# Trustees of the Standen Estate

# Land South of Clitheroe

Environmental Statement

October 2012

AMEC Environment & Infrastructure UK Limited

**Report for**

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## Document Revisions

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# 1. Introduction

## 1.1 Overview of the Development

This Environmental Statement (ES) is submitted on behalf of the Trustees of the Standen Estate in support of an outline planning application on Land South of Clitheroe. The illustrative masterplan for the site includes mixed-use development comprising residential development, a primary school site, open space and associated infrastructure on Land South of Clitheroe, Lancashire, hereafter referred to as 'the site'.

The site was included within the Ribble Valley Borough Council (RVBC) document *Core Strategy – Generation of Alternative Development Strategy Options* (June 2011) as 'Option D'. Following the addressing of concerns raised in the RVBC *Sustainability Appraisal Options Report,* a hybrid of options B and D, whereby a smaller number of houses is provided at the site than originally presented, was designated as the preferred Strategic Site option for a sustainable urban extension by RVBC *Core Strategy 2008-2028; A Local Plan for Ribble Valley - Regulation 19 Consultation Draft* (April 2012) and subsequently confirmed as such in the submission version as well as in the *Local Infrastructure Plan* (March 2012)

The site currently comprises an area of land of approximately 49.3 hectares (ha) located to the south east of the town of Clitheroe. A further 2.1 ha of land is included adjacent the A59/Pendle Road junction

Further details of the scheme are given in chapter 2.

## 1.2 Site Location

The location of the proposed development is shown on Figure 1.1. It is centred on National Grid Reference (NGR) SD374850 440689.

The site occupies an area of approximately (~) 49.3 ha of agricultural land and farm buildings predominantly used for grazing and mowing purposes separated into a number of medium to large sized fields bounded by hedgerows with individual hedgerow trees. A further 2.1 ha of land, comprising four individual fields, have been identified near the A59 junction for potential junction improvements to accommodate the development. These fields have therefore also been considered for assessment within the EIA.

The northern boundary of the main site comprises a mix of fencing types and trees to the rear of neighbouring residential properties off Littlemoor, Hillside Close, Lingfield Avenue and Shays Drive and along the boundary with the area of public open space, including an all-weather pitch. Drainage ditches also define this boundary with the open space. Beyond to the north lies the built-up area of Clitheroe.

The site boundary to the northeast is formed by hedgerows with hedgerow trees bordering Pendle Road. The boundary then follows a south-westerly route and is defined by a hedgerow with trees dividing agricultural fields. Beyond the fields to the south is the Worston Old Road minor road, with the A59 further beyond. The southern boundary then follows the edge of

woodland which surrounds Standen Hall and its associated grounds to the south, before tracking the route of Pendleton Brook, a small tributary of the River Ribble, north-westwards towards the Dent Plant Hire Depot off Whalley Road (A671) to the west.

Two public rights of way (PRoW) cross the site, towards the western and eastern boundaries respectively, and Ordnance Survey maps show the course of a Roman Road traversing the site in a northeast-southwest direction

## 1.3 Purpose of the ES

This ES form part of the Environmental Impact Assessment (EIA) of the scheme. EIA is required for certain developments under *The Town and Country Planning Act 1990*, as defined under the *Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 2011* (hereinafter referred to as the EIA Regulations). This ES has been prepared for the purpose of meeting those requirements of the EIA Regulations that pertain to ESs. The ES provides part of the information that will be used by the Council and others to inform the process of determination.

The Scheme falls within Schedule 2 of the EIA Regulations Development listed in Schedule 2 requires EIA if it is likely to have significant effects on the environment due to factors such as its size, nature or location. The applicant has taken the decision that the nature of the development means that an EIA would be beneficial to assist with the consideration of the planning application. The ES was completed with due regard to the criteria of Schedule 4 of the Regulations. The ES includes an assessment of the predicted effects of the Scheme, focusing, as required by the EIA Regulations, on those effects that have the potential to be significant[1]. The content of the ES, as well as the overall approach to the EIA, has also been designed to reflect the requirements of the EIA Regulations as well as widely recognised good practice in EIA.

## 1.4 The Applicant and Project Team

AMEC is an Environmental and Engineering Consultancy which has been responsible for the compilation of the ES and Non Technical Summary (NTS) The technical assessments were undertaken by the following consultant team:

- Planning Policy; Land Quality; The Water Environment; Noise; Air Quality; Community & Socio-economic effects: AMEC;
- Ecology: Environmental Research and Advisory Partnership (ERAP);
- Landscape and Visual Assessment: IBI Taylor Young; and
- Cultural Heritage: University of Durham.

AMEC has also prepared the Sustainability Appraisal, Energy Statement and Utilities Statement which have all been submitted in support of the planning application.

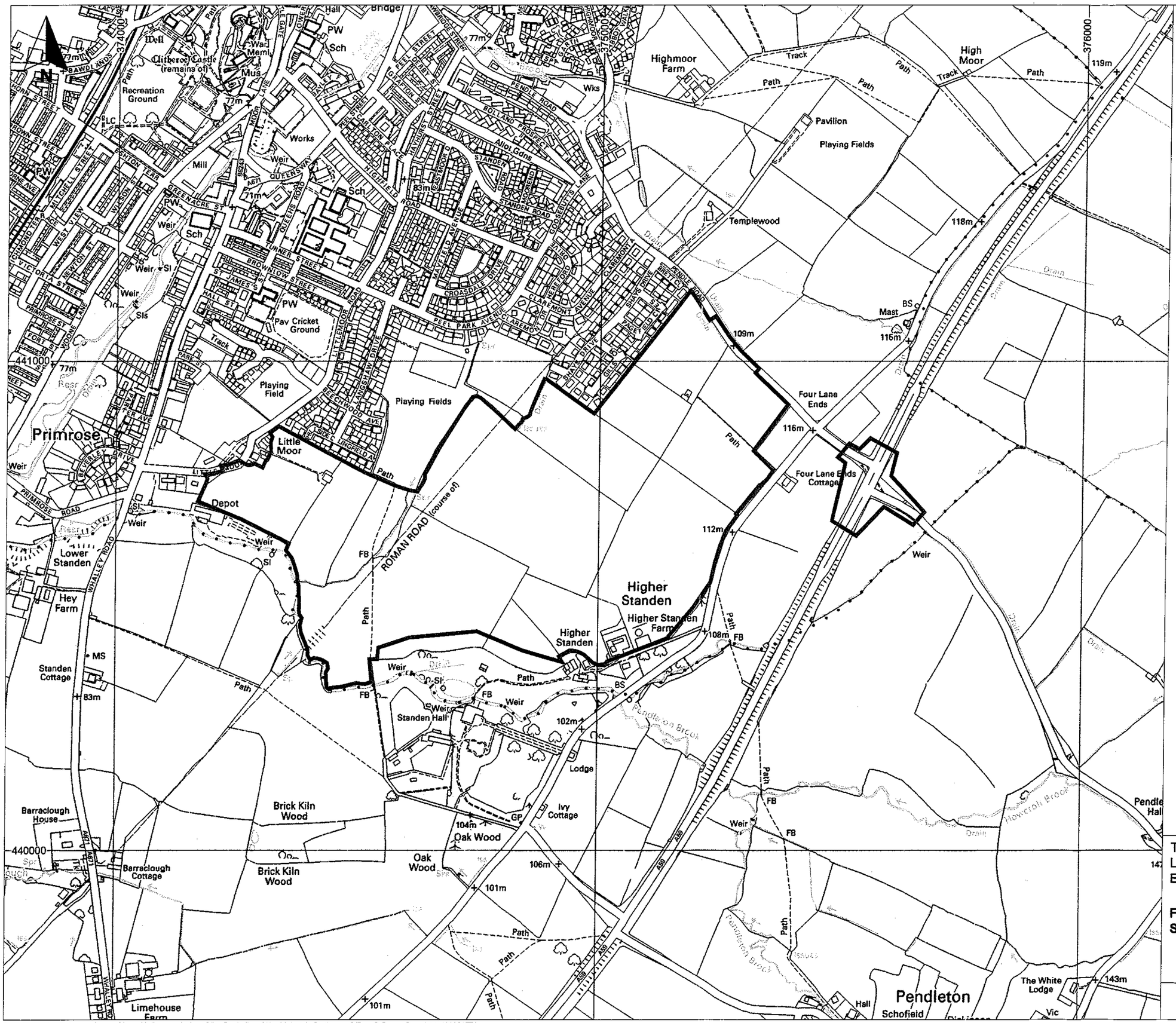
[1] See Schedule 4 of the EIA Regulations and paragraph 82 of Circular 02/99

The Transport Assessment, included as Appendix 1.1, has been prepared by Savell, Bird & Axon. The Planning Statement has been prepared by the Trustees' planning consultants, Steven Abbott Associates LLP.

## 1.5 Structure of the ES

The remainder of the ES is structured as follows:

- Chapter 2 explains the need for the scheme and outlines the main alternatives considered for meeting this need and indicates the main reasons for the choice of the site as well as providing a description of the proposals;
- Chapter 3 details the approach that has been adopted in preparing the ES;
- Chapter 4 provides an overview of the legislation and policies that are relevant to the ES; and
- Chapters 5-12 set out the technical assessments for the environmental topics that need to be considered in the ES

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# 2. The Proposed Development

## 2.1 Need and Alternatives

### 2.1.1 Need

The proposed development is aimed at contributing to the sustainable provision of the housing needs of the Borough.

The Submission Version of the Draft Core Strategy: A Local Plan for Ribble Valley document sets out the following key statement with respect to housing provision in the Borough:

> *'KEY STATEMENT: HOUSING PROVISION*
>
> *Land for residential development will be made available for an average annual completion rate of at least 161 dwellings per year in accordance with baseline information.*
>
> *The Council will identify through the Strategic Housing Land Availability Study, sites for residential development that are deliverable over a five-year period. By reference to the housing land monitoring report and where appropriate Strategic Housing Land Availability Assessments, the Council will endeavour to ensure housing land is identified for the full 15 year period and beyond.'*

The site of the proposed development was included as an 'Alternative Option' for development in the *Core Strategy – Generation of Alternative Development Strategy Options* (June 2011) document for the provision of housing and other economic development within the Borough. As discussed in Section 1.1, following the addressing of concerns raised in the RVBC *Sustainability Appraisal Options Report,* a hybrid of options B and D, the site was designated as the preferred Strategic Site in the RVBC *Core Strategy 2008-2028, A Local Plan for Ribble Valley - Regulation 19 Consultation Draft* (April 2012) and its subsequent submission version as well as in the *Local Infrastructure Plan* (March 2012). The latter document describes the site as follows:

> *"The strategic site at Standen is central to the delivery of the Core Strategy. It is a large site currently used for agricultural purposes and situated to the south east of Clitheroe, in close proximity to the town and all its amenities and the strategic highway network. It provides a major opportunity to develop a site for a mix of uses in a highly sustainable and comprehensive manner within a high quality landscaped setting. Uses will be predominantly residential (including affordable housing) but will also include employment (B1 uses), community and open space/recreational uses with new and enhanced provision for sustainable and active transport to maximise connections to the Clitheroe urban area. Land will also be made available within the site for a primary school within the site if this is required to meet the need for educational provision, taking into account the capacity of schools that would serve the development.*

*The extensive area proposed has been identified to enable adequate scope to achieve the highest quality design, appropriate layouts that can help protect important views across the site and strategic planting that will assist in reducing the impact of the strategic site. The site would make a significant contribution to meeting the Borough's overall housing provision in the plan period with a total of 1040 dwellings proposed."*

The development would provide benefits to the District and local area through the sustainable provision of the housing and employment respectively. It would also provide community facilities and services for the benefit of the local area

The new housing proposals would provide a significant proportion of the housing need identified in the RVBC Core Strategy documents, as well as a high quality development for new residents.

There would be a wider economic gain as a consequence of the need to employ a skilled workforce during the construction phase; and the practical necessity for buying goods and services locally throughout that phase.

The proposals for business development as part of the scheme would provide new job opportunities within the area.

### 2.1.2 Alternatives

The EIA Regulations do not expressly require the developer to study alternatives, although the nature of certain developments and their location may make the consideration of alternative sites a material consideration. In this instance, the site is acknowledged as the Strategic Site bordering the largest settlement of Clitheroe for sustainable urban development within the Submission Version of the Draft Core Strategy: A Local Plan for Ribble Valley following a process where a number of other sites were considered. Against this background, it is considered that further consideration of alternatives is not required.

## 2.2 Project Evolution

Even before the start of the EIA process, many development proposals are informed by environmental considerations. For example, early decisions might be made to avoid direct effects to designated nature conservation or cultural heritage features and there will often be recognition of the need to implement standard measures to control noise and dust emissions, and to minimise the risk of pollution incidents. Further opportunities to avoid or reduce potential adverse effects, or to deliver environmental enhancements, may be identified whilst preparing the scoping report.

A design led approach has at all stages sought to acknowledge and mitigate potential environmental effects as well as to incorporate and where possible enhance, environmental features and assets. Measures to mitigate potential environmental effects, alongside enhancement measures where possible, are identified within each individual chapter.

A number of preliminary meetings were held with the Council officers in relation to the proposed development, and the scheme has been informed by extensive consultations with statutory consultees including statutory undertakers, the Environment Agency, English Heritage, Natural England and the relevant environmental health and highway authorities.

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## 2.3 Proposed Layout and Scheme Components

### 2.3.1 Overview

The scheme comprises residential and employment development together with areas of formal and informal open space and landscaping. The envisaged location and extent of each is depicted in the illustrative masterplan produced by IBI Taylor Young (Figure 2.1) In summary the scheme elements are:

- 1 040 residential dwellings comprising:
  - 728 market homes;
  - 312 affordable homes;
  - 156 of the total (1 040) would be for elderly people (i.e. over 55 years of age) of which 78 would be affordable;
  - 0 8 ha to be reserved for retirement living within the total of 1 040 homes;
- 0 5 ha for local retail, service and community facilities;
- 2.25 ha of employment (Class B1) accommodating up to a maximum gross floorspace of 5 575 $m^2$;
- 2.1 ha of land for a primary school site;
- Public open space including green corridors and areas for tree planting and landscaping;
- An improved (roundabout) junction between Pendle Road and the A59;
- New vehicular, pedestrian and cycle accesses onto Pendle Road and Littlemoor;
- New pedestrian and cycle accesses onto Worston Old Road;
- Temporary vehicular access onto Worston Old Road;
- New pedestrian and cycle access from the end of Shays Drive;
- Roads, sewers, footpaths, cycleways, services and infrastructure including:
  - A Sustainable Urban Drainage System;
  - New services such as gas, electricity, water and telecommunications.

The proposed layout of these uses is set out in the accompanying illustrative masterplan (Figure 2.1)

The proposed residential and employment areas would make a significant contribution to the Borough's housing requirements and provide a new source of employment to the local area.

Given the flexibility offered by the land holding the overall development density works out at approximately 30 5 dph.

Further details of the layout, scale and design principles and parameters of the development are will be set out in the Design and Access Statement being produced to support an outline planning application.

Employment will be provided in a number of locations. Principally, a commercial element will occupy up to 5 575 $m^2$ of floorspace on 2.25 ha which will include re-use of existing farm buildings. A primary school site will be provided and a local centre with retail and community facilities close to Pendle Road. The remainder will comprise access, parking and landscaping, to include extensive areas of green space, including a buffer along the route of Pendleton Brook to the south-west

The primary school site and community facilities are proposed to be focused on the community hub at the Pendle Road access. Higher densities will focus on the community centres and key routes, medium densities will provide appropriate relationships with existing homes and lower densities will soften the rural fringe

Potential improvements to the access junctions from Pendle Road, and the junction of Pendle Road and the A59, are part of the proposals. Appropriate provision for emergency access will also be provided as the site has extensive road frontages.

The scheme seeks to minimise its effect upon environmental resources through the retention of features of landscape, biodiversity and cultural heritage value. The mapped line of the route of a Roman road on the site will be unaffected by development; and hedgerows, trees and other habitats are retained wherever possible for their intrinsic and landscape value

### 2.3.2 Drainage

Increased surface water drainage flows as a result of the scheme will be mitigated by attenuating the flows within the scheme to the existing greenfield run-off rate. This will be achieved through a combination of Sustainable Urban Drainage Systems (SUDS), details of which are provided in Chapter 6: Water Environment and Appendix 6.1: Flood Risk Assessment

### 2.3.3 Construction Management

**Introduction**

In delivering the scheme, the control of construction activities, to ensure adverse environmental effects are avoided, will be a key factor. In this regard, a Construction Environmental Management Plan (CEMP) will be implemented. This will be supported by topic specific measures, a summary of which is provided with further detail on these measures in the relevant topic chapter.

**Overview of Construction Environmental Management Plan**

Contractors working on the scheme would be required to prepare and then implement a Construction Environmental Management Plan (CEMP), which would detail working practices and any other measures that form part of the scheme for which planning permission would have been granted, including the mitigation measures set out in each technical chapter. As part of the CEMP, there will also be a need to monitor and audit its implementation.

The CEMP will:

- identify potential environmental effects associated with construction activities of the scheme;
- eliminate or minimise those significant effects that could damage the environment, or which may have negative social or economic repercussions;
- enhance those effects identified as being positive and beneficial; and
- monitor and audit environmental management progress (e.g. implementation of measures to mitigate environmental effects) against specific objectives.

Development of a CEMP commences with the identification of environmental effects, the significance of which are evaluated, so that appropriate actions can be identified and taken. This will lead to a programme of environmental objectives and targets being established for the project. On-site activity will be continually monitored and assessed against the agreed objectives, which in turn will be reviewed at regular intervals to ensure that they remain appropriate and to encourage continual improvement. The environmental objectives and targets will be configured to ensure that legislative requirements are always met. In addition the environmental objectives will strongly encourage the use of best practice within the project.

It is important that clear channels of communication are established to allow transfer of information regarding on-site activities to the public. A Communication Plan will be established to co-ordinate the release of information to the public and to efficiently deal with queries and complaints received. The Communication Plan will identify a single point of contact for the local community for each phase of the development. The designated individual will be responsible for recording, investigating, reporting and taking appropriate action in relation to all enquiries and complaints received. This designated communication manager would be named at the site entrance (with a contact number) and will liaise extensively with RVBC and community groups prior to the site of construction works. A Communication Plan will be devised and agreed at the appropriate time.

At the appropriate time, and following consultation, the expected level of environmental control would be included in the tender documents issued to contractors so that contractors allow for standard good practice measures in their costs and method statements.

**Construction Hours**

It has been assumed that construction activities would be restricted to between 07:00-19:00 Monday to Friday and 07:00-13:00 on Saturdays. Work will not normally be carried out during the evening, night-time or on Sundays or Bank Holidays

**Traffic Management**

A Traffic Management Plan will be prepared prior to construction. Routes for construction traffic and construction deliveries will be restricted to those identified in a Transport Assessment that will be included in the planning application. Plant deliveries requiring exceptionally large vehicles will avoid times of peak traffic flows and will take place in consultation with police.

**Ecological Management**

Several measures will be implemented to minimise adverse effects on flora and fauna, provide ecological enhancement and ensure compliance with the relevant wildlife legislation. Further information is provided in Chapter 7.

### 2.3.4 Construction Programme

The scheme proposals are currently at an outline stage and therefore it is only possible to provide an overview of the proposed construction programme, which may change during the detailed design of the scheme.

