance may be caused;
- The orientation, shape and location of any stockpiles are to be controlled to minimise risk of dust rising through wind action.
- suitable measures will be taken during the construction period to prevent the deposition of mud and dirt on the public roads and to prevent the propagation of dust from the site;
- sheeting of lorries during transportation of construction materials and spoil export; and
- all containers will be totally enclosed or covered by tarpaulins to prevent escape of dust or waste materials during loading and transfer from site.
- Maximum speed limit of 6 mph is to be enforced over all unmade surfaces

Local Air Quality

The Contractor shall take precautions to prevent the emission of smoke or fumes from construction vehicles, site plant and stored materials including volatile substances. Vehicles and plant shall be well maintained and measures shall be taken to ensure that engines and motors are not left running for long periods when not in use.

The Contractor shall comply with the provisions of the Environment Act 1995, the Clean Air Act 1993 and the Health and Safety at Work Etc. Act 1974.

The Contractor shall comply with the Control of Substances Hazardous to Health Regulations (COSHH) 1999 and Health and Safety Executive (HSE) Guidance Notes EH 40/90 and EH 40/97 on Occupational Exposure Limits.

The Contractor shall take precautions to prevent the occurrence of smoke emissions or fumes from site plant or stored fuel oils. Plant shall be well maintained and measures shall be taken to ensure that it is not left running for long periods when not in use. There will be no burning of waste on site.

3.3 Traffic and Accessibility

The predicted traffic generation associated with the construction works is not expected to result in significant impacts on existing traffic on the surrounding road network. To ensure this, a number of mitigation measures will be implemented to minimise the effects of construction traffic movements, particularly HGVs, as far as possible. These include the following:

- Material deliveries and the removal of excavated materials / waste will be restricted, where possible, to non-peak traffic periods and will be scheduled to avoid the school opening / closing times.

- All loading and unloading of vehicles will take place under supervision within the site.

- There will be sufficient space for HGVs to turn around within the site and exit in forward gear. In the unlikely event that it is necessary for a vehicle to reverse out of the site, this manoeuvre will be overseen by a qualified marshal working from a position outside the vehicle.

- Scheduled construction shift times will be outside of normal weekday peak traffic periods where possible to minimise potential traffic impacts on the surrounding road network;

- Where possible, heavy and special loads, will be delivered to the site during off peak hours subject to agreement with the Council and providing this does not give rise to additional levels of construction noise;

- Materials and equipment will be stored securely on site to minimise unnecessary traffic movements;

- The Contractor will ensure that delivery and construction vehicles do not park on, or obstruct the highway;

- The contractors will have sufficient parking on site to accommodate the expected

number of workers and visitors will utilise the dedicated sales car parking provision. Contractors will be encouraged to introduce car sharing schemes. The CTMP document confirms that the maximum workforce of 110 personnel is expected on site (both northern and southern parcels) at any one time and the northern compound provides for 83 car parking spaces.

- The contractors will be encouraged to use sustainable modes of transport and the compound will contain secure cycle storage, and shower facilities as well as up to date information on public transport services.

- Vehicle access will be controlled using a gateman / Banksman who will be responsible for the vehicle movement in and around the gate area when deemed necessary.

Specific measures relating to mud on roads will be implemented across the site, these include:

- The provision of easily cleaned hardstanding's for vehicles entering, parking and leaving the site;

- The provision of wheel washing facilities; consisting of a manned Jetwash within an designated wheel wash area, with all run off captured within an onsite attenuation basin via an interceptor.

- The Gateman will sweep the road immediately of any loose debris,

- The routine use of a mechanical road sweeper to clean the site of hardstanding and any mud or debris deposited by the site vehicles on roads or footpaths in the vicinity of the site.

- The adequate sheeting of each lorry load of spoil removed, to prevent spoil falling off during its journey.

The local residents / public will be kept informed of any site activities that may affect them (i.e.) Footpath Closures and temporary diversions with leaflet drops. The Hoarding will also display a contact telephone number in the case of Emergency or general information requirements.

3.4 Noise and Vibration

Unacceptable impacts arising from construction noise are not expected on the site. In general, 'Best Practicable Means' as defined in Section 72 of the Control of Pollution Act, 1974 will be employed to minimise noise and vibration, furthermore, the guidance provided in British Standard 5228-1:2009 - Code of practice for noise & vibration control on construction & open sites-Part 1: Noise will be followed. Such measures control the noise at source by using effective acoustic enclosures, screens and barriers and ensuring regular maintenance of vehicles. The following measures will be implemented:

- Agreed working hours will be 08:00 to 18:00 hours Monday to Friday and 08:00 to 13:00 hours on Saturdays, with no works taking place on Sundays or bank holidays.

- The Contractor will use only the most environmentally acceptable and quietly operating plant and equipment compatible with the safe and efficient execution of the works.

- Noise emitted by plant items should not exceed the limits quoted in either the relevant EC Directive, UK Statutory Instrument or BS 5228-1:2009.

- Items of plant operating on site will be shut down in intervening periods of use.

- Compressors brought onto the site will be silenced or sound reduced models fitted with acoustic enclosures.

- All pneumatic tools will be fitted with silencers of mufflers

- The excavation and demolition of the onsite buildings / site clearance will, wherever possible be undertaken without pneumatic breakers; hydraulic attachments will be used in preference to breakers. Where the use of impact hammers is necessary, their attachment to larger and heavier excavators can often reduce the level of vibration.

- Care will be taken during the erection of scaffolding to avoid impacts from banging steel.

- Deliveries will be programmed to arrive during working hours only. Care will be taken when unloading vehicles and construction vehicles will be routed on major roads only.

In addition, liaison with the Environmental Health Officer at West Suffolk Council will be maintained throughout the construction period.

3.5 Ground Conditions

General

All materials used in the construction must be of clean, inert composition. No material that may be a source of significant potential contamination must be introduced into the site.

If during development, in areas where contaminated land may be present, the ground must be engineered in such a way as to minimise risk to potential receptors (humans, animals and plants). This may require the removal of contaminated material to a location where it can be safely treated, in situ treatment/remediation or encapsulation in accordance with a remediation strategy.

Contaminated Land

A Geo-Environmental Desk Study and Site Investigation Report has been produced which researched the history and reviewed data for the site and the surrounding area in order to identify factors that may impact on any proposed site development for residential uses.

The conceptual site model and preliminary risk assessment identified herbicides / pesticides (including DDT and dieldrin), localised spillages of fuel from machinery and historically imported / fly tipped material as potential contamination sources. However, the chemical analysis undertaken as part of the strategic phase 2 ground investigation did not identify any concentrations of contaminants above the relevant critical levels. The report therefore indicates that the contamination linkages to vulnerable receptors to be low to negligible.

In the unlikely event of ground conditions being encountered during the excavation phase of construction that are suspected to contain localised contaminated sources then work in the particular area should cease immediately. The situation should then be reported to the geotechnical consultant who will arrange for the material to be sampled and analysed to confirm the most appropriate course of action.

The risk to construction works can be mitigated through adequate personal protective equipment and compliance to the various policy and legislation.

The contractor will comply with the provisions of the Environmental Protection Act 1990, and the Special Waste Regulations 1996 (as amended). The removal and disposal of contaminated materials will be conducted under a strict consignment note system. Disposal sites will be agreed with the Environment Agency.

The Environmental Protection Act 1990 (s.34) imposes a Duty of Care on any person who produces, imports, carries, keeps, treats or disposes of controlled waste. The Contractor will comply with this duty as set out in the Waste Management; the Duty of Care - Code of Practice March 1996.

The contractor will comply with the Control of Substances Hazardous to Health Regulations (COSHH) 1999 and HSE Guidance Note EH 40/99, Occupational Exposure Limits 1999, to ensure that contaminated excavated materials are handled and disposed of safely and properly.

In undertaking work on contaminated sites, useful information concerning the safe operation and redevelopment of contaminated sites may be found in HS(G)66 Protection of Workers and the General Public during the Development of Contaminated Land 1991. Precautions include:

- Protective clothing including overalls, hand protection, head protection and safety boots to be worn at all times;

- If it is necessary to remove contaminated material from site, then lorries or skips

used for the removal of the material should be fully covered.

- Detailed records of disposal should be discussed and agreed with the Environment Agency. Only licenced skip providers will be utilised on this project and all waste will be disposed at licenced waste disposal sites.

3.6 Groundwater

Construction methods employed within the scheme will be designed to prevent significant short-term and residual impact to both the groundmass and groundwater conditions on the site. Where sub-surface structures are constructed, such as piles, the techniques employed should be developed in accordance with the guidance provided in National Groundwater and Contaminated Land Centre report NC/99/73, Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution and Prevention. The results of the site investigation will be taken into account to ensure that the most appropriate method of construction is designed.

3.7 Surface Water Management

Prior to the commencement of works the Principal Contractor will provide a method statement detailing the control measures to be implemented to manage the groundwater / surface water run-off during the construction period to prevent the siltation of the drainage systems (direct and indirect discharge). An Environmental plan has been prepared (See Appendix C) which details where and how mitigation measures will be employed on the site.

The roads and drainage on the development are to be established as primary works to retain surface water overland flow in exceedance events.

In addition the following measures are proposed in accordance with Environment Agency Pollution Prevention Guidelines (PPGs). Pollution Prevention Guidance comprises a set of guidance notes aimed at providing developers and contractors with a set of best practice methods to minimise impacts on the water environment, specifically PPG5: Works in, Near or Liable to Affect Watercourses.

- The Environment Agency will be notified in advance of all works to allow pollution prevention and emergency procedures to be agreed.

- Exposed ground and stockpiles will be minimised to reduce silty runoff - if necessary, geotextiles will be used to shield spoil mounds.

- Concrete, cement and silt laden run off will be prevented from entering the watercourses and stockpiles of materials will be kept away from river and canal side locations.

- Spill kits etc. will be available in the unlikely event of a spill, and site personnel will be trained in their use.

- Potentially contaminative liquids such as oils and lubricants will be stored in bunded and lockable oil storage tanks, with hoses and gauges kept within the bund; the capacity of the bund will be equal to 110% of the storage tank volume.

- Adequate provision for the collection, treatment and disposal of sewage from site offices and accommodation should be provided.

- Earth moving operations that have the potential to give rise to contaminated drainage will be undertaken in compliance with British Standard Code of Practice for Earthworks, BS 6031, 1987.

3.8 Landscape and Visual

To reduce landscape and visual impacts throughout the construction phase, the following mitigation measures will be implemented:

- materials and machinery will be stored tidily during the works - tall machinery will not be left in place for longer than required for construction purposes, in order to minimise its impact in views;

- lighting of compounds and works sites will be restricted to agreed working hours and that which is necessary for security;

- roads providing access to site compounds and works areas will be maintained free of dust and mud, as will the access road to the south of the site;

- contractors' compounds will be located away from sensitive receptors eg nearby residential properties, watercourses';

- on completion of construction works, all remaining construction materials will be removed from the site; and

3.9 Ecology and Nature Conservation

To ensure potential impacts on terrestrial ecology and biodiversity are reduced to a practical minimum protection and mitigation will be undertaken strictly in accordance with the recommendations contained in the Biodiversity Monitoring Strategy and Ecological Implementation Strategy Mitigation prepared by Ecology Solutions and submitted to the LPA relative to the approval of conditions 42 and 45. This document can be found at Appendix B.

3.10 Site Waste Management Plan

Redrow Homes
For the residential development Redrow will establish a dedicated Waste Management Coordinator (the Site Manager) who will be tasked with overseeing the removal of all waste from site. A recycling regime for materials and packaging will be put in place to achieve a minimum of 80% recovery. The waste management coordinator will compile a report quantifying the materials recovered.
It is planned that site waste will be reduced through segregation and recycling.

Redrow intends to segregate the following materials in the material recovery programme;

- Wood
- Brick and Rubble
- Metal
- Plasterboard
- Mixed Waste
- Hazardous Waste

Dedicated skips will be provided for the collection of the listed materials about the site.

All contractors working on the site will be supplied with refuse bins by waste management coordinator. Once the bins are filled the waste management team will consolidate the waste and remove it from the site.

The consolidated waste will be collected from site by licensed waste carrier. Waste materials fall into three categories for management, these are;

- Reuse
- Recycle
- Landfill (disposal)

Reused – If surplus materials can be used in the permanent works they are classified as materials, which have been reused. If they are surplus to requirements and need to be removed from the site and they can be removed and used in their present form, they can be removed from the site for subsequent reuse. For example the material from any hardstanding's could be reused as crushed material for roads onsite.

Recycling – if a surplus material cannot be reused in its present form but could be used in a different form, it is sent for recycling. An example is recycled timber to make chipboard.

Landfill – If either of the above cannot be satisfied then the only option left is to send the waste materials to landfill. Landfill is only a last resort.

Waste certificates will be collated for all waste deposited at Environmentally Controlled Waste Reception Centres. Copies of all waste transfer notes will be kept for two years.

Records will be gathered about the waste gathered on site including volume, type and cost - including how it was packaged, when it was transferred, where it went to and who it was transferred to. These are all requirements of the duty of care.

Any hazardous waste that is removed from the site will be monitored and tracked to record compliance with the site waste management plan.

Site Security: Redrow Homes Limited will take reasonable steps to ensure site security measures are in place to prevent the illegal disposal of waste.

Monitoring: Skips need to be monitored continuously to ensure that contamination of segregated waste does not occur. During this monitoring we will regularly update on how the waste management system is working.
A record will be kept to continually review the type and amount of surplus material being produced and where possible/practical alter the site set up to maximise on reuse or recycling to maintain the use of disposal as a last resort.
The plan shall be communicated to the whole project team prior to commencement and at every revision stage. Business wide updates including the KPI'S (Key Performance Indicator's) will be communicated and discussed at Management meetings.

4.0 DEMOLITION / SITE CLEARANCE AND WASTE PROTOCOL

There are no existing structures at the site, so demolition works are not required. The site will be cleared to facilitate the proposed scheme development shown on approved drawings.

As set out in Redrow's environmental policy Redrow will aim to reduce the amount of waste we generate, both through product design and on-site management. Any waste that is produced through the construction of units will be carefully segregated and recycled wherever possible and where it cannot be recycled it will be disposed of in the correct manner.

We will set up a waste management plan for this development which will monitor and record all waste movement.

5.0 CONSIDERATE CONSTRUCTORS SCHEME

The site will be registered under the Considerate Constructor's Scheme; it is Redrow's aim to exceed the standard level of considerate constructors. Details of the scheme registration number and site manager contact details will be displayed at the site entrance.

The Site Code of Considerate Practice forms the basis of all the Scheme's requirements. Which include;

Considerate: All work is to be carried out with positive consideration to the needs of traders and businesses, site personnel and visitors, and the general public. Special attention is to be given to the needs of those with sight, hearing and mobility difficulties.

Environment: Be aware of the environmental impact of your site and minimise as far as possible the effects of noise, light and air pollution. Efforts should be made to select and use local resources wherever possible. Attention should be paid to waste management. Reduce, reuse and recycle materials where possible.

Cleanliness: The working site is to be kept clean and in good order at all times. Site facilities, offices, toilets and drying rooms should always be maintained to a good standard. Surplus materials and rubbish should not be allowed to accumulate on the site or spill over into the surroundings. Dirt and dust from construction operations should be kept to a minimum.

Good Neighbour: General information regarding the Scheme should be provided for all neighbours affected by the work. Full and regular communication with neighbours, including adjacent residents, traders and businesses, regarding programming and site activities should be maintained from pre-start to completion.

Respectful: Respectable and safe standards of dress should be maintained at all times. Lewd or derogatory behaviour and language should not be tolerated under threat of severe disciplinary action. Pride in the management and appearance of the site and the surrounding environment is to be shown at all times. Operatives should be instructed in dealing with the general public.

Safe: Construction operations and site vehicle movements are to be carried out with care and consideration for the safety of site personnel, visitors and the general public. No building activity should be a security risk to others.

Responsible: Ensure that everyone associated with the site understands, implements and complies with this Code.

Accountable: The Considerate Constructors Scheme poster is to be displayed where clearly visible to the general public. A site's contact details should be obvious to anyone affected by its activities.

6.0 RELEVANT LEGISLATION, STANDARDS AND GUIDANCE

Legislation

- The Control of Pollution Act 1974
- Health and Safety at Work Act 1974
- Wildlife and Countryside Act 1981
- Environmental Protection Act 1990
- Water Resources Act 1991
- Clean Air Act 1993
- The Construction (Design and Management) Regulations 2007
- Special Waste Regulations 1996 (as amended)
- Management of Health and Safety at Work Regulations 1999
- Control of Substances Hazardous to Health (COSHH) Regulations 1999
- Pollution Prevention and Control (England and Wales) Regulations 2000
- Countryside and Rights and Way Act 2001
- Traffic Regulations and General Direction 2002 (as amended)

Standards

- BS 5228-1:2009 - Code of practice for noise & vibration control on construction & open sites-Part 1: Noise
- BS 5837 – Guide for Trees in Relation to Construction
- BS 6031 – Code of Practice for Earthworks
- BS 6472 – Guide to Evaluation of Human Exposure to Vibration in Buildings
- DoE Advisory Leaflet 72 – Construction Noise Limits Applicable at Residential Locations During daytime hours.

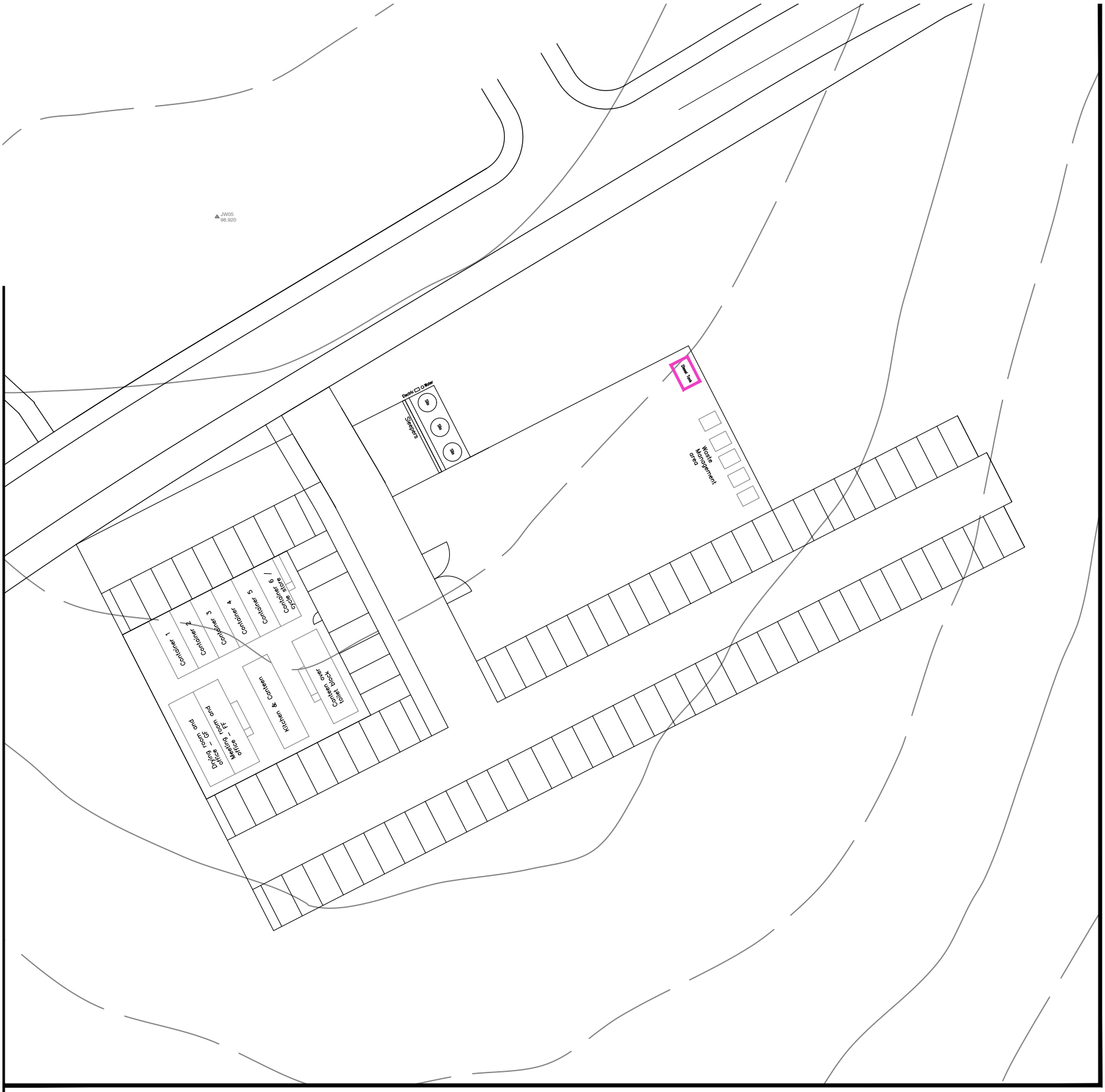
Guidance

- Building Research Establishment – Control of Dust from Construction and Demolition Activities
- Environment Agency Pollution Prevention and Guidance Notes
- National Planning Policy Framework (2012)
- PPG01 – General Guide to Water Pollution Prevention
- PPG02 – Above Ground Oil Storage Tanks
- PPG05 – Works In, Near or Liable to Affect Watercourses
- PPG21 – Pollution Incident Response Planning
- PPG24 – Planning and Noise
- BS5228: Part 1: 2009 – Noise control
- HSE Guidance Notes EH40/90 and 40/97 – Occupational Exposure (1999)
- HSE Guidance Note MS 13 – Asbestos (1991)
- HSE Guidance Note HS(G) 66 - Protection of Workers and the General Public during Development on Contaminated Land (1991)
- Lighting Engineers - Notes on Reduction of Light Pollution (2000)

- National Groundwater and Contaminated Land Centre Report NC/99/73 – Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination; Guidance on Pollution and Prevention

APPENDIX A

BUILD STRATEGY PLAN AND NORTHERN COMPOUND LAYOUT



Examples of typical Redrow Compound

Rev	Date	Details	By
A	26/09/19	Updated to suit latest build strategy	RF

Development	**Great Wilsey Park**
Location	Haverhill
Marketing Name	
Drawing Title	NORTHERN COMPOUND LAYOUT
Drawing Number	**8511-RED-ZZ-DR-C-003**
Revision	**A**
Scale @ A3	1:500
Drawn By	-
Date Started	JUNE 2019
Checked by	Date

REDROW HOMES
Redrow Homes (Eastern) Limited
2 Aurum Court, Sylvan Way, Southfields Business Park,
Laindon, Basildon, Essex SS15 6TU
Tel: 01268 886400 Web: www.redrow.co.uk

KEY

- Phase 1 build area to be constructed off Haverhill Road
- Phase 1 build area to be constructed from southern construction access off Chalkstone Way
- Phase 2 construction strategy to be determined by others.
- Redrow Homes northern site compound area including materials storage area and car parking.
- Redrow Homes southern site compound area including materials storage area and car parking.
- Phase 1 northern construction access
- Phase 1 southern construction access
- Wheel wash

Rev	Date	Details	By
B	26/09/19	Updated to suit latest build strategy	RF
A	22/07/19	Key reference to Phase 2 construction strategy amended	RF

Development	**Great Wilsey Park**
Location	Haverhill
Marketing Name	
Drawing Title	Overall Build Strategy
Drawing Number	8511-RED-ZZ-DR-C-005
Revision	B
Scale @ A0	1:1000
Drawn By	-
Date Started	Dec 2018
Checked by	
Date	

REDROW HOMES
Redrow Homes (Eastern) Limited
2 Aurum Court, Sylvan Way, Southfields Business Park,
Laindon, Basildon, Essex SS15 6TU
Tel: 01268 886400 Web: www.redrow.co.uk

APPENDIX B

Biodiversity Monitoring Strategy and Ecological Implementation Strategy Mitigation by Ecology Solutions

REDROW HOMES

ECOLOGYSOLUTIONS

Part of the ES Group

GREAT WILSEY PARK, HAVERHILL: INFRASTRUCTURE RESERVED MATTERS APPLICATION

Biodiversity Monitoring Strategy

Pursuant to Condition 45 of DC/15/2151/OUT

July 2019
8110.BMS.vf3

ecology solutions for planners and developers

CONTENTS

PLANS

1. INTRODUCTION

1.1. Ecology Solutions was commissioned by Redrow Homes in October 2018 to prepare materials to address the requirements of planning conditions for the development at Great Wilsey Park as shown on Plans ECO1 and ECO2 (reference: DC/15/2151/OUT).

1.2. Condition 45 requires that a Biodiversity Monitoring Strategy be submitted and approved prior to commencement of development. The condition states:

Within any phase or reserved matters application, no development shall take place (including demolition, archaeological investigation, ground works and vegetation clearance), until a biodiversity monitoring strategy for that phase has been submitted to, and approved in writing by, the local planning authority. The purpose of the strategy shall be to monitor existing and new habitats on the site including hedges, attenuation ponds and adjacent areas, and protected and priority species mitigation including [redacted] hazel dormice, reptiles and [redacted] The content of the Strategy shall include the following:

a) Aims and objectives of monitoring to match the stated purpose.
b) Identification of adequate baseline conditions prior to the start of development as appropriate.
c) Appropriate success criteria, thresholds, triggers and targets against which the effectiveness of the various conservation measures being monitored can be judged.
d) Methods for data gathering and analysis.
e) Location of monitoring.
f) Timing and duration of monitoring.
g) Responsible persons and lines of communication.
h) Review, and where appropriate, publication of results and outcomes.

A report describing the results of monitoring shall be submitted to the local planning authority at intervals identified in the strategy. The report shall also set out (where the results from monitoring show that conservation aims and objectives are not being met) how contingencies and/or remedial action will be identified, agreed with the local planning authority, and then implemented so that the development still delivers the fully functioning biodiversity objectives of the originally approved scheme. The monitoring strategy will be implemented in accordance with the approved details.

Reason: Monitoring is required at the appropriate time to ensure that that the proposed development delivers the fully functioning biodiversity outcomes set out in the Environmental Statement.

1.3. This document forms part of a Reserved Matters Application (RMA) for the Infrastructure of the Redrow scheme (which includes extensive landscaping and green infrastructure).

1.4. The stated purpose of the strategy is *"to monitor existing and new habitats on the site including hedges, attenuation ponds and adjacent areas, and protected and priority species mitigation including [redacted] hazel dormice, reptiles and [redacted]* This has been interpreted to extend to all existing and proposed habitats, and protected and priority species for which mitigation and enhancement measures are proposed. While the names features and species are referenced, the monitoring strategy is not limited to them.

2. WOODLAND AND SCRUB

2.1. Monitoring Objectives

To assess effectiveness of habitat establishment and management.

To use the findings to guide remedial action where appropriate.

2.2. Baseline Conditions

Great Field Plantation

2.2.1. Overall, while Great Field Plantation does offer opportunities to wildlife, it is of limited intrinsic nature conservation interest. The understorey is virtually absent and the field layer is very impoverished, with little light penetrating to the woodland floor. The aims of management will therefore be to facilitate a gradual conversion to a more naturalistic woodland with greater structural diversity, focusing on native species as opposed to introduced conifers.

Conversion of Even-aged Plantation to Uneven-aged System

2.2.2. The principal advantage of the phased removal of conifers and the introduction of native broadleaves is that disruption to wildlife is minimised. A phased approach is therefore favoured over a clear-fell approach, which would have an adverse effect on protected and notable species, and is in any case unacceptable from a landscape and visual standpoint.

2.2.3. Three glades will be established in the woodland by felling conifer species. New understorey planting will be undertaken using native species. Existing broadleaved species will be encouraged to grow to maturity.

2.2.4. Felled timber will be cut into logs and set into 'loggeries' and more informal log piles to encourage saproxylic invertebrates. Felled trees will not be shredded or mulched.