The development will comprise a series of phases, the number and extent of which are yet to be determined. Each phase will involve the following periods:

- site establishment, site clearance (where appropriate), finalisation of detail design and construction of primary infrastructure (i.e. main roads and utility services); and
- build-out - construction site set up, implementation of development

### 2.3.5 Operational Specification

The following measures are proposed to ensure sustainable approaches to the long-term operation of the site:

- a Travel Plan to promote access and movement by sustainable modes;
- sustainable construction measures, in accordance to the building regulations that apply at the time, to promote energy efficiency;
- measures to promote waste recycling and minimise the generation of waste on site;
- measures to promote efficient use of water; and
- long term management and maintenance of public realm and ecological resources on the site to conserve and enhance biodiversity

A variety of mechanisms will be used to ensure that the long term operation of the site continues to meet sustainable development objectives. This may include the establishment of a management arrangement for common areas. Mechanisms to determine outcomes during the operational/maintenance phase may include the use of design codes to influence or control development outcomes and maintenance regimes, planning conditions, and/or other management agreements.

### 2.3.6 Traffic Generation During Operation

The main vehicular access to and from the site will be provided from the new access from Pendle Road. The site layout will be designed to ensure that access through Littlemoor is restricted to the emergency services and to serve a limited number of dwellings. The proposed scale and mix of uses at the site have been used to forecast traffic generation during the operation of the site. This is discussed further in the updated Transport Statement which accompanies this submission. The traffic forecasts have been used in the assessment of noise and air quality effects of the scheme traffic (Chapters 10 and 11 respectively).

### 2.3.7 Waste Management and Disposal

The proposed land use will result in an increase in the generation of household waste in the local area as well as waste associated with the other uses. The additional waste generation will require collection, treatment and disposal in accordance with waste management practices for the district

Opportunities for waste avoidance, and reduction, as well as sustainable waste re-use, recycling and disposal, will be used where appropriate. Waste generation in both construction and operation will be minimised. Facilities will be provided for appropriate collection, segregation and storage of reusable and recyclable materials. A waste management plan for the site will be developed for the site as the detailed planning stage.

Application Boundary
New Pedestian/ Cycle Route
Existing Public Right of Way
National Cycle Network
Activity/ Ecology Trail
Line of Roman Road
Youth Play
Children's Play
New Junction

Employment Uses
Site for Potential Primary School
Community Uses
Retirement Living
Wetland - Enhanced Ecology
Landscape Corridors
Residential Parcels
Built Up Area of Clitheroe
Key Frontages

Brook
Stream
Swale
Rill
Pond/ Suds Attenuation
Primary Access
Secondary Access
- Emergency Bus and Cycle/ Pedestrian Route
Pedestrian Access - Cycle/ Pedestrian Route (and/or)

Littlemoor
Lingfield Avenue
Shay's Drive
Pendle Road
Pendleton Brook
Standen Hall
Higher Standen Farm
A59

0 100m 200m 300m

Trustees of the Standen Estate
Land South of Clitheroe
Environmental Statement

Figure 2.1
Illustrative Masterplan

Scale: 1:2500@A2 Job: 5381
Reviewed by: GP Drawing: SP(90)09E

taylor young

# 3. The EIA Process

## 3.1 The Process

### 3.1.1 Overview

EIA is a process. The preparation of the ES is one of the key stages in this process, as it brings together information about any likely significant environmental effects, which the competent authority (RVBC) responsible for determining the planning application, will use in making a decision about whether or not the development should be allowed to proceed. If consent is granted, the EIA process should continue, reflecting any requirement for monitoring or the need to use environmental information to inform day to day decisions about how to deal with detailed design, siting or other issues.

In this case the EIA was also commissioned in the context of the emerging Core Strategy to assist the Council with its evidence base.

The steps to be followed in the EIA process (once the requirement for EIA has been established) are summarised in Box 3.1. These are based on the EIA Regulations, government guidance and good practice. They require inputs from not only the EIA team, but also from the developer and competent authority. Following a short section on terminology, the remainder of this chapter provides further information about some of the key steps in the process.

**Box 3.1 Key Steps in the EIA Process**

- Defining the project, including consideration of the need for the project and alternatives for meeting this need;
- Deciding on the likely significant effects that need to be assessed and how the necessary assessments will be carried out;
- Using the scoping report as a basis for consulting over the scope of the EIA and refining the scope in response to the comments that are received (with this refinement process continuing as the proposals for the scheme and the understanding of its environmental effects evolve);
- Assembling further information about the baseline environmental conditions that relate to the likely significant effects;
- Determining whether this baseline is relevant to the assessment or whether it is more appropriate to predict how the baseline will have changed by the time that the development is constructed or operated;
- Identifying measures to avoid, reduce or compensate for adverse effects, or to increase the environmental benefits of the scheme and liaising with the project design team to incorporate these (where possible) into the proposals;
- Ongoing consultation with statutory consultees and other interested parties, as appropriate;
- Assessing the magnitude and other characteristics of the environmental effects being assessed;
- Evaluating the significance of the predicted effects;
- Collating the findings in an ES and summarising the findings in a non-technical summary (NTS);
- Submission of the ES to the relevant competent authority;
- Decision-making which may involve *inter alia* ongoing negotiation and requests for further information;
- Informing stakeholders of the decision on whether or not the development is to be permitted; and
- Ongoing environmental monitoring, assessment and other work, as required

### 3.1.2 Scoping

Scoping involves identifying:

- The people and environmental resources (collectively known as 'receptors') that could be significantly affected by the scheme; and
- The work required to take forward the assessment of these potentially significant effects.

The context for scoping is provided in the Environmental Impact Assessment Regulations 2011 and by Circular 02/1999. Schedule 4 of the Regulations states that the ES should include "*a description of the likely significant effects of the development on the environment....*"

In addition, the Circular states that:

> *"In many cases, only a few of the effects will be significant and will need to be discussed in the ES in any depth. Other impacts may be of little or no significance for the particular development in question and will need only very brief treatment to indicate that their possible relevance has been considered".*

The approach to scoping adopted by this EIA accords with Circular 02/1999. Specifically, it started at the outset of the EIA process to allow the focus to be placed on the important issues. The initial conclusions about the scope of the EIA were set out in a scoping report that was submitted to the competent authority for consultation and comment in October 2011. There is no statutory requirement to produce such a report, although to do so is widely recognised as good practice since it engages interested parties and enables them to contribute to the scope of the EIA from an early stage, which in turn can reduce delays later on.

In the scoping report, potential environmental effects are identified for further assessment and therefore are *'scoped-in'* when:

- They are likely to be significant; or
- They could be significant and further information and/or consultation is required to determine whether they are likely to be significant.

For each of these effects, the scoping report identifies the work required to take forward the EIA. Ideally there might already be sufficient information available for the scoping report to fully define the assessment approach for each environmental topic required. Often though, all that can be done is to identify the survey work needed to determine whether receptors are present and to understand the changes that could result in significant effects upon them. Only when this has been done can the assessment requirements relating to the receptor be fully defined and as new evidence becomes available, effects that were previously *'scoped-in'* might be *'scoped-out'* and vice versa.

## 3.2 Application of EIA

### 3.2.1 EIA Terminology

**Impacts and Effects**

In some EIAs, the terms *'impacts'* and *'effects'* are used interchangeably, whilst in others the terms are given different meanings. Some use 'impact' to mean the cause of an 'effect' whilst others use the converse meaning. This variety of definitions has led to a great deal of confusion over the terms, both among the environmental specialists that undertake EIAs and those who read the resulting ESs.

Other than where it is also used in quotations, the convention used in this ES is to use *'impacts'* only within the context of the term EIA, which describes the process from scoping through ES preparation to subsequent monitoring and other work. Otherwise, this document uses the word *'effects'* when describing the environmental consequences of the proposed development. Such effects come about as a result of a series of events (or from pathways) that involve:

- Physical **activities** that would take place if the development were to proceed (e.g. vehicle movements during construction operations);
- Environmental **changes** that are predicted to occur as a result of these activities (e.g. loss of vegetation prior to the start of construction work or an increase in noise levels). In some cases one change causes another change, which in turn results in an environmental effect.

The environmental **effects** that are predicted to result are the consequences of the environmental changes for specific environmental receptors (e.g. for bats from the loss of roosting sites or foraging areas or for people because of an increase in noise levels etc.).

This ES is concerned with evaluating the significance of the effects of the development, rather than the activities or changes that cause them. However, this requires these activities to be understood and the resultant changes quantified, and this in turn often necessitates predictive assessment work to be undertaken. An example of how a physical activity and environmental change can lead to an Environmental Effect is given in Box 3.2.

**Box 3.2 Example of Activities and Environmental Changes Leading to an Environmental Effect**

At the development, heavy plant will undertake a number of **activities** related to the movement and use of construction materials. These activities will lead to an increase in background noise levels that could be significant. It is therefore necessary to obtain information that will determine the magnitude of change and this will include data relating to the baseline conditions (background noise levels monitored at potential noise sensitive receptors). It will also include data from plant manufacturers to determine the amount of noise each item of plant will generate, together with site design information to determine the numbers of plant involved, the areas and routes in which they will operate and their relative proximity to receptors. The assessment will then involve predicting the magnitude of the noise that will be experienced at each receptor, taking into account any incorporated mitigation to reduce noise levels, and determine the resultant **effects** of this change.

**Mitigation**

In this report, mitigation is defined as covering the following terms.

- **Avoidance:** Measures taken to avoid adverse effects;

- **Reduction**: Measures taken to reduce adverse effects; and
- **Compensation:** Measures taken to offset or compensate for adverse effects These measures usually take the form of attempting to replace what will be lost

In addition, reference will be made to **enhancement** measures. These constitute genuine enhancement of environmental interests, unrelated to any avoidance, reduction or compensation, is not considered to be mitigation. However, it will still be relevant to the ES if it is proposed as part of the development.

AMEC's approach to EIA is to assess the effects of the scheme proposals as they stand at the 'design freeze', incorporating the mitigation measures that have been incorporated as part of the scheme proposals. Given that this EIA has been prepared to support a Core Strategy consultation, only outline parameters for the scheme are currently available. The assessments within the EIA are therefore based on these available parameters.

### 3.2.2 Topics to be Addressed in the EIA

Schedule 4 of the EIA Regulations specifies what should be included in an ES. This includes:

> *"... a description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development ..."*

Schedule 4 also specifies that the ES should describe:

> *"... aspects of the environment likely to be significantly affected by the development, including, in particular population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the inter-relationship between the above factors."*

In this ES, these topics are dealt with under the headings set out in Table 3.1. The ES also contains a number of appendices which are referenced throughout the document.

**Table 3.1 Environmental Topics Addressed in this ES**

| Topics in the EIA Regulations | Topics in this ES |
|---|---|
| Population | Landscape & Visual [chapter 9]; Noise [chapter 10] Community and Socio-economic effects [chapter 12] |
| Fauna | Ecology [chapter 7] |
| Flora | Ecology [chapter 7] |
| Soil | Land quality [chapter 5] |
| Water | The Water Environment [chapter 6] |
| Air | Air Quality [chapter 11] |
| Climatic factors | The Water Environment [chapter 6] |
| Material assets, including the architectural and archaeological heritage | Cultural Heritage [chapter 8] |
| Landscape | Landscape & Visual [chapter 9] |
| The inter-relationship between the above factors | These are discussed within each chapter as relevant |

### 3.2.3 Scoping Exercise

The findings of the early scoping work carried out for this EIA were set out in a scoping report, which for this proposed development was submitted to RVBC on 05 October 2011, and was subsequently distributed to a range of consultees. A copy of this Scoping Report is set out at Appendix 3.1

The scoping report set out in broad terms the proposals for the Land South of Clitheroe; the environmental issues that were likely to arise as a result of the development; the methodologies to be applied in the EIA; and the content of the proposed ES.

A formal scoping opinion was received from RVBC on 08 November 2011. The scoping opinion included copies of the responses received from consultees.

The scoping report has not been reissued in response to the scoping consultation responses that have been received. Instead the scope of the assessment has been modified in order to reflect:

- Material changes to the project (e.g. where refinements to the development proposals avoided effects or reduced them to the point that they were no longer likely to be significant);
- New information that came to light (e.g. from consultees or further survey) indicating that previously 'scoped-out' effects were likely to be significant or that previously 'scoped-in' effects were not; and
- New effects that were identified, which could be significant

The changes that have been made to the scope of the assessment are detailed in each topic chapter in this ES, as appropriate.

### 3.2.4 Assessment Methodology

All of the individual environmental topic assessments have been undertaken on the basis of a common understanding of the nature of the proposed development and of the major changes that could affect the baseline in the absence of the development.

Each environmental topic chapter also follows a broadly common format, although by necessity some variations have been included, especially where a chapter is primarily informative, e.g. land quality. However, the format for most sections includes the following subsections:

- **Introduction:** This provides a brief introduction to the assessment topic;
- **Context:** This provides a 'pen-picture' of the relevance of each environmental topic and includes details of the terminology and technical and planning context relevant to technical discipline;
- **Assessment Approach:** This summarises the data gathering and survey work that was undertaken to inform the proposed scope of the EIA;
- **Baseline Conditions:** This provides a detailed description of the receptors and draws conclusions in respect of their sensitivity or value based on the evaluation of relevant criteria;
- **Proposed Mitigation:** This section deals primarily with the ways in which the scheme design has been modified to avoid or reduce the effects that could potentially be significant during the key phases of the development. Measures designed to compensate for or offset likely significant effects are also provided;
- **Assessment of Effects:** The results of the detailed assessment are described in this section and are related to each of the receptors. It therefore takes account of the sensitivity (or value) attributed to a particular receptor and relates to it the predicted magnitude of environmental change from the various development-related activities. Information about the effects of all the environmental changes is then drawn together and a conclusion reached about the overall effect, as to whether it is 'significant' or 'not significant'. Broadly, an effect that is considered significant is of such weight that it could influence the development consent decision;
- **Conclusions:** This concludes the overall findings of the assessment in respect of the environmental topic or specific receptors. This is demonstrated in tabular form and summarises the predicted effects in relation to each receptor. It therefore provides a useful checking device to the findings of the preceding detailed assessments, which has determined whether the effects are "significant" or "not significant" as defined by the EIA Regulations; and
- **Implementation of Mitigation Measures:** For each of the mitigation measures that have been incorporated into the scheme design details are provided in respect of:
  - How the measures will be implemented (e.g. as part of a site environmental management plan);
  - What, if any, monitoring is required;

- Who will be responsible for their implementation/monitoring; and
- What planning controls or other mechanisms are considered necessary to formalise the delivery of the measure.

# 4. Planning Context

## 4.1 Introduction

A number of national and local planning policies are of relevance in the assessment of the proposals for the site and for the undertaking of the EIA. These are contained in the following documents:

- National Planning Policy Framework (2012);
- North West England Regional Plan (2009);
- The saved policies outlined within the Ribble Valley Local Plan (1998);
- Interim Policies;
- The Submission Version of the Draft Core Strategy: A Local Plan for Ribble Valley (2012).

## 4.2 National Planning Policy Framework

At the heart of the NPPF is the 'presumption in favour of Sustainable Development (paragraph 14) In terms of decision taking this means:

- *Approving development proposals that accord with the development plan without delay.*

The NPPF also contains 12 core planning principles which include a number which are relevant to the proposed mixed used development and to its design and assessment:

- *Proactively drive and support sustainable economic development to deliver the homes, business and industrial units, infrastructure and thriving local places that the country needs. Every effort should be made objectively to identify and then meet the housing, business and other development needs of an area, and respond positively to wider opportunities for growth,*
- *Seek to secure high quality design and a good standard of amenity for all existing and future occupants of land and buildings,*
- *Take account of the different roles and character of different areas, promoting the vitality of our main urban areas, protecting the Green Belts around them, recognising the intrinsic character and beauty of the countryside and supporting thriving rural communities within it,*
- *Contribute to conserving and enhancing the natural environment and reducing pollution. Allocations of land for development should prefer land of lesser environmental value, where consistent with other policies in this Framework,*

- *Encourage the effective use of land by reusing land that has been previously developed (brownfield land), provided that it is not of high environmental value;*
- *Promote mixed use developments, and encourage multiple benefits from the use of land in urban and rural areas, recognising that some open land can perform many functions (such as for wildlife, recreation, flood risk mitigation, carbon storage, or food production);*
- *Conserve heritage assets in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of this and future generations;*
- *Actively mange patterns of growth to make the fullest possible use of public transport, walking and cycling, and focus significant development in location which are or can be made sustainable; and*
- *Take account of and support local strategies to improve health, social and cultural well-being for all, and deliver sufficient community and cultural facilities and services to meet local needs.*

The NPPF, in seeking to deliver sustainable development, offers further guidance in relation to number of topics which are covered within this EIA The relevant text in relation to each topic is summarised below in Table 4 1:

**Table 4.1 Relevant Topic Based NPPF Information**

| Relevant Guidance | Implications for EIA |
|---|---|
| **Land Quality (paragraphs 120-122 for full details)** | |
| *Paragraph 120 states that to prevent unacceptable risks from pollution and land instability, planning decisions should ensure that development is appropriate to its location*<br><br>*The effects (including cumulative effects) of pollution on health, the natural environment, or general amenity, and the potential sensitivity of the area or proposed development to adverse effects from pollution. should be taken into account*<br><br>*Where a site is affected by contamination or land stability issues, responsibility for securing a safe development rests with the developer and/or landowner.*<br><br>*Paragraph 121 states. Planning policies and decisions should also ensure that.*<br><br>• *the site is suitable for its new use taking account of ground conditions and instability, including from natural hazards or former activities such as mining, pollution arising from previous uses and any proposals for mitigation including land remediation or impacts on the natural environment arising from that remediation,*<br><br>• *after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990. and*<br><br>• *adequate site investigation information prepared by a competent person, is presented* | Ensure that environmental effects are kept to acceptable levels and to develop the site according to best practice<br><br>Consider the effects of potential land contamination<br><br>To ensure the site is used effectively |

Table 4.1 (continued) Relevant Topic Based NPPF Information

| Relevant Guidance | Implications for EIA |
|---|---|
| **Land Quality (paragraphs 120-122 for full details) (continued)** | |
| Paragraph 122 states:<br><br>*Local planning authorities should focus on whether the development itself is an acceptable use of the land, and the impact of the use, rather than the control of processes or emissions themselves where these are subject to approval under pollution control regimes. Local planning authorities should assume that these regimes will operate effectively Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities.* | |
| **Hydrology and Flood Risk (paragraphs 100-104 for full details)** | |
| Paragraph 103 states:<br><br>*When determining planning applications, local planning authorities should ensure flood risk is not increased elsewhere and only consider development appropriate in areas at risk of flooding where, informed by a site-specific flood risk assessment[2] following the Sequential Test and if required the Exception Test, it can be demonstrated that*<br><br>• *within the site, the most vulnerable development is located in areas of lowest flood risk unless there are overriding reasons to prefer a different location; and*<br>• *development is appropriately flood resilient and resistant, including safe access and escape routes where required, and that any residual risk can be safely managed, including by emergency planning, and it gives priority to the use of sustainable drainage systems*[3]<br><br>Paragraph 104 states:<br><br>*For individual developments on sites allocated in development plans through the Sequential Test, applicants need not apply the Sequential Test Applications for minor development and changes of use should not be subject to the Sequential or Exception Tests but should still meet the requirements for site-specific flood risk assessments* | Undertake FRA, consider arrangement s for foul and surface discharge (including SUDs)<br><br>Consider pollution prevention mechanisms |

[2] A site-specific flood risk assessment is required for proposals of 1 hectare or greater in Flood Zone 1; all proposals for new development (including minor development and change of use) in Flood Zones 2 and 3, or in an area within Flood Zone 1 which has critical drainage problems (as notified to the local planning authority by the Environment Agency); and where proposed development or a change of use to a more vulnerable class may be subject to other sources of flooding.

[3] The Floods and Water Management Act 2010 establishes a Sustainable Drainage Systems Approving Body in unitary or county councils This body must approve drainage systems in new developments and re-developments before construction begins.