2.2.5. New planting will exclusively be locally native species e.g. Oak *Quercus robur*; Hazel *Corylus avellana*, Hornbeam *Carpinus betulus*, Field Maple *Acer campestre*, Holly *Ilex aquifolium*, Guelder Rose *Viburnum opulus*, Hawthorn *Crataegus monogyna*, Spindle *Euonymus europaeus*, Honeysuckle *Lonicera periclymenum*, Dog Rose *Rosa canina*, Silver Birch *Betula pendula*, Cherry *Prunus avium*, Bird Cherry *Prunus padus*, Crab Apple *Malus sylvestris* and Rowan S*orbus aucuparia*. The aim will be to encourage strong growth of these species to canopy and understorey layer as appropriate.

Coppicing

2.2.6. Existing Hazel stools will be coppiced on a 15-year rotation to encourage greater structural diversity, and layered to produce new coppice stools and expand the understorey. Cut wood will be used to diversify the habitat through establishment of wood piles.

Ground Flora

2.2.7. Though the intention will be to encourage natural regeneration, if this proves difficult consideration will be given to the introduction of plug-planted locally native species.

Public Use and Recreation

2.2.8. Public use of the woodland will be monitored and management operations adapted where necessary. Generally it is envisaged that fencing will be avoided. [redacted] this will be by means of dead hedging or planting thorny species. If fencing must be used it will be suitable for the area, e.g. natural woven Willow or Hazel hurdles.

Southern Plantation

2.2.9. The woodland in the south of the site is currently a mixed plantation, with a good proportion of native species, though largely even-aged. Long term management will encourage growth of native species and diversification of the habitat. Non-native conifers will be selectively felled to introduce habitat diversity, with timber retained as for Great Field Plantation.

2.2.10. An appropriate coppicing regime will be introduced on a 15-year rotation to encourage a vigorous understorey.

2.2.11. Bat and Dormouse 'hop-overs' will be established using trees approximately 6m in height at edges of new accesses.

Stour Brook Tributary

2.2.12. Generally the woodland along the watercourse is more semi-natural than that of the plantations, with mature broadleaved trees and a good understorey and field layer. At this stage it is considered that minimal intervention is necessary. Enhancements will focus on the provision of dead wood piles for habitat diversification.

2.3. Success Criteria and Targets

1. All new woodland and scrub established and sustainable.
2. Established 15-year Hazel coppice cycle.
3. Great Field Plantation to have 30% understorey cover in five years.
4. Observable woodland ground flora within two years.
5. Public access to Great Field Plantation established and effectively managed.
6. Where required, dead hedges and fencing established and maintained.
7. Replacement of all conifers in Southern Plantation within five years.

8. Dead wood piles established and undisturbed.
9. Observed use of new and existing features by wildlife.

2.4. Methods for Data Gathering and Analysis

2.4.1. Existing and newly established habitats will be subject to an annual walkover survey. The success or otherwise of habitat establishment and management will be noted. Areas where hedgerows or individual trees or shrubs have failed to establish successfully or where management is not proving effective will be recorded.

2.4.2. The walkover survey will be the responsibility of the management company, with input from the project ecologist and landscape architect as necessary. The project ecologist will advise on

2.4.3. Species monitoring to be undertaken as set out in the following sections will establish to what extent existing and new attenuation features are being used by wildlife.

2.5. Location of Monitoring

2.5.1. Monitoring will take place across the retained and newly established woodland and scrub within the site.

2.6. Timing and Duration

2.6.1. A walkover survey of all habitats will be undertaken on an annual basis by the management company. This will be an ongoing commitment that will extend beyond the lifetime of this strategy.

2.7. Contingencies and Remedial Action

2.7.1. Any habitats failing to establish will be subject to attention by the management company.

2.7.2. Watering will be required during periods of drought to ensure satisfactory establishment. Watering will be undertaken as required to maintain healthy plant growth.

2.7.3. Dead or diseased plants will be removed and replaced with the same species during the next growing season (i.e. October to March inclusive).

2.7.4. All remedial action will be the responsibility of the management company.

3. HEDGEROWS AND TREES

3.1. Monitoring Objectives

To assess effectiveness of habitat establishment and management.

To use the findings to guide remedial action where appropriate.

3.2. Baseline Conditions

3.2.1. The existing hedgerow network is a key green infrastructure asset and is to be retained and enhanced wherever possible.

3.2.2. Unless otherwise stated on the Hedgerow Removal Plan 5055-L-112 rev C accompanying the outline application, new gaps established will generally be a maximum of 12m to allow for Dormouse dispersal. Gaps in existing hedgerows will be reinforced with native species.

3.2.3. Hedgerows will continue to be managed, with the aim to ensure continued good structure. Hedgerows will be cut on rotation, so that not all are cut in any one year. This will encourage greater availability of winter forage for birds. Hedgerows will be laid on rotation to encourage greater structural diversity.

3.2.4. A scheme of new tree and shrub planting is to be undertaken throughout the green infrastructure as shown on the landscape proposals.

3.2.5. Existing trees outwith woodlands will be retained and safeguarded.

3.3. Success Criteria and Targets

1. All new hedgerows established and sustainable.
2. All existing hedgerows successfully laid in rotation and sustainable.
3. All new trees and shrubs established.
4. Observed use of new and existing features by wildlife.

3.4. Methods for Data Gathering and Analysis

3.4.1. Existing and newly established habitats will be subject to an annual walkover survey. The success or otherwise of habitat establishment and management will be noted. Areas where hedgerows or individual trees or shrubs have failed to establish successfully or where management is not proving effective will be recorded.

3.4.2. The walkover survey will be the responsibility of the management company, with input from the project ecologist and landscape architect as necessary.

3.4.3. Species monitoring to be undertaken as set out in the following sections will establish to what extent existing and new attenuation features are being used by wildlife.

3.5. Location of Monitoring

3.5.1. Monitoring will take place across the retained and newly established hedgerows, trees and shrubs within the site.

3.6. Timing and Duration

3.6.1. A walkover survey of all habitats will be undertaken on an annual basis by the management company. This will be an ongoing commitment that will extend beyond the lifetime of this strategy.

3.7. Contingencies and Remedial Action

3.7.1. Any habitats failing to establish will be subject to attention by the management company.

3.7.2. Watering will be required during periods of drought to ensure satisfactory establishment. Watering will be undertaken as required to maintain healthy plant growth.

3.7.3. Dead or diseased plants will be removed and replaced with the same species during the next growing season (i.e. October to March inclusive).

3.7.4. All remedial action will be the responsibility of the management company.

4. GRASSLAND

4.1. Monitoring Objectives

To assess effectiveness of habitat establishment.

To use the findings to guide remedial action where appropriate.

4.2. Baseline Conditions

4.2.1. The existing field margins are recognised to be of relatively higher botanical interest. These are to be retained and subject to ongoing management to maximise their botanical interest.

4.2.2. New areas of wildflower grassland are to be established throughout the Green Spine and Linear Park. These areas are currently principally intensive arable and improved grassland respectively. In conjunction with the drainage strategy, areas of dry and wet grassland will be established.

4.3. Success Criteria and Targets

1. All new grassland areas established and sustainable.
2. Botanical interest of existing field margins retained.
3. Observed use of new and existing features by wildlife.

4.4. Methods for Data Gathering and Analysis

4.4.1. Existing and newly established habitats will be subject to an annual walkover survey. The success or otherwise of habitat establishment and management will be noted. Areas where the habitats have failed to establish successfully or where management is not proving effective will be recorded.

4.4.2. The walkover survey will be the responsibility of the management company, with input from the project ecologist and landscape architect as necessary.

4.4.3. Species monitoring to be undertaken as set out in the following sections will establish to what extent existing and new attenuation features are being used by wildlife.

4.5. Location of Monitoring

4.5.1. Monitoring will take place across the retained and newly established grassland areas within the site.

4.6. Timing and Duration

4.6.1. A walkover survey of all habitats will be undertaken on an annual basis by the management company. This will be an ongoing commitment that will extend beyond the lifetime of this strategy.

4.7. Contingencies and Remedial Action

4.7.1. Any habitats failing to establish will be subject to attention by the management company.

4.7.2. Watering will be required during periods of drought to ensure satisfactory establishment. Watering will be undertaken as required to maintain healthy plant growth.

4.7.3. Dead or diseased plants will be removed and replaced with the same species immediately after identification.

4.7.4. All remedial action will be the responsibility of the management company.

5. ATTENUATION FEATURES

5.1. Monitoring Objectives

To assess effectiveness of habitat establishment.

To use the findings to guide remedial action where appropriate.

5.2. Baseline Conditions

5.2.1. The attenuation features of the site as proposed comprise a combination of existing drainage ditches and new attenuation basins. The existing drainage ditches are largely dry most of the time, and are associated with hedgerows and consequently generally overshaded.

5.2.2. For the most part the new and enhanced existing features will not be permanently wet, but some areas will be designed to retain water.

5.2.3. This will diversify the habitats present. Locally native aquatic and emergent species will be planted to encourage early naturalisation. Swales to be planted with appropriate mix of native species.

5.2.4. Newly established basins will be seeded with native damp grassland and tussocky grassland species mixes and managed appropriately.

5.2.5. Wetter areas will be planted with marginal species.

5.3. Success Criteria and Targets

1. Damp and dry grassland established and sustainable.
2. Marginal vegetation established and sustainable.
3. Observed use of new and existing features by wildlife.

5.4. Methods for Data Gathering and Analysis

5.4.1. Existing and newly established habitats will be subject to an annual walkover survey. The success or otherwise of habitat establishment and management will be noted. Areas where the habitats have failed to establish successfully or where management is not proving effective will be recorded.

5.4.2. The walkover survey will be the responsibility of the management company, with input from the project ecologist and landscape architect as necessary.

5.4.3. Species monitoring to be undertaken as set out in the following sections will establish to what extent existing and new attenuation features are being used by wildlife.

5.5. Location of Monitoring

5.5.1. Monitoring will take place across the retained and newly established attenuation features within the site.

5.6. Timing and Duration

5.6.1. A walkover survey of all habitats will be undertaken on an annual basis by the management company. This will be an ongoing commitment that will extend beyond the lifetime of this strategy.

5.7. Contingencies and Remedial Action

5.7.1. Any habitats failing to establish will be subject to attention by the management company.

5.7.2. Watering will be required during periods of drought to ensure satisfactory establishment. Watering will be undertaken as required to maintain healthy plant growth.

5.7.3. Dead or diseased plants will be removed and replaced with the same species immediately after identification.

5.7.4. All remedial action will be the responsibility of the management company.

6. [redacted]

[redacted]

To [redacted]

[redacted]

[redacted]

[redacted]

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[redacted]

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[redacted]

[redacted]

[redacted]

[redacted]

7. BATS

7.1. Monitoring Objectives

To assess changes in bat activity following establishment of new landscaping, infrastructure and public access.

To monitor status of known existing bat roosts.

To monitor use of new bat boxes.

To use the findings to guide remedial action where appropriate.

7.2. Baseline Conditions

7.2.1. Bat activity surveys completed in October 2018 and April to June 2019 across the Redrow site have recorded a generally low level of activity. Areas shown to be of greater interest for bats are Great Field Plantation and Hedgerow H4, crossing the south of the site. Species recorded during the activity surveys include Common Pipistrelle *Pipistrellus pipistrellus*, Soprano Pipistrelle *Pipistrellus pygmaeus*, Noctule Bat *Nyctalus noctula*, Brown Long-eared Bat *Plecotus auritus* and Barbastelle *Barbastella barbastellus*. The results of the activity surveys completed by to inform the ES in 2014 and 2015 across the wider site recorded a similar assemblage.

7.2.2. Several trees with potential roost features were identified by in 2014, three of which were found to contain roosts. A single Pipistrelle species hibernation roost was identified within tree T28. Trees T44 and T49 were identified as having bat roosts but the species were not identified from eDNA testing. Nocturnal surveys concluded that T49 was used as a roost by Soprano Pipistrelle.

7.2.3. Activity surveys involving transects and static detector deployments are to continue for the remainder of the 2019 survey season. Previously identified bat roosts are to be resurveyed to update the baseline information.

7.2.4. The 2018/19 dataset, combined with the information from the outline ES, provides a robust baseline from which to assess the effectiveness of mitigation and enhancement measures. As far as possible, future monitoring surveys will replicate the approach taken for the 2018/19 work.

7.3. Success Criteria and Targets

1. Existing bat species diversity maintained.
2. No significant decline in bat activity levels.
3. Recorded use of dark corridors.
4. Recorded use of bat hop-overs.
5. Continued use of known existing roosts.
6. Recorded use of new bat boxes.

7.4. Methods for Data Gathering and Analysis

7.4.1. A series of transect surveys, static detector deployments and bat roost surveys will be undertaken, following the established procedures of the outline ES and the updated surveys being undertaken by Ecology Solutions in 2018 / 2019.

7.4.2. Field surveys will be undertaken with regard to best practice guidelines issued by Natural England (2004[1]), the Joint Nature Conservation Committee (2004[2]) and the Bat Conservation Trust (2016[3]).

7.4.3. Monthly surveys will be completed from April to October in odd years during the operation of this strategy, i.e. Years 1, 3 and 5 following completion of the landscaping works and ecological enhancements associated with the Infrastructure RMA.

Activity Transects

7.4.4. Activity surveys will be undertaken across a set route which covers the majority of the site. This will include the designated dark corridors as defined in the *Lighting Strategy for Bats* produced under Condition 44 and, as far as possible, replicate the transect routes for Ecology Solutions' updated surveys in 2018/19 (see Plan ECO3).

7.4.5. A series of point counts will be included in the transects. Point counts will include but not be limited to the location of new bat hop-overs in the landscape. The locations of these are shown on the landscape drawings produced by Exterior Architecture (as referenced in the Ecological Implementation Strategy and Landscape and Ecological Management Plan) and shown on the plan accompanying the *Lighting Strategy for Bats*.

7.4.6. The transects will commence at sunset and continue for two to three hours in order to maximise the encounter rate of bats i.e. both early and late emerging species. The echolocation calls of bats will be recorded on iPads paired with Echo Meter Touch 2 Pro bat detectors and analysed using Kaleidoscope software (or equivalent equipment and software).

7.4.7. The surveyors will observe the behaviour of any bat recorded, i.e. foraging or commuting, together with noting the species present and number of bats present at that location.

7.4.8. Surveys will be conducted when the night-time temperature are above 10°C. The insectivorous diet of bats means there is little or no food available when temperature falls below this level and consequently levels of activity are low and may not accurately reflect the value of the site for bats. The weather conditions for the surveys will be recorded and any limitations noted.

[1]Mitchell-Jones, A. J. (2004). *Bat Mitigation Guidelines*. English Nature, Peterborough.
[2]Mitchell-Jones, A.J. & McLeish, A.P. (Eds.) (2004). *Bat Workers' Manual*. 3rd edition. Joint Nature Conservation Committee, Peterborough.
[3] Collins, J. (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines*. 3rd Edition. The Bat Conservation Trust, London.

Static Detector Deployments

7.4.9. Static bat detectors (SM4 or equivalent) will be deployed in the locations shown on Plan ECO3, i.e. the locations in which detectors have been deployed for Ecology Solutions' updated surveys in 2018/19, as far as is reasonable possible given security considerations. This will allow for more or less direct comparison between activity levels from before and after completion of landscaping works. Detectors will be deployed for a minimum of five nights per month between April and October inclusive. Accumulated data will be analysed using Kaleidoscope (or equivalent).

Emergence Surveys

7.4.10. Emergence surveys of existing known bat roosts (the trees noted above) will be undertaken on three occasions during the period from May to August / September inclusive. Trees will be observed from fifteen minutes before sunset until two hours after sunset. Surveyors will use SM4 detectors to record data, which will again be analysed using Kaleidoscope or equivalent. Records of bats emerging will be compared to the baseline data.

7.4.11. Where considered appropriate or useful, and where safe to do so, bat workers holding the necessary tree climbing qualifications will assess use of particular features.

Bat Boxes

7.4.12. Bat boxes will be checked by a licensed bat worker using a ladder in August annually for five years. Species and numbers present will be recorded. Where droppings are present these will be sent for DNA analysis if necessary. Each box will be numbered to allow accurate recording of data and comparison between years. A further check will be undertaken in March each year to ensure the box remains in situ.

7.5. Location of Monitoring

7.5.1. Monitoring will take place across the retained and newly created habitats within the site, focusing on the dark corridors as set out above.

7.6. Timing and Duration

7.6.1. Monitoring surveys will be completed monthly from April to October in Years 1, 3 and 5 following completion of the landscaping works associated with the Infrastructure RMA.

7.6.2. Bat boxes will be checked in August annually for signs of occupation by bats. A further check will be undertaken in March annually to see that the box remains in situ. These checks will be undertaken for the lifetime of this strategy (five years).

7.7. Contingencies and Remedial Action

7.7.1. Bat species diversity and activity levels will be monitored as set out above, with a particular focus on the dark corridors. Should significant changes be observed, such as loss of species or declines in activity, steps will be taken

where possible to address potential contributing factors. The lighting strategy is considered to be robust, but if unexpected adverse effects are being experienced lighting units will be investigated and repaired, modified or replaced if necessary.

7.7.2. Dispersal through bat hop-overs will be monitored. Should these not prove effective then remedial steps will be taken where possible. This may involve modification or replacement of lighting columns in the vicinity, new planting and / or replacement of existing planting.

7.7.3. Any damage to the vegetation comprising a bat-hop will be made good through replacement planting in the next planting season (i.e. October to March).

7.7.4. Similarly, any damage to vegetation in dark corridors will be made good during the next planting season.

7.7.5. Any damage or lighting columns, or malfunctions that affect the light spill, particularly where these are located close to foraging areas or dispersal routes, will be made good by the appointed contractor as soon as reasonably practicable.

7.7.6. It is accepted and understood that bats will move on to new roosting opportunities, and so if existing roosts are not found to be occupied in every year this should not necessarily be taken as evidence of an adverse effect. Nonetheless, if no occupation is observed in consecutive years, possible reasons for this will be considered and appropriate measures taken.

7.7.7. If bat boxes are found to be damaged they will be replaced as soon as reasonably practicable.

7.7.8. It is understood that bat boxes can take time to be found and used. If bat boxes are found to have no signs of use in the Year 2 check they will be relocated to a suitable tree under the supervision of a licensed bat worker.

8. OTTERS AND WATER VOLES

8.1. Monitoring Objectives

To monitor any use of the site by Otters.

To monitor any use of the site by Water Voles.

8.2. Baseline Conditions

8.2.1. No evidence of use by Otters or Water Voles has been recorded in the existing waterbodies across the Redrow site and the wider site, but this species is known to be present in the River Stour, and the Stour Brook south of the site.

8.3. Success Criteria and Targets

1. Recorded use of the site by Otters.
2. Recorded use of the site by Water Voles.

8.3.1. It is noted that no specific measures for Otters and Water Voles were defined the outline ES, simply that maintaining open watercourses could encourage their colonisation in time.

8.4. Methods for Data Gathering and Analysis

8.4.1. Otter surveys will be undertaken in Years 1, 3 and 5 following completion of the landscaping works associated with the Infrastructure RMA. Surveys for Otters can be undertaken at any time of year, but generally this work will be undertaken in concert with that for Water Voles (see below). A suitably qualified ecologist will survey watercourses to identify field signs:

- Spraint – Irregular, sometimes short, rounded segments containing fish bones, scales or crayfish parts;
- Footprints of otters in soft substrates along the watercourse typically 8cm wide and 10cm long;
- Holts and couches on the banks of the watercourse; and
- Slides on the banks of the watercourse.

8.4.2. Surveys for Water Voles will be undertaken in Years 1, 3 and 5 following completion of the landscaping works associated with the Infrastructure RMA, with surveys carried out from mid-April to the end of June and July to September inclusive.

8.4.3. As Water Voles are rarely seen, the surveys will be based around the identification of characteristic signs. The surveys will follow guidance by Natural England and consist of a close examination of all watercourses, waterbodies and banks up to two metres from the water's edge.

8.4.4. The following signs will be sought:

- Faeces - 8-12 mm long and 4-5 mm wide with blunt ends;
- Latrines - Water Voles will deposit the majority of their droppings at points of their territory boundary;
- Feeding Stations – Water Voles often bring pieces of cut vegetation to favoured feeding stations close to the water's edge;
- Burrows - Typically 4-8 cm in diameter and found in the river / ditch bank;
- Footprints of Water Vole in soft substrates along the ditches; and
- Water Voles that may be observed directly.

8.4.5. The condition of newly established and existing habitats will be monitored. Water levels in the Stour Brook tributary will be noted during survey work.

8.5. Location of Monitoring

8.5.1. Monitoring will take place across the retained and newly established waterbodies, watercourses and associated habitats across the site.

8.6. Timing and Duration

8.6.1. Monitoring surveys for Otters and Water Voles will be undertaken in Years 1, 3 and 5 following completion of the landscaping works associated with the Infrastructure RMA. Surveys for Water Voles will be carried out from mid-April to the end of June and July to September inclusive, with checks for Otters carried out at the same time.

8.7. Contingencies and Remedial Action

8.7.1. Otters and Water Voles are currently not present within the site. Any signs of their presence would be viewed as a significant benefit of the scheme.

8.7.2. New planting will be replaced if damaged or failing, in the next available planting season.

8.7.3. In the unlikely event that water level of the Stour Brook are seen to have changed significantly from previously observed levels, a civil engineer will be instructed to determine the cause and to take such remedial action as necessary to return the levels to their former position. This would be to ensure that the opportunity for colonisation by these species remains available.

9. DORMICE

9.1. Monitoring Objectives

To monitor any use of the site by Dormice.

To monitor use of new Dormouse nest boxes.

To use the findings to guide remedial action where appropriate.

9.2. Baseline Conditions

9.2.1. No evidence of Dormice has been recorded by Ecology Solutions across the Redrow site in surveys completed in 2018 and 2019. A partial Dormouse nest was recorded in a survey tube in the south-east of the wider site in 2015 during surveys to inform the outline ES; no evidence was recorded in the Redrow site.

9.3. Success Criteria and Targets

1. Recorded use of the site by Dormice in nest tube surveys.
2. Recorded use of Dormouse boxes.
3. Establishment and maintenance of habitats to encourage Dormice.

9.3.1. It is noted that no specific measures for Otters and Water Voles were defined the outline ES, simply that maintaining open watercourses could encourage their colonisation in time.

9.4. Methods for Data Gathering and Analysis

9.4.1. Monitoring surveys for Dormice will be undertaken in Years 1, 3 and 5 following completion of the landscaping works associated with the Infrastructure RMA.

9.4.2. The survey technique involves the installation and checking of nest tubes and nest boxes within all habitats considered to be species-rich or of potential value to Dormice. The Dormouse nest tubes / boxes utilised will be those approved as standard by the Mammal Society.

9.4.3. Nest tubes / boxes will be placed in accordance with the guidance provided by the Mammal Society and Natural England. Typically, tubes are placed within scrub, hedgerows and woodland approximately every 20 metres where suitable locations can be identified. Nest boxes are placed at lower densities but in similarly selected locations as for nest tubes. The nest tubes will be attached with wire ties underneath suitably sturdy horizontal branches and positioned approximately 1.5 metres above ground level on average.

9.4.4. The survey will be scored for effort according to the method developed from the South West Dormouse Project and carried through in the second edition

of *The Dormouse Conservation Handbook* (English Nature, 2006[4]). The system provides an overall score that reflects the chances of Dormice being discovered if present, and thus provides an indicator of the 'thoroughness' of a survey. This score is based on the number of tubes used and the number of months the tubes are in place.

9.4.5. The months of the year are weighted according to the likelihood of recording Dormice, as set out in Table 10.1 below.

Month	Weighting
April	1
May	4
June	2
July	2
August	5
September	7
October	2
November	2

Table 9.1. Monthly Score Weighting for Dormouse surveys.

9.4.6. Generally speaking, the index of effort is calculated based on the use of 50 nest tubes as a standard minimum.

9.4.7. A score of 20 (or above) is deemed a thorough survey and a score of 15 to 19 may be regarded as adequate where circumstances do not permit more time or more tubes (particularly if other survey methods have also given negative results).

9.4.8. Dormouse nest tubes will be collected following completion of each survey round. Nest boxes will remain in situ. The locations of nest boxes will be carefully considered to avoid interference by the public.

9.4.9. New and existing hedgerows, woodland and scrub will be checked and made good where necessary through new planting in the next planting season.

9.5. Location of Monitoring

9.5.1. Monitoring surveys will take place across suitable retained and newly created habitats within the site, i.e. hedgerows, woodland and scrub.

9.6. Timing and Duration

9.6.1. Monitoring surveys will take place in Years 1, 3 and 3 following completion of the landscaping works associated with the Infrastructure RMA. Surveys will be undertaken from May to September inclusive to meet the threshold index of probability score.

[4] English Nature (2006). *The Dormouse Conservation Handbook*. English Nature, Peterborough.

9.6.2. Nesting boxes will be checked annually in March by a suitably experienced ecologist for the first five years following installation, to ensure that they are still in situ and are not damaged.

9.7. Contingencies and Remedial Action

9.7.1. Dormice are currently not present within the site. Any signs of their presence would be viewed as a significant benefit of the scheme.

9.7.2. New planting will be replaced if damaged or failing, in the next available planting season.

9.7.3. If bat boxes are found to be damaged they will be replaced as soon as reasonably practicable. Regard will be had to possible interference from the public.

10. BIRDS

10.1. [redacted]

[redacted]

[redacted]

[redacted].

10.3. **Baseline Conditions**

10.3.1. Four wintering bird surveys were completed by Ecology Solutions in November and December 2018, and in January and February 2019. A total of 47 species were recorded, including 17 species that are listed as NERC species of principal importance, Suffolk LBAP and / or on the UK Birds of Conservation Concern Red and Amber list, as set out below:

Song Thrush *Turdus philomelos*
[redacted]
Yellowhammer *Emberiza citrinella*
Kestrel *Falco tinnunculus*
Linnet *Carduelis cannabina*
Redwing *Turdus iliacus*
Stock Dove *Columba oenas*
Black-headed Gull *Chroicocephalus ridibundus*
Bullfinch *Pyrrhula pyrrhula*
Dunnock *Prunella modularis*
Mistle Thrush *Turdus viscivorus*
Starling *Sturnus vulgaris*
House Sparrow *Passer domesticus*
Reed Bunting *Emberiza schoeniclus*
Fieldfare *Turdus pilaris*
Mallard *Anas platyrhynchos*
Lesser Black-backed Gull *Larus fuscus*

10.3.2. Four wintering bird surveys were undertaken between November 2014 and February 2015 to inform the outline ES, recording a similar complement of species.

10.3.3. Three breeding bird surveys were undertaken by Ecology Solutions in April, May and June 2019.

10.3.4. Fifty species were recorded within or immediately adjacent to the site, including 18 species that are listed as NERC species of principal importance and / or on the UK Birds of Conservation Concern Red and Amber list, as follows:

Song Thrush *Turdus philomelos*
[redacted]
Yellowhammer *Emberiza citrinella*
Kestrel *Falco tinnunculus*
Linnet *Carduelis cannabina*
Dunnock *Prunella modularis*
Mistle Thrush *Turdus viscivorus*
Starling *Sturnus vulgaris*
House Sparrow *Passer domesticus*
Reed Bunting *Emberiza schoeniclus*

Herring Gull *Larus argentatus*
Stock Dove *Columba oenas*
Black-headed Gull *Chroicocephalus ridibundus*
Bullfinch *Pyrrhula pyrrhula*
Fieldfare *Turdus pilaris*
Willow Warbler *Phylloscopus trochilus*
Lesser Black-backed Gull *Larus fuscus*
Tawny Owl *Strix aluco*

10.3.5. Of these species, singing males of Dunnock, Linnet, Yellowhammer, [redacted], Stock Dove, Reed Bunting, Song Thrush and Willow Warbler were all recorded within the site and are therefore categorised as possible breeders. The three gull species that were recorded were observed flying over the site and do not use the site itself to a significant degree, and there is no suitable breeding habitat for these species.

10.3.6. The only bird species that has been confirmed to successfully breed on site are Great Tits *Parus major*, with two nest sites recorded within Great Field Plantation. A pair of Yellowhammers were also seen mating in Hedgerow H17 indicating attempted breeding of this species within this area of the site.