**Table 4.1 (continued) Relevant Topic Based NPPF Information**

| Relevant Guidance | Implications for EIA |
|---|---|
| **Ecology (Paragraphs 109 and 117-119 for full details)** | |
| Paragraph 118 states:<br><br>When determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the following principles:<br><br>• *if significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts) adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*<br><br>• *proposed development on land within or outside a Site of Special Scientific Interest likely to have an adverse effect on a Site of Special Scientific Interest (either individually or in combination with other developments) should not normally be permitted. Where an adverse effect on the site's notified special interest features is likely, an exception should only be made where the benefits of the development, at this site, clearly outweigh both the impacts that it is likely to have on the features of the site that make it of special scientific interest and any broader impacts on the national network of Sites of Special Scientific Interest;*<br><br>• *development proposals where the primary objective is to conserve or enhance biodiversity should be permitted;*<br><br>• *opportunities to incorporate biodiversity in and around developments should be encouraged;*<br><br>• *planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of aged or veteran trees found outside ancient woodland, unless the need for, and benefits of, the development in that location clearly outweigh the loss; and*<br><br>• *the following wildlife sites should be given the same protection as European sites.*<br><br>- *potential Special Protection Areas and possible Special Areas of Conservation.*<br><br>- *listed or proposed Ramsar sites; and*<br><br>- *sites identified, or required, as compensatory measures for adverse effects on European sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.* | Consider effects on protected habitats and species. Provide appropriate surveys |

**Table 4.1 (continued) Relevant Topic Based NPPF Information**

| Relevant Guidance | Implications for EIA |
|---|---|
| **Cultural Heritage (Paragraphs 126 to 141 for full details)** | |
| When determining planning applications, paragraph 128 states that:<br><br>*The applicant must describe the significance of any heritage assets affected including any contribution made by their setting. The level of detail should be proportionate to the asset's significance but as a minimum the relevant historic environmental record should have been consulted. Where a site on which development is proposed includes or has the potential to include heritage assets within archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where appropriate, a field evaluation.*<br><br>Paragraph 132 states:<br><br>*When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation. The more important the asset, the greater the weight should be. Significance can be harmed or lost through alteration or destruction of the heritage asset or development within its setting. As heritage assets are irreplaceable, any harm or loss should require clear and convincing justification.*<br><br>Paragraph 133 states:<br><br>*Where a proposed development will lead to substantial harm to or total loss of significance of a designated heritage asset, local planning authorities should refuse consent, unless it can be demonstrated that the substantial harm or loss is necessary to achieve substantial public benefits that outweigh that harm or loss.*<br><br>*Paragraph 134 states:*<br><br>*Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal, including securing its optimum viable use.*<br><br>Paragraph 35 states:<br><br>*The effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that affect directly or indirectly non designated heritage assets, a balanced judgment will be required having regard to the scale of any harm or loss and the significance of the heritage asset* | Need to consider the potential archaeological significance of the site<br><br>Consider effects on the setting of heritage assets on/nearby the site. |
| **Landscape and Visual (Paragraphs 109 and 115-116 for full details)** | |
| Paragraph 109 states:<br><br>*The planning system should contribute to and enhance the natural and local environment by:*<br><br>• *protecting and enhancing valued landscapes, geological conservation interests and soils*<br><br>*Paragraph 115 states:*<br><br>*Great weight should be given to conserving landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to landscape and scenic beauty* | Identify the existing landscape character and assess effects of proposals<br><br>Consider the visual effects of the proposals in terms of the receiving environment |

Table 4.1 (continued) Relevant Topic Based NPPF Information

| Relevant Guidance | Implications for EIA |
|---|---|
| **Noise (Paragraphs 109 and 123-124 for full details)** | |
| Paragraph 123 states that decisions should aim to:<br>• avoid noise from giving rise to significant adverse impacts[4] on health and quality of life as a result of new development;<br>• mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions;<br>• recognize that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established;[5]<br>• and identify and protect areas of tranquility which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason. | Undertake noise assessment in relation to identified 'sensitive receptors' in close proximity to the site. |
| **Air Quality (Paragraphs 109 and 123-124 for full details)** | |
| Paragraph 124 states:<br>*Planning decisions should ensure that any new development in Air Quality Management Areas is consistent with the local air quality action plan.* | Consider likely emissions to air created by the development. |
| **Socio Economic (Paragraphs 18-28, 47-50, 69-78 for full details)** | |
| Paragraph 24 states:<br>*When considering edge of centre and out of centre proposals, preference should be given to accessible sites that are well connected to the town centre. Applicants and local planning authorities should demonstrate flexibility on issues such as format and scale*<br>Paragraph 70 states:<br>*To deliver the social, recreational and cultural facilities and services the community needs, planning policies and decisions should:*<br>• *plan positively for the provision and use of shared space, community facilities (such as local shops meeting places, sports venues, cultural buildings, public houses and places of worship) and other local services to enhance the sustainability of communities and residential environments;*<br>• *guard against the unnecessary loss of valued facilities and services, particularly where this would reduce the community's ability to meet its day-to-day needs;*<br>• *ensure that established shops, facilities and services are able to develop and modernise in a way that is sustainable, and retained for the benefit of the community; and*<br>• *ensure an integrated approach to considering the location of housing, economic uses and community facilities and services.* | Provision of housing mix to meet local needs<br>Demonstration of social and economic benefits of the scheme |

[4] See Explanatory Note to the Noise Policy Statement for England (Department for the Environment, Food and Rural Affairs).

[5] Subject to the provisions of the Environmental Protection Act 1990 and other relevant law.

Table 4.1 (continued) Relevant Topic Based NPPF Information

| Relevant Guidance | Implications for EIA |
|---|---|
| **Socio Economic (Paragraphs 18-28, 47-50, 69-78 for full details) (continued)** | |
| Paragraph 72 refers to the importance the Government attaches to ensuring that a sufficient choice of school places is available to meet the needs of existing and new communities It advices Local Authorities to:<br>• *give great weight to the need to create, expand or alter schools; and*<br>• *work with schools promoters to identify and resolve key planning issues before applications are submitted*<br>Paragraph 73 outlines the importance of access to high quality open spaces and how opportunities for sport and recreation can make an important contribution to the health and well-being of communities<br>Paragraph 75 refers to the protection and enhancement of public rights of way and access. There is encouragement for local authorities to add links to existing rights of way networks | |

## 4.3 North West of England Regional Plan

After the Regional Spatial Strategy (RSS) was purportedly abolished by the Secretary of State for Communities and Local Government on 6 July 2010, at the time of writing it remains part of the development plan

Table 4.2 Summary of Policy Context: North West of England Plan

| ES Chapter and Policy Reference | Policy Context Relevant to Development | Policy Implications for EIA |
|---|---|---|
| **Environment** | | |
| EM1: Integrated Enhancement and Protection of the Region's Environmental Assets | The Region's environmental assets should be identified, protected, enhanced and managed to conserve and enhance the landscape, natural environment, historic environment and woodlands of the region | Consider the effects of scheme on landscape, biodiversity, habitats and the historic environment |
| EM5: Integrated Water Management | Development should be located where there is spare capacity in the existing water supply and waste water treatment, sewer and strategic surface water mains capacity Development should be guided by flood risk appraisal and departures from the sequential test in PPS25 should only be proposed in exceptional cases | Consider effects of the scheme on flood risk and water quality |

Table 4.2 (continued) Summary of Policy Context: North West of England Plan

| ES Chapter and Policy Reference | Policy Context Relevant to Development | Policy Implications for EIA |
|---|---|---|
| **Socio Economic** | | |
| RDF2: Rural Areas<br>W1: Strengthening the Regional Economy<br>W3: Supply of Employment Land<br>L1: Services Provision<br>L4: Regional Housing Provision | To promote Key Service Centres<br>Development should respond to the predicted growth sectors and to provide an appropriate portfolio of employment land<br>To promote the vitality of a comprehensive range of accessible educational, healthcare, community, sporting and leisure facilities | Consider the impact of the proposal upon the local economy of the area and wider region. Impact of housing provision against local need and social implications of scheme including accessibility to services and amenities (including recreational). |

## 4.4 Adopted Ribble Valley Local Plan

The Ribble Valley Local Plan was adopted in 1997 and forms an element of the development plan. It will be duly replaced by the evolving Local Development Framework but, until then those policies saved in 2007 remain relevant and should be considered as part of the EIA assessment process. Therefore for ease of reference the relevant policies in relation to each technical chapter are outlined below in Table 4.3.

Table 4.3 Summary of Policy Context: Adopted Local Plan

| ES Chapter and Policy Reference | Policy Context Relevant to Development | Policy Implications for EIA |
|---|---|---|
| **Land Quality** | | |
| ENV6 Agricultural Land | Safeguarding best and most versatile agricultural land (grades 1 2 and 3a) | Consider the effects of scheme on land quality |
| **Ecology** | | |
| ENV1 Area of Outstanding Natural Beauty<br>ENV2 Forest of Bowland<br>ENV3 Open Countryside<br>ENV6 Agricultural Land<br>ENV7 Species Protection<br>ENV8 Sites of Special Scientific Interest<br>ENV9 Other Important Wildlife Sites<br>ENV10 Nature Conservation | To promote landscape character including vegetation<br>To protect and enhance biodiversity, including designated areas, areas of local ecological importance and protected species and their habitats | Consider effects on areas of local ecological importance Protect and enhance local biodiversity.<br>Provide appropriate surveys |

Table 4.3 (continued) **Summary of Policy Context: Adopted Local Plan**

| ES Chapter and Policy Reference | Policy Context Relevant to Development | Policy Implications for EIA |
|---|---|---|
| **Cultural Heritage** | | |
| ENV14 Archaeology and Historic Heritage | Presumption in favour of the preservation of ancient monuments and other nationally important archaeological remains and their settings | Need to consider the potential archaeological significance of the site<br><br>Consider effects on the setting of heritage assets on/nearby the site |
| **Landscape and Visual** | | |
| G1 Development Control<br><br>ENV1 Area of Outstanding Natural Beauty<br><br>ENV2 Forest of Bowland<br><br>ENV3 Open Countryside<br><br>ENV6 Agricultural Land<br><br>ENV12 Landscape Protection | All development proposals will be expected to provide a high standard of building design and landscape quality<br><br>The landscape and character of the Forest of Bowland Area of Outstanding Natural Beauty will be protected, conserved and enhanced<br><br>Development needs to contribute to the conservation of the natural beauty of the area The environmental effects of proposals will be a major consideration and the design materials, scale, massing and landscaping of development will be important factors in deciding planning applications<br><br>Important landscape features should be protected | Consider the visual effects of the proposals in terms of the receiving environment (specifically Forest of Bowland AONB)<br><br>Consider likely effects upon the local landscape features |
| **Socio Economic** | | |
| G5 Outside of Main Settlements<br><br>G6 Essential Open Spaces<br><br>H20 Sites outside settlements<br><br>RT18 Footpaths and Bridleways<br><br>RT19 Footpaths and Bridleways | To promote social inclusion through accessibility and mobility<br><br>To promote health and amenity through accessibility and mobility<br><br>To increase economic competitiveness<br><br>To ensure access for people with reduced mobility<br><br>To enhance safe and attractive routes and facilities for pedestrians and cyclists | Consider the impact of the proposal upon the local economy of the area and wider region Impact of housing provision against local need and social implications of scheme including accessibility to services and amenities (including recreational) |

## 4.5 The Submission Version of the Draft Core Strategy: A Local Plan for Ribble Valley (2012)

The development of the site is a key proposal in the above document and the specific land use mix being pursued is intended to fully comply with it. This section explains that key policy and also how what is being proposed relates to other policies in the emerging document.

Table 4.4 below outlines the policy intents ('Key Statements') in The Submission Version of the Draft Core Strategy: A Local Plan for Ribble Valley (2012) which, when adopted, will be the

overarching document to guide development over the next 20 years. These 'Key Statements' are material considerations pending the EIP and Secretary of State's findings.

**Table 4.4 Summary of Policy Context: Submission Version of the Draft Core Strategy**

| ES Chapter and Key Statement Reference | Policy Context Relevant to Development | Policy Implications for EIA |
|---|---|---|
| **Land Quality** | | |
| DMG1 General Considerations | All new development proposals will be required to achieve efficient land use and the re use and remediation of previously developed sites where possible (risks arising from coal mining will need to be considered) | Ground investigation needs to consider coal mining potential in area |
| **Hydrology and Flood Risk** | | |
| EN3 Sustaianble Development and Climate Change<br><br>DME6 Water Management | Sustainable development principles and sustainable construction methods, such as the use of sustainable drainage systems, should be incorporated<br><br>Development will not be permitted where the proposal would be at an unacceptable risk of flooding or exacerbate flooding elsewhere | SUDs need to be considered within drainage systems<br><br>FRA required |
| **Ecology** | | |
| EN3 Sustaianble Development and Climate Change<br><br>EN4 Biodiversity and Geodiversity<br><br>DMG1 General Considerations<br><br>DME1 Protecting Trees and Woodlands<br><br>DME3 Site and Species Protection and Conservation | Development proposals that adversely affect a site of recognised environmental or ecological importance should be avoided and will only be permitted where a developer can demonstrate that the negative effects of a proposed development can be mitigated, or as a last resort, compensated for through suitable measures | Undertake relevant surveys and identify mitigation if appropriate |
| **Cultural Heritage** | | |
| EN5 Heritage Assets<br><br>DMG1 General Considerations<br><br>DME4 Protecting Heritage Assets | There will be a presumption in favour of the preservation of heritage assets and their settings where they are recognized as being of importance (which will include Scheduled Ancient Monuments, listed buildings, conservation areas, registered parks and gardens) | Need to consider the potential archaeological significance of the site<br><br>Consider effects on the setting of heritage assets |

**Table 4.4 (continued) Summary of Policy Context: Submission Version of the Draft Core Strategy**

| ES Chapter and Key Statement Reference | Policy Context Relevant to Development | Policy Implications for EIA |
|---|---|---|
| **Landscape and Visual** | | |
| EN2 Landscape<br>DMG1 General Considerations<br>DME2 Landscape and Townscape Protection | The landscape and character of the Forest of Bowland Area of Outstanding Natural Beauty will be protected, conserved and enhanced.<br>Development should be of a high standard of building design. Be sympathetic to existing and proposed land uses in terms of its size, intensity and nature as well as scale, massing, style, features and building materials<br>Particular emphasis will be placed on visual appearance and the relationship to surroundings as well as the effects of development on existing amenities. | Identify the existing landscape character and assess effects of proposals<br>Consider the visual effects of the proposals in terms of the receiving environment (particularly in relation to Forest of Bowland AONB) |
| **Noise** | | |
| DMG1 General Considerations | General policy requests that development should not have a detrimental effect on the amenity of the area (which would include noise) | Identify sensitive receptors<br>Provide appropriate surveys and predictions for construction and operation |
| **Air Quality** | | |
| DMG1 General Considerations | General policy requests that the potential impacts of development on air quality (and where feasible mitigation provided) should be considered in assessing proposals | Consider likely emissions to air created by the development |
| **Socio Economic** | | |
| DS1: Development Strategy<br>H1: Housing Provision<br>H2: Housing Balance<br>H3: Affordable Housing<br>EC1 Business and Employment Development<br>EC2 Development of retail shops and community facilities<br>DMI1 Planning Obligations<br>DMI2 Transport Considerations<br>DMH1 Affordable Housing Criteria<br>DMB4 Open Space Provision<br>DMB5 Footpaths and Bridleways | The proposed development is designated for mixed use development which would include a range of uses: housing (including affordable housing), employment, community uses, local retail and service provision to serve the site, open space and recreational uses.<br>To key statements seek to:<br>• provide a range of housing tenure to meet housing need (including affordable housing);<br>• To increase economic competitiveness;<br>• To promote social inclusion through accessibility and mobility;<br>• To protect and enhance public rights of way and access for pedestrians and cyclists. | Consider the impact of the proposal upon the local economy of the area and wider region. Impact of housing provision against local need and social implications of scheme including accessibility to services and amenities (including recreational). |

# 5. Agricultural Land Quality and Soils

## 5.1 Introduction

This chapter sets out the results of an assessment of the effects of the proposed development on agricultural land quality and soils

## 5.2 Context

### 5.2.1 Technical Context

The site of the proposed development is currently in agricultural use. This assessment addresses the potential effects of the proposed development on this agricultural land resource.

A review of online historic maps[6] for the site of the proposed development indicates that the area has remained free of built development since at least 1847, with the site of the proposed development being shown as open fields until the present day. It is therefore likely that the land has not been used for any purposes other than agriculture and it is therefore unlikely that there is any contamination on the land that could give rise to significant environmental effects

### 5.2.2 Planning Context

Table 5.1 lists policy guidance and policies that are relevant to the assessment of the effects of the proposed development of the site on agricultural land quality and soils, and the issues in these policies/guidance that needed to be considered when determining the scope of the assessment. Details of the policies are provided in Chapter 4 and the accompanying Planning Statement

**Table 5.1 Policy Issues: Land Quality and Soils**

| Policy | Policy Issues |
|---|---|
| **National Policy** | |
| National Planning Policy Framework | Protect the best and most versatile agricultural land (land in grades 1, 2 and 3a of the Agricultural Land Classification), Geological conservation interests and soils. Prevent an unacceptable risk from or being adversely affected by unacceptable levels of land and soil pollution |
| **Regional and Local Policy** | |
| NW RSS Policy EM1 | Enhance and protect the region's environmental assets |
| RVLP Policy ENV6 | Safeguard best and most versatile agricultural land (grades 1, 2 and 3a) |

[6] www.old-maps.co.uk

### 5.2.3 Relevant Terminology

**Agricultural Land Classification**

The Agricultural Land Classification (ALC) provides a method for assessing the quality of farmland to enable informed choices to be made about its future use within the planning system. The Classification is based on the long term physical limitations of land for agricultural use. Factors affecting the grade are climate, site and soil characteristics, and the important interactions between them. The ALC is concerned with the inherent potential of land under a range of farming systems. The current agricultural use, or intensity of use, does not affect the ALC grade.[7]

The ALC system classifies land into five grades (grade 1 - excellent to grade 5 - very poor inclusive), with grade 3 subdivided into subgrades 3a and 3b. Details of the land uses typically associated with each grade of the ALC are given in Table 5.2.

**Table 5.2 Typical Land Use by ALC Grade**

| ALC Grade | Quality | Typical Land Use[8] |
|---|---|---|
| Grade 1 | Excellent | Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and these commonly include top and soft fruit, salad crops and winter harvested vegetables. |
| Grade 2 | Very Good | Land with minor limitations which affect crop yield, cultivations or harvesting. A very wide range of agricultural and horticultural crops can usually be grown |
| Grade 3a | Good | Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals or moderate yields of a wide range of crops including: cereals grass, oilseed rape potatoes, sugar beet and less demanding horticultural crops |
| Grade 3b | Moderate | Land capable of producing moderate yields of a narrow range of arable crops (notably cereals and grass), or lower yields of a wider range of crops or high yields of grass, which can be grazed or harvested over most of the year |
| Grade 4 | Poor | Land with severe limitations, which significantly restrict the range of crops and/or level of yields. It is therefore mainly suited to the production of grass. The grade also includes very droughty arable land |
| Grade 5 | Very Poor | Land with very severe limitations which restrict use to permanent pasture or rough grazing. |

**Best and Most Versatile Land**

Best and Most Versatile (BMV) land is defined as *"land in grades 1, 2 and 3a of the Agricultural Land Classification"*. This is the land which is most flexible, productive and efficient in response to inputs.[2]

[7] (Natural England, 2009).

**Topsoil**
Topsoil is the material which developed originally at the top of a soil profile and is characteristically darker in colour and has a higher organic matter content than subsoil material.[8]

**Subsoil**
Subsoil lies below the topsoil and a soil profile would usually have at least one, and possibly up to four or more, individual subsoil horizons within the 1m depth from the surface. However, topsoil sometimes overlies shallow bedrock with no subsoil present.