10.3.7. Families of Great Tit, Blue Tit *Cyanistes caeruleus*, Jackdaw *Corvus monedula*, Bullfinch, Magpie *Pica pica*, Goldfinch *Carduelis carduelis*, Whitethroat *Sylvia communis*, Blackbird *Turdus merula* and Long-tailed Tit *Aegithalos caudatus* were recorded on site during the survey completed in June.

10.3.8. Confirmed breeders immediately adjacent to the site include Rooks *Corvus frugilegus*, Blue Tits, Common Moorhen *Gallinula chloropus* and Starlings. There is a large Rookery of approximately 33 nests within the deciduous woodland

10.3.9. Information from the breeding bird surveys is that a maximum of three [redacted] were recorded singing during any one survey. It is therefore taken that three territories are being held during the breeding season.

10.4. [redacted]

[redacted]

10.5. **Methods for Data Gathering and Analysis**

Breeding Birds

10.5.1. Three breeding bird surveys will be undertaken during suitable weather conditions between April and June in Years 1, 3 and 5 following completion of the landscaping works associated with the Infrastructure RMA.

10.5.2. As far as is practicable, transects will follow the same route as used for the breeding bird surveys (see Plan ECO4), to allow for direct comparison.

10.5.3. All birds seen or heard within the survey area will be identified and recorded, as will their behaviour. Binoculars and a telescope will be used when necessary.

Wintering Birds

10.5.4. Four monthly wintering bird surveys will be undertaken between November and February in Years 1, 3 and 5 (or equivalent) following completion of the landscaping works associated with the Infrastructure RMA. Again, the transect route will follow that used for the most recent surveys as far as practicable (see Plan ECO4).

10.5.5. The surveys will commence at or soon after sunrise and will be performed in suitable weather conditions. The transect route will be chosen so that the entire site is covered and all features likely to support wintering birds are surveyed.

10.6. Location of Monitoring

10.6.1. Monitoring will take place across the retained and newly created habitats within the site. Transect routes will closely follow those used for the most recent surveys.

10.7. Timing and Duration

10.7.1. Monitoring will take place in Years 1, 3 and 5 following completion of the landscaping associated with the Infrastructure RMA.

10.7.2. Bird boxes will be checked periodically (at least once a year in March) for the first five years following installation, by a suitably experienced ecologist to ensure that they are still in situ and are not damaged. Swift towers will be checked with binoculars in June.

10.8. Contingencies and Remedial Action

10.8.1. Any damage to new planting will be made good through replacement during the next planting season.

10.8.2. If bird boxes are found to be damaged they will be replaced as soon as reasonably practicable.

10.8.3. [redacted]

11. REPTILES

11.1. Monitoring Objectives

To assess changes in reptile population sizes and distribution.

To use the findings to guide remedial action where appropriate.

11.2. Baseline Conditions

11.2.1. A presence / absence survey for reptiles has been completed from April to June 2019. The results of the surveys show that low populations of Grass Snake and Common Lizard are present, with the main areas of interest being Hedgerow H4 and the southern edge of the new plantation in the south of the site. The field margins to the north of Great Field Plantation were also seen to support small numbers of Common Lizard. These results are similar to those of surveys undertaken to inform the outline ES in 2014. That work also identified Slow Worm in the wider survey area, though not within the Redrow site.

11.3. Success Criteria and Targets

1. Maintain presence of Grass Snake and Common Lizard within the site.
2. Increase populations of Grass Snake and Common Lizard.
3. Record Slow Worm within the site in sustainable numbers.

11.4. Methods for Data Gathering and Analysis

11.4.1. Specific surveys for reptiles will be carried out in Years 1, 3 and 5 following completion of the landscaping works associated with the Infrastructure RMA. Work will be undertaken between April and September inclusive. The methodology that will be utilised is principally derived from guidance given in Froglife Advice Sheet 10[5], the *Herpetofauna Workers' Manual*[6] and the Herpetofauna Groups of Britain and Ireland's (HGBI) advisory note[7].

11.4.2. Areas of suitable habitat will be surveyed for the presence of reptiles using artificial refugia ("tins"), 0.5m x 0.5m roofing felt tins will be placed within areas of suitable reptile habitat within the site.

11.4.3. The tins provide shelter and heat up more quickly than the surroundings in the morning and can remain warmer than the surroundings in the late afternoon. Being ectothermic (cold blooded), reptiles use them to bask under and raise their body temperature which allows them to forage earlier and later in the day.

[5] Froglife (1999) *Reptile Survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation*. Froglife Advice Sheet 10. Froglife, Halesworth.
[6] Gent, T and Gibson, S. (2003). *Herpetofauna Workers' Manual*. JNCC, Peterborough.
[7] Herpetofauna Groups of Britain and Ireland (HGBI). (1998). *Evaluating Local Mitigation / Translocation Programmes: Maintaining Best Practice and Lawful Standards*.

11.4.4. To determine presence / absence the tins will be checked for reptile activity over seven visits at appropriate times of the day (avoiding the middle of the day when the ambient air temperature is at its highest) in accordance with Natural England and other guidance. Optimum weather conditions for reptile surveying are temperatures between 10°C and 17°C, intermittent or hazy sunshine and little or no wind.

11.4.5. The status of new and existing grassland habitats, and of newly established hibernacula, will be checked on an annual basis for the five years covered by this strategy.

11.5. Location of Monitoring

11.5.1. Monitoring will take place across the retained and newly created habitats within the site.

11.6. Timing and Duration

11.6.1. Monitoring surveys will be undertaken in Years 1, 3 and 5 following completion of the landscaping works associated with the Infrastructure RMA.

11.6.2. Hibernacula will be checked annually for the first five years following installation, by a suitably experienced ecologist to ensure that they are still in situ and are not damaged.

11.7. Contingencies and Remedial Action

11.7.1. Should tussocky grassland not establish appropriately the landscape contractor will address the matter through examining ground conditions and re-sowing as necessary.

11.7.2. Hibernacula will be replaced or repaired as soon as reasonably practicable if found to be damaged. If damage persists then consideration will be given to relocating the feature to a less obvious location – this will be at the discretion of the project ecologist and the management company.

12. AMPHIBIANS

12.1. Monitoring Objectives

To monitor any use of the site by Great Crested Newts.

To monitor use of the site by other amphibians.

12.2. Baseline Conditions

12.2.1. No Great Crested Newts *Triturus cristatus* were recorded during earlier survey work in 2015. Additionally, there are no records for Great Crested Newts in the local area. Common Toads *Bufo bufo* and Smooth Newts *Lissotriton vulgaris* were recorded during Great Crested Newt surveys completed in 2014 and 2015. Ponds within the site and those within 500m were subject to eDNA testing in 2019 where permission was granted. The results of the eDNA testing were returned as negative.

12.3. Success Criteria and Targets

1. Maintain presence of Common Toads and Smooth Newts within the site.
2. Record Great Crested Newts within the site in sustainable numbers.

12.4. Methods for Data Gathering and Analysis

12.4.1. A single evening presence / absence survey will be undertaken of existing and newly established ponds during the peak Great Crested Newt survey season from mid-April to mid-May. Given the absence of existing records from the locality and negative recent survey results it is considered unlikely that they will be recorded, but this survey would allow assessment of the distribution of Common Toad and Smooth Newt populations.

12.4.2. The survey would take the form of an evening visit to survey the ponds will high-powered torches and deploy bottle traps. The following morning the traps would be checked and an egg search undertaken. These are the standard methods following guidance in *Great Crested Newt Mitigation Guidelines* (English Nature, 2001)[8].

12.5. Location of Monitoring

12.5.1. Monitoring will take place across the retained and newly created waterbodies within the site.

12.6. Timing and Duration

12.6.1. Monitoring surveys will take place in Years 1, 3 and 5 following completion of the landscaping works and attenuation features associated with the Infrastructure RMA. The survey will be undertaken during the peak Great Crested Newt survey season of mid-April to mid-May.

[8] English Nature (2001). *Great Crested Newt Mitigation Guidelines*. English Nature, Peterborough,.

12.7. **Contingencies and Remedial Action**

12.7.1. Any problems identified with water levels in existing ponds will be discussed with the management company and steps taken where appropriate to maintain their status.

12.7.2. In general no further remedial actions for amphibians are likely to be necessary.

13. INVERTEBRATES

13.1. Monitoring Objectives

To check new invertebrate features for signs of use, damage or disturbance, and take remedial action as necessary.

13.2. Baseline Conditions

13.2.1. Given the habitats present, it is likely an assemblage of common invertebrate species utilises the site, though the intensive arable management of the majority of the land will limit variety. There is no evidence to suggest that any rare or notable species would currently be present.

13.3. Success Criteria and Targets

1. Maintain new invertebrate habitats.
2. Encouraging greater invertebrate diversity.

13.4. Methods for Data Gathering and Analysis

13.4.1. Specific invertebrate survey work is not proposed, rather the focus of monitoring will be on qualitative observations of new invertebrate nesting features, in terms of their use by invertebrates.

13.4.2. The status of new and existing grassland habitats, and of newly established hibernacula, will be checked on an annual basis for the five years covered by this strategy.

13.5. Location of Monitoring

13.5.1. Monitoring will take place across the retained and newly created habitats within the site.

13.6. Timing and Duration

13.6.1. New invertebrate nesting features will be monitored on at least an annual basis during other survey visits to the site.

13.6.2. Newly established and existing habitats will be monitored as previously described.

13.7. Contingencies and Remedial Action

13.7.1. Should new wildflower grassland not establish appropriately the landscape contractor will address the matter through examining ground conditions and re-sowing as necessary.

13.7.2. Nesting features will be replaced or repaired as soon as reasonably practicable if found to be damaged. If damage persists then consideration will be given to relocating the feature to a less obvious location – this will be at the discretion of the project ecologist and the management company.

14. RESPONSIBLE PERSONS AND COMMUNICATION

14.1. Redrow Homes has ultimate responsibility for implementation of this monitoring strategy. The individual currently leading for Redrow Homes is Richard Franks, Senior Engineering Manager, and the responsibility for implementation will be his or that of his appointed successor.

14.2. It is the responsibility of the appointed individual at Redrow Homes to instruct appropriate experienced ecologists and / or landscape contractors to check the status of the various existing and proposed habitats and features described in this report.

14.3. Clear channels between these parties and their associates on the ground will be in operation at all times, by email and telephone as appropriate.

14.4. Redrow and the landowner will establish a joint management company to manage and maintain the public landscape areas of Great Wilsey Park. The management company will be responsible for the ongoing maintenance of areas of soft landscaping within public open spaces, attenuation basins and Great Field Plantation.

15. REVIEW AND PUBLICATION OF RESULTS

15.1. An annual monitoring report will be produced for five years following completion of landscaping works associated with the Infrastructure RMA. This will be delivered in November of each year.

15.2. The report will set out the findings of the monitoring work, which will be judged against the success criteria. Details of any remedial work undertaken will be set out, together with any revised objectives for the following year.

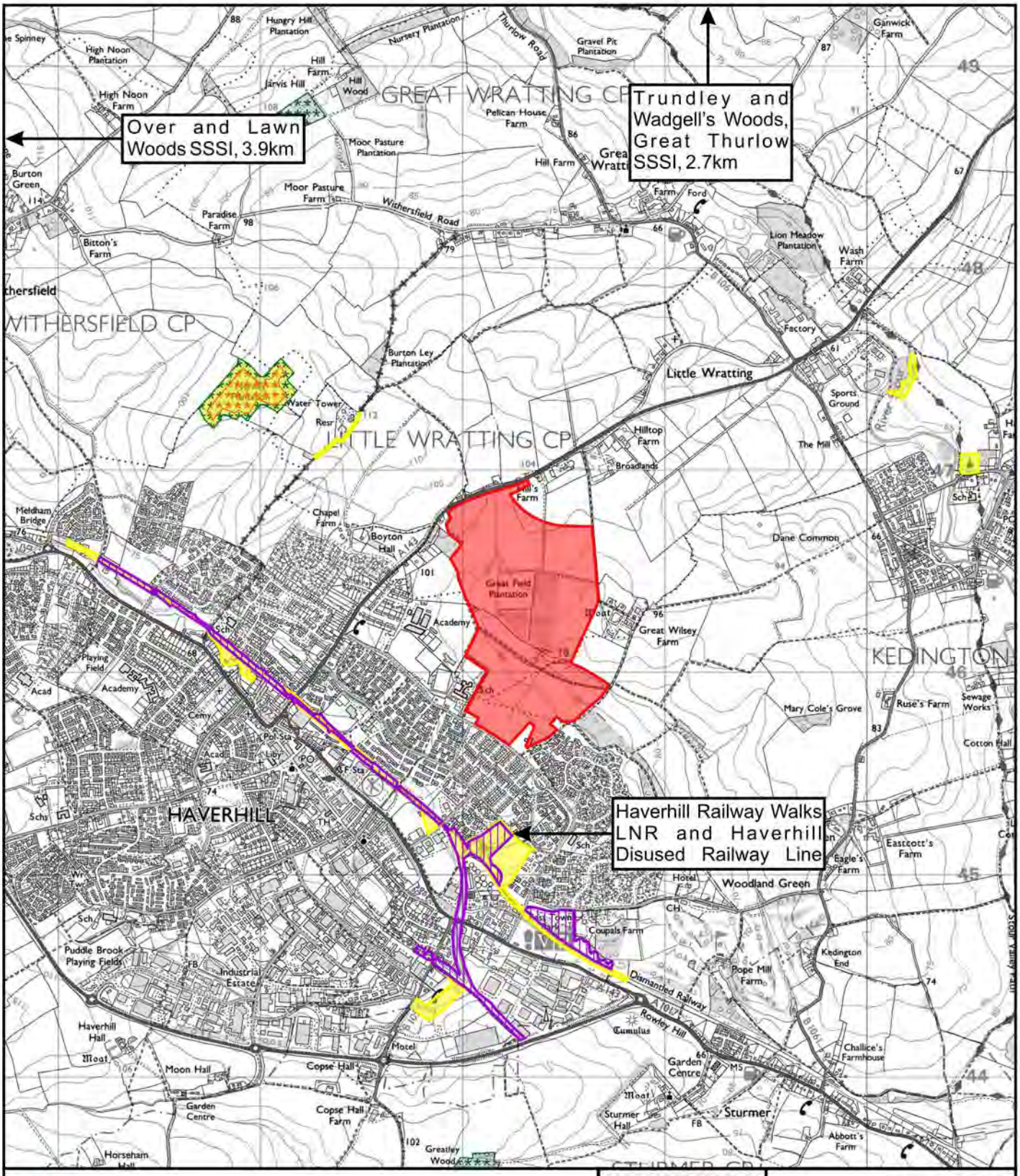
15.3. This Biodiversity Monitoring Strategy covers the first five years following completion of the landscaping and ecological enhancement works associated with the Infrastructure RMA. Following submission of the Year 5 monitoring report, further discussion will be held with the Local Planning Authority to determine the need for further monitoring work.

15.4. This is intended to be an iterative document. Objectives and success criteria will be reviewed annually and amended if required following discussion and agreement with the Local Planning Authority.

PLANS

PLAN ECO1

Site Location and Ecological Designations



KEY:

- SITE LOCATION
- LOCAL NATURE RESERVE (LNR)
- COUNTY WILDLIFE SITE (CWS)
- ANCIENT WOODLAND
- ANCIENT REPLANTED WOODLAND

N

ECOLOGYSOLUTIONS
Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

8110: GREAT WILSEY PARK, HAVERHILL

PLAN ECO1: SITE LOCATION AND ECOLOGICAL DESIGNATIONS

Rev: A

Jul 2019

PLAN ECO2

Ecological Features

H11
H10
H14
H12
H13
H15
H9
H7
H17
H6
H5
H4

KEY:

- SITE BOUNDARY
- ARABLE LAND
- WOODLAND
- IMPROVED GRASSLAND
- DITCH
- STOUR BROOK TRIBUTARY
- POND
- HEDGEROW
- TREE
- TRACK

N

ECOLOGYSOLUTIONS
Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

8110: GREAT WILSEY PARK, HAVERHILL

PLAN ECO2:
ECOLOGICAL FEATURES

Rev: A
Jul 2019

PLAN ECO3

Approach to Bat Surveys

KEY:

- TRANSECT ROUTE
- CONFIRMED BAT ROOST
- BAT HOP-OVER
- BAT FORAGING ROUTES
- DARK CORRIDOR
- (1) STATIC DETECTOR

N

Based on Exterior Architecture Drawing No. ExA_1868_Illustrative Masterplan

ECOLOGYSOLUTIONS
Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

8110: GREAT WILSEY PARK, HAVERHILL

PLAN ECO3:
APPROACH TO BAT SURVEYS

Rev: B
Jul 2019

PLAN ECO4

Approach to Bird Surveys

KEY:

TRANSECT ROUTE

N

Based on Exterior Architecture Drawing No. ExA_1868_Illustrative Masterplan

ECOLOGYSOLUTIONS
Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

8110: GREAT WILSEY PARK, HAVERHILL

PLAN ECO4:
APPROACH TO BIRD SURVEYS

Rev: B

Jul 2019

ECOLOGYSOLUTIONS

Part of the ES Group

Ecology Solutions Limited | Cokenach Estate | Barkway | Royston | Hertfordshire | SG8 8DL

01763 848084 | east@ecologysolutions.co.uk | www.ecologysolutions.co.uk

REDROW HOMES

ECOLOGYSOLUTIONS

Part of the ES Group

GREAT WILSEY PARK, HAVERHILL: INFRASTRUCTURE RESERVED MATTERS APPLICATION

Ecological Implementation Strategy

Pursuant to Condition 42 of DC/15/2151/OUT

July 2019
8110.EIS.vf4

ecology solutions for planners and developers

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1. INTRODUCTION

1.1. Ecology Solutions was commissioned by Redrow Homes in October 2018 to prepare materials to address the requirements of planning conditions for the development at Great Wilsey Park as shown on Plans ECO1 and ECO2 (reference: DC/15/2151/OUT).

1.2. Condition 42 requires that an Ecological Implementation Strategy be submitted and approved prior to commencement of development. The condition states:

No development shall take place on any phase or reserved matters application (including demolition, archaeological investigation, ground works and vegetation clearance) until an ecological implementation strategy for that particular phase or reserved matters application addressing the mitigation measures set out in Volume 2 Section 9 of the Environmental Statement dated September 2015, relevant appendices and subsequent Addendum document May 2016 has been submitted to and approved in writing by the local planning authority. The implementation strategy shall include the following:

a. ES mitigation measures to be addressed
b. Purpose and conservation objectives for the proposed works.
c. Review of site potential and constraints informed by up to date survey.
d. Detailed design(s) and / or working method(s) to achieve stated objectives.
e. Extent and location / area of proposed works on appropriate scale maps and plans.
f. Type and source of materials to be used where appropriate, e.g. native species of local provenance.
g. Timetable for implementation demonstrating that works are aligned with the proposed phasing of development.
h. Persons responsible for implementing the works.
i. Details of initial aftercare and long-term maintenance.
j. Requirement for monitoring and remedial measures.
k. Details for disposal of any wastes arising from works.

The implementation strategy shall be implemented in accordance with the approved details and all features shall be retained in that manner thereafter.

Reason: To ensure the satisfactory development of the site at the appropriate time to protect vulnerable ecological habitats and ensure the satisfactory development of the site.

1.3. This report has been prepared to address the requirements of condition 42, providing details of the ecological implementation strategy to be adopted within the infrastructure phase of the Redrow development, with particular attention paid to the mitigation measures set out in Volume 2 Section 9 of the Environmental Statement, relevant appendices and subsequent Addendum. Due regard is had to the baseline information and long term objectives for the site where these are relevant. As necessary, mitigation strategies are proposed such that the development would be in line with all relevant legislative and planning policy requirements.

1.4. The focus of this document is on the mitigation strategies and protective measures that will be implemented during construction, i.e. the development of the site and establishment of the various habitats and features proposed. The long term of management and ecological enhancement of the site is focused on in the Landscape and Ecological Management Plan.

1.5. Both documents refer to the General Arrangement (GA) drawings and Planting Plans produced by Exterior Architecture in consultation with Ecology Solutions.

2. ES MITIGATION MEASURES TO BE ADDRESSED

2.1 ES Chapter

2.1.1 The mitigation measures described in the Ecology ES Chapter are summarised in Table 9.5 of that document. The effects concerned and the mitigation proposed are reproduced in the table below. A column has been added to the table to indicate where in this document and / or on the accompanying GA and Planting Plans the measures are detailed.

POTENTIAL EFFECT	NATURE OF EFFECT	SIGIFICANCE	MITIGATION / ENHANCEMENT MEASURES	GEOGRAPHICAL FEATURES	RESIDUAL EFFECTS	DOCUMENT / PLAN REFERENCE OR COMMENT
Construction						
Statutory & Non-Statutory Sites						
Dust Particles Exposure on LNR & CWS	Temporary	Negligible	Work area sprayed with water during dry conditions	Local	Negligible	See section 6 of this document.
Habitats						
Arable Field Loss	Permanent	Negligible	Diverse range of habitats will be created within previously arable dominated areas	Negligible	Minor/ Moderate Beneficial Long Term	Arable fields are largely occupied by housing parcels. Green spine proposals illustrated on GA and Planting Plans.
Improved Grassland – Loss of fields	Permanent	Negligible	Some fields to be retained along the water course, these will be enhanced with additional planting. More species rich meadow grassland habitats are to be created within the GI	Negligible	Negligible	See GA and Planting Plans and section 7 of this document.
Field Margins – Partial loss	Permanent/ Temporary	Negligible	Majority retained within hedgerows. New areas of grassland habitats created providing more coverage and diversity	Site	Minor Beneficial Long Term	For general protection of field margins, see GA and Planting Plans and section 7 of this document. H19, H21, H23, H24 are not within the Redrow site.
Field Margins – Partial loss of North/East 'Wildlife Conservation Areas' margins. (H19, H21 & H23/H24)	Permanent/ Temporary	Minor Adverse Short Term		Site		
Woodland - Loss of 1ha of Woodland Compartment W1	Permanent	Minor/ Moderate Adverse Long Term	Additional woodland planting through the Application Site	Local	Moderate Beneficial Long Term at Local Level.	W1 is not within the Redrow site.
Woodland - Loss of 0.3ha Recently Planted Plantation (TN5)	Permanent	Minor/ Moderate Adverse Long Term	Additional woodland planting to compensate for losses	Local		See GA and Planting Plans and section 8 of this document.
Woodland – Damage from encroachment by equipment or materials	Temporary/ Permanent	Minor/ Moderate Adverse Short Term	Retained habitats fenced off and 'toolbox' talks given to contractors. No dig methods where roads and footpath required.	Site	Negligible	See GA and Planting Plans and section 8 of this document.
Woodland – Foliage coverage with dust particles	Temporary	Minor Adverse Short Term	During dry periods water will be sprayed over the ground, suppressing dust.	Site		See GA and Planting Plans and section 8 of this document.

POTENTIAL EFFECT	NATURE OF EFFECT	SIGIFICANCE	MITIGATION / ENHANCEMENT MEASURES	GEOGRAPHICAL FEATURES	RESIDUAL EFFECTS	DOCUMENT / PLAN REFERENCE OR COMMENT
Hedgerows - Partial losses of hedgerows H4, H9, H13 & H14	Permanent	Minor Adverse Long Term	Existing hedgerows strengthened with additional native species. Compensatory hedgerows planted.	Local		See GA and Planting Plans and section 9 of this document.
Hedgerows - Partial losses of HEGS hedgerows H11, H12, H21 & H23				Local		For H11, H12 see GA and Planting Plans and section 9 of this document. H21, H23 not within Redrow site.
Hedgerows - Partial loss of hedgerows H19 'important' under REGS				Local		H19 not within Redrow site.
Hedgerows - Damage to existing and newly planted hedgerows from machinery, equipment and materials	Temporary/ Permanent	Minor Adverse Medium Term	Retained habitats fenced off and 'toolbox' talks given to contractors	Site		See GA and Planting Plans and section 9 of this document.
Watercourses - Becoming clogged with rubbish/building material	Temporary	Minor Adverse Short Term	'Toolbox' talks given to contractors about sensitively of habitats	Site		See GA and Planting Plans and section 10 of this document.
Fauna						
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]		[redacted]
Birds (Breeding) – Removal of arable habitats	Permanent	Minor Adverse Long Term	No arable habitats will be created. Additional nests and foraging provided in GI.	Negligible	Negligible	See section 16 of this document.
Birds (Breeding) – Removal of hedgerow & part of woodland W1 removal during breeding season	Permanent	Moderate Adverse in Short Term	Habitat removal to occur outside of breeding season or under supervision of an experienced ecologist. New hedgerows will be planted with fruiting bodies for foraging and dense structure for nesting.	Site	Negligible	See GA and Planting Plans and section 16 of this document. W1 not in Redrow site.
Breeding Birds- Habitat created benefit swift, starlings, song thrush, dunnock and house sparrow.	Permanent	Minor Beneficial Long Term	GI will create additional hedgerow, trees, areas of open greenspace and residential gardens.	Local	Minor Beneficial Long Term	See GA and Planting Plans and section 16 of this document.
Wintering Birds – Loss of arable habitats on skylarks	Permanent	Minor Adverse Long Term	Displaced to surrounding arable field	Local	Negligible	See section 16 of this document.

POTENTIAL EFFECT	NATURE OF EFFECT	SIGIFICANCE	MITIGATION / ENHANCEMENT MEASURES	GEOGRAPHICAL FEATURES	RESIDUAL EFFECTS	DOCUMENT / PLAN REFERENCE OR COMMENT
Dormice – Loss of habitats used by dormice – Isolation and injury/death	Permanent	Minor/ Moderate Adverse Long Term	Removal of habitats under Natural England licence at appropriate times of the year.	Local	Negligible	No evidence of Dormice in Redrow site. No licence required (see ES Addendum comments below).
Dormice Loss of hedgerow H23/H24	Permanent	Negligible / Minor Adverse Long Term		Site	Negligible	H23, H24 not in Redrow site.
Dormice - Possible encroachment of construction machinery/materials into retained habitats used dormice	Temporary	Minor	Retained habitats fenced off and 'toolbox' talks given to contractors	Site	Negligible	No evidence of Dormice in Redrow site. See GA and Planting Plans and section 9 of this document for hedgerow protection measures.
Dormice – Deer grazing on new GI planting	Temporary	Moderate Adverse Long Term	Fencing off or planting more mature species.	Site	Negligible	No evidence of Dormice in Redrow site. See section 14 of this document for protective measures.
Reptiles - Loss of habitats used by reptile populations	Permanent	Moderate Adverse Medium Term	Passive displacement will be undertaken in areas when habitat losses occur.	Local	Minor Beneficial Long Term	See GA and Planting Plans and section 17 of this document.
Reptiles - Isolation of reptile populations from access roads/habitat loss	Temporary/ Permanent	Minor/ Moderate Long Term	Ensuring populations are not isolated by displacement measures and additional habitats created	Site		See section 17 of this document.
Reptiles - Possible encroachment of construction machinery/materials into retained habitats used by reptiles	Temporary	Minor Adverse Short Term	Retained habitats fenced off and 'toolbox' talks given to contractors	Site	Negligible	See GA and Planting Plans and section 17 of this document.
Bats -Losses of woodland W1 will alter navigational and foraging behaviours	Temporary	Minor Adverse Short Term	Linkages will be retained within other areas of woodland W1. Increased GI will provide alternative routes.	Site	Negligible	W1 not in Redrow site.
Bats - Fragmentation of navigational corridors due to linear losses	Temporary	Minor Adverse Short Term	Habitat 'Hop-overs' to be created near gaps and additional planting to ensure additional navigational routes	Local		See GA and Planting Plans and section 12 of this document.
Bats - Disruption of navigational and foraging routes by artificial lighting from construction works – common species of bat	Temporary	Minor Adverse Short Term	Limit dusk working hours, where required direction lighting will be situated away from natural habitats.	Site	Negligible	See GA and Planting Plans and Lighting Strategy for Bats (Condition 44).
Bats - Disruption of navigational and foraging routes by artificial lighting from construction	Temporary	Moderate Adverse Short Term		Local		See GA and Planting Plans and Lighting Strategy for Bats (Condition 44).

POTENTIAL EFFECT	NATURE OF EFFECT	SIGIFICANCE	MITIGATION / ENHANCEMENT MEASURES	GEOGRAPHICAL FEATURES	RESIDUAL EFFECTS	DOCUMENT / PLAN REFERENCE OR COMMENT
works – Barbastelle bats						
Bats - Disruption of tree roosts and access to them, by artificial lighting from construction works	Temporary	Minor Adverse Short Term		Site	Negligible	See GA and Planting Plans and Lighting Strategy for Bats (Condition 44).
Operational Effects						
Statutory & Non-Statutory Sites						
Increase in recreational disturbance on CWS & LNR.	Temporary/ Permanent	Minor Adverse Long Term	Specific GI created for recreational activities i.e. off lead dog walking. Circular walks with semi natural features.	Local	Negligible	See GA and Planting Plans and section 6 of this document.
Effects on Habitats						
Woodland - Recreation disturbance on Great Field Plantation	Temporary/ Permanent	Minor Adverse Long Term	Perimeter planting and fencing to focus public access to designated paths. Interpretation boards installed.	Local	Minor Beneficial Long Term	See GA and Planting Plans and section 8of this document.
Woodland - Increased disturbance of woodland W1, due to possible access to new amenities	Temporary/ Permanent	Minor Adverse Long Term		Local		W1 not in Redrow site.
Woodland - Increased disturbance and possible damage of woodland W4 from extended play and public interference	Temporary/ Permanent	Minor Adverse Long Term		Local		W4 not in Redrow site.
Woodland - Increase in litter levels within woodland affecting ground flora and fauna	Temporary	Minor Adverse Medium Term	Litter bins to be located at entry points to woodland and near public amenities	Local		See GA and Planting Plans and section 8 of this document.
Woodland - Disturbance through public short cuts through exiting and created hedgerow / margins	Temporary	Minor Adverse Medium Term	Post and wire fencing to allow time for hedgerows to establish.	Site	Negligible	See GA and Planting Plans and section 8 of this document.
Watercourse - Increase in recreational pressure of watercourse, particularly the central feature	Temporary/ Permanent	Minor Adverse Long Term	Fencing and public interpretation boards to raise awareness of biological features.	Local		See GA and Planting Plans and section 10 of this document.
Residential Gardens	Permanent	Minor beneficial Long Term	N/A	Site	Minor beneficial Medium Term	N/A
New Woodland – Damage by the public	Temporary	Minor Adverse in Medium Term	New woodland planting will be fenced off and managed	Local	Negligible	See GA and Planting Plans and section 8 of this document.

POTENTIAL EFFECT	NATURE OF EFFECT	SIGIFICANCE	MITIGATION / ENHANCEMENT MEASURES	GEOGRAPHICAL FEATURES	RESIDUAL EFFECTS	DOCUMENT / PLAN REFERENCE OR COMMENT
New Habitats – Grassland, waterbodies, woodland, and individual tree planting	Permanent	Moderate/ Major Beneficial Long Term	New habitats created	Local	Moderate/ Major Beneficial Long Term	See GA and Planting Plans and sections 7 to 10 of this document.
New Habitats – Inappropriate Management	Temporary/ Permanent	Moderate Adverse Short/ Medium/ Long Term	A Green infrastructure & Biodiversity Management Plan will be written	Local	Moderate Beneficial Long Term	See GA and Planting Plans and Landscape and Ecological Management Plan (Condition 7).
Effects on Fauna						
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted] n 11 of this document.
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]		[redacted] .
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]		[redacted] 1 of this document.
Birds – Domestic Cats and Slow Development of Habitats	Temporary	Minor Adverse Medium Term	Existing habitats retained to allow possible refuge. Where possible more mature hedgerow species planted. Nesting boxes will provide opportunities while habitats mature.	Site	Negligible	See GA and Planting Plans and section 16 of this document.
Birds – New GI	Permanent	Minor Beneficial Long Term	Retention of hedgerows and the GI created will provide more refuge and foraging opportunities	Local	Minor Beneficial Long Term	See GA and Planting Plans and section 16 of this document.
Dormice – Inappropriate Management of Habitats	Temporary/ Permanent	Minor / Moderate Adverse Long Term	A Green infrastructure & Biodiversity Management Plan will be written	Site	Minor Beneficial Long Term	No evidence of Dormice in Redrow site.
Dormice – Degradation of existing/created habitats by public	Temporary/ Permanent	Minor / Moderate Adverse Long Term	Habitats will be fenced off while they develop and interpretation boards specifying the importance of such areas	Site		No evidence of Dormice in Redrow site.
Dormice – Predation by Cats	Permanent	Minor Adverse Long Term	Dense hedgerow planting and nesting boxes installed for refuge opportunities while habitats develop.	Site		No evidence of Dormice in Redrow site. See GA and Planting Plans and section 14 of this document.
Reptiles – Predation by Cats	Permanent	Minor Adverse Long Term	New grassland habitats will be created through the site with specific reptile features such as hibernacula, log piles and hedgerows. These will act as refuge and hibernation structures.	Site	Minor Beneficial Long Term	See GA and Planting Plans and section 17 of this document.
Reptiles – Habitat Creation	Permanent	Minor Beneficial Long Term		Site		See GA and Planting Plans and section 17 of this document.
Reptiles – Degradation of existing/created habitats by public	Temporary/ Permanent	Minor/ Moderate	Habitats will be fenced off while they develop and interpretation boards specifying the importance of such areas	Site		See GA and Planting Plans and section 17 of this document.

POTENTIAL EFFECT	NATURE OF EFFECT	SIGIFICANCE	MITIGATION / ENHANCEMENT MEASURES	GEOGRAPHICAL FEATURES	RESIDUAL EFFECTS	DOCUMENT / PLAN REFERENCE OR COMMENT
Bats – Street and Building Lighting	Permanent	Moderate Adverse Short Term	Buffers will be created along habitats to limit the degree of light spill. Where lighting required, they will be directionally focused or shrouded. Lighting on buildings will only be placed where necessary. Additional GI will provide alternative foraging and commuting opportunities	Local	Negligible	See GA and Planting Plans and Lighting Strategy for Bats (Condition 44).
Bats – Additional GI	Permanent	Minor/ Moderate Beneficial Long Term	Additional GI created that will provide new commuting and foraging opportunities. GI will increase prey items as waterbodies and grassland habitats created.	Local	Minor/ Moderate Beneficial Long Term	See GA and Planting Plans and section 12 of this document.
Cumulative Effects – North West Haverhill Development						
Construction						
Dust Particles Effects on Statutory Sites	Temporary	Minor Adverse Short Term	Supress with spraying ground with water during dry periods	Borough	Negligible	See section 6 of this document.
Loss of hedgerows	Permanent	Minor Adverse Long Term	New hedgerow planting with GI	Site		See GA and Planting Plans and section 9 of this document.
Operational						
Recreational pressures on Ann Sucklings Way & Norney Plantation CWS	Permanent	Minor Adverse Long Term		Borough	Negligible	See section 6 of this document.

2.2 ES Addendum

2.2.1 The ES Addendum summarises the revised approach to be taken for Dormice, at paragraphs 9.2.8 and 9..2.9. Note that the reference to a nest is for an area outwith the Redrow phase of development.

Since the submission of the planning application, the proposed mitigation measures have been amended; a Natural England licence will not be required. The survey results used techniques recommended within the most current available guidance, which demonstrated a single dormouse nest is situated within habitats to be retained by the proposals. No further nesting sites or evidence of dormouse nests were identified in nesting tubes within locations affected by the proposed development. From this evidence it has been concluded that the proposed development will not affect a breeding site or resting place, which are afforded strict protection under the Conservation of Habitats and Species Regulation 2010 (as amended), therefore a licence is not required to legitimise the works.

In situations where no evidence of dormouse activity has been identified in habitats effected by proposals, but dormice are known locally the Dormice Conservation Handbook confirms a licence can be avoided "if the proposed activity can be timed, organised and carried out to avoid committing offences". The guidance also confirms that where impacts can be completely avoided, the Regulations are not offended and a licence is not required. To ensure such circumstances a precautionary Outline Risk Assessment and Method Statement has been written on the basis of the current parameters plan (Appendix 9.6), this specifies habitat removal at appropriate time of the year so

avoiding potential offences under the Regulations. If dormice activity is confirmed then works will stop and a licence applied for.

2.2.2 The strategies in the Dormouse Risk Assessment and Method Statement included as an Appendix to the Addendum have been adopted in full, as set out in section 14 of this document. The results of surveys undertaken by Ecology Solutions have shown that this remains a suitable approach.

2.2.3 Other information in the ES Addendum does not change the approach summarised in the table above.

3. PURPOSE AND CONSERVATION OBJECTIVES

3.1 Purpose of the Strategy

3.1.1 The purpose of this strategy is to address the mitigation measures set out in Volume 2 Section 9 of the Environmental Statement (ES) dated September 2015, relevant appendices and the subsequent Addendum document dated May 2016.

3.1.2 The scope of the ES relates to the wider site and the ecological receptors identified during work to inform the outline application. The current strategy relates solely to infrastructure reserved matters application for the land in the ownership of Redrow Homes.

3.2 Conservation Objectives

3.2.1 Specific objectives for the conservation of particular species or groups and particular habitats of nature conservation interest are set out in the relevant sections below. The nature of these objectives has been guided by the principles set out in UK and European wildlife legislation, notably the Wildlife & Countryside Act 1981 (as amended), the Conservation of Habitat and Species Regulations 2017 and the Natural Environment & Rural Communities Act 2006. Furthermore, the formulation of these objectives has also been influenced by national and local biodiversity and conservation targets, as set out in the UK Post-2010 Biodiversity Framework and the Sussex Biodiversity Action Plan (BAP).

3.2.2 The overarching objectives for nature conservation are as follows:

- To safeguard habitats and species that are important in the national and local context, and to maintain or enhance their conservation status as appropriate;
- To ensure that the site continues to support a similar complement of species to that already existing (with the exception of invasive non-native species); and
- To enhance the biodiversity of the site, where this is compatible with the above objectives.

3.2.3 Information on the existing situation at the site and its environs regarding habitats of ecological interest and the presence of protected species has been collated as part of the preparation of this document. This includes information gathered to inform the outline ES and the more recent 2018/19 surveys completed by Ecology Solutions. Together, this provides the baseline on which the mitigation strategies set out in this document are founded.

3.3 Detailed Designs and Working Methods to achieve Objectives

3.3.1 Information on the approaches to achieve the stated objectives is set out in the sections to follow. These are specifically designed to achieve the aims of the mitigation strategy set out in the ES and associated documents. They define the type and source of materials to be used where appropriate.

4. REVIEW OF SITE POTENTIAL AND CONSTRAINTS

4.1 This document has been informed by the background information accrued for the outline ES and by updated surveys undertaken by Ecology Solutions of the Redrow Homes site in 2018/19.

4.2 Constraints

4.2.1 The following main habitat / vegetation types were identified within the areas proposed for infrastructure within the site:

- Arable;
- Improved Grassland;
- Hedgerow;
- Watercourse;
- Pond;
- Ditch;
- Trees;
- Plantation; and
- Field Margins.

4.2.2 The location of these habitats is shown on Plan ECO2.

4.2.3 Habitats of value in the context of the site include mixed and broadleaf plantation, hedgerows, trees (especially where these also offer suitable nesting opportunities for bird species or potential roosting opportunities for bats), field margins, watercourse, ditches and ponds. The arable land and improved grassland are of limited intrinsic nature conservation value.

4.2.4 None of the above habitats pose an overriding ecological constraint in themselves that would prevent the development proceeding, with the majority of the habitats of greater value being retained and enhanced as part of the green infrastructure for the site.

4.2.5 Other ecological constraints within the areas of infrastructure are attributed to the known or potential presence of [redacted] bats, Otters, Water Voles, Dormice, Hedgehogs, birds, common reptiles, amphibians and invertebrates. These constraints are addressed by mitigation measures detailed in later sections of this document.

4.2.6 The ecological constraints are illustrated on Plan ECO3.

4.2.7 In addition, Haverhill Railway Walks Local Nature Reserve (LNR) and Haverhill Disused Railway Line County Wildlife Site (CWS) are present some 492m south of the site according to the ES. This is beyond the existing built-up area of Haverhill, and though the ES highlights the potential for dust deposition as an adverse effect, in Ecology Solutions' view this is highly unlikely given the distance and prevailing wind direction, even if there were not a requirement for standard good construction practice to minimise dust on surrounding residential areas. Ann Sucklings Way CWS and Norney Plantation CWS are further removed, at 729m and 990m according to the ES. These are cited in the cumulative effects assessment in terms of recreational effects.

4.3 Potential

4.3.1 The majority of the site consists of intensively managed arable fields, with areas of improved grassland. These are intrinsically of low ecological interest, with the large arable fields in particular offering relatively little for wildlife. The plantations are generally even-aged; Great Field Plantation has minimal understorey and a depauperate ground flora. The hedgerows, while a significant ecological asset, are gappy or missing in places.

4.3.2 Hence the site possesses excellent potential for wildlife gains, retaining and enhancing the best of the existing habitats, while promoting new opportunities through the strategies for green and blue infrastructure networks. The establishment of new habitats and future management of the network as a whole will deliver significant benefits.

4.3.3 Surveys undertaken to inform the outline planning application and those completed in 2018/19 identified a complement of bat species using the site for foraging and dispersal; some use of the site by [redacted], though this appears to have declined over time; an assemblage of breeding birds; the presence of two species of reptile, Common Lizard and Grass Snake; and the amphibians Common Toad and Smooth Newt. Some limited evidence of Dormice was recorded in the wider site subject to the outline application (though not the Redrow site). Otters and Water Voles are known to be present in the wider locality. The site is expected to support a range of common invertebrates, but interest will be limited by the intensive arable management.

4.3.4 Overall, there is significant potential to enhance the site for the species known to be present, and to provide opportunities for those present in the wider environment to colonise naturally over time.

4.4 Survey Information

4.4.1 This Ecological Implementation Strategy is informed by the range of survey work completed as part of the outline planning application, which has been reviewed in full, and surveys carried out by Ecology Solutions on behalf of Redrow Homes in 201819. The ecological constraints are well understood. The mitigation and enhancement strategy for this reserved matters application has adopted in full the approved measures in the Environmental Statement and ES Addendum accompanying the outline planning application. The strategy is therefore comprehensive and robust.

4.4.2 Full details of the updated survey work are provided in the Protected Species Survey Report which accompanies the Infrastructure RMA. The Protected Species Survey Report should be read in conjunction with this EIS for the full baseline information.

5. EXTENT AND LOCATION / AREA OF PROPOSED WORKS

5.1 The extent and location of all proposed works are shown on the GA and Planting Plans produced by Exterior Architecture in consultation with Ecology Solutions.

5.2 These detailed plans, which are at an appropriate scale, clearly show the locations of all new and retained habitats, the degree of habitat loss and creation, and the protective measures to be employed throughout the period of construction.

5.3 This strategy make reference to the GA and Planting Plans throughout, and should be read alongside those plans.

5.4 Summary plans (Plans ECO4a to d) are included within this EIS for an overview and ease of reference, but for the full detail refer to the GA and Planting Plans.

6. DESIGNATED SITES

6.1 This section is concerned with addressing the effects on Haverhill Railway Walks Local Nature Reserve (LNR) and Haverhill Disused Railway Line County Wildlife Site (CWS) as identified in the ES, as well as Ann Sucklings Way CWS and Norney Plantation CWS cited in the cumulative effects assessment.

6.2 Conservation Objectives

To avoid dust effects arising from development. To avoid increased recreational disturbance.

6.3 Designs and Working Methods

Dust Suppression

6.3.1 The preparation of the arable land for development is not considered likely to produce high levels of dust, but during periods of dry weather the work area will be sprayed with water.

6.3.2 A suitable vehicle and bowser will be kept on site, and the assessment of dust effects will be allocated to a suitable individual by the site manager, who will have ultimate responsibility for implementing the measure.

6.3.3 It should be noted that suppression of dust during construction is a routine measure adopted by Redrow Homes on all sites, particularly where existing residential properties and / or features of ecological importance are present. Hence this will be done in any event.

6.3.4 It is noted that the effects of dust on these designated sites were assessed as ‘negligible’ in the ES even before mitigation.

Recreational Opportunities

6.3.5 The Redrow scheme includes a significant expanse of new public open space, which will be delivered as part of the infrastructure phase of development, as set out in this document, the Landscape and Ecological Management Plan and the GA and Planting Plans. This new green infrastructure will be available for use by new residents, offering diverse opportunities for walking, dog-walking and general informal recreation. There will therefore be no adverse effects on the designated sites as a result.

7. GREEN SPINE / LINEAR COUNTRY PARK

7.1 This section is concerned with the establishment of the Green Spine and Linear Park, as shown on the GA and Planting Plans, and the mitigation of effects on grassland as identified in the ES.

7.2 Conservation Objectives

To avoid adverse effects on retained habitats through direct encroachment.

To avoid adverse effects on new establishing habitats through direct encroachment.

To establish high quality new habitats using appropriate native species mixes.

7.3 Designs and Working Methods

Construction Phase Mitigation

7.3.1 All habitats to be retained as part of development will be appropriately protected using robust fencing, i.e. Heras fencing or similar, as shown on the GA and Planting Plans.

7.3.2 Tree root protection areas, as defined on the GA and Planting Plans, will be safeguarded through fencing complying with the British Standard.

7.3.3 Site personnel will be briefed as to the presence of these important retained areas.

7.3.4 No storage of materials will be permitted within 10m of retained habitats, and vehicle movements within this area will be for essential works only.

7.3.5 These measures will be the responsibility of the site manager.

Dust Suppression

7.3.6 The preparation of the arable land for development is not considered likely to produce high levels of dust, but during periods of dry weather the work area will be sprayed with water.

7.3.7 A suitable vehicle and bowser will be kept on site, and the assessment of dust effects will be allocated to a suitable individual by the site manager, who will have ultimate responsibility for implementing the measure.

New Habitats

7.3.8 All new habitats will be appropriately protected using robust fencing, i.e. Heras fencing or similar, as shown on the GA and Planting Plans, until such time as they are properly established.

7.3.9 New planting undertaken as part of the infrastructure of the site will include native species with an emphasis on trees and plants of known value to wildlife.

7.3.10 Avenue trees (see GA and Planting Plans, Planting Schedule and Table 7.1 below) will be planted along primary roads screening play areas and parkland. This will help to increase connectivity throughout the site and offer habitats for nesting birds and invertebrates.

Avenue Tree Species
Field Maple 'Elsrijk' *Acer campestre* 'Elsrijk'
Norway Maple 'Crimson King' *Acer platanoides* 'Crimson King'
Hornbeam 'Fastigiata' *Carpinus betulus* 'Fastigiata'
Cherry 'Accolade *Prunus* 'Accolade'

Table 7.1. Avenue Tree species list.

7.3.11 The Linear Country Park will be a core component of the new development. Green corridors throughout the new development will serve as conduits for wildlife, encouraging natural processes to permeate into the establishing community. They will include new areas of wildflower grassland, native tree and shrub planting, and new swales and attenuation basins as part of the drainage strategy (see below).

7.3.12 The Northern Gateway Park will incorporate a large number of parkland trees (see GA and Planting Plans, Planting Schedule and Table 7.2 below), increasing the diversity and age range of tree species within site.

Parkland Tree Species
Field Maple *Acer campestre*
Norway Maple *Acer platanoides*
Indian Horse-chestnut *Aesculus indica*
Alder *Alnus glutinosa*
Silver Birch *Betula pendula*
Hornbeam *Carpinus betulus*
Hornbeam 'Fastigiata' *Carpinus betulus* 'Fastigiata'
Beech *Fagus sylvatica*
Copper Beech *Fagus sylvatica* 'Purpurea'
Holly *Ilex aquifolium*
Crab Apple 'Evereste' *Malus sylvestris* 'Evereste'
Crab Apple *Malus sylvestris*
Canadian Poplar *Populus x canadensis*
Bird Cherry *Prunus padus*
Blackthorn *Prunus spinosa*
Pin Oak *Quercus palustris*
Oak *Quercus robur*
Whitebeam 'Majestica' *Sorbus aria* 'Majestica'
Rowan S*orbus aucuparia*
Wild Service-tree *Sorbus torminalis*
Bald Cypress *Taxodium distichum*
Small-leaved Lime *Tilia cordata*
Common Lime *Tilia x europaea*

Table 7.2. Parkland tree species list.

7.3.13 New areas of extensive tree planting will be under-sown with Emorsgate Seeds woodland mix (see GA and Planting Plans, Planting Schedule and Table 7.3 below).

EW1 Woodland Mixture Species	% per Mix
Wild Flowers	
Garlic Mustard *Alliaria petiolata*	3%
Ramsons *Allium ursinum*	0.8%
Betony *Stachys officinalis*	1.6%
Rough Chervil *Chaerophyllum temulum*	1%
Foxglove *Digitalis purpurea*	0.2%
Meadowsweet *Filipendula ulmaria*	2%
Hedge Bedstraw *Galium album*	1%
Water Avens *Geum rivale*	1%
Wood Avens *Geum urbanum*	0.2%
Bluebell *Hyacinthoides non-scripta*	2.8%
Hairy St John's-wort *Hypericum hirsutum*	0.8%
Primrose *Primula vulgaris*	0.2%
Selfheal *Prunella vulgaris*	1.5%
Red Campion *Silene dioica*	2.7%
Ragged Robin *Lychnis flos-cuculi*	0.2%
Wood Sage *Teucrium scorodonia*	1%
	20%
Grasses	
Common Bent *Agrostis capillaris*	10%
Sweet Vernal Grass *Anthoxanthum odoratum*	2%
False Brome *Brachypodium sylvaticum*	7%
Crested Dog's-tail *Cynosurus cristatus*	28%
Tufted Hair-Grass *Deschampsia cespitosa*	1%
Slender Creeping Red Fescue *Festuca rubra ssp. litoralis*	20%
Wood Meadow-grass *Poa nemoralis*	12%
	80%

Table 7.3. Emorsgate Seeds EW1 Woodland Mixture species list.

7.3.14 An 'edible spine' will be established within the linear country park focusing on edible and foraging plants (see GA and Planting Plans, Planting Schedule and Table 7.4 below).

Edible Planting Species
Wild Garlic *Allium ursinum*
Hazel *Corylus avellana*
Purple Coneflower *Echinacea purpurea*
Wild Strawberry *Fragaria vesca*
Crab Apple *Malus sylvestris*
Water Mint *Mentha aquatica*
Wild Marjoram *Origanum vulgare*
Blackthorn *Prunus spinosa*
Dog Rose *Rosa canina*
Elder *Sambucus nigra*
Rowan S*orbus aucuparia*

Table 7.4. Edible Planting species list.

7.3.15 Significant new tree planting will be undertaken in this area with an emphasis on orchard tree species (see GA and Planting Plans, Planting Schedule and Table 7.5 below).

Wild Orchard Tree Species
Apple 'Annie Elizabeth' *Malus domestica* 'Annie Elizabeth'
Apple 'Red Falstaff' *Malus domestica* 'Red Falstaff'
Wild Cherry *'*Amber Heart' *Prunus avium* 'Amber Heart'
Wild Cherry 'Knight Early Black' *Prunus avium* 'Knight Early Black'
Wild Cherry 'Penny' *Prunus avium* 'Penny'
Plum 'Avalon' *Prunus domestica* 'Avalon'
Plum 'Cambridge Gage' *Prunus domestica '*Cambridge Gage'
Plum 'Denniston's Superb' *Prunus domestica* 'Denniston's Superb'
Bird Cherry *Prunus padus*

Table 7.5. Wild Orchard tree species list.

7.3.16 The planting schedule includes the provision of wet and dry grassland habitat, designed to encourage greater wildflower diversity, and the provision of swales and ponds as habitats containing taller vegetation. This habitat diversification will favour invertebrates and will in turn provide net gains for local wildlife.

7.3.17 Areas of amenity grassland within the infrastructure for the site will be seeded with a flowering lawn mix (see GA and Planting Plans, Planting Schedule and Table 7.6 below).

EL1 Flowering Lawn Mixture Species	% per Mix
Wild Flowers	
Lady's Bedstraw *Galium verum*	4%
Rough Hawkbit *Leontodon hispidus*	0.5%
Oxeye Daisy *Leucanthemum vulgare*	1%
Birdsfoot Trefoil *Lotus corniculatus*	3.7%
Cowslip *Primula veris*	3.0%
Selfheal *Prunella vulgaris*	4.0%
Meadow Buttercup *Ranunculus acris*	3.5%
Red Clover *Trifolium pratense*	0.1%
	20%
Grasses	
Common Bent *Agrostis capillaris*	8.0%
Crested Dog's-tail *Cynosurus cristatus*	40.0%
Slender Creeping Red Fescue *Festuca rubra ssp. litoralis*	28.0%
Smaller Cat's-tail *Phleum bertolonii*	4.0%
	80%

Table 7.6. Emorsgate Seeds EL1 Flowering Lawn Mixture species list.

7.3.18 The existing field margins are recognised to be of relatively higher botanical interest. These will be retained and subject to ongoing management to maximise their botanical interest. There will be no storage of materials or tracking over of these areas, and no new tree planting.

7.3.19 New areas of wildflower grassland are to be established throughout the Green Spine and Linear Park. These areas are currently principally intensive arable and improved grassland respectively. In conjunction with the drainage strategy, areas of dry and wet grassland will be established (see GA and Planting Plans, Planting Schedule and Tables 7.7 and 7.8 below).

7.3.20 Newly established meadows will be cut on an annual basis as required, with the arisings removed. These would be retained as 'habitat piles' in suitable locations to encourage reptiles.

EM6 Meadow Mixture for Chalk & Limestone Soils Species	% per Mix
Wild Flowers	
Yarrow *Achillea millefolium*	0.5%
Kidney Vetch *Anthyllis vulneraria*	0.5%
Common Knapweed *Centaurea nigra*	1.5%
Greater Knapweed *Centaurea scabiosa*	2%
Wild Basil *Clinopodium vulgare*	0.4%
Wild Carrot *Daucus carota*	1%
Lady's Bedstraw *Galium verum*	2%
Field Scabious *Knautia arvensis*	1.5%
Rough Hawkbit *Leontodon hispidus*	0.4%
Oxeye Daisy *Leucanthemum vulgare*	0.5%
Bird's-foot Trefoil *Lotus corniculatus*	0.6%
Sainfoin *Onobrychis viciifolia*	1.5%
Wild Marjoram *Origanum vulgare*	0.2%
Hoary Plantain *Plantago media*	0.7%
Salad Burnet *Sanguisorba minor*	2%
Cowslip *Primula veris*	1%
Selfheal *Prunella vulgaris*	1%
Meadow Buttercup *Ranunculus acris*	1%
Bulbous Buttercup *Ranunculus bulbosus*	1.5%
Small Scabious *Scabiosa columbaria*	0.2%
	20%
Grasses	
Quaking-grass *Briza media*	4%
Glaucous Sedge *Carex flacca*	0.2%
Crested Dog's-tail *Cynosurus cristatus*	32%
Sheep's-fescue *Festuca ovina*	24%
Slender Creeping Red Fescue *Festuca rubra ssp. litoralis*	12.6%
Crested Hair-grass *Koeleria macrantha*	2%
Smaller Cat's-tail *Phleum bertolonii*	4%
Yellow Oat-grass *Trisetum flavescens*	1.2%
	80%

Table 7.7. Emorsgate Seeds EM6 Meadow Mixture for Chalk and Limestone Soils species list.