## 5.3 Assessment Approach

### 5.3.1 Preliminary Data Gathering and Survey Work

Data on agricultural land classification and soils were sourced from:

- *Agricultural Land Classification in relation to land south of Clitheroe* (Berrys, 2012);
- *Provisional Agricultural Land Classification* (MAFF, unknown date) – provisional data 1:250 000 available at http://magic.defra.gov.uk/; and
- *Sheet 3 Soils of Midland and Western England, scale 1:250 000* (Soils Survey of England and Wales, 1983).

Information about geological/ geomorphological Sites of Special Scientific Interest was obtained from http://magic.defra.gov.uk/ Information about Regionally Important Geological and Geomorphological Sites were obtained from www.lancashirerigs.org.uk.

### 5.3.2 Proposed Scope of the Assessment

**Potential Receptors**
Receptors that have the potential to be significantly affected by the proposed development and have therefore been taken forward for further assessment as part of the ES are:

- BMV land which could be affected by construction and permanent land take; and
- topsoil which may be lost during construction or affected by changes in soil structure.

**Potentially Significant Effects**
The potential effects of the proposed development on agricultural land quality and soil receptors are summarised below. These effects are assessed in section 5.6.

- Potential effects on BMV land due to permanent land-take;
- Potential effects on soils caused by loss of topsoil; and

[8] (Defra, 1988)

- Potential effects on soils resulting from changes in soil structure.

### 5.3.3 Significance Evaluation Methodology

**Overview**

The National Planning Policy Framework (NPPF), states that, in relation to planning decisions *"local planning authorities should take into account the economic and other benefits of the best and most versatile agricultural land"*. Although the NPPF does not preclude development on grades 1, 2 and 3a it puts an emphasis on using poorer quality land in preference to that of a higher quality. For these reasons, only BMV land is assessed to be of sufficient value that an effect upon it could be significant in terms of land quality. Effects on lower grade land are not considered in this ES except in other chapters where the land is valued for different reasons (e.g. in the Biodiversity chapter) and where changes in agricultural land could affect agricultural activity.

In identifying the potential for significant effects on soils and agricultural land, consideration has been given to the construction and operational activities associated with the proposed development of the site and the environmental changes that these are predicted to cause

**BMV Land**

In this ES, the evaluation of significance has been undertaken using professional judgement, drawing upon information about the area of BMV land that would be lost together with contextual data about BMV land. Contextual data are available about the extent of grade 1 and 2 agricultural land in the borough of Ribble Valley and the County of Lancashire, but there are no data on the extent of grade 3a land (as grades 3a and 3b are not differentiated - Defra, 2005). There is however, no grade 1 or grade 2 land in the borough of Ribble Valley. As a consequence, the only relevant local contextual data about BMV land are the areas of grade 1 and 2 land within Lancashire as a whole (recognising that these areas do not necessarily equate with the total area of BMV land in the county due to the absence of data on grade 3a land)

**Soils**

The significance of effects on soil resources has been assessed on the basis of professional judgement with reference to:

- the activities associated with the construction and operation of the proposed development of the site;
- the amount of topsoil that would be lost (i.e. buried under subsoil or sterilised by development); and
- any change in the quality of topsoil, whether in terms of its structure or the degree of contamination as a result of the proposed development of the site.

### 5.3.4 Technical Consultations

Natural England advised AMEC that it does not hold any detailed ALC studies of the proposed development. In light of this, the Trustees of the Standen Estate commissioned an Agricultural Land Classification survey to be undertaken in June 2012 (Berrys, 2012).

### 5.3.5 Final Scope of the Assessment

The scope of the assessment remains as stated in section 5.3.2.

### 5.3.6 Information Gaps

There are no information gaps which would influence the assessment.

## 5.4 Baseline Conditions

### 5.4.1 Agricultural Land Quality

Berrys' assessment (Berrys, 2012) covers the Strategic Site as identified in the RVBC Core Strategy 2008-2028 – A Local Plan for Ribble Valley – Regulation 19 Consultation Draft (April 2012) This classified most of the site as grade 3b (46.5 ha) with some grade 4 land (2.2 ha) located to the south-west of the site on the steep valley slopes and floodplain of Pendleton Brook. There is 1.2 ha of non-agricultural land (e.g. farm buildings) within the proposed development site (excluding the land around the A59 junction).

From the *Provisional Agricultural Land Classification* mapping, (MAFF, date unknown) the proposed road junction between the A59 and Pendle Road (which is outside the Strategic Site in the Core Strategy) is grade 3 land. Given that it is contiguous with the Strategic Site land it is likely that it is at best grade 3b land.

### 5.4.2 Soils

Within the *Soils of Midland and Western England* map (Soils Survey of England and Wales, 1983), the soils of the site of the proposed development are classified as Brickfield 3 (713g). The Brickfield 3 soils are *"slowly permeable seasonally waterlogged fine loamy, fine loamy over clayey and clayey soils"* The cropping and land use of this soil is defined as *"stock rearing and some dairying on permanent grassland; grassland and winter cereals in drier lowlands"*.

**Geological/ Geomorphological Sites**

There are no geological/ geomorphological sites located on the site of the proposed development.

## 5.5 Proposed Mitigation

### 5.5.1 Measures Incorporated to Mitigate Potential Significant Effects

A number of mitigation measures have been incorporated into the proposed development of the site to mitigate environmental effects on soils see Table 5.3 below. These mitigation measures should be read alongside the scheme description set out in Chapter 2.

**Table 5.3 Rationale for Incorporation of Mitigation Measures**

| Potential Receptor | Predicted Changes and Potential Effects | Incorporated Mitigation |
|---|---|---|
| Soil | During development topsoil may become buried under subsoil or topsoil may be sterilised by development. This could affect the soil resource. | Topsoil to be removed and reused on site (for example in greenspace areas/gardens). Where there is a surplus, the contractors will be required to identify ways to use the surplus for landscape schemes elsewhere rather than being sent to landfill. |
| Soil | Inappropriate storage and/or handling of soils during construction may degrade soil structure | A pre-construction survey of existing land drainage to be carried out and any requirement for drainage modifications identified prior to construction |
| | | Topsoil and subsoils to be stripped separately where possible in dry weather |
| | | Topsoil and subsoils to be stored separately using a methodology that has been defined with reference to best practice |
| Soil | Some construction activities (for example the use of heavy machinery) may cause soils to be compacted and could affect the soil resource | Outside areas of excavation, soil compaction to be minimised via the use of temporary tracks, low ground pressure tyres, tracked vehicles, low axle loads and limiting the use of machinery in wet weather |
| | | Reinstated soils/ soils over which construction vehicles have travelled to be examined to determine whether there is a need for soil ripping to reduce compaction or for vegetation to be established to reduce soil erosion |
| Soils | Construction-related contamination could affect the soil resource | All oil or chemical storage tanks to be properly bunded. |
| | | Prevention of pollution measures to be introduced (see Chapter 6 for further details) |

### 5.5.2 Summary of Mitigation Measures

Table 5.4 lists the receptors that could be affected by the proposed development, the potential environmental changes that could affect these receptors, and the consequent results of these changes. This table also summarises the mitigation measures that have been incorporated into the development proposals in order to avoid, reduce or compensate for potential adverse effects. The likely effectiveness of these mitigation measures is defined as follows.

- High certainty of effectiveness: The measure can be expected to be effective in avoiding or reducing the potential effect, and so can be relied on in assessment;
- Medium certainty of effectiveness: The measure can reasonably be expected to be effective based on the available information (and so can be relied on in assessment), although additional data may require review of the measures;
- Uncertainty of effectiveness: The measure may be beneficial but cannot necessarily be relied on and should not therefore influence the assessment of the effect. However, the measure has been incorporated into the design of the proposed development of the site on the basis that, despite its potential ineffectiveness, it is worthwhile.

Table 5.4 **Summary of Proposed Mitigation Measures**

| Receptor | Change(s) and Potential Effects | Incorporated Mitigation | Likely Effectiveness |
|---|---|---|---|
| Soils | Topsoils may become buried under subsoil or sterilised by development resulting in the loss of topsoil | An EMP will be prepared that includes measures to avoid loss of topsoil. See Table 5 3 for details of these measures | Medium certainty of effectiveness |
| Soils | Inappropriate storage and/or handling of soils during construction may result in degradation of the soil structure. Some construction activities may have the same effect (for example heavy machinery can cause soils to become compacted) | The EMP will include measures to protect the structure of soils. See Table 5.3 for details of these measures | Medium certainty of effectiveness |
| Soils | Construction-related contamination may be created which may detrimentally affect soil quality | The EMP will include the measures to prevent contamination See Table 5 3 for details of these measures | Medium certainty of effectiveness |

## 5.6 Assessment of Effects

### 5.6.1 Predicted Effects and their Significance

**BMV Land**

Development of the site would result in the loss of agricultural land. The majority of the site of the proposed development is classified as grades 3b, 4 or non-agricultural land and therefore is not classified as BMV land. The remaining land (i.e land containing the proposed A59 junction) is likely not to be BMV land.

**Soils**

Development of the site could result in topsoil being lost Implementation of mitigation measures will ensure that most topsoil will be retained on site for re-use in landscape works. Any surplus topsoil that cannot be used on site will, wherever possible, be used for landscape schemes elsewhere rather than being sent to landfill.

Soils may be affected by changes to soil structure caused by construction activities Mitigation measures have been designed to protect the structure of soils during their stripping and storage and, where appropriate, to reinstate drainage to its previous condition. It is therefore likely that, through implementation of the mitigation measures, the integrity of the soils will be maintained.

In conclusion, therefore, following the implementation of mitigation measures, the potential effects on soil caused by loss of topsoil or changes in soil structure are not likely to be significant

## 5.7 Summary of Predicted Effects

**Table 5.5 Summary of Effects and Evaluation of Significance**

| Receptor | Probability | Value | Magnitude | Significance Level | Rationale |
|---|---|---|---|---|---|
| BMV land | Certain | High | Low | Not Significant | There is not likely to be any loss of BMV land and the effect is therefore not significant |
| Soils | Certain | High-Medium | Low | Not Significant | Most topsoil would be retained on site for re-use in landscaping and the structure of soils would be protected during stripping and storage Drainage would be reinstated to its previous condition. Consequently the effect is likely to be not significant |

| Key: | Probability | Value | Magnitude | Significance |
|---|---|---|---|---|
| | Certain | High | High | Significant |
| | Likely | Medium | Medium | Not Significant |
| | Possible | Low | Low | |
| | Unlikely | | None | |

## 5.8 Implementation of Mitigation Measures

**Table 5.6 Implementation of Incorporated Mitigation and Monitoring Proposals**

| Mitigation Measure/ Monitoring Proposal | Actioned By | Compliance Mechanism |
|---|---|---|
| Environmental Management Plan (EMP) | Developers/ Contractors | Planning Condition |

## 5.9 Technical References


1. Ministry of Agriculture Fisheries and Food, (Unknown). *Provisional Agricultural Land Classification*. Available at www.magic.defra.gov.uk.

2. Ministry of Agriculture Fisheries and Food, (1988). *Agricultural Land Classification of England and Wales - Revised guidelines and criteria for grading the quality of agricultural land*. Available at http://archive.defra.gov.uk/foodfarm/landmanage/land-use/documents/alc-guidelines-1988.pdf

3. Soils Survey of England and Wales, (1983). *Sheet 3 Soils of Midland and Western England (scale 1 250,000)*. Ordnance Survey, Southampton

4. Defra, (2005). *Agricultural Land Classification Statistics*. Publisher unknown.

5 Berrys, (2012) *Agricultural Land Classification in relation to land south of Clitheroe*. Unpublished report prepared for the Trustees of the Standen Estate

# 6. Water Environment

## 6.1 Introduction

The Environment Agency (EA) has an overall policy objective of protecting and enhancing the environment. This duty comes from existing legislation, such as the Environment Act 1995, and is further strengthened by the Water Framework Directive (2000/60/EC) which is focused on delivering an integrated approach to the protection and sustainable use of the water environment on a river basin scale. The potential significant effects of the proposed development at Standen, Clitheroe on the water environment - surface water (flows and quality) and groundwater (recharge, flow and quality) are addressed in this chapter.

The development site is located in the EA Flood Zone 1, i.e. less than 0.1% risk of tidal flooding, or of fluvial flooding from watercourses such as the Pendleton Brook. Though residential development can potentially cause local changes to runoff rates the flood risk can be managed by ensuring that the site is served by well designed SuDS that serve to attenuate flows and ensure runoff to watercourses is no higher than before the development. A stand-alone Flood Risk Assessment (FRA) accompanies this chapter (Appendix 6.1).

## 6.2 Context

### 6.2.1 Relevant Terminology

The following key term has been referred to in this chapter and is defined briefly as follows:

- SuDS – Sustainable urban Drainage Systems – these are modern drainage systems, designed to capture runoff from a development site, and release it slowly into downstream watercourses. By doing so, they prevent an increase in runoff rate, and thus the increase of downstream flood risk.

A list of relevant terminology and abbreviations used in the chapter are presented in Section 6.10.

### 6.2.2 Technical Context

The proposed scheme is the development of agricultural land between the existing built up area of Clitheroe and land north of Standen Hall. The landscape is currently agricultural land, with some moderately sloping areas, and some steeper fields. A small watercourse is present on site, which is a tributary to the Pendleton Brook, a larger watercourse that flows along part of the site's southern boundary. These watercourses are mostly located in steep sided incised valleys, although the upper sections comprise agricultural drainage ditches. The site is bounded by existing residential development to the north/ west, agricultural land to the north and east, whilst the southern boundary runs along the Pendleton Brook valley. Overall there are relatively few watercourses on the site, and the site all ultimately drains to the Pendleton Brook. The site is not above a significant aquifer (i.e. a 'Principal' aquifer, or within any groundwater source protection zone) The development proposed is predominantly residential, but also includes a

substantial business centre, a primary school site, space for retirement living and ancillary retail and community services - all set within generous green space provision In addition, the junction between Pendle Road and the A59 would be improved to become a roundabout.

### 6.2.3 Planning and Guidance

This section details the planning and technical guidance followed in the production of this assessment. The assessment has primarily been undertaken using a qualitative assessment methodology based on professional judgement and measures set out in statutory and best practice guidance including the following.

**Legislation**

Key legislative drivers relating to the Water Environment and used to inform this assessment include the following:

- Control of Pollution Act 1974;
- EC Dangerous Substances Directive (76/464/EEC);
- EC Fisheries Directive (78/659/EEC);
- Environmental Protection Act 1990;
- Land Drainage Act 1991;
- Environment Act 1995;
- Groundwater Regulations 1998;
- UK Water Quality (Water Supply) Regulations 2000;
- Water Framework Directive (2000/60/EC); and
- Flood and Water Management Act (2010).

The *Floods and Water Management Act (2010)* provides the key guidance on the requirements for the provision and maintenance of surface water drainage features. Under the *Flood and Water Management Act (2010)* LCC is the "approving body" for the proposed SuDS at the development sites. As required by the act, the SuDS will be designed to comply with current national guidance (i.e. CIRIA C697)

**National Policy**

- National Planning Policy Framework (NPPF), 2012;
- Development and Flood Risk - Practice Guide;
- EA Pollution Prevention Guidance Notes (PPG) – (Environment Agency, 2011);
  - PPG 1 General guide to the prevention of water pollution;
  - PPG 2 Above ground oil storage tanks;
  - PPG 3 Use and design of oil separators in surface water drainage systems;

- PPG 4 Disposal of sewage where no mains drainage is available;
- PPG 5 Works in, near or liable to affect watercourses;
- PPG 6 Working at construction and demolition sites;
- PPG 8 Safe storage and disposal of used oils; and
- PPG 21 Pollution incident response planning

- CIRIA Report C532: Control of Water Pollution from Construction Sites;
- CIRIA Report C502: Environmental Good Practice on Site;
- BS6031: 1981 Code of Practice for Earth Works;
- Good Practice Guide for Handling Soils (MAFF 2000); and
- Local and Regional Land Drainage Byelaws.

**Regional and Local Policy**

Key policies from the Local Plan relevant to the Water Environment are detailed in Table 6.1 below.

**Table 6.1 Summary of Relevant Development Plan Environmental Policies**

| Policy Ref. | Summary of Policy Provisions |
|---|---|
| **Ribble Valley Districtwide Local Plan** | |
| *Flood Risk* | Former policy G7 (Flood Protection) was not saved from the Local Plan Reference is made to the now defunct RSS and National Guidance instead |
| *Ribble Valley Strategic Flood Risk Assessment* | Refers to the then PPS25 (now superseded by the NPPF, and the accompany NPPF Technical Guidance on flood risk) The SFRA notes the following FRA objectives:<br>"• *whether a proposed development is likely to be affected by current or future flooding from any source;*<br>• *whether it will increase flood risk elsewhere,*<br>• *whether the measures proposed to deal with these effects and risks are appropriate.*<br>• *if necessary provide the evidence to the LPA so that the Sequential Test can be applied; and*<br>• *where necessary, demonstrates that the proposed development satisfies the requirements of the Exceptions Test"*<br>The need for high-quality adoptable SuDS to be incorporated in new developments is also stated. |

## 6.3 Assessment Approach

### 6.3.1 Data Gathering and Survey Work

The preparation of this section has been informed by a topographic survey of the site, a Strategic Flood Risk Assessment (SFRA) completed by RVBC in May 2010, and a site-specific Flood Risk Assessment (FRA) prepared by AMEC in May 2012 in accordance with the guidance and requirements set out in the NPPF. In addition, consultation has taken place with, and flood data were obtained from the Environment Agency, information on sewer or surface water flooding from United Utilities and information on the SFRA and flood records from RVBC and LCC (Highways)

**Desk Study**

The information detailed below in Table 6.2 was obtained in support of this chapter

**Table 6.2 Desk Study Information Sources**

| Data Source | Information |
|---|---|
| Environment Agency | Flood Risk, hydrological, hydrogeological and water quality data By data request and via website. |
| Ribble Valley Borough Council | SFRA – additional flood risk information |
| United Utilities | Sewer and surface water flooding |
| Ordnance Survey | Site Mapping |
| Topographic Survey | Detailed site levels and areas |
| British Geological Survey | Site geological information |
| Cranfield University – LANDIS database | Site soil type information |

**Survey**

The following surveys have been undertaken in support of this assessment:

- Topographic Survey (July 2011); and
- Site visits by AMEC staff in March 2012 (overview of site, key drainage features)

### 6.3.2 Proposed Scope of Assessment

**Potential Receptors**

New development (i.e. construction works, buildings, access roads and supporting infrastructure) has the potential to affect the hydrological and hydrogeological aspects of the local environment. Potentially both water quality and quantity in adjacent waterbodies could be affected by construction and operation activities. Based on the baseline assessment of the existing site the potential receptors detailed in rows one to six of Table 6.3 have been identified

An additional off-site receptor (Water Resources) has also been identified and is also detailed in row seven of Table 6.3.

**Table 6.3 Identified Potential Receptors**

| Potential Receptor | Details |
|---|---|
| Surface Water Quantity in local watercourses | Potential for the development to increase runoff from the development site, and therefore increase peak flows. Conversely increased runoff could result in less water being available to enter watercourses during drier times of the year, reducing water levels. |
| Surface Water Quality in local watercourses | Release of silt into watercourses due to construction or of other pollutants from accidental spillage from construction equipment/methods used (e.g. oil/fuel, lubricants, coolant, hydraulic fluid, concrete washwater) |
| Groundwater Quantity beneath the development site | Reduced infiltration, resulting in less recharge |
| Groundwater Quality beneath the development site | Creation of flow pathways during foundation construction that result in polluted surface water entering the groundwater beneath the development site |
| Flood Risk to people and property in the area surrounding the development site | Higher water levels in adjacent watercourses due to increased runoff. Displacement of water from the development site due to loss of storage volumes within the floodplain |
| Hydromorphology | Potential for development to damage physical quality of the local watercourses, with impacts on habitats and on aesthetic appearance of watercourses |
| Water Resources | Increased treated effluent discharges from Clitheroe WwTW and increased mains water supply demand from the new development |

**Potential Significant Effects**

There are a range of potentially significant effects associated with the proposed development. The development could potentially have a significant effect on surface water and groundwater in terms of quantity or quality, on flood risk downstream of the site, on hydromorphology and on water resources. However, the development will incorporate appropriate avoidance, design and mitigation options to avoid any of these potential effects actually being significant.