EM8 Meadow Mixture for Wetlands Species	% per Mix
Wild Flowers	
Yarrow *Achillea millefolium*	0.2%
Sneezewort *Achillea ptarmica*	0.2%
Betony *Stachys officinalis*	1%
Common Knapweed *Centaurea nigra*	2.5%
Meadowsweet *Filipendula ulmaria*	2%
Lady's Bedstraw *Galium verum*	2%
Rough Hawkbit *Leontodon hispidus*	0.5%
Oxeye Daisy *Leucanthemum vulgare*	0.5%
Bird's-foot Trefoil *Lotus corniculatus*	0.7%
Greater Bird's-foot-trefoil *Lotus pedunculatus*	0.5%
Ribwort Plantain *Plantago lanceolata*	1%
Cowslip *Primula veris*	1%
Selfheal *Prunella vulgaris*	1.5%

Meadow Buttercup *Ranunculus acris*	2%
Yellow Rattle *Rhinanthus minor*	1.5%
Great Burnet *Sanguisorba officinalis*	1.5%
Pepper-saxifrage *Silaum silaus*	0.5%
Ragged Robin *Lychnis flos-cuculi*	0.4%
Devil's-bit Scabious *Succisa pratensis*	0.5%
	20%
Grasses	
Common Bent *Agrostis capillaris*	10%
Meadow Foxtail *Alopecurus pratensis*	1%
Sweet Vernal Grass *Anthoxanthum odoratum*	3%
Quaking-grass *Briza media*	2%
Crested Dog's-tail *Cynosurus cristatus*	32%
Tufted Hair-Grass *Deschampsia cespitosa*	1%
Slender Creeping Red Fescue *Festuca rubra ssp. litoralis*	24%
Meadow Barley *Hordeum brachyantherum*	1%
Meadow Fescue *Festuca pratensis*	6%
	80%

Table 7.8. Emorsgate Seeds EM8 Meadow Mixture for Wetlands species list.

7.3.21 Areas of tussocky grassland will be established using Emorsgate Seeds EG10 Tussock Grass Mixture (see GA and Planting Plans, Planting Schedule and Table 7.9 below) to create greater opportunities for reptiles and other wildlife.

EG10 Tussock Grass Mixture Species	**% per Mix**
Meadow Foxtail *Alopecurus pratensis*	2.5%
Crested Dog's-tail *Cynosurus cristatus*	25.0%
Cocksfoot *Dactylis glomerata*	20.0%
Tufted Hair-Grass *Deschampsia cespitosa*	2.5%
Strong-creeping Red Fescue	25.0%
Yorkshire Fog *Holcus lanatus*	2.5%
Tall Fescue *Festuca arundinacea*	12.5%
Meadow Fescue *Festuca pratensis*	10%
	100%

Table 7.9. Emorsgate Seeds EG10 Tussock Grass Mixture species list.

7.3.22 The periphery of the wildflower meadows will be planted with native tree species (see GA and Planting Plans, Planting Schedule and Table 7.10 below), bolstering the existing woodland edge and mature Oak trees present along the boundaries of the linear park.

Woodland Meadow Edge Tree Species
Field Maple *Acer campestre*
Alder *Alnus glutinosa*
Silver Birch *Betula pendula*
Hazel *Corylus avellana*
Bird Cherry *Prunus padus*
White Willow *Salix alba*
Crack Willow *Salix fragilis*
Yew *Taxus baccata*

Table 7.10. Woodland Meadow Edge tree species list.

7.4 Initial Aftercare and Long-term Management and Maintenance

Trees

7.4.1 Watering will be required during periods of drought for no less than the first three years after planting to ensure satisfactory establishment.

7.4.2 Trees will be inspected every six months for the first two years to ensure that they are healthy, not diseased or damaged, or dead. After the first two years, trees can be inspected annually if found to be establishing well.

7.4.3 Any failed trees within the first five years will be replaced and maintained for a subsequent five years. Tree replacement will occur in early spring or late autumn.

7.4.4 Annual pruning will be completed between January and March. Emergency pruning will be undertaken immediately after a critical fault is identified.

Grassland

7.4.5 Seed is best sown in the autumn or spring but can be sown at other times of the year if there is sufficient warmth and moisture.

7.4.6 **EG10 Tussock Grass Mixture.** Once established, tussocky grassland requires very little management.

7.4.7 In the first year, mow regularly to 40-60mm throughout the growing season to prevent annual weeds smothering the slower growing grasses. Cuttings will be removed if dense.

7.4.8 After the first year, unwanted perennial weeds can be occasionally spot treated.

7.4.9 Tussocky areas may need to be cut every 2-3 years between October and February to control scrub and bramble development. This should be done on a rotational basis, so that no more than half of the area is cut in any one year to allow an area of safe refuge for wildlife.

7.4.10 **EL1 Flowering Lawn Mixture.** Newly sown flowering lawns should be mown every 7-10 days during the growing season of the first year to a height of 40-60mm. Residual perennial weeds will be carefully dug out or spot treated.

7.4.11 After the first year the grass will be mown regularly to a height of 25-40mm. Management can be relaxed from late June for 4-8 weeks to allow for flowering (mowing may be suspended earlier to allow for Cowslip to flower). Heavy quantities of cuttings should be collected and removed from site.

7.4.12 **EW1 Woodland Mixture.** In established woodland the woodland mix requires very little management.

7.4.13 In young or open woodland with higher light levels, the mix should be cut annually in mid-summer until the tree cover has established.

7.4.14 **EM6 Meadow Mixture for Chalk and Limestone Soils and EM8 Meadow Mixture for Wetlands.** Newly sown meadows will be mown regularly

throughout the first year of establishment to a height of 40-60mm. This will control annual weeds and help maintain balance between faster growing grasses and slower developing wild flowers. Cuttings will be removed if dense. Residual perennial weeds will be carefully dug out or spot treated.

7.4.15 In subsequent years, on poor shallow soils the grass will be cut once or twice at the end of the summer.

7.4.16 On deeper soils best results are usually obtained by traditional meadow management. This will include a cut to 50mm after flowering in July or August. The cuttings will be left to dry and shed seed for 1-7 days before being removed from the site. The grass can then be maintained at a height of 50mm through to spring.

7.4.17 Areas of new and retained and enhanced planting, as well as ponds and swales, will be monitored annually for the first five years to ensure that the species diversity and composition is developing in such a way as to enhance the site for wildlife.

7.4.18 Watering will be required during periods of drought to ensure satisfactory establishment. Watering will be undertaken as required to maintain healthy plant growth.

7.4.19 Dead or diseased plants will be removed and replaced with the same species immediately after identification.

8. WOODLAND AND SCRUB

8.1 This section is concerned with the establishment and management of existing and new woodland habitats, including Great Field Plantation, and the mitigation of effects on woodland as identified in the ES.

8.2 Conservation Objectives

To avoid adverse effects on retained habitats through direct encroachment.

To avoid adverse effects on new establishing habitats through direct encroachment.

To establish high quality new habitats using appropriate native species mixes.

To promote greater habitat diversity in existing woodland.

8.3 Designs and Working Methods

Construction Phase Mitigation

8.3.1 All habitats to be retained as part of development will be appropriately protected using robust fencing, i.e. Heras fencing or similar, as shown on the GA and Planting Plans.

8.3.2 Tree root protection areas, as defined on the GA and Planting Plans, will be safeguarded through fencing complying with the British Standard.

8.3.3 Site personnel will be briefed as to the presence of these important retained areas.

8.3.4 No storage of materials will be permitted within 10m of retained habitats, and vehicle movements within this area will be for essential works only.

8.3.5 These measures will be the responsibility of the site manager.

Dust Suppression

8.3.6 The preparation of the arable land for development is not considered likely to produce high levels of dust, but during periods of dry weather the work area will be sprayed with water.

8.3.7 A suitable vehicle and bowser will be kept on site, and the assessment of dust effects will be allocated to a suitable individual by the site manager, who will have ultimate responsibility for implementing the measure.

New Habitats

8.3.8 All new habitats will be appropriately protected using robust fencing, i.e. Heras fencing or similar, as shown on the GA and Planting Plans, until such time as they are properly established.

Great Field Plantation

8.3.9 Overall, while Great Field Plantation does offer opportunities to wildlife, it is of limited intrinsic nature conservation interest. The understorey is virtually absent and the field layer is very impoverished, with little light penetrating to the woodland floor. The aims of management are therefore to facilitate a gradual conversion to a more naturalistic woodland with greater structural diversity, focusing on native species as opposed to introduced conifers.

Conversion of Even-aged Plantation to Uneven-aged System

8.3.10 The principal advantage of the phased removal of conifers and the introduction of native broadleaves is that disruption to wildlife is minimised. A phased approach is therefore favoured over a clear-fell approach, which would have an adverse effect on protected and notable species, and is in any case unacceptable from a landscape and visual standpoint.

8.3.11 Three glades will be established in the woodland by felling conifer species. New understorey planting will be undertaken using native species. Existing broadleaved species will be encouraged to grow to maturity.

8.3.12 Felled timber will be cut into logs and set into 'loggeries' and more informal log piles to encourage saproxylic invertebrates. Felled trees will not be shredded or mulched.

8.3.13 New planting will exclusively be locally native species e.g. Oak *Quercus robur*; Hazel *Corylus avellana*, Hornbeam *Carpinus betulus*; Field Maple *Acer campestre*, Holly *Ilex aquifolium*, Guelder Rose *Viburnum opulus*; Hawthorn *Crataegus monogyna*; Spindle *Euonymus europaeus*, Honeysuckle *Lonicera periclymenum*, Dog Rose *Rosa canina*, Silver Birch *Betula pendula*, Cherry *Prunus avium*, Bird Cherry *Prunus padus*, Crab Apple *Malus sylvestris* and Rowan S*orbus aucuparia*. The aim will be to encourage strong growth of these species to canopy and understorey layer as appropriate.

Coppicing

8.3.14 Existing Hazel stools will be coppiced on a 15-year rotation to encourage greater structural diversity, and layered to produce new coppice stools and expand the understorey. Cut wood will be used to diversify the habitat through establishment of wood piles.

Ground Flora

8.3.15 The effects of habitat management on the ground flora will be monitored. Though the intention will be to encourage natural regeneration, if this proves difficult consideration will be given to the introduction of plug-planted locally native species.

Wildlife Opportunities

8.3.16 It is expected that the habitat enhancements will generate greater wildlife interest. Additional opportunities will be established by providing a series of bat, bird and invertebrate boxes (see following sections).

Public Use and Recreation

8.3.17 Public use of the woodland will be monitored and management operations adapted where necessary. Generally it is envisaged that fencing will be avoided. Where it is necessary to dissuade the public from accessing certain areas (for example around the Badger setts and where new planting has been undertaken) this will be by means of dead hedging or planting thorny species. If fencing must be used it will be suitable for the area, e.g. natural woven Willow or Hazel hurdles.

Boundary Hedgerow

8.3.1 A new native hedgerow will be established on the boundaries of Great Field Plantation to diversify the habitat and regulate public access. Subject to the detail of the Housing RMA layouts, which at the time of writing have yet to be finalised, specific access points will be facilitated.

Detailed Management Plan

8.3.2 Great Field Plantation represents a special case in terms of habitat establishment and management. The information in this and other documents set out the general prescriptions for management, protection and monitoring, but the detailed measures in terms of which trees to fell to establish glades, and which areas to coppice on which rotation will be subject to a further submission, for which Redrow Homes is content to accept a planning condition on the Infrastructure Reserved Matters permission. This allows time for further consultation on the detail of this key aspect of the green infrastructure, without unduly delaying the commencement of construction.

Southern Plantation

8.3.3 The woodland in the south of the site is currently a mixed plantation, with a good proportion of native species, though largely even-aged. Long term management will encourage growth of native species and diversification of the habitat.

8.3.4 Non-native conifers will be selectively felled to introduce habitat diversity, with timber retained as for Great Field Plantation.

8.3.5 An appropriate coppicing regime will be introduced on a 15-year rotation to encourage a vigorous understorey.

8.3.6 Bat and Dormouse 'hop-overs' will be established using native trees approximately 6m in height at edges of new accesses (see GA and Planting Plans for locations and detailed specifications of bat hop-overs). The species to be used are listed in Table 8.1 below.

Bat Hop-over Tree Species
Field Maple *Acer campestre*
Alder *Alnus glutinosa*
Hornbeam *Carpinus betulus*
Beech *Fagus sylvatica*
Bird Cherry *Prunus padus*
Blackthorn *Prunus spinosa*
Oak *Quercus robur*

Wild Service-tree *Sorbus torminalis*
Small-leaved Lime *Tilia cordata*

Table 8.1. Bat Hop-over tree species list.

Stour Brook Tributary

8.3.7 Generally the woodland along the watercourse is more semi-natural than that of the plantations, with mature broadleaved trees and a good understorey and field layer. At this stage it is considered that minimal intervention is necessary. Enhancements will focus on the provision of dead wood piles for habitat diversification. The existing footbridge will be replaced to facilitate safe public access and recreation.

New Woodland

8.3.8 A significant area of new woodland is to be established in the northern area of the linear park adjacent to plot A1. This will be based around W8 / W10 NVC woodland as recommended in the ES.

New Woodland

8.3.9 A significant area of new woodland is to be established in the northern area of the linear park adjacent to plot A1. This will be based around W8 / W10 NVC woodland as recommended in the ES. Tables 8.2 to 8.4 below set out the species to be used.

No	Species	%
23	Field Maple *Acer campestre*	3%
8	Hornbeam *Carpinus betulus*	1%
16	Dogwood *Cornus sanguinea*	2%
256	Hazel *Corylus avellana*	34%
113	Hawthorn *Crataegus monogyna*	15%
8	Spindle *Euonymus europaeus*	1%
8	Beech *Fagus sylvatica*	1%
16	Holly *Ilex aquifolium*	2%
8	Wild Privet *Ligustrum vulgare*	1%
8	Crab Apple *Malus sylvestris*	1%
8	Aspen *Populus tremula*	1%
8	Cherry *Prunus avium*	1%
16	Blackthorn *Prunus spinosa*	2%
113	Sessile Oak *Quercus petraea*	15%
38	Oak *Quercus robur*	5%
8	Buckthorn *Rhamnus cathartica*	1%
38	Goat Willow *Salix caprea*	5%
38	Grey Willow *Salix cinerea subsp. cinerea*	5%
8	Elder *Sambucus nigra*	1%
8	Rowan *Sorbus aucuparia*	1%
8	Yew *Taxus baccata*	1%
8	Wayfaring-tree *Viburnum lantana*	1%

Table 8.2. Woodland planting species list, Area 1 (752.52m^2).

No	Species	%
54	Field Maple *Acer campestre*	3%
18	Hornbeam *Carpinus betulus*	1%

36	Dogwood *Cornus sanguinea*	2%
609	Hazel *Corylus avellana*	34%
269	Hawthorn *Crataegus monogyna*	15%
18	Spindle *Euonymus europaeus*	1%
18	Beech *Fagus sylvatica*	1%
36	Holly *Ilex aquifolium*	2%
18	Wild Privet *Ligustrum vulgare*	1%
18	Crab Apple *Malus sylvestris*	1%
18	Aspen *Populus tremula*	1%
18	Cherry *Prunus avium*	1%
36	Blackthorn *Prunus spinosa*	2%
269	Sessile Oak *Quercus petraea*	15%
90	Oak *Quercus robur*	5%
18	Buckthorn *Rhamnus cathartica*	1%
90	Goat Willow *Salix caprea*	5%
90	Grey Willow *Salix cinerea subsp. cinerea*	5%
18	Elder *Sambucus nigra*	1%
18	Rowan S*orbus aucuparia*	1%
18	Yew *Taxus baccata*	1%
18	Wayfaring-tree *Viburnum lantana*	1%

Table 8.3. Woodland planting species list, Area 2 (1,790 85m^2).

No	Species	%
132	Field Maple *Acer campestre*	10%
40	Hornbeam *Carpinus betulus*	3%
93	Dogwood *Cornus sanguinea*	7%
461	Hazel *Corylus avellana*	35%
40	Spindle *Euonymus europaeus*	3%
53	Beech *Fagus sylvatica*	4%
93	Holly *Ilex aquifolium*	7%
40	Wild Privet *Ligustrum vulgare*	3%
40	Crab Apple *Malus sylvestris*	3%
40	Cherry *Prunus avium*	3%
93	Blackthorn *Prunus spinosa*	7%
40	Buckthorn *Rhamnus cathartica*	3%
40	Elder *Sambucus nigra*	3%
40	Rowan S*orbus aucuparia*	3%
40	Yew *Taxus baccata*	3%
40	Wayfaring-tree *Viburnum lantana*	3%

Table 8.4. Woodland planting species list, Area 3 (1,316.86m^2).

8.4 Initial Aftercare and Long-term Management and Maintenance

Trees

8.4.1 Watering will be required during periods of drought for no less than the first three years after planting to ensure satisfactory establishment.

8.4.2 Trees will be inspected every six months for the first two years to ensure that they are healthy, not diseased or damaged, or dead. After the first two years, trees can be inspected annually if found to be establishing well.

8.4.3 Any failed trees within the first five years will be replaced and maintained for a subsequent five years. Tree replacement will occur in early spring or late autumn.

8.4.4 Annual pruning will be completed between January and March. Emergency pruning will be undertaken immediately after a critical fault is identified.

Shrubs

8.4.5 Shrub planting will be inspected every three months to ensure that they are healthy, not diseased or damaged, or dead. Any failed species will be removed and replaced with the same species and size.

9. HEDGEROWS AND TREES

9.1 This section is concerned with the establishment and management of new hedgerows and trees, and the mitigation of effects on woodland as identified in the ES.

9.2 Conservation Objectives

To avoid adverse effects on retained habitats through direct encroachment.

To avoid adverse effects on new establishing habitats through direct encroachment.

To establish high quality new habitats using appropriate native species mixes.

9.3 Designs and Working Methods

Construction Phase Mitigation

9.3.1 All habitats to be retained as part of development will be appropriately protected using robust fencing, i.e. Heras fencing or similar, as shown on the GA and Planting Plans.

9.3.2 Tree root protection areas, as defined on the GA and Planting Plans, will be safeguarded through fencing complying with the British Standard.

9.3.3 Site personnel will be briefed as to the presence of these important retained areas.

9.3.4 No storage of materials will be permitted within 10m of retained habitats, and vehicle movements within this area will be for essential works only.

9.3.5 These measures will be the responsibility of the site manager.

Dust Suppression

9.3.6 The preparation of the arable land for development is not considered likely to produce high levels of dust, but during periods of dry weather the work area will be sprayed with water.

9.3.7 A suitable vehicle and bowser will be kept on site, and the assessment of dust effects will be allocated to a suitable individual by the site manager, who will have ultimate responsibility for implementing the measure.

New Habitats

9.3.8 All new habitats will be appropriately protected using robust fencing, i.e. Heras fencing or similar, as shown on the GA and Planting Plans, until such time as they are properly established.

New Hedgerows

9.3.9 The existing hedgerow network is a key green infrastructure asset and is to be retained and enhanced wherever possible. Unless otherwise stated on the Hedgerow Removal Plan 5055-L-112 rev C accompanying the outline application (see Appendix 1), new gaps established will generally be maximum of 12m to allow for Dormouse dispersal. Gaps in existing hedgerows will be reinforced with native species. New hedgerow and shrub planting will comprise native species as shown on the GA and Planting Plans and Planting Schedule and listed in Table 9.1 below.

Native Hedgerow and Shrub Species
Field Maple *Acer campestre*
Dogwood *Cornus sanguinea*
Hazel *Corylus avellana*
Hawthorn *Crataegus monogyna*
Spindle *Euonymus europaeus*
Crab Apple *Malus sylvestris*
Wild Cherry *Prunus avium*
Blackthorn *Prunus spinosa*
Dog Rose *Rosa canina*
Elder *Sambucus nigra*
Guelder Rose *Viburnum opulus*

Table 9.1. Native Hedgerow and Shrub species list.

9.3.10 Hedgerows will continue to be managed. Management will aim to ensure continued good structure. Hedgerows will be cut on rotation, so that not all are cut in any one year. This will encourage greater availability of winter forage for birds. Hedgerows will be laid on rotation to encourage greater structural diversity.

9.4 Initial Aftercare and Long-term Management and Maintenance

Trees

9.4.1 Watering will be required during periods of drought for no less than the first three years after planting to ensure satisfactory establishment.

9.4.2 Trees will be inspected every six months for the first two years to ensure that they are healthy, not diseased or damaged, or dead. After the first two years, trees can be inspected annually if found to be establishing well.

9.4.3 Any failed trees within the first five years will be replaced and maintained for a subsequent five years. Tree replacement will occur in early spring or late autumn.

9.4.4 Annual pruning will be completed between January and March. Emergency pruning will be undertaken immediately after a critical fault is identified.

Shrubs and Hedgerows

9.4.5 Shrub and hedgerow planting will be inspected every three months to ensure that they are healthy, not diseased or damaged, or dead. Any failed species will be removed and replaced with the same species and size.

9.4.6 Pruning and dead-heading will be completed at the end of the plant flowering seasons (spring to autumn) as required.

10. ATTENUATION FEATURES

10.1 This section is concerned with the establishment and management of new attenuation features.

10.2 Conservation Objectives

To avoid adverse effects on retained habitats through direct encroachment. To avoid adverse effects on new establishing habitats through direct encroachment. To establish high quality new habitats using appropriate native species mixes.

10.3 Designs and Working Methods

Construction Phase Mitigation

10.3.1 All habitats to be retained as part of development will be appropriately protected using robust fencing, i.e. Heras fencing or similar, as shown on the GA and Planting Plans.

10.3.2 Tree root protection areas, as defined on the GA and Planting Plans, will be safeguarded through fencing complying with the British Standard.

10.3.3 Site personnel will be briefed as to the presence of these important retained areas.

10.3.4 No storage of materials will be permitted within 10m of retained habitats, and vehicle movements within this area will be for essential works only.

10.3.5 Particular regard will be had to the management of on-site waste disposal, with regular checks of watercourses being undertaken for signs of litter.

10.3.6 These measures will be the responsibility of the site manager.

Dust Suppression

10.3.7 The preparation of the arable land for development is not considered likely to produce high levels of dust, but during periods of dry weather the work area will be sprayed with water.

10.3.8 A suitable vehicle and bowser will be kept on site, and the assessment of dust effects will be allocated to a suitable individual by the site manager, who will have ultimate responsibility for implementing the measure.

New Habitats

10.3.9 All new habitats will be appropriately protected using robust fencing, i.e. Heras fencing or similar, as shown on the GA and Planting Plans, until such time as they are properly established.

New Attenuation Features

10.3.10 For the most part these new features will not be permanently wet, but some areas will be designed to retain water. This will diversify the habitats present. Locally native aquatic and emergent species will be planted to encourage early naturalisation. Swales will be planted with appropriate mix of native species (see GA and Planting Plans, Planting Schedule and Tables 10.1 and 10.2 below).

Marginal Planting Species
Marsh-marigold *Caltha palustris*
Lesser Pond-sedge *Carex acutiformis*
Common Spike-rush *Eleocharis palustris*
Water Avens *Geum rivale*
Yellow Iris *pseudacorus*
Jointed Rush *Juncus articulatus*
Purple-loosestrife *Lythrum salicaria*
Water Mint *Mentha aquatica*
Water Forget-me-not *Myosotis scorpioides*
Reed Canary Grass *Phalaris arundinacea*

Table 10.1. Marginal planting species list.

10.3.11 Newly established basins will be seeded with locally native species mixes and managed appropriately. Areas of dry and wet grassland will be established. The blue infrastructure network of swales will provide new foraging and dispersal opportunities for a variety of wildlife.

EP1F Wild Flowers for Pond Edges Species	**% per Mix**
Sneezewort *Achillea ptarmica*	2.5%
Wild Angelica *Angelica sylvestris*	10%
Marsh-marigold *Caltha palustris*	1%
Common Knapweed *Centaurea nigra*	7.5%
Hemp-agrimony *Eupatorium cannabinum*	5%
Meadowsweet *Filipendula ulmaria*	15%
Water Avens *Geum rivale*	2.5%
Square-stalked St John's-wort *Hypericum tetrapterum*	2.5%
Yellow Iris *Iris pseudacorus*	20%
Greater Bird's-foot-trefoil *Lotus pedunculatus*	5%
Gypsywort *Lycopus europaeus*	4%
Purple-loosestrife *Lythrum salicaria*	3%
Water Mint *Mentha aquatica*	0.5%
Common Fleabane *Pulicaria dysenterica*	0.5%
Meadow Buttercup *Ranunculus acris*	10%
Great Burnet *Sanguisorba officinalis*	3%
Ragged Robin *Lychnis flos-cuculi*	4%
Devil's-bit Scabious *Succisa pratensis*	2.5%
Tufted Vetch *Vicia cracca*	1.5%
	100%

Table 10.2. Emorsgate Seeds EP1F Wild Flowers for Pond Edges species list.

10.4 Initial Aftercare and Long-term Management and Maintenance

10.4.1 **EP1F Wild Flowers for Pond Edges.** In the first year, annual weed growth should be cut back to encourage the development of a good perennial ground cover.

10.4.2 Once established, vegetation should be managed on a rotational basis, removing short sections every 2-3 years to provide a variation in structure. Dense stands of single species may also benefit from selective thinning. Vegetation removal should be undertaken between September and November to cause the least disruption to wildlife.

11.

11.1

11.1.2

11.1.3

11.2 Conservation Objectives

11.3 Designs and Working Methods

Construction Phase

11.3.1

11.3.2

11.3.3

11.3.4

[redacted]

11.3.5 [redacted]

[redacted]

[redacted]

- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]

[redacted]

12. BATS

12.1 Baseline Conditions

12.1.1 Bat activity surveys completed in October 2018 and April to June 2019 across the Redrow site have recorded a generally low level of activity. Areas shown to be of greater interest for bats are Great Field Plantation and Hedgerow H4, crossing the south of the site. Species recorded during the activity surveys include Common Pipistrelle *Pipistrellus pipistrellus*, Soprano Pipistrelle *Pipistrellus pygmaeus*, Noctule Bat *Nyctalus noctula*, Brown Long-eared Bat *Plecotus auritus* and Barbastelle *Barbastella barbastellus*. The results of the activity surveys completed by to inform the ES in 2014 and 2015 across the wider site recorded a similar assemblage.

12.1.2 Several trees with potential roost features were identified by in 2014, three of which were found to contain roosts. A single Pipistrelle species hibernation roost was identified within tree T28. Trees T44 and T49 were identified as having bat roosts but the species were not identified from eDNA testing. Nocturnal surveys concluded that T49 was used as a roost by Soprano Pipistrelle.

12.1.3 Activity surveys involving transects and static detector deployments are to continue for the remainder of the 2019 survey season. Previously identified bat roosts are to be resurveyed to update the baseline information.

12.1.4 The 2018/19 dataset, combined with the information from the outline ES, provides a robust baseline from which to assess the effectiveness of mitigation and enhancement measures. As far as possible, future monitoring surveys will replicate the approach taken for the 2018/19 work.

12.2 Conservation Objectives

To avoid disturbance to bat foraging during construction.
To avoid possible adverse effects on known bat roosts.
To avoid effects on bat foraging during operation..

12.3 Designs and Working Methods

Construction Phase Mitigation

12.3.1 During the construction period no lighting will be present at night on identified bat foraging routes, as shown in the *Lighting Strategy for Bats* produced for Condition 44. This will be the responsibility of the site manager. The Ecological Clerk of Works will be able to advise on the location of these features.

12.3.2 Retained trees with roost potential will be safeguarded using Heras fencing or similar (see GA and Planting Plans for location of fencing) and site personnel briefed on the presence of bats as part of the site induction.

New Habitat Planting

12.3.3 To compensate for the partial loss of hedgerows, additional native species planting will be provided throughout the green infrastructure and open space area greater than that which is to be lost, as shown on the GA and Planting Plans. The retained hedgerows will be included within the green linkages and will be 'gapped up' with native species; this will increase species diversity, strengthen the hedgerows and improve the corridor for foraging bats.

12.3.4 Management of the hedgerows will be undertaken in an ecologically sensitive manner to enhance the nature conservation value. Such management will include allowing the hedgerow to reach at least a height of 3m. Once reached the hedgerow can be 'topped out' to maintain the height or to suit circumstances, with a width of at least 1-2m; a proportion of trees within the hedgerow such as Oak and Field Maple will be allowed to mature into standard trees to provide nesting and foraging opportunities for local wildlife and a varied habitat structure; and grassland along the hedgerow base will be allowed to grow to provide a graduated sward height and habitat.

12.3.5 To compensate for woodland losses additional native species woodland planting (that of which will be greater than to be lost) are to be incorporated into the scheme (see GA and Planting Plans).

12.3.6 The attenuation features to be established will offer new foraging resources for bats once established. Seeding with dry and damp grassland mixes, and establishing marginal vegetation will encourage use by invertebrates and increase the foraging opportunities for the local bat population.