### 6.3.3 Significance Evaluation Methodology

The following four criteria have been used in evaluating the significance of the effects of the proposed development at Standen:

- The type of effect, i.e. whether it is positive, negative, neutral or uncertain;
- The probability of the effect occurring based on the scale of certain, likely or unlikely;
- The sensitivity of the resource under consideration, as defined in Table 6.4; and
- The magnitude of the effect in relation to the resource that has been evaluated, quantitatively where possible, otherwise using a qualitative scale of high, medium,

or low, as defined in Table 6.4. Where magnitude is considered to be negligible, no perceivable impact to the quantity or quality of the water environment will result from the proposed development.

Table 6.5 provides further information on the definitions of high, medium, low and negligible magnitude.

**Table 6.4 Definitions of Hydrological Policy Importance/Sensitivity**

| Magnitude of Change | Sensitivity | | |
|---|---|---|---|
| | **High** | **Medium** | **Low** |
| **High** | Substantial | Moderate/ Substantial | Moderate |
| **Medium** | Moderate/ Substantial | Moderate | Slight/ Moderate |
| **Low** | Moderate | Slight/ Moderate | Slight |
| **Negligible** | Slight | Slight/ Negligible | Negligible |
| **Key:** | Significant | Not Significant | |

**Table 6.5 Impact Magnitude Criteria (Water Environment)**

| | Hydrological Definition | | | | | | |
|---|---|---|---|---|---|---|---|
| **Magnitude of Effect** | **Surface Water Quantity** | **Surface Water Quality** | **Groundwater Quantity** | **Groundwater Quality** | **Flood Risk** | **Hydro-morphology** | **Water Resources** |
| High | Change in flows >5% resulting in a measurable change in dilution capacity | Change in water quality, changing river status with respect to EQS[9] for more than one month | Change in ground-water levels leading to an identifiable change in ground-water flow regime and artesian flows | Change in ground-water quality, changing site quality with respect to DWS[10] for more than 1% of samples | Change (>50%) in proportion of site rainfall immediately running off, changing the flood risk or erosion of channels.<br><br>Flood risk to nearby people and property increased. | Change in erosion and deposition patterns. Introduction of hard-engineering features along majority of watercourse. Conservation interests put at risk | Development size in excess of expected increase in water supply demand / effluent treatment demand as set out in water company plans. Meeting demand will result in significant water environment impacts. |
| Medium | Change in flows between 2-5% resulting in a measurable change in dilution capacity | Change in water quality, changing site status with respect to short-term EQS, or for less than one month with other EQS | Change in ground-water levels leading to an identifiable change in ground-water flow regime | Change in ground-water quality, changing site quality with respect to DWS for less than 1% of samples | Change (10-50%) in proportion of site rainfall immediately running off, changing the flood risk or erosion of channels.<br><br>Flood risk to nearby people and property NOT increased. | Some change in deposition and erosion regimes. Introduction of hard-engineering features along less than 20% of watercourse. | Development size in excess of expected increase in water supply demand / effluent treatment demand as set out in water company plans. |

[9] EQS - Environmental Quality Standard, as laid down in relevant EU Directives and national legislation.

[10] DWS - Drinking Water Standards.

**Table 6.5 (continued) Impact Magnitude Criteria (Water Environment)**

| | Hydrological Definition | | | | | | |
|---|---|---|---|---|---|---|---|
| **Magnitude of Effect** | **Surface Water Quantity** | **Surface Water Quality** | **Groundwater Quantity** | **Groundwater Quality** | **Flood Risk** | **Hydro-morphology** | **Water Resources** |
| Low | Measurable change in flow of up to 2% | Measurable short-term change in water quality but no change with respect to EQS | Measurable change in ground-water levels, but no appreciable change in ground-water flow regime | Measurable change in ground-water quality, but not changing site status with respect to DWS | Small change (<10%) in proportion of site rainfall immediately running off, but no change in flood risk or channel erosion.<br><br>Flood risk to nearby people and property NOT increased. | Slight change in bed morphology and sedimentation pattern, minor erosion. Introduction of hard-engineering features along less than 5% of watercourse. | Development size within expected increase in water supply demand / effluent treatment demand as set out in water company plans. |
| Negligible | No notable change | No notable change | No notable change | No notable change | No notable change | No notable change | No notable change |

Table 6.6 Criteria Used to Define Sensitivity

| Receptor Sensitivity | Definition of Sensitivity |
|---|---|
| High | Potential impacts of the development would be notable at the INTERNATIONAL or NATIONAL scale |
| Medium | Potential impacts of the development would be notable at the REGIONAL scale |
| Low | Potential impacts of the development would be notable at the LOCAL scale |

Professional judgement is used to assess the findings in relation to each of these criteria to give an assessment of significance for each effect. The significance rating is determined by assessing the value of the receptor against the magnitude of potential effect. Those effects which are shaded in Table 6.4 equate to those considered significant under the EIA Regulations with the others constituting no effect or an insignificant effect.

### 6.3.4 Technical Consultations

The following technical consultations were undertaken:

- Environment Agency – requests for site specific information (flood risk, abstractions, discharge consents) and the greenfield runoff rate;
- United Utilities – details on any existing assets in the area, historic sewer flooding;
- Ribble Valley Borough Council – Strategic Flood Risk Assessment (SFRA) and records of Private Water Supplies; and
- Lancashire County Council (Highways) – details of any local flooding associated with highway drainage.

A consultation response from the Environment Agency indicated that overall the EA had no significant issues that need to be addressed through EIA but set out recommendations in relation to the FRA and SuDS design. These issues have been addressed in the master plan, FRA and Drainage Strategy. In addition the potential impacts of the discharges from Clitheroe WwTW and any impacts on the WFD designation of the Pendleton Brook should also be considered

A copy of the consultation responses is provided in Appendix C of the FRA (Appendix 6.1).

### 6.3.5 Final Scope of the Assessment

The scope of the assessment has not changed from that described in section 6.3.2.

### 6.3.6 Information Gaps

The available information is considered to be sufficient to enable an appropriate assessment of the proposed development on the Water Environment.

## 6.4 Baseline Conditions

### 6.4.1 Existing Site

For an outline description of the land uses currently at the Standen Estates site please see Section 1.2. Details of the existing hydrological features are shown on Figure 6.1.

**Topography**

Site elevations range from 114.1m AOD in the far east to 79.9m AOD in the far west. The eastern portion of the site slopes gently westwards, towards a small on-site watercourse. The smaller western portion of the main development site slopes more steeply down towards Littlemore Lane. There is a sharp slope along the site's southern boundary where the site drops towards the Pendleton Brook. The brook is located within an incised valley, typically 10 m below the adjacent site.

Elevations at the area set aside for the proposed A59 junction improvements range between 115.0m AOD and 117.5m AOD.

**Hydrology**

The majority of the 49.3 ha main development site drains to the Pendleton Brook, whilst a small area (~0.8 ha) in the far north drains towards the Mearley Brook. Both of these watercourses are tributaries to the River Ribble. The area of the proposed junction improvement at the A59/Four Lane Ends junction drains to the Pendleton Brook, upstream of Standen Hall and the main development site. As shown on Figure 6.1, most of the runoff draining towards the Pendleton Brook collects to a small on-site watercourse via a few ditches, whilst the far western part of the site drains towards Littlemoor.

**Geology, Soils and Hydrogeology**

British Geological Survey (BGS) DiGiMap data shows the bedrock at the site to be Bowland High Group and Craven Group, made up of interbedded Mudstone, Siltstone and Sandstone. Specifically, the BGS website indicates that the Clitheroe Limestone Formation and Hodder Mudstone formation are the specific bedrock formations under the site while the superficial geology is made up of diamicton (glacial till).

The LANDIS Soilscapes[11] database indicates that the soils present on the site are: "slowly permeable, seasonally wet acid loamy and clayey soils".

The site does not overly, and is not adjacent to a Source Protection Zone (SPZ)[12]. The bedrock beneath the site is classified as a 'Secondary A' aquifer, the EA defines this as:

> *"permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers."*

The superficial geology (till) is a non-aquifer.

[11] See: http://www.landis.org.uk/soilscapes/

[12] Areas designated by the Environment Agency in order to protect aquifers important for public water supply

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**Land Use and Existing Impermeable Areas**

The majority of the site is currently grassland used for grazing. Two small ruined farm buildings are present towards the centre of the site. Higher Standen Farm is located near the southern boundary. Approximately 0.6 ha (1.2% of the site) is potentially impermeable.

**Water Quality**

Water quality monitoring is carried out by the Environment Agency for the Mearley Brook in Clitheroe town centre, upstream of the confluence with the Pendleton Brook. The River Ribble is also monitored downstream of the confluence of the Pendleton/ Mearley Brook (and Clitheroe WwTW) with the Ribble. The latest data from the EA is provided in Table 6.7.

**Table 6.7 Environment Agency Water Quality Testing Results for the Mearley Brook and River Ribble**

| River | Year | Chemistry | Biology | Nitrates | Phosphates |
|---|---|---|---|---|---|
| Mearley Brook | 2009 | A | B | 2 | 2 |
| | 2008 | A | B | 2 | 2 |
| | 2007 | A | B | 2 | 1 |
| | 2006 | A | B | 2 | 2 |
| | 2005 | A | C | 3 | 2 |
| | 2004 | A | C | 3 | 2 |
| River Ribble (downstream of the Pendleton/ Mearley Brook confluence) | 2009 | A | A | 2 | 2 |
| | 2008 | A | A | 2 | 2 |
| | 2007 | A | B | 2 | 2 |
| | 2006 | A | B | 2 | 2 |
| | 2005 | A | B | 2 | 3 |
| | 2004 | A | A | 2 | 2 |

Chemistry and Biology are ranked as: A = very good, B = good, C = fairly good, D = fair, E = poor, and F = bad.
Nitrates and Phosphates are ranked with values of: 1 = very low, 2 = low, 3 = moderate, 4 = high, 5 = very high, and 6 = excessively high.
[For more details see: http://www.environment-agency.gov.uk/homeandleisure/37811.aspx]

The chemical and biological water quality in the watercourses is 'Very Good' to 'Good', with generally 'Low' levels of nutrients (Phosphates (P) and Nitrates (N)).

The WFD classification of the reaches of watercourse adjacent to the development site is summarised in Table 6.8. The key impacts on the Mearley Brook system relates to macro-invertebrates and hydromorphology.

Table 6.8 **WFD Classification of the Mearley Brook/ River Ribble adjacent to the Standen Estates Site**

| River | Current Ecological Status | Reason |
|---|---|---|
| Mearley Brook GB112071065510 | Moderate | Macro-invertebrates / Hydromorplogy |
| River Ribble (d/s Stock Beck) GB112071065612 | Moderate Potential | Hydromorphology - Heavily Modified |

**Licensed Abstractions and Discharges**

There is only one surface water abstraction licence in the vicinity (1000 m) of the site boundary. There are no other surface water or any groundwater abstractions on the Environment Agency's database for this area of search. There are three Discharge Consent licences in the vicinity (1000 m) of the site boundary. Details of the abstractions and Discharge Consents are shown in Tables 6.9 and 6.10 respectively, and also locations on Figure 6.1. There are no Source Protection Zones (SPZ) on or adjacent to the site.

RVBC has confirmed that there are no Private Water Supplies located within the site or within 1 km of the site.

Table 6.9 **Environment Agency Registered Abstractions**

| Licence and Location | Details |
|---|---|
| EA Licence ref: 2671309021 | Surface water, river / stream single point Agriculture |
| Pendleton Brook north of Pendleton Village | Trustees of the Standen Estate |
| GR: SD 753 401 | Annually: 59,098 $m^3$ / Daily maximum: 163 $6m^3$ |
| | 1966 to present No licence conditions |

Table 6.10 **Environment Agency Discharge Consents**

| Licence and Location | Details |
|---|---|
| #1 - 11574, Whalley Road, Clitheroe, SD 74160 40670 | Domestic Property (Single) |
| #2 - 11658, Whalley Road, Clitheroe SD 74040 40680 | Domestic Property (Single) |
| #3 - 11649, Pendle Road Clitheroe SD 75120 41270 | Domestic Property (Single) |

**Nature Conservation Designations**

Information on designated nature conservation sites is provided in Chapter 7 (Biodiversity). There are no statutory designated nature conservation sites (i.e SAC, SPA, SSSI or Ramsar) within or immediately adjacent to the site. There are no sites designated for geological/ geomorphological reasons on or adjacent to the site

The Ribble catchment is designated a Priority Catchment under the Catchment Sensitive Farming Initiative (England). The majority of the site is currently farmed under the Entry Level Stewardship (ELS) requirements

**Flood Risk**

The Environment Agency's flood maps show that the majority (99.6%) of the site is in Flood Zone 1 – i.e. less than a 0.1% risk of flooding from fluvial sources in a given year However, a small part of the site is in Flood Zone 3 and 2 (approximately 0.2 ha, or 0.4% of the site), associated with the Pendleton Brook. The area of the site to be developed is entirely located in Flood Zone 1. However, there is a small on site tributary, with a catchment area too small (0.3 $km^2$) to be included in the Environment Agency's flood mapping

The site visit and FRA identified several groundwater springs on site; however these were all adjacent to or within the incised valley of the small on site watercourse.

In terms of flood risk from other sources – i.e surface water run-off, surface water run-on, and risks from artificial sources the FRAs have identified negligible issues There are no artificial structures near the sites that could cause flooding of the sites (i.e. embankment waterbodies, flood defences etc). There is limited potential for run-on onto the site from surrounding areas as the upslope area is intercepted by upslope watercourses, with the site being generally higher than the surrounding area.

**Hydromorphology**

A site walkover was undertaken during the preparation of the FRA and Water Environment ES chapter Appendix D of the FRA contains various images taken along the length of the Pendleton Brook adjacent to the site and the onsite watercourse The Pendleton Brook, and the lowest 300 m of the onsite watercourse can be seen to be almost semi-natural in appearance. Natural bed and banks and associated features are present along the majority of these watercourses, with a large amount of natural vegetation present along the watercourse corridor and notable woody debris accumulations in the channels (important wildlife interest feature) However, grazed grassland is present up to the banktop on the site side of the Pendleton Brook, and various pieces of litter/ debris in the on-site watercourse

**Water Environment Sensitivity**

The assessment of the baseline environment indicates a water environment with low sensitivity to development This is due to the presence of a number of watercourses and ditches on and near the development site However, there are no notable abstractions, the development site is not above a significant aquifer, and the current discharge consents are minor.

In terms of water quality, the local watercourse's sensitivity can be defined as of 'Local' importance since available information confirms that they are not pristine and therefore highly sensitive to potential changes, or degraded such that additional development could worsen their condition The watercourses are not designated under any environmental criteria The

secondary aquifer beneath is classified as being important in supporting the local hydrological environment only.

In terms of water quantity, the development site is considered to be sensitive only in the local context. This is because the development site is set in the headwaters of a small tributary to the River Ribble, largely away from the local watercourses, and the surface water around the site does not support any abstractions other than small local needs. The secondary aquifer beneath is classified as being important in supporting the local hydrological environment only. Further, the development site is at limited risk of flooding, since it is located above the main local watercourses.

In terms of hydromorphology, the site is not considered to be sensitive in the local context, since the watercourse features observed are common on local watercourses, and not of particular importance at the regional/ national level.

**Future Baseline**

The future baseline could potentially change due to additional development near Clitheroe. This could lead to increased demand for water supplies, increased treated effluent flows from Clitheroe WwTW into the River Ribble, and potentially larger amounts of runoff from impermeable developed areas into watercourses exacerbating flood risk. Climate change may also result in more intense rainfall events, and higher flood levels.

However, the implication of these factors on the water environment is limited. Water supply and the discharge of treated effluent will have to comply with existing environmental legislation aimed at ensuring abstraction for water supply/ discharge of treated effluent do not adversely affect the water environment. These issues are managed strategically by the relevant water company though future planning and development as set out in their Strategic Business Plan.

Current planning guidance on flood risk means that all new developments must manage their surface water runoff so as not to increase downstream flood risk. Sustainability measures also mean that new developments are designed to be more water-efficient than older developments.

Allowances for climate change, have been included in the assessment, both in developing the drainage system to allow for more intense rainfall (a 30% increase in intensity), and by ensuring that the development areas are above future flood levels.

## 6.5 Proposed Mitigation

### 6.5.1 Measures Incorporated to Mitigate Potential Significant Effects

A range of Environmental Measures have been incorporated into the proposed development to mitigate against any potentially significant effects. These are detailed below.

**Surface Water and Groundwater Quantity**

Runoff can be managed by maximising the amount of surface water that infiltrates to the ground within source areas through measures such as permeable paving and filter strips. The remaining runoff collected will be routes to attenuation ponds, where it will be stored and slowly released into local watercourses. Further details are provided in the FRA (see Appendix 6.1)

**Surface Water Quality**

Buffer zones will be established along watercourses (10 m for the Pendleton Brook, and 5 m for the smaller onsite watercourse). Construction operations within these areas will be avoided, with materials storage and plant movement being focused elsewhere on the site. All built development except watercourse crossings and drainage outfalls will be kept outside of these areas The proposed watercourse crossing across the onsite watercourse will be constructed as early as possible into the construction program. If required, temporary siltation ponds will be constructed to manage runoff during development, with the use of silt fencing and straw bales etc to capture fine sediment in the runoff. Further, the internal roads and SuDS will be constructed at an early stage so that flows are then attenuated by these structures.

Soil movement will be undertaken with reference to best practice guidelines available from DEFRA in the form of the Good Practice Guide for Handling Soils (MAFF, 2000). In principle, soil excavation should be undertaken during dry periods and undertaken with backactors and dump trucks. Topsoil and subsoil should not be mixed or stored together.

Essential mitigation measures relevant to controlling erosion and runoff from construction sites are described in the EA's pollution prevention guidance and special requirements and include the following:

- Scheduling construction activities to minimise the area and period of time that soil will be exposed, particularly during winter periods;
- Installation of cut-off drains or bunds (in this case excavated soil and subsoil) around the working areas to intercept uncontaminated surface runoff and divert it around the works;
- Minimising the stockpiling of materials and locating essential stockpiles as far away as possible from watercourses; and
- Revegetation of worked areas as soon as possible after construction.

Mitigation will be needed to address the appropriate management of fluids such as oils and diesel. Throughout the construction phase, best working practices will be adopted and measures to protect the water environment will be taken by adopting recommendations set out in the EA's PPG Notes. These will include the storage of fuel within bunded tanks and a requirement that refuelling takes place on hard-standing in designated areas only. Through the adoption of measures such as: storage in bunded areas, on hardstanding, away from watercourses; provision of spillage kits; and tanks/ storage units being regularly checked for defects the potential for spillage and pollution events will be minimised.

Prior arrangements will be made with the EA regarding the quality and quantity of effluent before any discharge of contaminated site drainage from such treatment facilities is undertaken If required by the EA, monitoring of water quality in the watercourses to which the site drains will be undertaken before and during construction, to ensure that no significant negative impacts are occurring. Routine monitoring of river crossing condition and any potential areas of sediment laden runoff will be undertaken during construction and operation, and remedial action taken if necessary

As a result of these measures there will be no impact on the catchment's (Mearley Brook) WFD status. Treated effluent form the site will be discharged from the Clitheroe WwTW into the River Ribble.