Dark Corridors

12.3.7 Across the site, dark corridors have been designed to ensure and incorporate habitats of value to bats for foraging, potential roosting and commuting into the wider area – see the *Lighting Strategy for Bats*.

12.3.8 Other lighting considerations will also be implemented during construction and incorporated into the development in order to ensure minimal light spill from the site. Lighting will be directed to where it is needed, to avoid light spillage, particularly along the hedgerow and woodland edges; buffer zones will not be illuminated; lighting that is incorporated into the development design will be of a type that has a low attraction to insects; any upward lighting will be avoided; and security lighting on properties backing on to sensitive hedgerows and woodland will be low wattage LED which will provided on the properties at construction to forestall a future homeowner installing unsuitable lighting which could impact on bats.

Bat Hop-overs

12.3.9 In order to maintain the linkages and an area of darkness across the gaps created by the road access through the hedgerows, young plantation woodland and tributary corridor a 'hop-over' will be created. Details of the locations of the hop-overs and their specification in terms of planting are provided on the GA and Planting Plans. Hop-overs will be established early in the process.

Bat Boxes

12.3.10 The inclusion of a variety of bat boxes around the site on suitable trees, and particularly along the woodland edges will provide new potential roosting sites for bats within the local area. Boxes will be located in sheltered spots and placed at a height of at least three metres from the ground. Boxes will also be arranged around the site so that a number of different aspects are covered.

12.3.11 Illustrative locations of bat boxes are provided on Plans ECO4a to d; in practice the locations of the boxes will be determined on the ground by the Ecological Clerk of Works, who will ensure that the orientation and position of the boxes is appropriate, and that suitable trees are chosen.

12.4 Type and Source of Materials

12.4.1 Twenty Schwegler 2F Universal Bat Boxes, 20 Schwegler 1FF Flat Bat Box, and 5 Schwegler 1FW Hibernation Boxes (see Appendix 2) will be installed on suitable existing trees throughout the site.

12.5 Initial Aftercare and Long-term Management and Maintenance

12.5.1 Bat boxes will be checked periodically (once per year in March) for the first five years following installation, by a suitably experienced and licensed ecologist to ensure that they are still in situ and are not damaged. Boxes will be replaced if found to be damaged.

13. OTTERS AND WATER VOLES

13.1 Baseline Conditions

13.1.1 No evidence of use by Otters or Water Voles has been recorded in the existing waterbodies across the Redrow site and the wider site, but these species are known to be present in the River Stour, and the Stour Brook south of the site.

13.2 Conservation Objectives

> To avoid impacts on potential Otter and Water Vole habitat during construction.
>
> To establish and enhance suitable habitat for Otters and Water Voles within the site, to encourage natural colonisation in future.

13.3 Designs and Working Methods

13.3.1 Prior to any works in the vicinity of suitable habitats within the site, a check survey for Otters and Water Voles will be undertaken by an ecologist. In the event that evidence of these species is recorded, consideration will be given for the need for a Natural England licence, dependent on the nature of the works proposed.

Fencing of Retained Habitats

13.3.2 All retained watercourses will be fenced using Heras fencing or similar (as shown on the GA and Planting Plans) to avoid possible encroachment. All site personnel will be briefed as to the importance of these areas for wildlife as part of the site induction.

Enhancements

13.3.3 Though there is no evidence of their presence within the site at the time of writing, Otters and Water Voles are known to be present within the locality and the development represents an opportunity to provide greater opportunities for the species.

13.3.4 The network of attenuation features to be established as part of the Linear Park and drainage strategy, as well as the retained and enhanced ditches across the site, will be a valuable new area of potential habitat for Otters and Water Voles, should they colonise the site.

13.3.5 The provision of wet grassland associated with the drainage strategy will provide suitable overland habitat for dispersal.

14. DORMICE

14.1 Baseline Conditions

14.1.1 No evidence of Dormice has been recorded by Ecology Solutions across the Redrow site in surveys completed in 2018 and 2019. A partial Dormouse nest was recorded in a survey tube in the south-east of the wider site in 2015 during surveys to inform the outline ES; no evidence was recorded in the Redrow site.

14.2 Conservation Objectives

To avoid potential killing or injury of any Dormice that may be present.
To establish and enhance suitable habitat for Dormice within the site.

14.3 Designs and Working Methods

Construction Phase Mitigation

14.3.1 Notwithstanding that no evidence of Dormice has been recorded in the Redrow site, the highly precautionary approach advocated by the ES Addendum has nevertheless been adopted in full. At the time of writing there is no requirement for a Natural England licence.

14.3.2 During the construction period all contractors will be briefed about the importance of the habitats within the site for the range of species that have been identified, and that care should be taken when conducting any works near existing natural features. All vegetation removal will have been predetermined at the full planning stages, and no additional losses would occur until the project ecologists have confirmed so.

14.3.3 Where site offices, material and vehicle storage are proposed, and where the phased development commences all natural habitats will be fenced off with an appropriate buffer using Heras fencing or similar (the location of which is shown on the GA and Planting Plans). This will ensure that habitats are not degraded through soil compaction and interference by contractors and machinery.

Timed Vegetation Removal – Hedgerows

14.3.4 Where sections of hedgerow are to be removed these will generally be limited to a length of 12m. The methods below cover the methods for habitat removal during the winter and summer.

<u>Winter</u>

14.3.5 Vegetation checks and removal will be undertaken during the winter between November and March inclusive under the supervision of the Ecological Clerk of Works. This period will avoid the bird breeding season and the active period for Dormice, as they are more likely to be in hibernation underground. Searches of the vegetation will be undertaken prior to any vegetation removal whereby nests and any cavities within trees etc will be inspected for Dormice.

The clearance of vegetation will be undertaken by hand with no heavy machinery to be used in close proximity to the areas of removed, so avoiding any possible disturbance through noise and vibrations. All tree felling will also be undertaken during this period, provided there are no bat roosting constraints.

14.3.6 The vegetation will be cut down to approximately 10-15cm, to avoid disturbance to the ground and retain the roots and stumps, in order not to adversely affect any Dormice that may be hibernating at or below the surface. The hedgerow canopy will be removed from the stem, a small proportion of the hedge will be kept as a 'dead hedge', which will provide a feature within which Dormice could continue to move when they wake from hibernation, this also means that individuals will be able to move along such breaks into surrounding retained habitats.

14.3.7 The removal of the root systems of the cut vegetation will be undertaken when Dormice are active between April to October, although care will be taken to avoid periods of cold wet weather, when Dormice can go into torpor. All root removals will need to be supervised by a licensed ecologist. During this period the 'dead hedge' will also be removed from the site; care will be taken to ensure that there are no nesting birds present; if they are present then work will stop until young have fledged and a buffer created to ensure that the nest is not disturbed. These areas will also be searched for Dormouse nests prior to removal.

Summer

14.3.8 Vegetation will be cleared by hand during the summer when Dormice are active; this will be between May to late September, but clearance should ideally be undertaken in May to avoid separating young that would be dependent on their mothers. All vegetation that is scheduled for removal will be checked for bird and Dormouse nests before any removal is undertaken. All removal will take place under a watching brief by a licensed ecologist, whereby removal of small lengths (approximately 10m) will be undertaken over consecutive days, thus allowing time for any possible Dormice to move from the area. The removal of the canopy of vegetation will be undertaken by hand; this will ensure that sightings of Dormice are more likely. The root system of the vegetation should also be removed during this period so to avoid potential refuge and hibernation opportunities in the future.

Timed Vegetation Removal – Woodland

14.3.9 Small sections of woodland are to be removed to facilitate access roads in the south of the Redrow site, these are also well removed from the Dormouse nest recorded. Approaches for winter and summer vegetation removal were included in the outline application.

Winter

14.3.10 During the winter months (November to March) ground level vegetation will be removed from the woodland areas; this will persuade any Dormice that could potentially be present to move when they come out of hibernation. As with the above a 'dead hedge' will be provided to allow safe passage to surrounding retained habitats / woodland. The remaining tree stumps and any

ground removal will take place in the summer months when any Dormice present would be expected to have left the area (May to September).

Summer

14.3.11 Summer removal will take place between May and September. Small sections of the woodland compartments will be removed over a number of consecutive days. This will allow time and opportunities for any Dormice that might be present to move into adjacent retained habitats. Care will be taken to ensure that no habitats contain nesting birds.

Habitat Enhancements and Management

14.3.12 All existing and retained habitats will be enhanced with additional planting to ensure that poor structure and gaps are filled with native species that will benefit foraging, commuting and nest building. These will have a positive effect on Dormice but also other species.

14.3.13 Woodland compartments will be thinned to allow understorey shrub development, which are of more value to Dormice than the current tree canopy. Understorey species will be planted, including Oak, Honeysuckle *Lonicera periclymenum*, Hawthorn, Wayfaring-tree *Viburnum lantana*, Bramble *Rubus fruticosus*, Crab Apple *Malus sylvestris*, Cherry and Hazel.

14.3.14 Management will include coppicing, rotational cutting of sections of hedgerows at three to five year intervals and / or hedgerow laying; such measures will ensure increased fruiting bodies and understorey renewal of growth which will benefit invertebrates.

14.3.15 There will be a number of new habitats created within the site that will increase opportunities for Dormice to spread from their current isolation into the wider site and off site.

14.3.16 Generally, gaps established in existing hedgerows will be limited to 12m (see GA and Planting Plans), to facilitate movement of Dormice at ground level should they move into the area. To limit the requirement for individuals to go to ground taller shrubs / trees will be planted either side of any gaps, whereby management will ensure that the canopy is lifted to create a natural bridge over time. These measures are effectively the same as the bat hop-overs, and are in the same location. Similar measures will be adopted across the stream that runs through the site, whereby tree canopies will be encouraged to bridge the gap and potentially provide links to habitats where Dormice are currently absent.

Nest Boxes

14.3.17 Prior to any habitat losses a number of Dormice nesting boxes will be installed within woodland habitats.

14.3.18 Wooden nest boxes will be installed within habitat adjacent to any vegetation losses, these will increase the nesting opportunities within the site and thus increase the carrying capacity in the long term. These will be monitored to ensure they remain viable as nesting features, and will also be used for future assessment of the population.

14.4 Type and Source of Materials

14.4.1 All Dormouse boxes erected to inform surveys will be re-positioned and an additional 20 boxes will be installed within suitable and retained habitat. Locations for Dormouse boxes will be determined by the Ecological Clerk of Works.

14.5 Initial Aftercare and Long-term Management and Maintenance

14.5.1 Nesting boxes will be checked periodically (at least once a year in March) for the first five years following installation, by a suitably experienced ecologist to ensure that they are still in situ and are not damaged. Boxes will be replaced if found to be damaged.

15. HEDGEHOGS

15.1 Baseline Conditions

15.1.1 The site contains suitable habitats for Hedgehog foraging and dispersal, including woodland and hedgerows.

15.2 Conservation Objectives

To avoid killing or injury of Hedgehogs during construction. To provide greater opportunities for Hedgehogs within the site.

15.3 Designs and Working Methods

Construction Phase Mitigation and Vegetation Clearance

15.3.1 Ground cover will be cleared outside of the winter hibernation period wherever possible. Where this is not possible, a check for hibernation nests will be completed by the Ecological Clerk of Works prior to clearance.

15.3.2 Scrub and tree removal will be carried out in a sensitive manner, using hand tools to clear the base of trees to be removed prior to any large machinery pulling out roots.

15.3.3 Any clearance of log piles or other Hedgehog shelter features will be subject to inspection by the Ecological Clerk of Works to ensure that Hedgehogs are absent. In the event that an individual is encountered, it will be carefully placed in an appropriate lidded box and immediately removed to an area of suitable habitat at the margins of the site away from working areas.

15.3.4 Any trenches or deep pits associated with construction that are to be left open overnight will be provided with a means of escape in case a Hedgehog enters. This is particularly important if the trench fills with water, and will take the form of a roughened plank of wood placed in the trench as a ramp to the surface.

New Habitat Planting

15.3.5 The retention of hedgerows along with additional buffer planting and grassland will provide continued opportunities for commuting and foraging Hedgehogs. New planting including native species and species of known wildlife value will offer new foraging resources for Hedgehogs.

15.3.6 Specific enhancements for invertebrates (see below) will provide additional foraging opportunities for Hedgehogs.

Hibernation Boxes

15.3.7 Hedgehog hibernation boxes and log piles will be installed in discreet locations throughout the development under the direction of the Ecological Clerk of Works.

Hedgehog Gateways and Highways

15.3.8 Though not strictly part of the Infrastructure RMA, access to new housing areas will be a benefit for Hedgehogs using the new green infrastructure, and through being connected new residential gardens will offer new potential habitat for Hedgehogs and other small mammals. Garden fences will be provided with a 'Hedgehog Gateway', a 13cm x13cm section of fence cut out at the base, to facilitate dispersal for Hedgehogs and other small animals (see Appendix 3). This will enhance the permeability of the new development for wildlife. In this way, where the residential areas intersect with the green infrastructure, Hedgehog Highways will become established.

15.4 Type and Source of Materials

15.4.1 Ten Schwegler Hedgehog Domes or Ecoplate Hedgehog houses (see Appendix 4) will be positioned in discreet locations within the site.

15.5 Initial Aftercare and Long-term Management and Maintenance

15.5.1 Hibernation boxes will be checked periodically (at least once a year) for the first five years following installation, by a suitably experienced ecologist to ensure that they are still in situ and are not damaged. Boxes will be replaced if found to be damaged.

16. BIRDS

16.1 Baseline Conditions

16.1.1 Four wintering bird surveys were completed by Ecology Solutions in November and December 2018, and in January and February 2019. A total of 47 species were recorded, including 17 species that are listed as NERC species of principal importance, Suffolk LBAP and / or on the UK Birds of Conservation Concern Red and Amber list, as set out below:

Song Thrush *Turdus philomelos*
[redacted]
Yellowhammer *Emberiza citrinella*
Kestrel *Falco tinnunculus*
Linnet *Carduelis cannabina*
Redwing *Turdus iliacus*
Stock Dove *Columba oenas*
Black-headed Gull *Chroicocephalus ridibundus*
Bullfinch *Pyrrhula pyrrhula*
Dunnock *Prunella modularis*
Mistle Thrush *Turdus viscivorus*
Starling *Sturnus vulgaris*
House Sparrow *Passer domesticus*
Reed Bunting *Emberiza schoeniclus*
Fieldfare *Turdus pilaris*
Mallard *Anas platyrhynchos*
Lesser Black-backed Gull *Larus fuscus*

16.1.2 Four wintering bird surveys were undertaken between November 2014 and February 2015 to inform the outline ES, recording a similar complement of species.

16.1.3 Three breeding bird surveys were undertaken by Ecology Solutions in April, May and June 2019.

16.1.4 Fifty species were recorded within or immediately adjacent to the site, including 18 species that are listed as NERC species of principal importance and / or on the UK Birds of Conservation Concern Red and Amber list, as follows:

Song Thrush *Turdus philomelos*
[redacted]
Kestrel *Falco tinnunculus*
Linnet *Carduelis cannabina*
Herring Gull *Larus argentatus*
Stock Dove *Columba oenas*
Black-headed Gull *Chroicocephalus ridibundus*
Bullfinch *Pyrrhula pyrrhula*
Dunnock *Prunella modularis*
[redacted]
Starling *Sturnus vulgaris*
House Sparrow *Passer domesticus*
Reed Bunting *Emberiza schoeniclus*
Fieldfare *Turdus pilaris*
Willow Warbler *Phylloscopus trochilus*
Lesser Black-backed Gull *Larus fuscus*
Tawny Owl *Strix aluco*

16.2 Conservation Objectives

To safeguard bird nesting and foraging habitats during construction.

To avoid damage or destruction of birds' nests during construction.

To provide greater opportunities for birds within the site.

16.3 Designs and Working Methods

Nesting Bird Checks

16.3.1 In order avoid impacts on nesting birds, and to avoid a potential offence under the Wildlife & Countryside Act 1981, all necessary clearance of vegetation would be undertaken outside of the bird breeding season (March to July inclusive) wherever possible. Where this is not possible, a check survey of vegetation by an experienced ecologist would be undertaken immediately prior to clearance. In the event that a nest was found to be present, the vegetation would be left uncleared with a 5m exclusion zone around it until the young had fledged.

16.3.2 The Ecological Clerk of Works would liaise closely with the site manager on all clearance of suitable nesting habitat.

Fencing of Retained Habitats

16.3.3 All retained woodland, trees, hedgerows and field margins will be fenced using Heras fencing or similar (as shown on the GA and Planting Plans) to avoid possible encroachment. All site personnel will be briefed as to the importance of these areas for nesting birds as part of the site induction.

New Habitat Planting

16.3.4 The scheme includes habitat enhancements through the planting of native and ornamental trees and shrubs. New areas of woody species planting throughout the site will in time mature into habitats suitable for use by foraging and nesting birds.

16.3.5 Areas of new tussocky wildflower grassland will provide further nesting and foraging opportunities for farmland birds such as [redacted]

[redacted] Planting Plans.

Bird Boxes

16.3.7 A series of bird boxes and Swift poles will be provided to enhance nesting opportunities for birds in the local area. A selection of hole- and open-fronted designs will be used in order to encourage a variety of species. The locations of the Swift poles are shown on the GA and Planting Plans.

16.3.8 Indicative locations of the bird boxes are shown on Plans ECO4a to d, but in practice these will be positioned on suitable mature trees under the direction of the Ecological Clerk of Works.

16.4 Type and Source of Materials

16.4.1 Twenty Schwegler 2H Open Front Bird Boxes, 20 Schwegler 1N General Purpose Deep Bird Boxes and 20 Schwegler 1B Bird Boxes will be installed on retained trees throughout the site. Swift poles will be erected within suitable areas within the site (see Appendix 5 and GA and Planting Plans).

16.5 Initial Aftercare and Long-term Management and Maintenance

16.5.1 Bird boxes will be checked periodically (at least once a year in March) for the first five years following installation, by a suitably experienced ecologist to ensure that they are still in situ and are not damaged. Boxes will be replaced if found to be damaged.

17. REPTILES

17.1 Baseline Conditions

17.1.1 A presence / absence survey for reptiles has been completed from April to June 2019. The results of the surveys show that low populations of Grass Snake and Common Lizard are present, with the main areas of interest being Hedgerow H4 and the southern edge of the new plantation in the south of the site. The field margins to the north of Great Field Plantation were also seen to support small numbers of Common Lizard. These results are similar to those of surveys undertaken to inform the outline ES in 2014. That work also identified Slow Worm in the wider survey area, though not within the Redrow site.

17.2 Conservation Objectives

To safeguard reptile habitats during construction. To provide greater opportunities for reptiles within the site.

17.3 Designs and Working Methods

Passive Displacement

17.3.1 Where habitats used by reptiles exist mitigation measures will be put into place to ensure that no offence is caused under the Wildlife & Countryside Act. This will include passive displacement and fencing of sensitive areas.

17.3.2 The locations of existing field margins to be removed are shown on the GA and Planting Plans.

17.3.3 Passive displacement will involve the intensive management of the existing habitats favourable to reptiles, through a cutting regime which will encourage reptiles to move away from such areas. Cuts will be undertaken using a hand strimmer with an initial cut of 200mm followed by a cut of 100mm 24 hours later and then cut as short as possible. Displacement will occur ahead of development, when reptiles are active (between mid-March and October) and during favourable weather conditions. All cuttings and other debris will be removed to avoid creating places of refuge. Following the passive displacement exercise, topsoil will be stripped to remove any suitability for reptiles. All works will be undertaken under the supervision of a suitably qualified ecologist.

17.3.4 At the time of writing it is expected that all reptile mitigation measures would be undertaken by means of passive displacement, as specified in the ES and supported by the most recent survey findings. However, it is possible that passive displacement may not prove to be the most appropriate method in all circumstances, for example if the direction of displacement would not encourage reptiles to move into areas of larger suitable habitat, or where fragmentation is an issue. At the discretion of the Ecological Clerk of Works, in consultation with the site manager, a more formal capture and translocation exercise will be undertaken, involving the deployment of ‘tins’ and daily visits to the site during suitable conditions. Captured reptiles would be placed in a

cloth bag and removed to receptor sites identified for the purpose; the locations of these sites are shown on the GA and Planting Plans.

Fencing of Retained Habitats

17.3.5 All retained field margins will be fenced using Heras fencing or similar (as shown on the GA and Planting Plans) to avoid possible encroachment. All site personnel will be briefed as to the importance of these areas for reptiles as part of the site induction.

New Habitat Planting and Hibernation Features

17.3.6 Areas where reptiles have been recorded are to be included within the green infrastructure network. These will undergo enhancements with hibernacula created to offer refuge, shelter and hibernation opportunities away from residential areas. The locations of the hibernacula are shown on the GA and Planting Plans.

17.3.7 The green corridors will link to larger areas, which will have multiple uses, including amenity, access and conservation. Habitats will be established with a tussocky grassland structure with wildflower mixes; this will provide the nectar sources for invertebrate / prey items, basking areas and safe passages through undergrowth. Where tree removal is required the trunks will be kept and cut up and arranged within retained habitats; these will create basking opportunities, refuge and as they rot provide a foraging resource. The locations of these new habitats are shown on the GA and Planting Plans.

17.3.8 Management of grassland will be important for the longevity of suitable habitats. Cutting regimes will be rotated whereby only small parcels of a compartment are cut in one year.

17.4 Type and Source of Materials

17.4.1 Hibernacula will be created from materials sourced on site from tree management activities (see Appendix 6).

17.5 Initial Aftercare and Long-term Management and Maintenance

17.5.1 Hibernacula will be checked annually for the first five years following installation, by a suitably experienced ecologist to ensure that they are still in situ and are not damaged. Hibernacula will be replaced if found to be damaged.

18. AMPHIBIANS

18.1 Baseline Conditions

18.1.1 No Great Crested Newts *Triturus cristatus* were recorded during earlier survey work in 2015. Additionally, there are no records for Great Crested Newts in the local area. Common Toads *Bufo bufo* and Smooth Newts *Lissotriton vulgaris* were recorded during Great Crested Newt surveys completed in 2014 and 2015. Ponds within the site and those within 500m were subject to eDNA testing in 2019 where permission was granted. The results of the eDNA testing were returned as negative.

18.2 Conservation Objectives

To safeguard amphibian habitats during construction.
To provide greater opportunities for amphibians within the site.

18.3 Designs and Working Methods

Precautionary Working Methods

18.3.1 Construction works and pollution of surface water run-off could result in pollution of the ponds, field ditches and water course. To ensure there are no potential negative effects to the quality of the water all operations will be undertaken in accordance with standard guidance provided in the Environmental Agency Guidelines PPG5 Pollution Prevention Guidelines. In addition, the drainage strategy will be designed to ensure that surface water run-off is suitably treated prior to discharge.

18.3.2 Works to enhance ponds and ditches will be undertaken outside of the amphibian breeding period from March to June inclusive. The Ecological Clerk of Works will be consulted before this work is undertaken, and if necessary a check survey will be carried out.

18.3.3 No Great Crested Newts have been recorded within the site and a Natural England licence is not necessary to undertake the work.

Retained and New Habitats

18.3.4 Work to enhance and manage on site ditches, and to establish new wildlife-friendly attenuation features, will provide new aquatic habitats for amphibian species. New grassland habitats to be established within the site will offer new opportunities during the terrestrial phase.

18.3.5 The proposed development will include strong green linkages across the site (see GA and Planting Plans). Within the green infrastructure additional attenuation features. Permanently wet areas will include marginal native species planting, as shown on the GA and Planting Plans and Planting Schedule. These areas will offer new breeding habitats, while the grassland and woodland to be established (see GA and Planting Plans) will provide terrestrial opportunities.

18.3.6 Additional habitats suitable for use by invertebrate and amphibian species will be provided by creating log piles within the green linkages at the base of hedgerows, and in areas of woodland and grassland. The piles would be established using wood generated through maintenance of trees / woodlands within the site. These structures would benefit amphibians by providing places of shelter and or rest and potential hibernation opportunities along with increasing habitat for invertebrates.

Road Crossings

18.3.7 Where gaps in existing hedgerows are created as part of the development, dropped kerbs will be installed on either side of the road in that location to aid the movement of wildlife through the site.

18.4 Type and Source of Materials

18.4.1 Log piles will be created from materials sourced on site from tree management activities.

18.5 Initial Aftercare and Long-term Management and Maintenance

18.5.1 Log piles will be checked periodically for the first five years following installation, by a suitably experienced ecologist to ensure that they are still in situ. Log piles will be replaced if found to be missing.

19. INVERTEBRATES

19.1 Baseline Conditions

19.1.1 Given the habitats present, it is likely an assemblage of common invertebrate species utilises the site, though the intensive arable management of the majority of the land will limit variety. There is no evidence to suggest that any rare or notable species would currently be present.

19.2 Conservation Objectives

To provide greater opportunities for invertebrates within the site.

19.3 Designs and Working Methods

New Habitat Planting

19.3.1 The provision of new habitats of ecological interest including trees, wildflower grassland and wetland habitats, will offer new and enhanced resources for invertebrates.

Nesting Aids, Log Piles and Bee Banks

19.3.2 As a further enhancement, invertebrate nesting aids and log piles, along with bee banks and a bug hotel feature will be established within the green infrastructure of the site. These features, the locations of which are shown on the GA and Planting Plans, will provide new opportunities for invertebrates.

19.4 Type and Source of Materials

19.4.1 Log piles and 'loggeries' will be created from materials sourced on site from tree management activities (see Appendix 7). A series of bee banks, 10 Schwegler clay and reed insect nesting aids and a bug hotel feature will be installed throughout the site (see Appendix 8).

19.5 Initial Aftercare and Long-term Management and Maintenance

19.5.1 Nesting aids will be checked annually for the first five years following installation, by a suitably experienced ecologist to ensure that they are still in situ and are not damaged. Nesting aids will be replaced if found to be damaged. Bee banks will be checked annually as part of landscaping works, and re-established if they are deteriorating.

19.5.2 The initial aftercare and long-term management and maintenance of new and enhanced habitats is described in the habitats section above.

20. TIMETABLE OF WORKS

20.1 The timetable of works as set out in the previous sections is summarised below. The phasing of the development and particular actions that must occur before each phase is brought forward is summarised on Plan ECO5.

Receptor	Action	Timing
Habitats	Habitat creation and enhancement	In concert with construction
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
Bats	Bat box installation	On retained trees as part of habitat enhancement works, autumn 2019
	Establishment of hop-overs	To be established in first phase of landscaping works associated with Infrastructure RMA
Otters	Pre-construction checks of suitable habitat	Prior to commencement of works
Water Voles	Pre-construction checks of suitable habitat	Prior to commencement of works
Dormice	Seasonal vegetation clearance	Winter clearance to be completed November to March inclusive. Stumps to be removed April to October under full supervision of an ECoW. Summer clearance May to late September under full supervision of an ECoW.
	Dormouse nest box installation	On retained trees autumn 2019
Hedgehogs	Clearance of log piles and other hibernation features	Under full supervision by ECoW between October and April; certified by ECoW between May and September
	Hedgehog hibernation box installation	In suitable habitat, from autumn 2019 onwards
Birds	Nesting bird checks of vegetation to be removed	March to July inclusive, as required
	Bird box installation	On retained trees from autumn 2019 onwards
	Swift pole installation	On completion of initial landscaping works in each area
Reptiles	Clearance of log piles and other hibernation features	Under full supervision by ECoW between November and March; certified by ECoW between April and October
	Passive displacement	Under full supervision by ECoW when reptiles are active (between mid-March and October) and during favourable weather conditions
	Hibernacula installation	From autumn 2019 onwards, in line with landscaping works
Amphibians	Road crossings	In concert with construction
	Hibernacula installation	From autumn 2019 onwards, in line with landscaping works
Invertebrates	Nesting aid installation	In suitable habitat from autumn 2019 onwards
	Bee bank construction	As part of landscaping works, from autumn 2019 onwards

Table 20.1. Timetable for ecological mitigation and enhancement measures.

21. PERSONS RESPONSIBLE FOR IMPLEMENTING THE WORKS

21.1 Redrow Homes has ultimate responsibility for implementation of this strategy. The individual currently leading for Redrow Homes is Richard Franks, Senior Engineering Manager, and the responsibility for implementation will be his or that of his appointed successor.

21.2 It is the responsibility of the appointed individual at Redrow Homes to instruct appropriate experienced contractors to establish the various features and protective measures proposed, and also the responsibility of the appointed individual at Redrow Homes to instruct appropriate experienced ecologists and / or landscape contractors to check the work.

21.3 A suitably experienced Ecological Clerk of Works (ECoW) will be appointed by Redrow Homes to liaise with the site manager during construction. The ECoW will attend site at least once per month for a meeting with the site manager, and at any other times where an immediate presence is required.

21.4 It will be the responsibility of the site manager or his appointed representatives to deliver a site induction that includes reference to all wildlife issues identified in this document. The ECoW will liaise with the site manager on the content of the induction.

21.5 Clear channels between these parties and their associates on the ground will be in operation at all times, by email and telephone as appropriate.

21.6 Redrow and the landowner will establish a joint management company to manage and maintain the public landscape areas of Great Wilsey Park. The management company will be responsible for the ongoing maintenance of areas of soft landscaping within public open spaces, attenuation basins and Great Field Plantation.

22. MONITORING AND REMEDIAL MEASURES

22.1 Site visits by the Ecological Clerk of Works will be undertaken on a monthly basis throughout the programme of works to establish the infrastructure of the site. The ecologist will meet with the site manager and discuss progress of establishment, along with any problems that may have arisen. The Ecological Clerk of Works will also be available to attend site at short notice to discuss particular issues or observe specific works.

22.2 Effects on ecological receptors will be monitored, and conclusions drawn as to the significance of any effects, and any measures that may need to be implemented to mitigate for any effects identified. Following completion of the work, the effects will be analysed and any significant changes will be reported.

22.3 A separate comprehensive Biodiversity Monitoring Strategy for the infrastructure application has been prepared to address the requirements of Condition 45. That document should be referred to for full details of monitoring of newly established habitats and features.

23. DISPOSAL OF WASTES

23.1 Waste arising from the proposed works will be disposed of as per standard construction practice. A clear system so waste storage and disposal will be put in place as part of good site management. All waste arising will be stored in approved and secure locations and separated for disposal as appropriate.

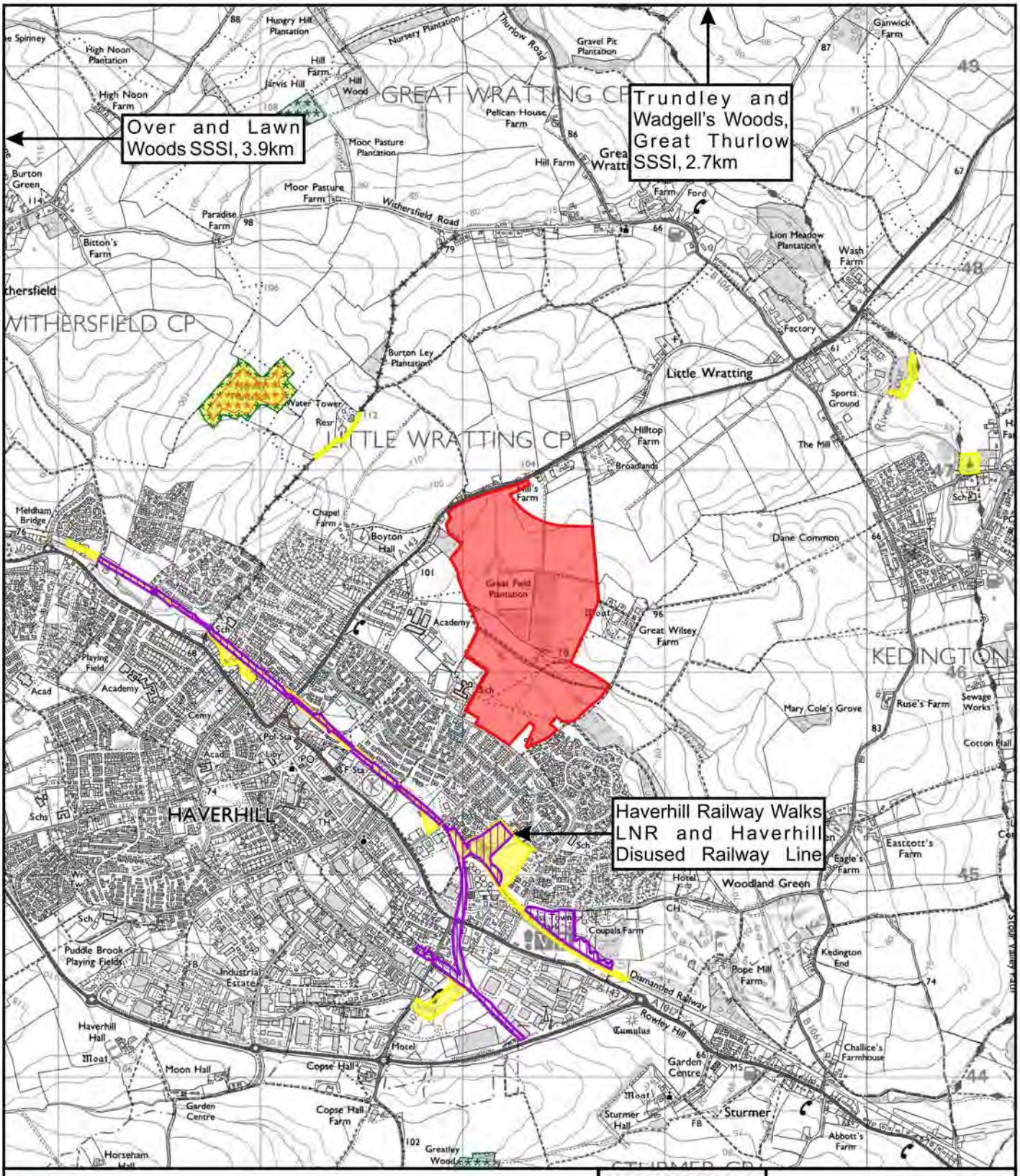
23.2 During the operational phase of the development, the appointed management contractor will allow for the off-site disposal of all litter and landscape maintenance waste. The contractor will be responsible for all waste disposal costs and approvals.

23.3 There are no known non-native invasive species within the Redrow site and therefore disposal of material of at an approved facility is not required.

PLANS

PLAN ECO1

Site Location and Ecological Designations



KEY:

- SITE LOCATION
- LOCAL NATURE RESERVE (LNR)
- COUNTY WILDLIFE SITE (CWS)
- ANCIENT WOODLAND
- ANCIENT REPLANTED WOODLAND

N

ECOLOGYSOLUTIONS
Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

8110: GREAT WILSEY PARK, HAVERHILL

PLAN ECO1: SITE LOCATION AND ECOLOGICAL DESIGNATIONS

Rev: A

Jul 2019

PLAN ECO2

Ecological Features

H11
H10
H14
H12
H13
H15
H9
H7
H17
H6
H5
H4

KEY:

- SITE BOUNDARY
- ARABLE LAND
- WOODLAND
- IMPROVED GRASSLAND
- DITCH
- STOUR BROOK TRIBUTARY
- POND
- HEDGEROW
- TREE
- TRACK

N

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Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

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PLAN ECO2:
ECOLOGICAL FEATURES

Rev: A
Jul 2019

PLAN ECO3

Ecological Constraints

[redacted]

PLAN ECO4a

Ecological Implementation Strategy 1

[redacted]

PLAN ECO4b

Ecological Implementation Strategy 2

[redacted]

PLAN ECO4c

Ecological Implementation Strategy 3

[redacted]

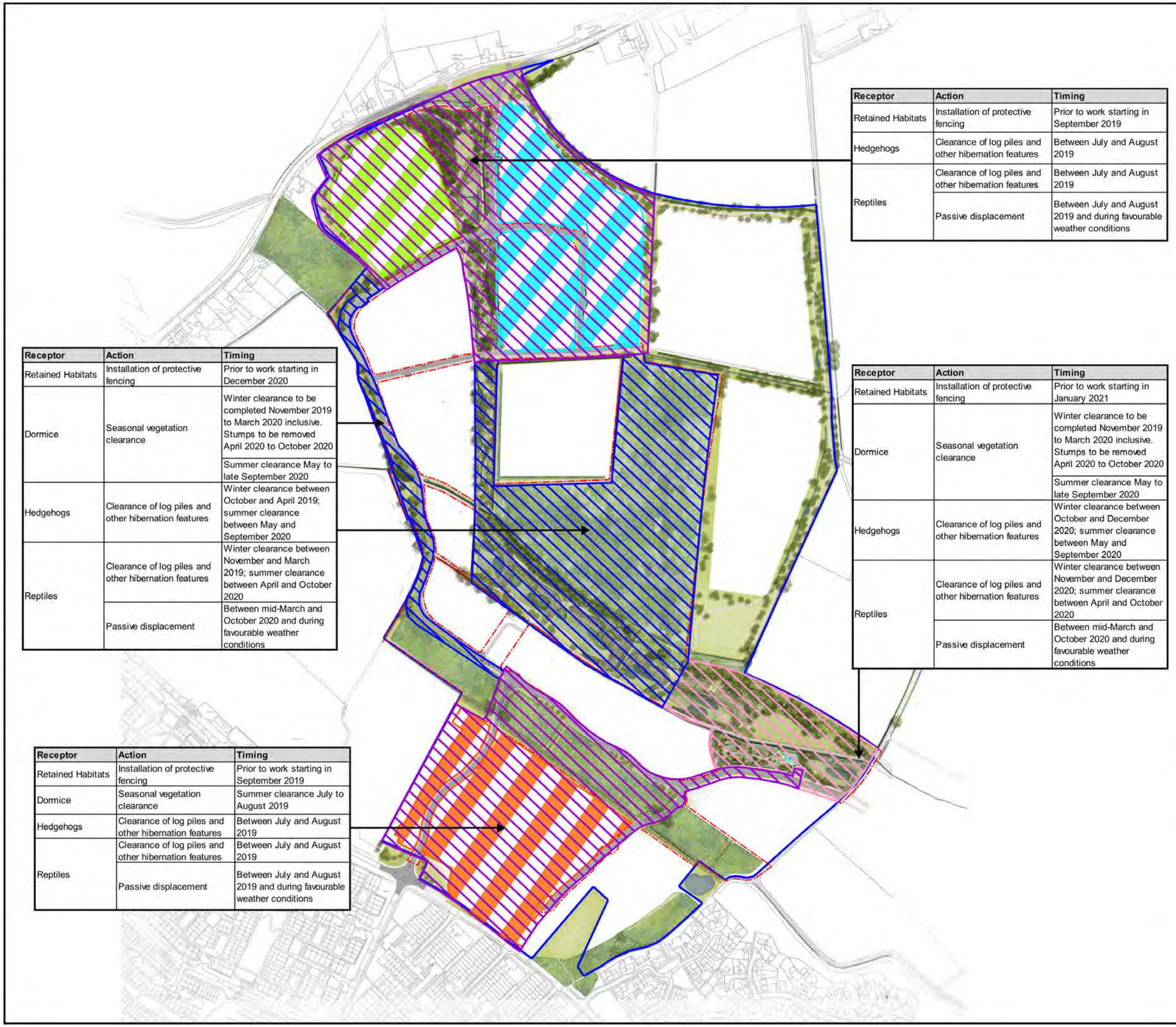
PLAN ECO4d

Ecological Implementation Strategy 4

[redacted]

PLAN ECO5

Phasing of Development



Receptor	Action	Timing
Retained Habitats	Installation of protective fencing	Prior to work starting in September 2019
Hedgehogs	Clearance of log piles and other hibernation features	Between July and August 2019
Reptiles	Clearance of log piles and other hibernation features	Between July and August 2019
	Passive displacement	Between July and August 2019 and during favourable weather conditions

Receptor	Action	Timing
Retained Habitats	Installation of protective fencing	Prior to work starting in December 2020
Dormice	Seasonal vegetation clearance	Winter clearance to be completed November 2019 to March 2020 inclusive. Stumps to be removed April 2020 to October 2020
		Summer clearance May to late September 2020
Hedgehogs	Clearance of log piles and other hibernation features	Winter clearance between October and April 2019; summer clearance between May and September 2020
Reptiles	Clearance of log piles and other hibernation features	Winter clearance between November and March 2019; summer clearance between April and October 2020
	Passive displacement	Between mid-March and October 2020 and during favourable weather conditions

Receptor	Action	Timing
Retained Habitats	Installation of protective fencing	Prior to work starting in January 2021
Dormice	Seasonal vegetation clearance	Winter clearance to be completed November 2019 to March 2020 inclusive. Stumps to be removed April 2020 to October 2020
		Summer clearance May to late September 2020
Hedgehogs	Clearance of log piles and other hibernation features	Winter clearance between October and December 2020; summer clearance between May and September 2020
Reptiles	Clearance of log piles and other hibernation features	Winter clearance between November and December 2020; summer clearance between April and October 2020
	Passive displacement	Between mid-March and October 2020 and during favourable weather conditions

Receptor	Action	Timing
Retained Habitats	Installation of protective fencing	Prior to work starting in September 2019
Dormice	Seasonal vegetation clearance	Summer clearance July to August 2019
Hedgehogs	Clearance of log piles and other hibernation features	Between July and August 2019
Reptiles	Clearance of log piles and other hibernation features	Between July and August 2019
	Passive displacement	Between July and August 2019 and during favourable weather conditions

KEY:

- INFRASTRUCTURE SEPTEMBER 2019 TO FEBRUARY 2020
- INFRASTRUCTURE MARCH 2020 TO DECEMBER 2020
- INFRASTRUCTURE JANUARY 2021 TO SEPTEMBER 2021
- HOUSING FEBRUARY 2020 TO JUNE 2022
- HOUSING FEBRUARY 2020 TO JUNE 2023
- HOUSING FEBRUARY 2020 TO JUNE 2024

N

Based on Exterior Architecture Drawing No. ExA_1868_Illustrative Masterplan

ECOLOGYSOLUTIONS
Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

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PLAN ECO5:
PHASING OF DEVELOPMENT

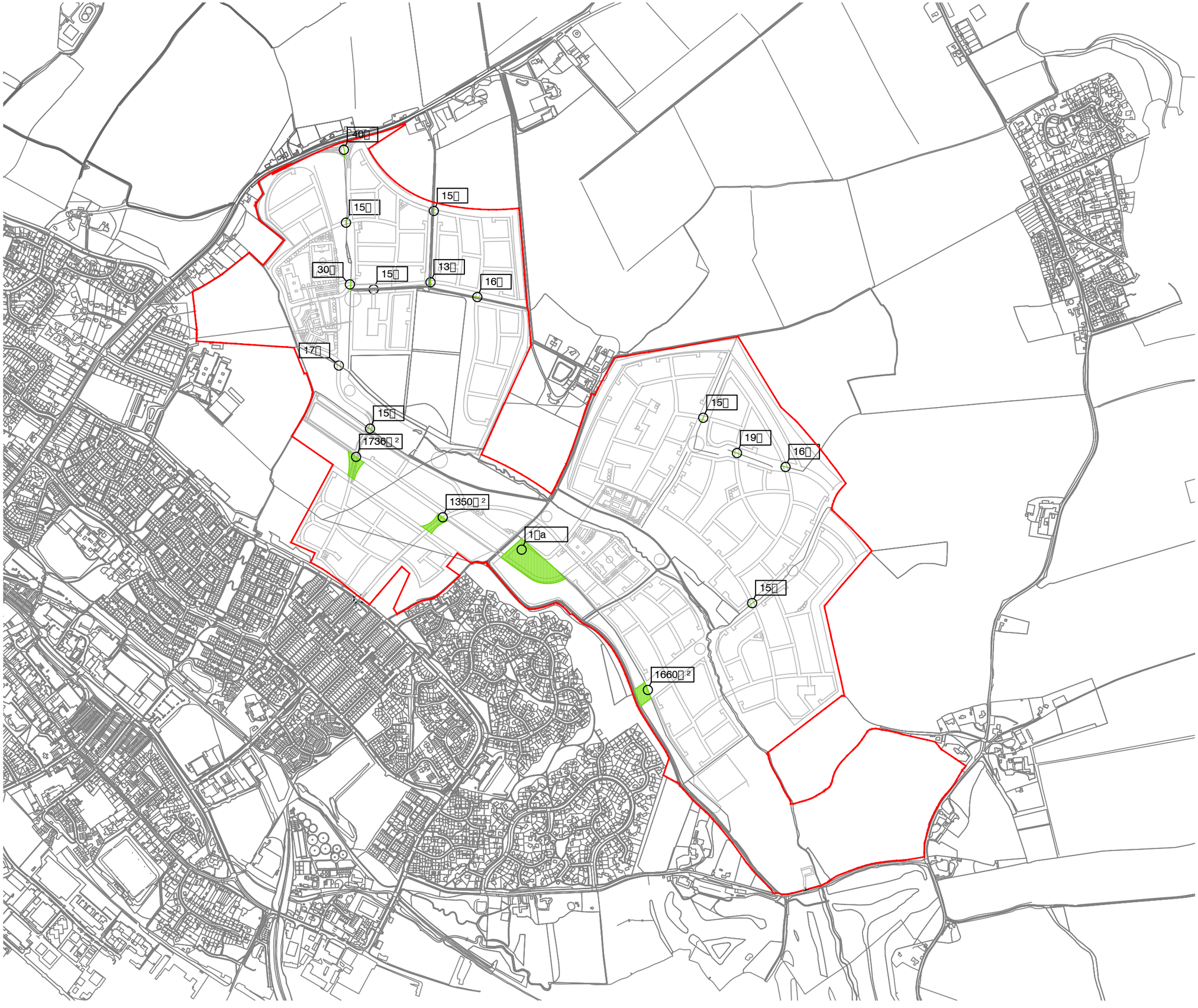
Rev: B

Jul 2019

APPENDICES

APPENDIX 1

Hedgerow Removal Plan 5055-L-112 rev C



NOTES

All dimensions to be verified on site. Do not scale this drawing. All discrepancies to be clarified with project Landscape Architect.

N

Scale 1:10,000 @ A3

0 100 200 300 400 500m

Application boundary		168.34ha
Hedgerow to be removed to facilitate road access (Total length) (Assumed 2.5 roadside clearance for visibility)		241m
Woodland to be removed (Total area)		1.47ha

rev	date	description	by
C	10.08.15	Coupals Road access / car park included	NJE
B	06.08.15	Change to site access	NJE
A	21.07.15	Change to road layout	SJ

masterplanning
environmental assessment
landscape design
urban design
ecology
architecture
arboriculture

FPCR Environment and Design Ltd
Lockington Hall
Lockington
Derby DE74 2RH

t: 01509 672772
f: 01509 674565
e: mail@fpcr.co.uk
w: www.fpcr.co.uk

client
HALLAM LAND MANAGEMENT LTD

project
Great Wilsey Park
Haverhill

drawing title
Hedgerow Removal Plan

scale
1:10,000@A3

drawn
NJE

date
July 2015

drawing number
5055-L-112

rev
C

CAD file: 5055/LANDS/CAD/Masterplan 01.04.15

APPENDIX 2

Bat Box Specifications

Bat Boxes

Schwegler bat boxes are made from ‘woodcrete’ and have the highest rates of occupation of all types of box.
The 75% wood sawdust, clay and concrete mixture is ideal, being durable whilst allowing natural respiration and temperature stability. These boxes are rot and predator proof and extremely long lasting.

2F Bat Box

A standard bat box, attractive to the smaller British bat species. Simple design with a narrow entrance slit on the front.

Woodcrete construction, 16cm diameter, height 33cm.

1FF Bat Box

The rectangular shape makes the 1FF suitable for attaching to the sides of buildings or on sites such as bridges, though it may also be used on trees. It has a narrow crevice-like internal space to attract Pipistrelle and Noctule bats.

Woodcrete construction.
Width: 27cm
Height: 43cm
Weight: 8.3kg

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Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

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1FW Bat Hibernation Box

This huge box is designed to provide a protected environment which is particularly important through the cold winter months when bats are hibernating. Three wooden panels within the box imitate crevices for roosting.

Woodcrete construction, 38cm diameter, height 50cm, weight 28kg.

This heavy box requires secure mounting if placed above the ground and should be sited away from public areas.

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Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

APPENDIX 3

Hedgehog Gateway Specification

Hedgehog Gateways

A 13 x 13 cm section cut out at the base of the gravel board or directly into the fence panel creating links between residential gardens and the surrounding landscape.

This will facilitate the dispersal of Hedgehogs and other small animals and enhance the permeability of the new development for wildlife.

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Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

APPENDIX 4

Hedgehog House Specifications

Hedgehog Houses

Schwegler Hedgehog Dome

The Schwegler Hedgehog Dome encourages Hedgehogs to settle in a particular area and provides year-round shelter featuring a weather proof cover and insulated floor.

Ecoplate Hedgehog House

This large, environmentally friendly house is made from recycled plastic and is weather resistant and very durable. A hidden entrance tunnel inside makes it more difficult for predators to reach Hedgehogs inside.

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Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

APPENDIX 5

Bird Box Specifications

Bird Boxes

Schwegler bird boxes have the highest rates of occupation of all types of box.
They are designed to mimic natural nest sites and provide a stable environment with the right thermal properties for chick rearing and winter roosting.
Boxes are made from 'Woodcrete'. This 75% wood sawdust, clay and concrete mixture is breathable and very durable making these bird boxes extremely long lasting.

2H Open Fronted Bird Box

This box is attractive to robins, pied wagtails, spotted flycatcher, wrens and black redstarts.

Dimensions 15 x 20 x 20 cm

1N Deep Nest Box

A deeper than standard nest box which is ideal for Robins, Spotted Flycatchers, Pied Wagtails, Tits and Sparrows. Its depth offers protection from cats, Magpies, Jays and Martens.

Two entrance holes, 30 x 50mm. Nesting area 15 x 21cm.

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Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

Bird Boxes

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They are designed to mimic natural nest sites and provide a stable environment with the right thermal properties for chick rearing and winter roosting.
Boxes are made from 'Woodcrete'. This 75% wood sawdust, clay and concrete mixture is breathable and very durable making these bird boxes extremely long lasting.

1B Bird Box

This is the most popular box for garden birds and appeals to a wide range of species. The box can be hung from a branch or nailed to the trunk of a tree with a 'tree-friendly' aluminium nail.

Available in four colours and three entrance hole sizes. 26mm for small tits, 32mm standard size and oval, for redstarts for example.

Swift Pole / Tower

A Swift nest colony can be fitted to a steel lamp post or a timber telegraph pole. This provides nest sites for a colony of Swifts in an area with no suitable buildings present. The minimum height for a Swift Pole / Tower is 7m, but the higher the better.

Multiple entrance holes, 55 x 33mm.

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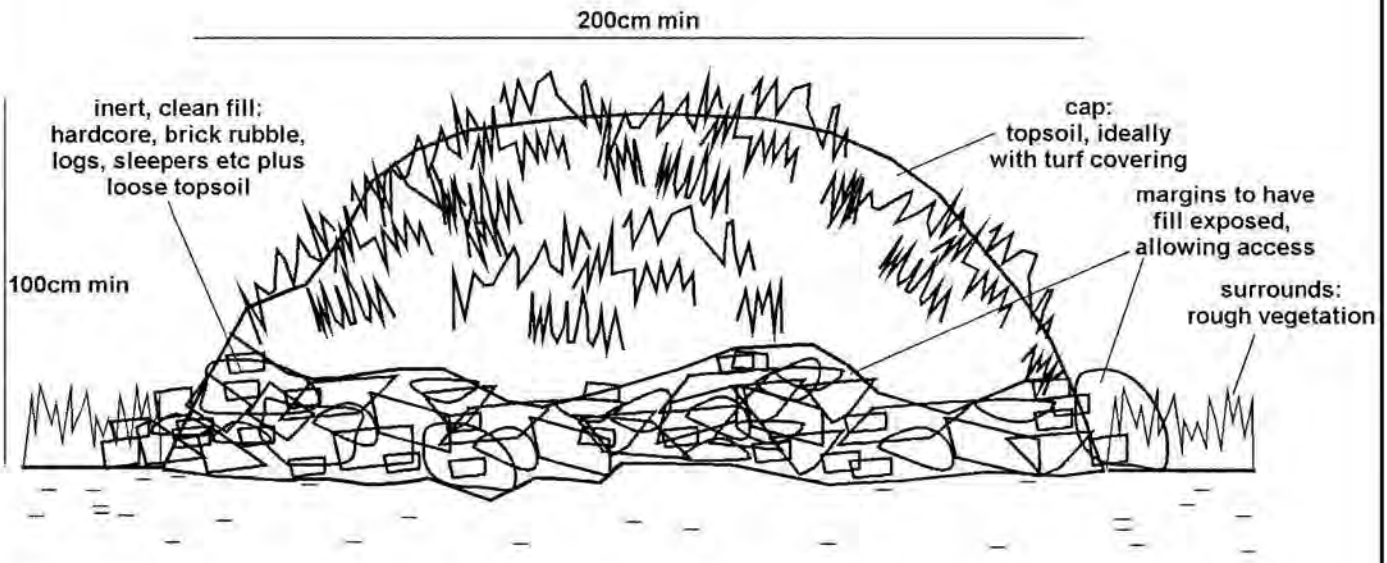
Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

APPENDIX 6

Reptile Hibernacula Specification



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Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

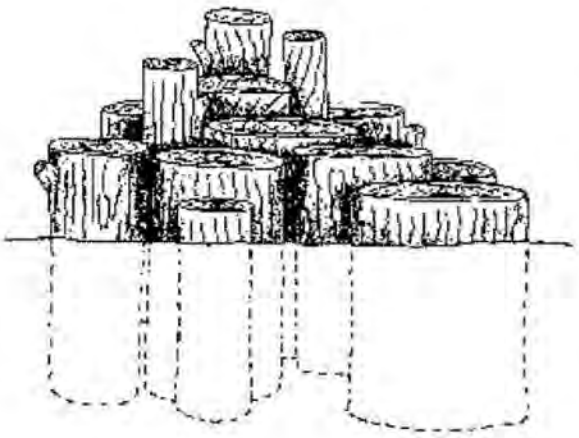
HIBERNACULA DESIGN

APPENDIX 7

Stag Beetle Loggery Specification

Stag Beetle Loggery

Stag Beetles require dead wood to complete their life cycle, laying eggs underground by logs or stumps of dead trees. The larvae will then spend up to seven years slowly growing in size. A wide range of woods are used, especially Oak, but also Ash, Elm, Sycamore, Lime, Hornbeam, Apple and Cherry. Coniferous species are generally avoided. Adults emerge from the soil beneath logs or stumps from mid-May until July.



Loggery

Large logs (10-50cm diameter) of hardwood (e.g.Oak, Beech, Sycamore, Ash) with bark still attached sunk c. 60cm into the ground, in partially shaded areas. Treated wood should not be used.