**Groundwater Quality**

The only relatively deep operation will be the construction of the foundations for the dwellings and associated buildings. In general these are likely to be relatively shallow unless ground conditions dictate the need for piling. Some of the larger buildings (primary school, employment area) may also require deeper foundations For this reasons the risk of excavations creating vertical flow pathways will be limited. A Foundation Risk Assessment will be prepared for the chosen foundation method (likely to be either mass concrete rather than piling), and agreed with the EA. The foundation design minimises excavation requirements in accordance with BS6031: 1981 Code of Practice for Earth Works. Any silty water pumped out of voids will be passed through a silt settlement area, and drained to land to allow silt to settle out.

The use of appropriate agreed techniques for foundation construction will prevent any notable impact on groundwater from foundation construction Spillage kits will be provided on site in case of any accidents during construction.

**Flood Risk**

The key impacts on flood risk would be either the placement of new development within areas at notable risk of flooding; or the discharging of the site's runoff directly to receiving watercourses without attenuation, increasing peak flows and hence potentially flood levels downstream However, new development has been sited in Flood Zone 1, where the risk of fluvial flooding is minimal. Development will also be slightly set back from the onsite watercourse to ensure that it is not placed on or adjacent to the springs that issue adjacent to this watercourse Measures such as slightly raised floor levels and the design of the site drainage system to the Sewers for Adoption requirements have been included to minimise the risk of flooding from surface water Further details are provided in the FRA.

Surface water runoff from the developed site will be captured and attenuated in a variety of SuDS features, being released slowly to the downstream watercourses at a greenfield runoff rate agreed with the Environment Agency (10 l/s/ha). No potential impacts to existing people and property nearby were identified in the FRA.

**Hydromorphology**

The key impacts on Hydromorphology would potentially be the replacement of large lengths of watercourse bed/banks with hard engineering structures. This is not proposed. Only one watercourse crossing is proposed, which will be constructed sympathetically and according to current EA guidance. Two existing structures will also be removed. Other than this the only other structures that will be constructed within the watercourse corridor will be the headwalls/ pipe outfalls for the surface water management system. These will be relatively small, discrete structures. If possible these will be constructed out of sympathetic materials (i e. native stone), rather than shuttered concrete. Protective measures such as silt fencing and sand bagging/ overpumping will also be incorporated during watercourse crossing construction to prevent silt-laden runoff entering the watercourses. As a result of these measures there will be no impact on the catchment's (Mearley Brook) WFD status.

**Water Resources**

The key impacts will be increased mains water demand and increased foul flows to Clitheroe WwTW (and the subsequent increase in treated effluent discharges).

In order to minimise water use, the development will be designed to comply with current water efficiency measures. The developer will work with the local water supply/sewerage undertaker (United Utilities) to detail the expected timeframe over which the development will be completed. This will enable the appropriate infrastructure to be put in place, with the appropriate environmental measures and licences. Where required developer contributions will contribute towards the cost of parts of this infrastructure provision. On a broader scale United Utilities are aware of the population growth trajectories of the settlements within their region and plan for this accordingly in their strategic plans.

### 6.5.2 Summary of Mitigation Measures

Table 6.11 lists the receptors that could be affected by the proposed development, the potential environmental changes that could affect these receptors, and the consequent results of these changes. This table also summarises the mitigation measures that have been incorporated into the development proposals in order to avoid, reduce or compensate for potential adverse effects. The likely effectiveness of these mitigation measures is defined as follows:

- High certainty of effectiveness: The measure can be expected to be effective in avoiding or reducing the potential effect, and so can be relied on in assessment;
- Medium certainty of effectiveness: The measure can reasonably be expected to be effective based on the available information (and so can be relied on in assessment), although additional data may require review of the measures;

Uncertainty of effectiveness: The measure may be beneficial but cannot necessarily be relied on and therefore should not therefore influence the assessment of the effect. However, the measure has been incorporated into the design of the scheme on the basis that, despite its potential ineffectiveness, it is worthwhile.

**Table 6.11 Summary of Proposed Mitigation Measures**

| Receptor | Change(s) and Potential Effects | Incorporated Mitigation | Likely Effectiveness |
|---|---|---|---|
| Water quantity (surface/ ground) | Runoff from the site during construction and following development. | The scheme design includes Sustainable Urban Drainage Systems (SuDS) which will provide treatment to surface water runoff from the scheme. The SuDS system will be constructed at the earliest feasible stage of the development. Site runoff, which may contain silt, will be directed to settlement lagoon(s) and Discharge Consents obtained for the discharge of this water to the proposed receiving watercourses (i.e. the onsite watercourse and the Pendleton Brook). | High |
| Water quality of surface water and ground water resources | Pollution effects as a result of accidental spillage and polluted run-off from construction activities. | Construction work will take place in accordance with the Environment Agency Pollution Prevention Guidelines. In addition the contractor will be required to implement a Construction Environment Management Plan (CEMP) which will include measures such as:<br>• bunding of chemical and fuel stores to 110% of capacity;<br>• pollution incidence response plan to deal with any accidental spillages or leaks; and<br>• maintenance and re-fuelling of vehicles and equipment on hardstanding. | High |
| Water quality of surface water and ground water resources | Pollution effects from polluted run-off from the development once constructed and fully occupied. | Given the nature of the development (residential with a small retail centre and community buildings plus associated access roads, and some employment) the routing of runoff through SuDS features such as attenuation ponds will provide sufficient water quality treatment to ensure downstream water quality is not impaired by the development. The guidance provided in CIRIA C697 will be followed to ensure the appropriate levels of treatment are provided. | High |

**Table 6.11 (continued) Summary of Proposed Mitigation Measures**

| Receptor | Change(s) and Potential Effects | Incorporated Mitigation | Likely Effectiveness |
|---|---|---|---|
| Flood Risk - Properties within the development and off-site | Increased risk of flooding caused by an increase in impermeable areas as the site is developed as built development. | In addition to the proposed SuDS to attenuate site runoff to natural greenfield levels, several measures have been identified in the FRA which have been incorporated into the scheme design. These include:<br>• locating all development within Flood Zone 1 in areas least at risk of flooding;<br>• using the areas of the site adjacent to watercourses (and in Flood Zone 3 and 2) as amenity areas such as public open space and landscaping;<br>• raising floor levels to 0.15m or more above local ground levels to minimise the risk of surface water and ground water flooding to properties within the site; and<br>• inclusion of control measures within the scheme which will mimic natural drainage, allow some infiltration and restrict run-off from the site. Such measures will include permeable paving storage, plus storage within the drainage system and will also include attenuation basins. | High |
| Hydromorphology | Damage to the Pendleton Brook and the onsite watercourse | Development will be set back from these watercourses to minimise any impacts. Outfall structures (from the sites' surface water runoff attenuation ponds) will be constructed sympathetically. The proposed watercourse crossing of the on-site watercourse will be constructed sympathetically according to current EA guidance. The two existing watercourse crossing points will be removed. | High |
| Water Resources | Increased discharges of treated Effluent. Increased mains water supply demand. | As discussed in the 'Future Baseline' section these factors will be handled by the local water company. Water supply and the discharge of treated effluent will have to comply with existing environmental legislation aimed at ensuring abstraction for water supply/discharge of treated effluent do not adversely affect the water environment. These issues are managed strategically by the relevant water company though future planning and development as set out in their Strategic Business Plan.<br>The proposed development will incorporate the current standard water efficiency measures. | High |

### 6.5.3 Additional Measures Incorporated to Mitigate Possible Other Effects

No other potential effects on the Water Environment have been identified. Therefore no additional Water Environment mitigation measures are included.

## 6.6 Assessment of Effects

The following sections detail the assessment of the remaining residual effects - i.e. those that may not be fully prevented/ameliorated following implementation of the mitigation measures detailed in Section 6.5.

### 6.6.1 Predicted Effects and their Significance

**Surface Water and Groundwater Quantity**
The measures detailed in Section 6.5 are considered to fully mitigate against any potentially notable effects No residual effects are predicted with these mitigations in place.

**Surface Water Quality**
The measures detailed in Section 6.5 are considered to fully mitigate against any potentially notable effects. No residual effects are predicted with these mitigations in place.

**Groundwater Quality**
The measures detailed in Section 6 5 are considered to fully mitigate against any potentially notable effects No residual effects are predicted with these mitigations in place.

**Flood Risk**
The measures detailed in Section 6 5 are considered to fully mitigate against any potentially notable effects. No residual effects are predicted with these mitigations in place.

**Hydromorphology**
The limited impacts of the development on hydromorphology, combined with the measures detailed in Section 6.5 are considered to fully mitigate against any potentially notable effects. No residual effects are predicted with these mitigations in place.

**Water Resources**
The measures detailed in Section 6.5 are considered to fully mitigate against any potentially notable effects. No residual effects are predicted with these mitigations in place.

### 6.6.2 Possible Other Mitigation

No other mitigations other than those detailed in Section 6.5 are proposed.

### 6.6.3 Conclusions

The proposed development in combination with the identified mitigations is not predicted to have any impacts on the Water Environment. The mitigations identified in Section 8.4 will fully prevent any notable effects on the water environment

## 6.7 Cumulative Effects

Potential cumulative effects (with respect to Water Environment receptors) could occur as an in combination result of the proposed development occurring alongside other developments within the same region However, it is understood that no other major developments are currently proposed in the area around the development site that could impact on the Water Environment The development site would provide the vast majority of the planned housing provision for Clitheroe, and as such no developments with a similar degree of potential impact on the Water Environment are expected

There are currently development proposals for an adjacent 4 ha site on Littlemoor. No cumulative effects are considered likely, since under the current planning system appropriate design without impacts on the water environment will be stipulated. Both developments will have to manage their surface water runoff onsite, and release the flows slowly following attenuation so as not to increase flood risk.

With regards to surface and ground water quantity and quality, flood risk and hydromorphology the mitigations undertaken will ensure that all of the potential effects are prevented on site. As there will be no off-site effects, it is not considered that these could cumulatively cause an effect.

Of all the receptors, the impact of the development on Water Resources could potentially be the most significant. However, whilst the development is large (1000 dwellings), this is relatively small when set against the existing regional water resource. In addition, the existing regulatory framework provides a means of ensuring that abstractions of water from the natural environment, and releases of treated effluent are designed, implemented and managed in such a way that notable cumulative impacts will be prevented.

It has been found that the identified potential effects on the receptors identified (Table 6.3) can be mitigated with measures that have a high likely effectiveness (Table 6.11) Cumulative effects are therefore considered to be negligible.

## 6.8 Summary of Predicted Effects

Table 6.12 summarises the predicted effects of the development The assessment indicates that the Water Environment has a relatively low sensitivity. This is due to the presence of a number of watercourses and field drains on and near the development site. No significant residual effects are expected

**Table 6.12 Summary of Effects and Evaluation of Significance**

| Receptor | Probability | Value | Magnitude | Significance | |
|---|---|---|---|---|---|
| | | | | Level | Rationale |
| **Surface Water Quantity** | Likely | Low | Low | NS | Receptor of low sensitivity / Identified mitigations will prevent potential effects. |
| **Ground Water Quantity** | Likely | Low | Low | NS | Receptor of low sensitivity / Identified mitigations will prevent potential effects. |
| **Surface Water Quality** | Likely | Low | Low | NS | Receptor of low sensitivity / Identified mitigations will prevent potential effects. |
| **Ground Water Quality** | Likely | Low | Low | NS | Receptor of low sensitivity / Identified mitigations will prevent potential effects. |
| **Flood Risk** | Likely | Low | Low | NS | Receptor of low sensitivity / Identified mitigations will prevent potential effects. |
| **Hydromorphology** | Likely | Low | Low | NS | Receptor of low sensitivity / Identified mitigations will prevent potential effects. |
| **Water Resources** | Likely | Low | Low | NS | Receptor of low sensitivity / Identified mitigations will prevent potential effects. |

| Key: | Probability | Value* | Magnitude | Significance |
|---|---|---|---|---|
| | Certain | High | High | Significant (S) |
| | Likely | Medium | Medium | Not Significant (NS) |
| | Possible | Low | Low | |
| | Unlikely | | None | |

Note: *The sensitivity or value of a watercourse or the water within it has been based on its relative geographical importance or river classification and then attributed to a scale of high, medium or low.

## 6.9 Implementation of Mitigation Measures

Table 6.13 details the organisation responsible, and the compliance mechanism responsible for implementing the identified mitigation measures.

**Table 6.13 Implementation of Incorporated Mitigation and Monitoring Proposals**

| Mitigation Measure/ Monitoring Proposal | | Actioned By | Compliance Mechanism |
|---|---|---|---|
| Site SuDS | To prevent an increase in site runoff and an increase in downstream flood risk | LPA, EA, Developer and the SAB | Initially agreed at the planning application stage – overall scheme parameters (attenuation rate, storage required types of features). To achieve planning permission this will need to be signed off by the LPA following consultation with the EA and SAB. If the proposed SuDS are considered unacceptable, the application will not be approved. A planning condition will specify the details to be implemented during development.<br><br>The developer will be responsible for constructing the SuDS to the final agreed design, in consultation with the SAB. The SAB, as the final adopting body will need to be satisfied with the construction and implementation standard of the SuDS before signing them off. The SAB will then be responsible for regular maintenance of the SuDS. |
| | Potential pollution of ground and surface water during construction works | LPA, developer | A CEMP will be produced detailing the measures to be taken during construction to minimise the risk of pollution incidents.<br><br>The requirement for a CEMP can be enabled via a planning condition, although, regardless the production and adherence to a CEMP is good practice. |
| | Potential pollution of ground and surface water during development's lifetime | SAB, occupiers | The development's SuDS will provide a means of capturing and treating a large proportion of potential contaminants contained in runoff from the site. Debris/solid particles will settle out within the attenuation basins, and some bio-treatment of organic compounds will naturally occur within the attenuation SuDS features. The SAB will be responsible for regular maintenance of the SuDS.<br><br>The attenuation ponds will also provide a means of isolating contaminated runoff should an accidental spillage occur on site. |
| Measures to prevent an increase in flood risk | | LPA, EA and Developer | The planning application will only be approved if the LPA is satisfied (following consultation with the EA) with the flood risk mitigation measures included in the proposal. A Planning Condition will be included to specify the measures detailed in the FRA are included in the development. The developer will then construct the development as per the agreed designs. |
| Measures to prevent impacts on hydromorphology | | LPA, EA and developer | Flood Defence Consents (FDCs) will be required for the outfall structures draining the SuDS ponds into local watercourses, and for the proposed bridge across the onsite watercourse.<br><br>Only FDCs for necessary and appropriately designed structures will be approved. |

## 6.10 Glossary

**Table 6.14 Water Environment Glossary**

| Term or Abbreviation | Description |
|---|---|
| AOD | Above Ordnance Datum |
| BGS | British Geological Survey |
| CIRIA | Construction Industry Research and Information Association |
| Defra | Department for Environment Food and Rural Affairs |
| DCLG | Department for Communities and Local Government |
| DWS | Drinking Water Standards |
| EA | Environment Agency |
| EIA | Environmental Impact Assessment |
| ELS | Entry Level Scheme |
| EQS | Environmental Quality Standard |
| FRA | Flood Risk Assessment |
| GSPZ | Groundwater Source Protection Zone |
| LCC | Lancashire County Council |
| MAFF | Ministry for Agriculture Fisheries and Food |
| NERC | National Environment Research Council |
| NPPF | National Planning Policy Framework |
| PPG | Pollution Prevention Guidelines |
| ReFH | Revitalised Flood Hydrograph (flood hydrology estimation software) |
| RVBC | Ribble Valley Borough Council |
| SAB | SuDS Approving Body |
| SAC | Special Area of Conservation |
| SFRA | Strategic Flood Risk Assessment |
| SPA | Special Protection Area |
| SSSI | Site of Special Scientific Interest |
| UU | United Utilities |
| WFD | Water Framework Directive |
| WwTW | Waste water Treatment Works |

## 6.11 Technical References


1. DCLG. National Planning Policy Framework (2012)

2. DCLG Technical Guidance to the National Planning Policy Framework (2012).

3 PPS 25 Development and Flood Risk Practice Guide (2009).

4. British Geological Survey (BGS) DiGMapGB-625 data 1:625,000

5. Environment Agency website www.environment-agency.gov uk; 'What's in your backyard' (2012).

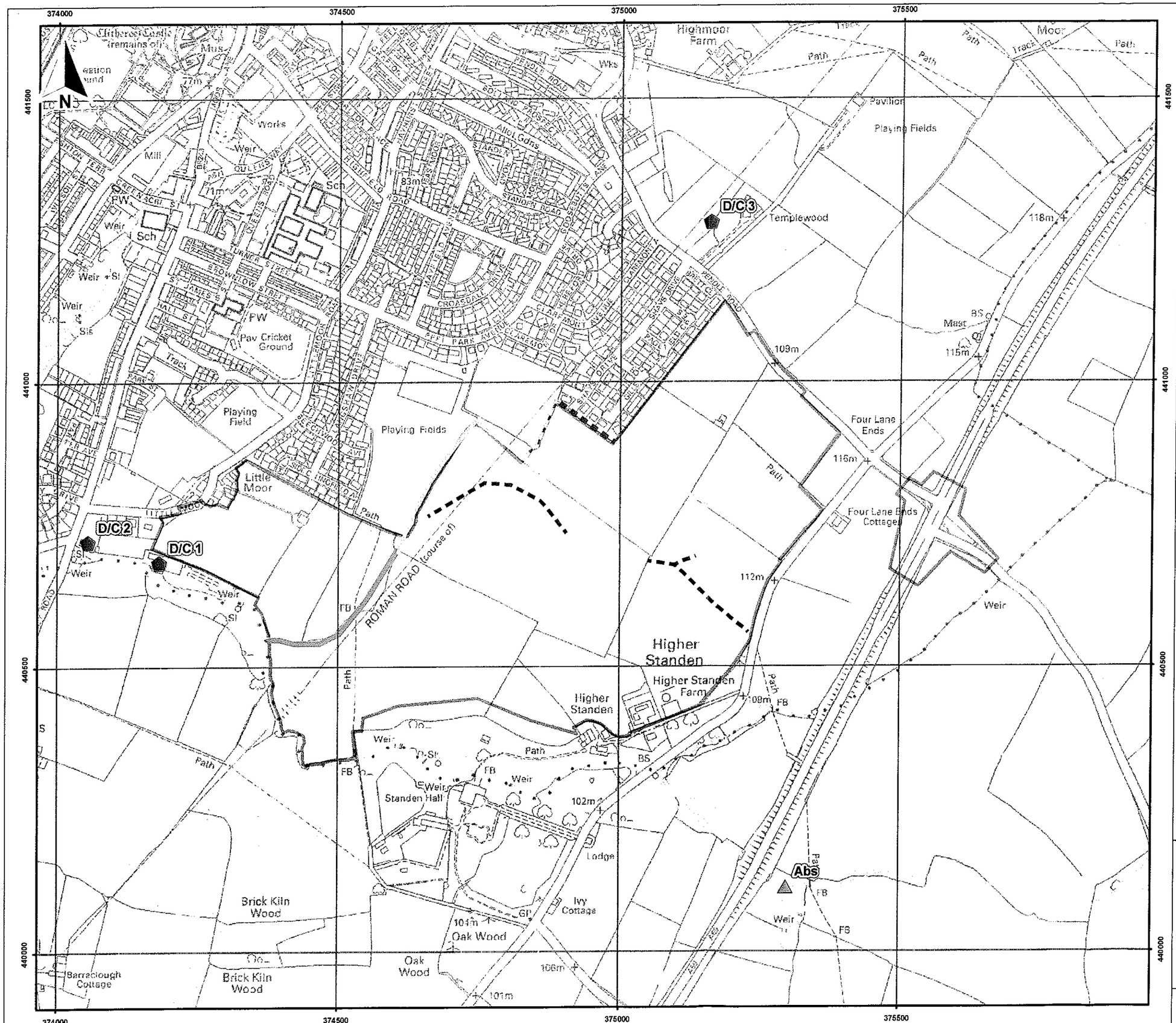
6. Defra/Environment Agency. FD2320. Flood Risk Assessment Guidance for New Development Phase 2. R&D Technical Report FD2320/TR2 2005' and 'Environment Agency Supplementary note on flood hazard ratings and thresholds for development planning and control purpose – clarification of the Table 13.1 of FD2320/TR2 and of FD2321/TR1. (2008).

7. CIRIA, C697, The SUDS Manual, (2007).

8. Ribble Valley Borough Council Draft Core Strategy for consultation (2012)

9. Ribble Valley Borough Council. Strategic Flood Risk Assessment – Level 1, (2010).

10. Landmark Information Group. Envirocheck Report Flood Screening Report Datasheet, (2012).




**Key:**

- Site Application Boundary
- Existing Abstractions
- Existing Discharge Consents

**On Site Watercourse**

- Overland flow routes
- Dry section
- Piped section
- Limited flow
- Noteable flow, spring fed

Further information on the existing abstractions and discharge consents is given in the Water Environment section of the ES

The main development site is the 50 1 ha plot in the west

The four smaller areas to the east (14.3 ha total) comprise the total boundary of land, some of whicht will be used for the A59 junction improvements

0 50 100 200 300 Metres

Scale: 1:6,500 @ A3

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Trustees of Standen Estate
Land South of Clitheroe
Environmental Statement

**Figure 6.1**
**Water Environment**

October 2012
29421-S12 brear

amec

# 7. Ecology

## 7.1 Introduction

This Environmental Statement (ES) chapter describes the habitats and species present on and adjacent to the Land South of Clitheroe site (hereafter referred to as the 'site'). The ecological baseline has been identified through scoping consultations, a desktop study and data search and from comprehensive field surveys carried out by ERAP Ltd (Consultant Ecologists) at appropriate times of year.

The scope of survey undertaken is sufficient to enable the identification and accurate assessment of any potential ecological constraints and biodiversity enhancement and creation opportunities associated with the development proposals.

The importance of the identified habitats and species has been evaluated against standard local, regional, national and international importance criteria. The results of the ecological evaluation and recommendations have informed the preparation of the illustrative masterplan

Appropriate and achievable mitigation measures, designed to avoid, prevent or minimise potentially adverse environmental effects are identified and the potential adverse effects of the scheme on ecology and biodiversity are described and assessed to identify whether they are likely to be significant.

Opportunities to incorporate features for enhancement and creation of biodiversity within and around the development are described and their implementation recommended.

## 7.2 Context

### 7.2.1 Relevant Terminology

There are a number of key terms that have been referred to in this chapter and for ease of reference these are defined briefly as follows:

- **EIA** is an Environmental Impact Assessment;
- **EcIA** is an Ecological Impact Assessment which follows the guidelines as prepared by the Institute of Ecology and Environmental Management (IEEM) (IEEM 2006);
- **Biodiversity** is the variety and abundance of species, their genetic composition, and the natural communities, ecosystems, and landscapes in which they occur;
- **Fauna** and **Flora** are respectively, animal and plant life;
- **Phase 1 Habitat survey** categorises habitats to a broad level using the methodologies set out by JNCC (version 2010) guidelines;
- **Protected species** are species included on Schedules 2 and 4 of *The Conservation of Habitats and Species Regulations 2010,* Schedules 1, 5 and 8 of the *Wildlife and*

*Countryside Act 1981* (as amended) (excluding species that are only protected in relation to their sale) and badgers, which are protected under the *Protection of Badgers Act 1992;*

- **Species of Principal Importance** are species listed on Section 41 of the Natural Environment and Rural Communities (2006) Act. The species are selected by the Secretary of State in consultation with Natural England. These species are all those requiring conservation action in the UK Biodiversity Action Plan (UK BAP);
- **Habitats of Principal Importance** are habitats listed on Section 41 of the Natural Environment and Rural Communities (2006) Act. The habitats are selected by the Secretary of State in consultation with Natural England. These habitats are those requiring conservation action in the UK Biodiversity Action Plan (UK BAP);
- **Direct Effects** are considered to be primarily 'encroachment' effects, such as land take or disturbance of protected species;
- **Indirect Effects** are those that operate at a distance, via distinct pathways (e.g hydrological impacts, dust deposition), although it is recognised that the distance may be short, i.e. within tens or hundreds of metres;
- **Mitigation** comprises measures taken to *avoid* or *reduce* negative impacts. Measures may include: locating the development and its working areas and access routes away from areas of high ecological interest, fencing off sensitive areas during the construction period, or timing works to avoid sensitive periods. An example of a reduction measure is a reed bed silt trap that is designed to minimise the amount of polluted water running directly into an ecologically important watercourse;
- **Compensation** comprises measures taken to make up for the loss of, or permanent damage to, biological resources through the provision of replacement areas. Any replacement area should be similar to or, with appropriate management, have the ability to reproduce the ecological functions and conditions of those biological resources that have been lost or damaged;
- **Enhancement** is a new benefit to biodiversity, unrelated to any negative impact;
- **Integrity** is the coherence of a site's ecological structure and function across its whole area that enables it to sustain the habitat, complex of habitats and/or levels of populations of the species for which it was classified;
- **Biological Heritage Sites are** local wildlife sites which contain habitats or features of value at the County Level.

### 7.2.2 Technical Context

This EcIA has been prepared in accordance with the standard approach detailed in the Guidelines for Ecological Impact Assessment in the United Kingdom prepared by the Institute of Ecology and Environmental Management (IEEM) (IEEM 2006) and the Environmental Impact Assessment: guide to procedures prepared by the Department for Communities and Local Government (January 2000).

This EcIA uses the following baseline survey information to assess the potential ecological impacts and determine mitigation measures required in connection with an application to develop the land at Standen:

- Data collated during a desktop study comprising biological data collated by the Lancashire Environment Record Network (LERN);
- An Extended Phase 1 Habitat Survey and survey of all hedgerows;
- Appropriately licensed surveys for protected species namely Great Crested Newt, Barn Owl, bat species, Otter and Water Vole;
- Breeding bird surveys;
- Survey and assessment for relevant Species of Principal Importance namely Brown Hare, Hedgehog and some bird species.

The site and recorded features of ecological interest (ecological receptors) have been evaluated in local, regional and national contexts using standard ecological criteria, and also with regard to Government directives and international obligations on wildlife conservation

The assessment has considered the types of impacts that could occur at the construction and operational phases of the proposal and it has described and qualified the significance of the impacts, with reference to a range of assessment criteria The assessment relies on the illustrative masterplan prepared by IBI Taylor Young (with ecological input); a number of assumptions have therefore been made during the assessment These assumptions are described in Section 7.5.

A description of appropriate and achievable avoidance or mitigation measures, designed to prevent or minimise respectively the predicted negative impacts is provided. Where mitigation is not possible appropriate compensatory measures have been described to ensure, in accordance with the principles of the National Planning Policy Framework (NPPF), there is no net loss in biodiversity as a result of the proposals

As required by the NPPF and other relevant planning documents, opportunities for the enhancement of biodiversity at the site have been explored with the overall objective of increasing the biodiversity value (i.e. the nature conservation interests at the site)

Finally the residual impacts have been assessed. It has been necessary to assume the future development will encompass all ecological mitigation, compensatory and enhancement recommendations. If there are any significant amendments to the masterplan, then this EcIA will be updated accordingly.

### 7.2.3 Planning and Guidance

**Legislation**

The following legislation and European Directives afford protection to wildlife and have been used to inform this assessment:

- *Wildlife and Countryside Act (1981)* (as amended);
- *The EC Birds Directive (Directive 79/409/EEC),* as translated into UK law by *The Conservation of Habitats and Species Regulations 2010;*

- *The EC Habitats Directive (Directive 92/43/EEC)* as translated into UK law by *The Conservation of Habitats and Species Regulations 2010;*
- *The Natural Environment and Rural Communities Act (2006);*
- *The Protection of Badgers Act (1992)*; and
- *The Hedgerows Regulations (1997).*

The legal status of species and habitats has therefore been used in the evaluation of the site's nature conservation importance, alongside other standard evaluation criteria. Where appropriate the potential significant effects on these habitats and species are assessed in the EcIA.

**National Policy**

The National Planning Policy Framework (NPPF) was published in March 2012. The NPPF states that:

- To achieve sustainable development, the planning system should seek environmental gains and should contribute to protecting, minimising impacts on biodiversity and enhancing the natural environment to help to improve biodiversity;
- Pursuing sustainable development involves seeking positive improvements in the quality of the natural environment, including moving from a net loss of biodiversity to achieving gains for nature;
- The planning system should contribute to and enhance the natural environment by minimising impacts on biodiversity and providing net gains where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including establishing coherent ecological networks;
- If significant harm to biodiversity resulting from a development cannot be avoided or adequately mitigated, or as a last resort, compensated for, then planning permission should be refused

Although the NPPF replaced *Planning Policy Statement 9: Biodiversity and Geological Conservation (2005)* in March 2012 the guidance in the following Government Circular remains applicable.

*The Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and Their Impact Within the Planning System* (DEFRA 01/2005, ODPM 06/2005)

**Regional and Local Policy**

Policies EM1 and DP7 of the North West Regional Spatial Strategy to 2021 seek to conserve and enhance biodiversity as part of an integrated approach to protection and enhancement of the region's environmental assets.

Specifically the nature conservation section of Policy EM1 states that:

> *"Plans, strategies, proposals and schemes should seek to deliver a 'step-change' increase in the region's biodiversity resources by contributing to the delivery of national, regional and local biodiversity objectives and targets for maintaining, restoring and expanding habitats and species populations. This*

*should be done through protecting, enhancing, expanding and linking areas for wildlife within and between the locations of highest biodiversity resources, including statutory and local wildlife sites, and encouraging the conservation and expansion of the ecological fabric elsewhere "*

It also states that:

*"Plans, strategies, proposals and schemes should protect and enhance the region's geological and geomorphological resources including statutory and local sites by contributing to the delivery of national, regional and local geodiversity objectives and targets."*

Policy DP7 (environmental quality) states that environmental quality (including air, coastal and inland waters) should be protected and enhanced by: -

- Understanding and respecting the character and distinctiveness of places and landscapes;
- Protection and enhancement of the historic environment;
- Reclaiming derelict land and remediating contaminated land for end-uses to improve the image of the region and use land resources efficiently;
- Maintaining and enhancing the quantity and quality of biodiversity and habitat;
- Ensuring that plans, policies or proposals which alone or in combination could have a significant effect on the integrity of conservation objectives of sites of international importance for nature conservation are subject to assessment including assessment and amelioration of the potential impacts of development (and associated traffic) on air quality, water quality and water levels

**Table 7.1 Summary of Relevant Development Plan Environmental Policies**

| Policy Ref. | Summary of Policy Provisions |
|---|---|
| **Ribble Valley Districtwide Local Plan** | |
| Policy ENV1 *Area of Outstanding Natural Beauty* | The landscape and character of the Forest of Bowland Area of Outstanding Natural Beauty will be protected, conserved and enhanced. In addition development will also need to contribute to the conservation of the natural beauty of the area. The environmental effects of proposals will be a major consideration and the design, materials, scale, massing and landscaping of development will be important factors in deciding planning applications (see Policy G1). |
| Policy ENV2 *Forest of Bowland* | The landscape and character of those areas immediately adjacent to the Forest of Bowland Area of Outstanding Natural Beauty will be protected, conserved and wherever possible enhanced. The environmental effects of proposals will be a major consideration and the design, materials, scale, massing and landscaping of development will be important factors in deciding planning applications (see Policy G1) |

**Table 7.1 (continued) Summary of Relevant Development Plan Environmental Policies**

| Policy Ref. | Summary of Policy Provisions |
|---|---|
| Policy ENV3 *Open Countryside* | In the open countryside outside the AONB and areas immediately adjacent to it, development will be required to be in keeping with the character of the landscape area and should reflect local vernacular, scale, style, features and building materials. Proposals to conserve, renew and enhance landscape features, will be permitted, provided regard has been given for the characteristic landscape features of the area |
| Policies ENV6 *Agricultural Land* | The Borough Council will safeguard the best and most versatile agricultural land (as classified by the Ministry of Agriculture) unless it can be shown that the need for development overrides agricultural considerations |
| Policy ENV7 *Species Protection* | Development proposals which would have an adverse effect on wildlife species protected by law will not be granted planning permission, unless arrangements can be made through planning conditions or agreements to secure the protection of the species |
| Policy ENV8 *Sites of Special Scientific Interest* | Development proposals likely to affect adversely the nature conservation of Sites of Special Scientific Interest will not be permitted unless it can be demonstrated that other material considerations outweigh the special interest of the Site |
| Policy ENV9 *Other Important Wildlife Sites* | Development proposals within or adjacent to a County Biological Heritage Site or other site of local nature conservation importance identified on the proposals map will be permitted provided the development would not significantly harm the features |
| Policy ENV10 *Nature Conservation* | Where permission is granted for development affecting the nature conservation value of sites, including those referred to in Policies ENV8 and ENV9, conditions may be imposed or agreements sought:<br><br>(a) to avoid damage to wildlife habitats or physical features of the nature conservation interest;<br><br>(b) to secure the retention or enhancement of wildlife habitats; and<br><br>(c) in appropriate cases, to require the re-creation of habitats once the development has ceased |

## Other Policies

The UK Biodiversity Action Plan (UK BAP) also identifies a number of priority habitats and species for conservation action and those present, or likely to be present, at the Site have been identified in the ES. The Lancashire Local BAP (LBAP) (2005) aims to ensure that the targets and priorities within the UK BAP are implemented at a local level for those habitats and species present in Lancashire. The Habitat Action Plans (HAPs) and Species Action Plans (SAPs) listed in Table 7.2 are considered relevant to the proposals.

Table 7.2 Potentially Relevant Lancashire HAPs/ SAPs

| Habitat Action Plan | Species Action Plan |
|---|---|
| Broadleaved and Mixed Woodlands | Farmland Birds |
| Rivers and Streams | Lapwing |
| | Song Thrush |
| | Bats |
| | Brown Hare |

## 7.3 Assessment Approach

### 7.3.1 Data Gathering and Survey Work

**Desktop Study and Data Search**

The following sources of information and ecological records were consulted:

- MAGIC: a web-based interactive map which brings together geographic information on key environmental schemes and designations, including details of statutory designated sites (http://magic.defra.gov.uk);
- National Biodiversity Network (NBN Gateway) (weww.nbn.org.uk);
- Nature on the Map (www.natureonthemap.org.uk); and
- Lancashire Biodiversity Action Plan (LBAP).

The Lancashire Environment Record Network was contacted and a request for all ecological records including non-statutory local wildlife sites (Biological Heritage Sites (BHSs)) within a radius of 2 kilometres from the central grid reference of the site (SD 748 806) was requested.

**Scope of Field Surveys**

The scope of ecological surveys carried out at the site between March 2011 and June 2012 was defined/informed following examination of the existing survey information, the comments received from consultees and the initial walkover surveys carried out by ERAP Ltd's Ecologists.

All relevant surveys and habitat assessments have been carried out in accordance with the Institute of Ecology and Environmental Management (IEEM) guidance on survey methodology and standard guidance endorsed by Natural England.

The surveys comprised:

- Extended Phase 1 Habitat survey (including a Hedgerow Survey);
- Full Great Crested Newt survey;

- Badger survey;
- Water Vole survey;
- Two breeding bird surveys, and
- Licensed bat surveys (comprising daytime inspections, a hibernation survey and dusk/dawn activity surveys).

The dates of all surveys, weather conditions and personnel are presented in Table 7.3. The specific survey methodologies applied are described below. Surveys were carried out by suitably qualified and experienced surveyors. Where relevant the surveyor's qualifications and experience met the criteria as defined in the Technical Guidance Series Competencies for Species Survey prepared by the Institute of Ecology and Environmental Management (IEEM).

**Table 7.3 Details of all Survey Dates, Weather and Personnel**

| Survey | Dates | Weather Conditions | Personnel |
|---|---|---|---|
| Extended Phase 1 Habitat Survey, Hedgerow Survey & Badger Survey | 01/03/2011 | Overcast, 100% cloud cover, occasional light drizzle 11°C and calm (Beaufort Scale 1) | B Robinson B Sc (Hons) AIEEM<br>V Burrows B Sc (Hons) M Sc. CEnv MIEEM |
| | 19/05/2011 | Sunny, dry, 50% cloud over, 17°C and calm (Beaufort Scale 1) | |
| | 03/06/2011 | Sunny, <1% cloud cover 22°C calm (Beaufort Scale 0) | |
| Great Crested Newt | 28/04/2011 | Refer to Appendix 7.3 | S Hough<br>R Lowe B Sc. |
| | 05/05/2011 | | |
| | 19/05/2011 | | |
| | 30/05/2011 | | |
| Water Vole and Otter | 02/06/2011 | Sunny, dry, <1% cloud cover, 20°C and calm (Beaufort Scale 1) | B Robinson B Sc (Hons) AIEEM<br>C Swindells B Sc. (Hons) |
| Breeding Birds | 28/04/2011 | Sunny, dry, 10°C rising to 16°C calm (Beaufort Scale 1) | C Swindells B Sc. (Hons) |
| | 02/06/2011 | Sunny intervals, 14°C rising to 20°C, calm (Beaufort Scale 0) | |
| Licensed Bat surveys | Between September 2011 and June 2012 | Refer to Appendix 7.5. | V Burrows B Sc (Hons) M Sc. CEnv MIEEM<br>B Robinson B Sc (Hons) AIEEM<br>Experienced assistants |

### 7.3.2 Proposed Scope of the Assessment

**Potential Receptors**

*Evaluation (Determining Value)*
The current guidelines on ecological impact assessment (IEEM 2006) note that an appropriate ecological assessment cannot consider every individual species or habitat that may potentially be affected by a development, but should focus on 'Valued Ecological Receptors'.

Valued Ecological Receptors are species and habitats that are indicative of the ecological quality of the Site and which could be affected by the scheme

The following criteria/ evaluation tools have been used to assess the value of the identified receptors applicable to the site. The criteria have been applied to habitats and species that need to be assessed because they are of biodiversity value rather than because they are legally protected (although it is recognised that there may be overlap).

- The baseline survey information has been evaluated with reference to standard nature conservation criteria as described by Ratcliffe (1977) and the Nature Conservancy Council (1989) These are size (extent), diversity, naturalness, rarity, fragility, typicalness, recorded history, position in an ecological or geographical unit, potential value and intrinsic appeal;
- The National Vegetation Classification (NVC) was used to evaluate those habitats that can be assessed in terms of plant communities;
- Hedgerows have been evaluated by the application of criteria published in the Wildlife and Landscape section of *The Hedgerows Regulations 1997* to determine their 'importance';
- Government advice on wildlife, as set out in the NPPF and associated circulars comprising the *Countryside and Rights of Way Act 2000, Planning for Biodiversity and Geological Conservation – A Guide to Good Practice (March 2006)*, Government Circular: *Biodiversity and Geological Conservation – Statutory Observations and their Impact Within the Planning System*, have been consulted during the evaluation;
- Attention has also been given to the objectives of the *UK Biodiversity Action Plan* and to local biodiversity action plans, and species action plans.

In addition to actual biodiversity value of the habitats and wildlife, secondary (or supporting) value, potential value and social value have been considered. For example, some features that are currently of no particular intrinsic ecological interest may nevertheless perform an ecological function, e.g. because they act as a buffer against negative impacts, or because they enable in some other way the effective conservation of a more valuable feature An example of a feature which is of secondary value is the presence of small pockets of green space within an urban environment as the green spaces may create 'stepping stones' and contribute to the dispersal, migration and genetic exchange of wild species (including protected species).