Information derived from *Stag Beetle: An advice note for its conservation in London.* London Wildlife Trust. http://www.wildlondon.org.uk/resourcefiles/20040625132051Stag+Beetles.doc

ECOLOGYSOLUTIONS
Part of the ES Group

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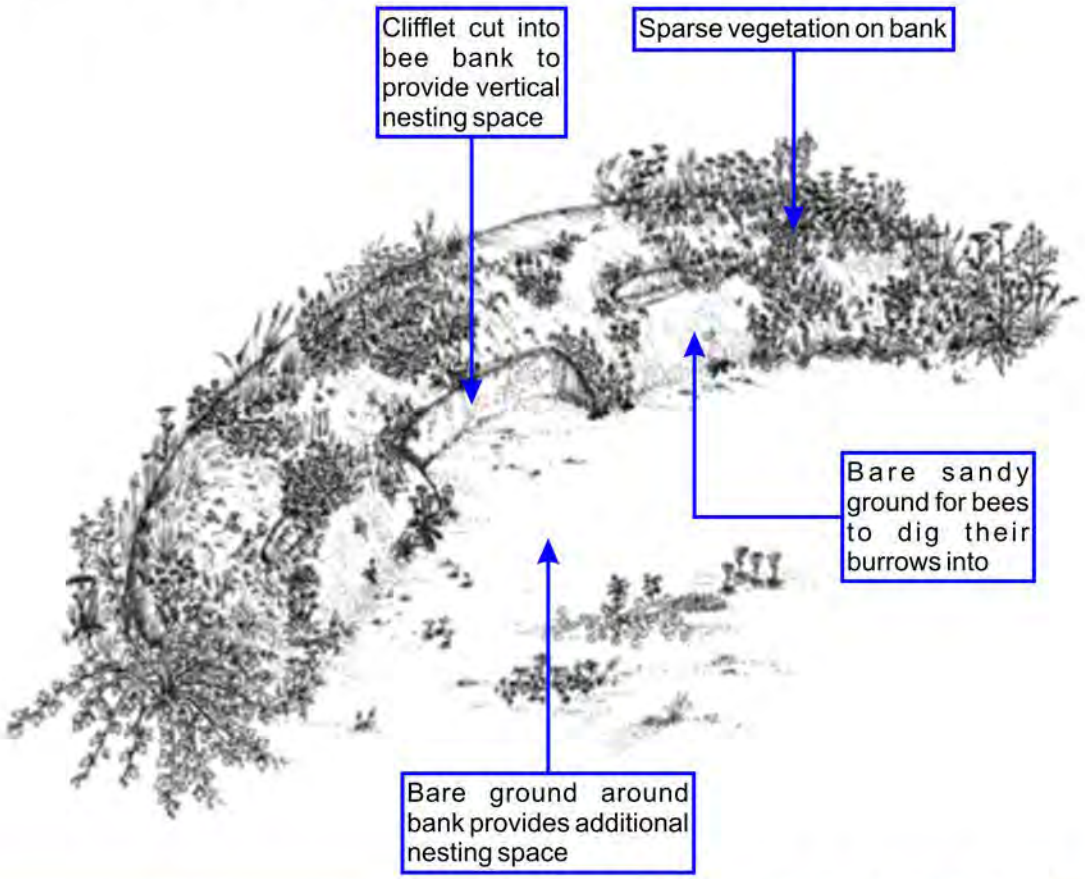
APPENDIX 8

Invertebrate Nesting Aid Specifications

Invertebrate Nesting Aids

Bee Bank

Provides warm, sheltered patches of bare ground where solitary mining bees and other invertebrates nest. Made from sand, stones and other loose aggregates. Vegetation will be cut on a rotational basis so bare ground is always visible. Bee banks will be positioned in a wildflower meadow area to provide a nearby source of nectar and pollen for bees. The bee bank will be aligned to face south or south-east for maximum sunshine.



Information derived from *How to Create a Bee Bank*. Buglife.
https://www.buglife.org.uk/sites/default/files/Bee%20bank%20booklet.pdf

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Invertebrate Nesting Aids

Bug Hotel

Manmade structure providing nesting sites for solitary bees and wasps and hibernacula for ladybirds, woodlice and butterflies. It will be constructed using a variety of natural materials including logs, bark and bamboo sticks, to provide as many sheltering opportunities as possible.

Schwegler Clay and Reed Insect Nest

An attractive insect nest which can be hung in any sunny, sheltered spot. Reeds on either side of a clay central section provide a range of environments to suit different insects (designed to attract only harmless insects).

Dimensions: 290 x 225 x 205 mm
Weight: 5.7 kg
Schwegler woodcrete, clay, and reeds

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ECOLOGYSOLUTIONS

Part of the ES Group

Ecology Solutions Limited | Cokenach Estate | Barkway | Royston | Hertfordshire | SG8 8DL

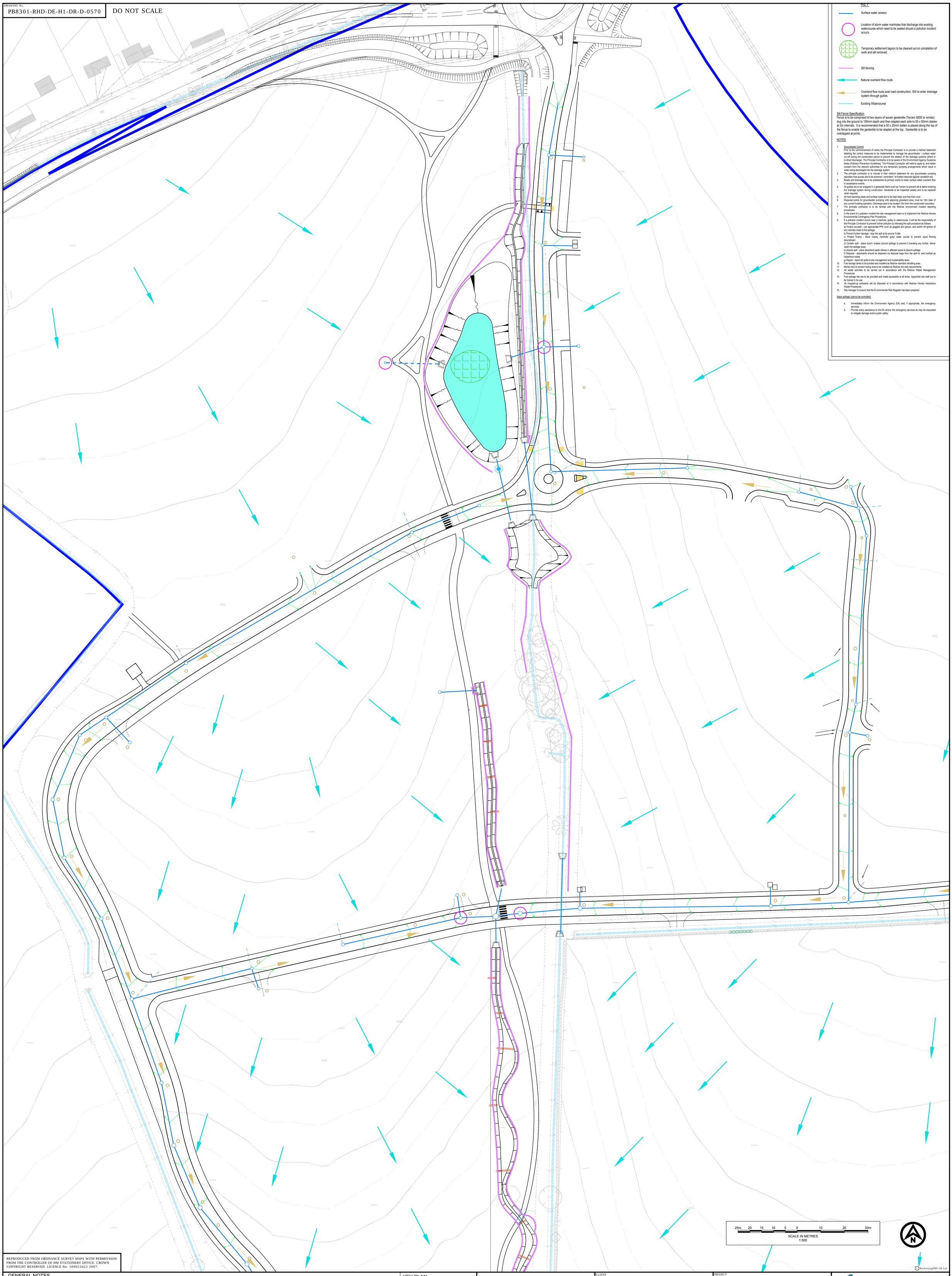
01763 848084 | east@ecologysolutions.co.uk | www.ecologysolutions.co.uk

APPENDIX C

ENVIRONMENTAL PLAN

DRAWING No.
PB8301-RHD-DE-H1-DR-D-0570

DO NOT SCALE



KEY

- Surface water sewers
- Location of storm water manholes that discharge into existing watercourse which need to be sealed should a pollution incident occurs.
- Temporary settlement lagoon to be cleaned out on completion of work and silt removed.
- Silt fencing
- Natural overland flow route
- Overland flow route post road construction. SW to enter drainage system through gullies
- Existing Wtaercourse

Silt Fence Specification
Fence is to be comprised of two layers of woven geotextile (Terram 500S or similar) dug into the ground to 100mm depth and then stapled each side to 50 x 50mm stakes at 2m intervals. It is recommended that a 50 x 25mm batten is placed along the top of the fence to enable the geotextile to be stapled at the top. Geotextile is to be overlapped at joints.

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   Prior to the commencement of works the Principal Contractor is to provide a method statement detailing the control measures to be implemented to manage the groundwater / surface water run-off during the construction period to prevent the siltation of the drainage systems (direct or in-direct discharge). The Principal Contractor is to be aware of the Environment Agency Guidance Notes (Pollution Prevention Guidelines). The Principal Contractor will need to apply to, and obtain consent from the relevant authorities for any temporary pumping arrangements which result in water being discharged into the drainage system.
2. The principle contractor is to include in their method statement for any groundwater pumping operation how pumps are to be powered / controlled / re-fuelled /secured against vandalism etc.
3. Roads and drainage are to be established as primary works to retain surface water overland flow in exceedance events.
4. All gullies are to be wrapped in a geotextile fabric such as Terram to prevent silt & debris entering the drainage system during construction. Geotextile to be inspected weekly and to be replaced when required.
5. All hard standing areas and surface roads are to be kept clean and free from mud.
6. Dispersal points for groundwater pumping onto adjoining grassland area, must be 10m clear of any current building operation. Discharge pipe to be located 10m from the construction boundary.
7. The principle contractor is to be familiar with the Redrow environment incident reporting procedures.
8. In the event of a pollution incident the site management team is to implement the Redrow Homes Environmental Contingency Plan Procedures.
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   b) Prevent further damage - stop the spill at its source if safe
   c) Protect Drains - block nearby manhole/ gully/ water course to prevent liquid flowing downstream
   d) Contain spill - place boom/ snakes around spillage to prevent it traveling any further. Never wash the spillage away
   e) Absorb spill - place absorbent pads/ pillows in affected areas to absorb spillage
   f) Disposal - absorbents should be disposed via disposal bags from the spill kit, and marked as hazardous waste
   g) Report - report all spills to site management and sustainability team
10. Fuel storage tanks to be bunded and installed as Redrow standard refuelling area.
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14. All mopped-up pollutants will be disposed of in accordance with Redrow Homes Hazardous Waste Procedures.
15. Site manager to ensure that the Environmental Risk Register has been prepared.

Major spillage (cannot be controlled)

a. Immediately inform the Environment Agency (EA) and, if appropriate, the emergency services
b. Provide every assistance to the EA and/or the emergency services as may be requested to mitigate damage and/or public safety.

25m 20 15 10 5 0 10 20 30m
SCALE IN METRES
1:500

N

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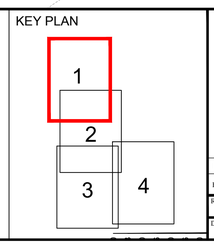
KEY PLAN



REV	DATE	DESCRIPTION	BY	CHK	APP
I01	30/07/19	FIRST ISSUE	JBW	PV	DJ

REVISIONS

DRAWING STATUS: INFORMATION

CLIENT: REDROW

PROJECT: GREAT WILSEY PARK

TITLE: RESERVED MATTERS DRAINAGE ENVIRONMENTAL PLAN SHEET 1 OF 4

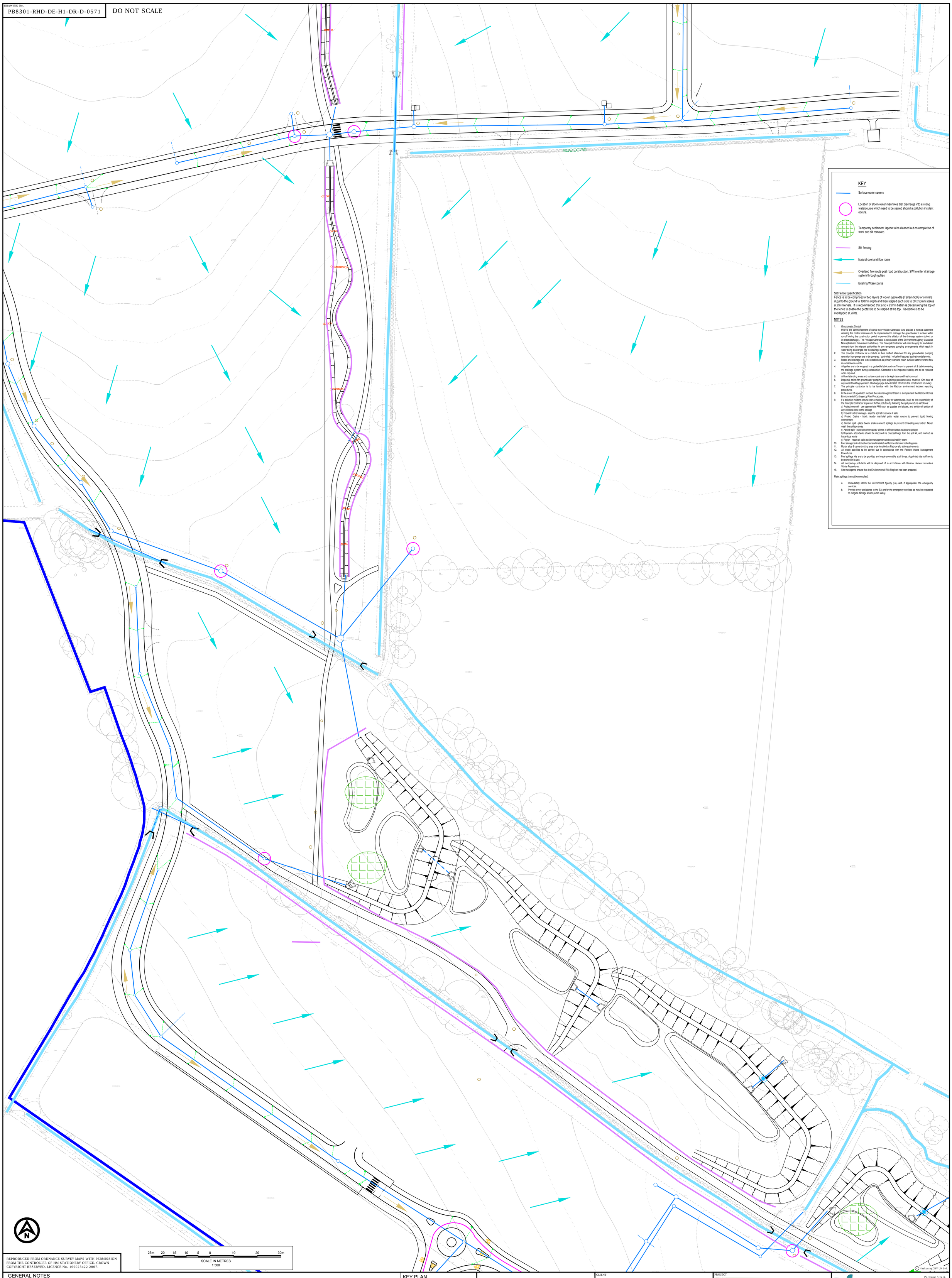
Royal HaskoningDHV
Enhancing Society Together
Portland Street,
Manchester One, 9th Floor
Manchester, M1 3LE
Tel +44(0)161 2361018
Email info.manchester@uk.rhdhv.com
Website www.royalhaskoning.com

DRAWN	CHECKED	APPROVED
RMV	PV	DJ
DATE	SCALE AT A0	PROJECT NUMBER
JUL-19	1:500	PB8301

DRAWING No.	REVISION
PB8301-RHD-DE-H1-DR-D-0570	I01

DRAWING No.
PB8301-RHD-DE-H1-DR-D-0571

DO NOT SCALE



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25m 20 15 10 5 0 10 20 30m
SCALE IN METRES
1:500

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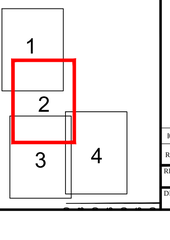

REV	DATE	DESCRIPTION	BY	CHK	APP
I01	30/07/19	FIRST ISSUE	JBW	PV	DJ

REVISIONS

DRAWING STATUS: INFORMATION

CLIENT: REDROW

PROJECT: GREAT WILSEY PARK

TITLE: RESERVED MATTERS DRAINAGE ENVIRONMENTAL PLAN SHEET 2 OF 4

Royal HaskoningDHV
Enhancing Society Together
Portland Street,
Manchester One, 9th Floor
Manchester, M1 3LE
Tel +44(0)161 236 1018
Email info.manchester@uk.rhdhv.com
Website www.royalhaskoning.com

DRAWN	CHECKED	APPROVED
RMV	PV	DJ
DATE	SCALE AT A0	PROJECT NUMBER
JUL-19	1:500	PB8301

DRAWING No. PB8301-RHD-DE-H1-DR-D-0571 REVISION I01

DRAWING No.
PB8301-RHD-DE-H1-DR-D-0572

DO NOT SCALE

KEY

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- Location of storm water manholes that discharge into existing watercourse which need to be sealed should a pollution incident occurs.
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× 94.750

× 95.750

25m 20 15 10 5 0 10 20 30m
SCALE IN METRES
1:500

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KEY PLAN

1
2
3
4

REV	DATE	DESCRIPTION	BY	CHK	APP
I01	30/07/19	FIRST ISSUE	JBW	PV	DJ

REVISIONS

DRAWING STATUS: INFORMATION

CLIENT: REDROW

PROJECT: GREAT WILSEY PARK

TITLE: RESERVED MATTERS DRAINAGE ENVIRONMENTAL PLAN SHEET 3 OF 4

Royal HaskoningDHV
Enhancing Society Together
Portland Street,
Manchester One, 9th Floor
Manchester, M1 3LF
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Email info.manchester@uk.rhdhv.com
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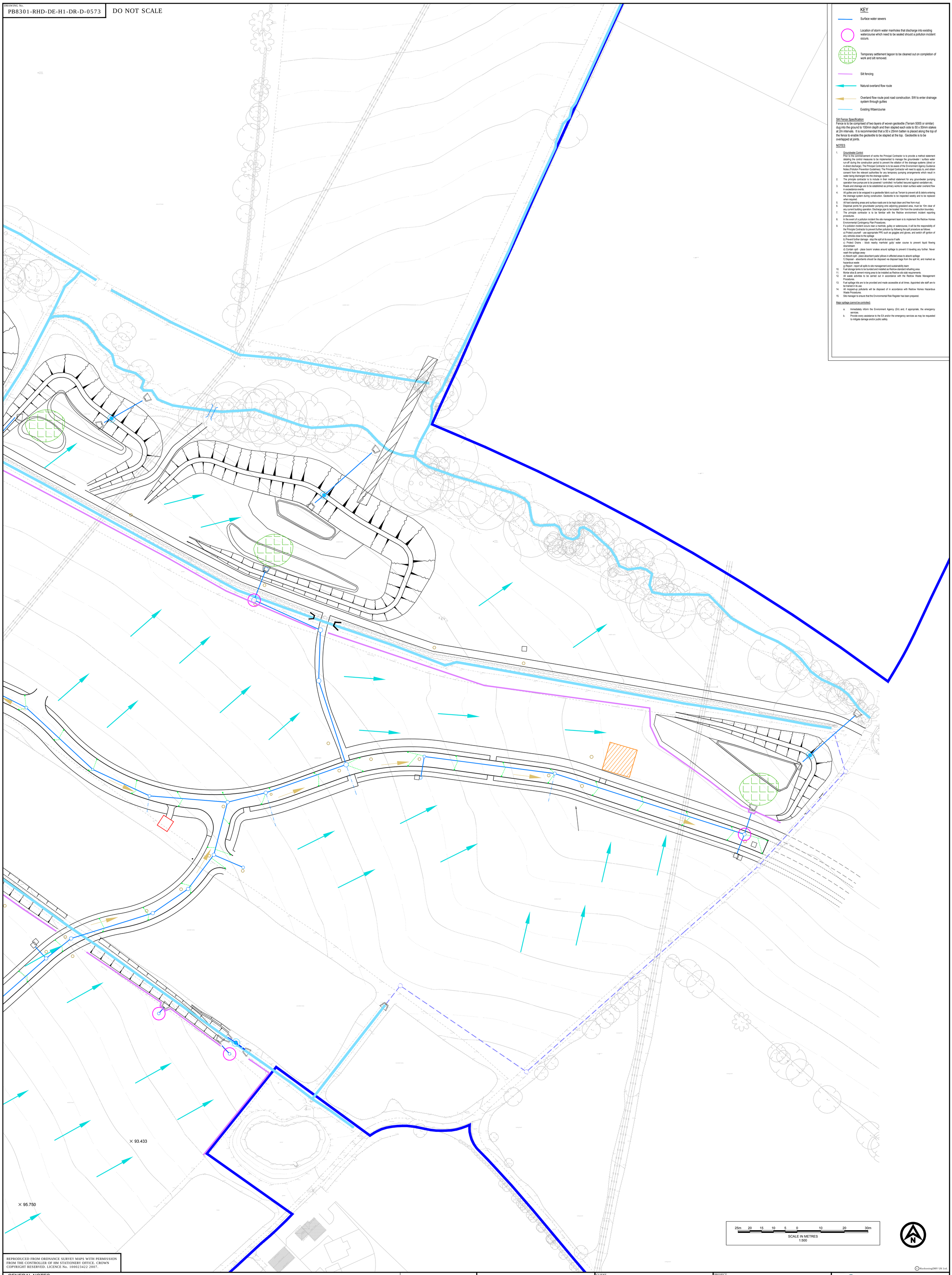
DRAWN	CHECKED	APPROVED
RMV	PV	DJ
DATE	SCALE AT A0	PROJECT NUMBER
JUL-19	1:500	PB8301

DRAWING No. PB8301-RHD-DE-H1-DR-D-0572

REVISION I01

DRAWING No.
PB8301-RHD-DE-H1-DR-D-0573

DO NOT SCALE



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SCALE IN METRES
1:500

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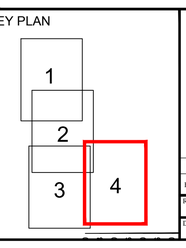

REV	DATE	DESCRIPTION	BY	CHK	APP
I01	04/07/19	FIRST ISSUE	JBW	PV	DJ

REVISIONS

DRAWING STATUS
INFORMATION

CLIENT
REDROW

PROJECT
GREAT WILSEY PARK

TITLE
RESERVED MATTERS
DRAINAGE
ENVIRONMENTAL PLAN
SHEET 4 OF 4

Royal HaskoningDHV
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Portland Street,
Manchester One, 9th Floor
Manchester, M1 3LE
Tel +44(0)161 2361018
Email info.manchester@uk.rhdhv.com
Website www.royalhaskoning.com

DRAWN	CHECKED	APPROVED
RMV	PV	DJ
DATE	SCALE AT A0	PROJECT NUMBER
JUL-19	1:500	PB8301

DRAWING No.
PB8301-RHD-DE-H1-DR-D-0573

REVISION
I01

APPENDIX D

BOUNDARY AND PROW FENCING SETTING OUT PLAN

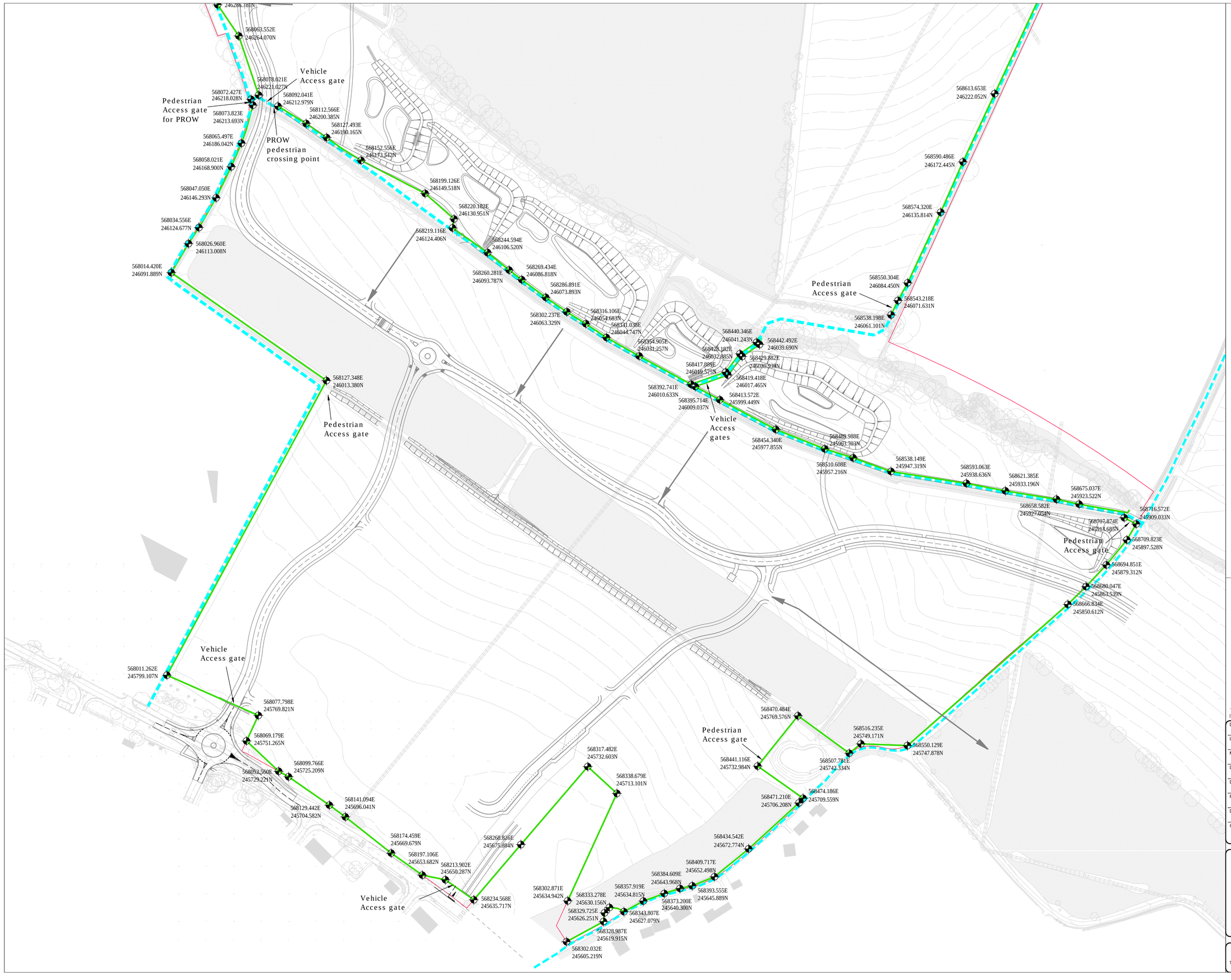
KEY

- Protection Fencing
- Contract Boundary
- PROW route

Rev	Date	Details	By
B	25.07.19	Position of PROW protection fencing revised.	RF
A	09.04.19	Updated to show vehicle & pedestrian access gates	RF

Development	**Great Wilsey Park**
Location	Haverhill
Marketing Name	
Drawing Title	Boundary & PROW Fencing setting out
Drawing Number	**8511-RED-ZZ-DR-C-001**
Revision	**B**
Scale @ A1	1:1250
Drawn By	-
Date Started	April 2019
Checked by	Date

REDROW HOMES
Redrow Homes (Eastern) Limited
2 Aurum Court, Sylvan Way, Southfields Business Park,
Laindon, Basildon, Essex SS15 6TU
Tel: 01268 886400 Web: www.redrow.co.uk



Rev	Date	Details	By
B	25.07.19	Position of PROW protection fencing revised.	RF
A	09.04.19	Updated to show vehicle & pedestrian access gates	RF

Development	**Great Wilsey Park**
Location	Haverhill
Marketing Name	
Drawing Title	Boundary & PROW Fencing setting out
Drawing Number	**8511-RED-ZZ-DR-C-002**
Revision	**B**
Scale @ A1	1:1250
Drawn By	-
Date Started	April 2019
Checked by	Date

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Redrow Homes (Eastern) Limited
2 Aurum Court, Sylvan Way, Southfields Business Park,
Laindon, Basildon, Essex SS15 6TU
Tel: 01268 886400 Web: www.redrow.co.uk