Where possible, the potential value of a feature has been recognised. The potential value of a feature is related to the ease by which a feature (such as a habitat) can be altered for example by a change in management to improve and enhance the feature and possibly achieve biodiversity targets as defined in the UK and Lancashire BAPs.

Using the evaluation tools described above a set of Valued Ecological Receptors has been identified. The value assigned to a receptor determines the geographic scale at which the impact is significant. The ecological receptor is considered valuable (or has the potential to become valuable) on the scale detailed at Table 7.4.

**Table 7.4 Criteria for Determining Value**

| Receptor Value | Description |
|---|---|
| International | International importance plus biodiversity assets such as:<br>Internationally (including European) designated sites (Special Protection Area (SPA) Ramsar Special Area for Conservation (SAC))<br>A site which meets the criteria for designation as an international site but is not designated<br>A significant* population of a European protected species in this geographical region<br>*e g a population of bird species representative of more than 1% of the international population<br>A small population of a European protected species not typical of the geographical region |
| National/UK | National importance, plus biodiversity assets such as:<br>Nationally designated sites (Site of Special Scientific Interest (SSSI), National Nature Reserve)<br>A site which meets the criteria for designation as a national site but is not designated<br>A significant* population of a more common and widespread European protected species in this geographical region<br>*e.g a population of bird species representative of more than 1% of the national population<br>A significant population of a protected species under all parts of Schedule 1, 5 or 6 of the *Wildlife and Countryside Act 1981* e g Badger |
| Regional | Regional importance, plus biodiversity assets such as those listed below:<br>A good/typical example of a Habitat of Principal Importance/UK Biodiversity Action Plan Priority Habitat that satisfies all the criteria in the definition but is in some way slightly enhanced (e.g. presence of a species that is localised in the region)<br>A regularly occurring, locally significant population of a species listed as being nationally scarce |
| County | County or District importance, plus biodiversity assets such as those listed below:<br>Sites of County importance (non-statutory) designated by local authorities or others, including semi-natural ancient woodland greater than 0.25ha, and species equivalents. In the Lancashire Area these are known as Biological Heritage Sites (BHSs)<br>UK Biodiversity Action Plan (BAP) Priority Habitats/Habitats of Principal Importance as defined by Section 74 of the *Countryside and Rights of Way Act 2000* , UK BAP (2007) and listed on Section 41 of the *Natural Environment and Rural Communities (2006) Act*<br>Significant populations of UK Biodiversity Action Plan (BAP) Priority Species/Species of Principal Importance as defined by Section 74 of the *Countryside and Rights of Way Act*, the *UK BAP (2007)* and listed on Section 41 of the *Natural Environment and Rural Communities (2006) Act* |

**Table 7.4 (continued) Criteria for Determining Value**

| Receptor Value | Description |
|---|---|
| Local | Local/Parish importance plus biodiversity assets such as those listed below:<br><br>Populations of UK BAP Priority Species which are not considered to be exceptional or of significance in the local geographical area<br><br>Areas of habitat which appreciably enrich the habitat resource in the local or parish contexts but are not of substantive biological importance e.g local greenspaces and wildlife corridors within an urban area.<br><br>Habitats and species listed on the Lancashire BAP (but not already listed as UK BAP Priority Habitats and Species). |
| Within the zone of immediate influence only/Site | Less than local importance, with very limited biodiversity assets such as:<br><br>Species-poor vegetation communities<br><br>Typical populations of common and widespread mammal, bird, amphibian and/or invertebrate species<br><br>Habitats which are sub-optimal for use by wildlife because of problems with the structure species composition and/or very limited size |
| Negative | Presence of a species of flora or fauna listed under Schedule 9 of the *Wildlife and Countryside Act 1981* or other non-native invasive/injurious species that have potential to have a significant impact on the native flora and fauna and could be considered to have an ecological commercial or social adverse effect usually at the local or site level |

**Potential Significant Effects**

In the absence of any mitigation (compensation or enhancement as part of the proposals) the following potential effects are identified: -

*Construction Stage*

- **Habitat loss** owing to site clearance operations;
- **Habitat fragmentation** to accommodate access road links and footpaths;
- **Damage/Injury to Wildlife** as a result of inappropriate timing of site stripping and clearance works;
- **Disturbance** owing to the physical presence of construction activities and human activities; and,
- **Pollution** as a result of disturbance and accidents.

*Operational Stage (i.e when the houses, businesses etc. are occupied)*

- **Degradation of existing retained habitat** such as the Pendleton Brook corridor and hedgerows as a result of activities such as fly-tipping and increased recreational pressure;

- **Degradation of new habitats created in connection with the scheme** as a result of activities such as fly-tipping, absence of favourable management and increased recreational pressure; and
- **Pollution** owing to inappropriate disposal of household materials such as car oil.

The scale of impact on each Valued Ecological Receptor is discussed in Section 7.6 and summarised in the EcIA at Table 7.13.

The mitigation and recommendations described in Section 7.5 aim to appropriately address the identified potential impacts to avoid a significant effect on the Valued Ecological Receptors.

As described below, the ecological survey information has been provided to the design team from an early stage in the design of the site and this has informed the Development Framework and illustrative masterplans. The ecological constraints plan presented at Figure 7.3 illustrates the guidance provided.

Some of the measures already taken during the iterative design process to avoid or minimise adverse effects on wildlife and biodiversity are listed in Section 7.5.1, but the main mitigation, compensation and enhancement proposals are set out in Section 7.5.2.

Where feasible and appropriate, opportunities to enhance the biodiversity and nature conservation value of the site have been identified, and proposals are outlined to sustain and add to biodiversity in accordance with the NPPF and local planning policy

The residual impacts of the proposals are presented in the EcIA in Table 7.14 and summarised in Table 7.15

### 7.3.3 Significance Evaluation Methodology

Assessment of potential ecological effects resulting from implementation of the proposed development is based on predicting ecologically significant changes (effects) to the baseline conditions of the site that are likely to occur.

Effects are predicted based on the potential impacts that the proposals would have on those aspects of ecological structure and function on which the identified ecological receptors depend. Natural trends and the inherent resilience of a receptor have been considered and changes have been discussed using the following headings:

- Direction (positive/negative); whether the effect will result in net loss or degradation of a Valued Receptor or whether it will enhance or improve it;
- Magnitude and/or extent of impact;
- Duration (short or long-term, where short-term is defined and the duration of the anticipated activity which results in an effect);
- Value of ecological receptor;
- Reversibility (chance of recovery/ replacement within a reasonable timeframe); and
- Timing and frequency; consideration of the timing of events in relation to ecological change: some effects may be of greater significance if they take place at

certain times of year (e.g. breeding season). The extent to which an effect is repeated may also be of importance.

Confidence in predictions is based on the scale proposed in IEEM guidelines as summarised below:

- Certain/ Near-Certain: Probability estimated at 95% chance or higher;
- Probable: Probability estimated above 50% but below 95%;
- Unlikely: Probability estimated above 5% but less than 50%; and,
- Extremely Unlikely: Probability estimated at less than 5%

Where possible and working with the assumptions identified in Section 7.5, each Valued Ecological Receptor has been assessed to determine the likely construction and operational impacts of implementation of the development proposals, to outline any mitigation required and to highlight residual impacts.

A precautionary approach has been taken in the prediction of effects. Where there is any doubt, the effect is given the higher level

Table 7.5 details the criteria to be used in the assessment of magnitude of an identified effect on the identified Valued Ecological Receptors

**Table 7.5 Definition of Magnitude for Ecological Assessment**

| Magnitude | Description |
|---|---|
| Major | The proposed development would cause a large change to existing environmental conditions This includes major effects on the integrity of large-scale and ecologically significant areas; the land being affected is likely to comprise a designated site (SPA, SAC, SSSI etc) or key habitats as listed in *The UK Biodiversity Action Plan Steering Group Report* (lowland meadow, lowland dry acid grassland, standing open waters etc) and/or support significant populations of statutory protected species |
| Moderate | The proposed development would cause a noticeable change to existing environmental conditions. This includes major effects on a scale that would affect a moderate proportion of an area that is considered to be ecologically important, including designated sites, key habitats, local sites of substantive biological importance (BHS) but will not affect the overall integrity of the area Also included here are minor scale effects on protected species |
| Minor | The proposed development would cause a small change to existing environmental conditions. This includes major effects on common wildlife habitats, common types of semi-natural vegetation and minor but valuable wildlife features in the landscape<br><br>Other important but not protected species may experience temporary disturbance and minor effects. |
| Negligible | The proposed development would cause no discernible change to existing environmental conditions.<br><br>Temporary or very small-scale damage to common types of semi-natural vegetation or habitat or minor losses of such habitat is included here This includes minor effects on very common wildlife species |

**Significance Criteria**

Impact assessment refers to the change that is predicted to take place to the existing condition of the environment as a result of the proposed development.

The significance of an effect is generally determined as the combination of the "sensitivity and/or value" of the affected environmental receptor and the predicted "extent" and/or "magnitude" of the effect or change. The assessment of significance ultimately relies on professional judgement, although comparing the extent of the impact with criteria and standards specific to each environmental topic can guide this judgement.

An ecologically significant effect is defined as one that affects the Integrity of a site or ecosystem, or the Conservation Status of a habitat or species within a geographical area.

Significance has been assessed on the basis of the *value* of the features and the *magnitude* of effects taking into account professional judgment. Effects are considered to be significant or not significant (see Table 7.6).

As a general rule, the more ecologically valuable a receptor and the greater the magnitude of the effect, the more likely it is for a significant effect to result. However, effects are considered at different geographical scales, and something that is not considered significant at one scale may be of significance when viewed in a different geographical context.

It is generally the case that no significant effect can occur to features of less than local importance, other than in exceptional circumstances such as where a feature has high social or economic value, or the magnitude of effect is particularly high.

**Table 7.6 Evaluation of Significance for Assessment**

| Value/ Sensitivity | Magnitude | | | |
|---|---|---|---|---|
| | **Major** | **Moderate** | **Minor** | **Negligible** |
| International | Significant | Significant | Significant | No effect |
| National/UK | Significant | Significant | Not significant | No effect |
| Regional | Significant* | Not significant | Not significant | No effect |
| County | Not significant | Not significant | No effect | No effect |
| Local | Not significant | No effect | No effect | No effect |
| Less than Local | No significant effect | | | |

* Only for habitats

### 7.3.4 Technical Consultations

A Scoping Report was submitted in October 2011 to Ribble Valley Borough Council (RVBC). RVBC consulted their specialist ecological advisers available at Lancashire County Council (LCC), The Environment Agency (EA) and Natural England (NE) in relation to nature conservation issues.

### 7.3.5 Final Scope of the Assessment

In their scoping opinion response RVBC (and their advisers) accepted the proposed approach to the assessment and scope of ecological surveys.

Owing to the proximity of the proposals to a watercourse (Pendleton Brook) the EA stated that the scope of ecological survey should also include macroinvertebrate, macrophyte, crayfish and fish surveys. There was subsequent correspondence with the EA which pointed out that Pendleton Brook would not be directly affected by the proposals. The EA confirmed the following: "*The request for fish, macrophyte and macroinvertebtrate surveys may only apply to works that have the potential to impact directly on aquatic habitats. Based on the information submitted in the EIA Scoping report it is unlikely that these surveys will be a requirement for this development proposal*".

The need to complete macroinvertebrate, macrophyte and fish surveys has therefore been scoped out from further consideration in this assessment.

The consultees also made the following comments/ recommendations:

- The need for the ecological survey information to inform the masterplanning process;
- Clear span structures must be used where footpath of road crossing points are intended over watercourses;
- Any proposed access along watercourses must be sensitively designed and managed if it is likely to have a negative effect. This may include the incorporation of an appropriate buffer zone comprising the retention of existing trees;
- Any proposed informal space should be managed so as to foster a natural character with retention of native trees, shrubs species and grasslands to enhance floristic and habitat value;
- Any proposed landscaping should be of native species of local origin;
- Proposed dwellings should face watercourses and gardens backing on to the watercourses should be avoided to avoid future harm to their quality and value.

### 7.3.6 Survey Limitations and Validity of Results

All surveys were carried out at the optimum time of year to maximise the quality of the results and the detection of the target species.

The entire site was accessible and there were no access constraints. It is concluded that no significant survey limitations were encountered

As this project has evolved the ecological survey data have aged However no survey data have been collated more than two seasons ago A walkover survey in May 2012 has confirmed that the agricultural regime at the site has remained the same as in 2011; no significant changes have occurred in terms of the management and condition of the site over the survey period

It is concluded that all ecological survey data remain valid and applicable for use in this assessment.

### 7.3.7 Likely Zone of Influence

Examination of the habitats in the wider area, which comprises additional agriculturally improved grassland similar to that present at the site, amenity grassland, existing housing and the Pendleton Brook corridor has informed the assessment of the likely zone of influence arising from the proposals.

It is concluded that the likely zone of influence arising from the proposals comprises the site itself and the adjacent 900 m long section of Pendleton Brook and its associated interests, including downstream habitats.

A wider zone of influence is not applicable in this case owing to the absence of habitats/species of significant ecological value in the local area.

### 7.3.8 List of Valued Ecological Receptors

Section 7.4 and the information at Appendices 7.1 to 7.5 describe the baseline conditions at the site. The surveys have informed the identification of the List of Valued Ecological Receptors (refer to Table 7.7).

The comprehensive ecological surveys carried out between March 2011 and June 2012 have not detected the features/ species listed below. Effects on the following potential Valued Ecological Receptors (VERs) have been reasonably scoped out from further assessment:

- Statutorily designated sites (e.g. SAC, SSSI);
- Non-statutorily designated sites (e.g. BHS, LNR);
- Badger;
- Reptile species;
- Great Crested Newt;
- Otter; and
- Water Vole.

In accordance with the IEEM guidelines (2006), where receptors have been evaluated to be of lower value than 'Local Value' no further assessment is deemed necessary as the impact on these receptors is not likely to be of significance. However, it should be noted that mitigation measures may still be required to ensure protection of receptors to comply with current wildlife legislation and best practice guidelines.

The ecological receptors listed in Table 7.7 have been identified with the potential to be affected by the development proposals (regardless of the site layout and mitigation measures) and carried forward for further ecological impact assessment. Supporting rationale for the assessment of Ecological Value is described in Sections 7.4.5 and 7.4.8.

Table 7.7 **List of Identified Valued Ecological Receptors (VERs) to be carried forward for Further Ecological Impact Assessment**

| Receptor | Ecological Value |
|---|---|
| **Habitats** | |
| Pendleton Brook and associated fauna (e g foraging bats and Bullhead) | County Value |
| Hedgerows and tree lines | County Value |
| Ditch Corridors | Local Value |
| Calcareous grassland | Local Value |
| Marshy grassland | Local Value |
| **Species** | |
| Japanese Knotweed | Negative |
| Bat species | Local Value |
| Breeding birds (including Species of Principal Importance) | Local Value |
| Brown Hare (Species of Principal Importance) | Local Value |

## 7.4 Baseline Conditions

### 7.4.1 Designated Sites

There are no statutory designated sites (e g. SAC, SPA, SSSI) within or adjacent to the site boundary

The Salthill and Bellmanpark Quarry Site of Special Scientific Interest (SSSI) is 1 3 km to the north of the site (refer to Figure 7.1) The disused quarries straddle the A671 road and are designated for their Carboniferous Limestone and associated fossil geological interest. There is no habitat connectivity between the site and the SSSI and no complementary quarry or excavation sites are present within the site. There are no non-statutorily designated sites within the site or adjacent to the site boundary.

The desktop study confirmed the presence of two non-statutory sites within 1 km of the site which are designated as Biological Heritage Sites (BHS), refer to Figure 7 1. Details of the sites are given in Table 7.8.

Table 7.8 Non-statutorily Designated Sites within 1 Kilometre of Centre of the Site

| Site | Grid Reference | Distance from the Site Boundary (Metres) | Reason for Designation |
|---|---|---|---|
| Primrose Lodge BHS | SD 739 410 | 400m to the west | Although the Primrose Lodge BHS is located only 400 metres from the site boundary, the intervening land offers poor wildlife connectivity between the site and the BHS owing to the presence of existing built development and the A671 (Whalley Road)<br><br>Any inter-relationship, direct and indirect effect on the Primrose Lodge BHS as a result of the proposals is reasonably discounted<br><br>The citation is to be completed for this BHS |
| Clitheroe Castle Knoll | SD 742 417 | 900 metres to the north-west | However, owing to the distance (approximately 900 metres) between the site and the Castle Knoll and the presence of built development in the intervening land direct and indirect effects are reasonably discounted |
| Barrow Clough Wood | SD 736 399 | Over 800m to the south-west | Designated for the presence of woodland and scrub habitat that meet the BHS selection criteria The BHS is over 800 metres from the site boundary<br><br>There is no significant habitat connectivity between the site and the BHS. Any inter-relationship, direct or indirect impact on the Barrow Clough Wood BHS as a result of the proposals is reasonably discounted |

### 7.4.2 Detailed Survey Methodologies: Flora

**Extended Phase 1 Habitat Survey**

An Extended Phase 1 Habitat Survey was completed in spring and summer. Habitats were identified and any features of nature conservation interest were described in detail.

A vegetation and habitat map was produced for the site and the immediate surrounding area at a scale of 1:5,000 (refer to Figure 7.2). The mapping is based on the Joint Nature Conservation Committee Phase 1 Habitat Survey methodology (JNCC 2010)

The principal and constant plant species within the Site boundary were identified with estimates of the distribution, ground cover, abundance and constancy of occurrence of individual species. The estimation of abundance was based on the DAFOR system where D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare, this being a widely used and accepted system employed by ecological surveyors.

In addition to the survey of the site, a walkover of the land to a distance of 50 m from the site boundary was also conducted where access was possible, to enable the identification of any habitats or species that could be indirectly affected by the scheme.

All stands of vegetation and habitats were described and evaluated using the National Vegetation Classification (NVC). The NVC provides a systematic and comprehensive analysis

of British vegetation and is widely used by Natural England and other wildlife organisations as well as ecological consultants to provide a scientific basis for the description and evaluation of habitats. The NVC provides a reliable framework for nature conservation and land-use planning.

Searches were made for uncommon, rare and statutorily protected plant species, those species listed as protected in the *Wildlife and Countryside Act 1981* and indicators of important and uncommon plant communities. All plant nomenclature follows Stace (1991).

Searches were carried out for the presence of invasive species, including those listed on the revised (April 2010) Schedule 9 of the *Wildlife and Countryside Act 1981*, namely Japanese Knotweed, Giant Hogweed and Indian Balsam

**Hedgerow Surveys**

Hedgerows were surveyed and assessed in accordance with the criteria in the wildlife and landscape section of *The Hedgerows Regulations 1997*.

### 7.4.3 Baseline Conditions: Flora

**General Description**

The site is located a minimum of 1 km to the south-east of Clitheroe town centre and comprises two areas of agricultural farmland bisected by the A59 road. Land to the west of the A59 covers an area of 49.3 hectares and comprises 16 fields of agricultural pasture (labelled Fields 1 to 13 and C to E on Figure 7.2) with boundary hedgerows and scattered mature broadleaf trees. Land to the east of the A59 comprises two fields of agricultural pasture with boundary hedgerows and scattered mature trees (labelled A and B on Figure 7.2).

Fields 1 to 13 comprise the main area of the proposed development site. Fields A to E have been included owing to the likelihood of the construction of a road/junction improvement at the A59 which may affect a small area at the marginal corners of each of these fields. As the project has evolved Field E has been omitted from the site boundary

The following habitats have been detected at the site and are described below:

- Improved grassland;
- Semi-improved grassland;
- Calcareous grassland (remnant);
- Marshy grassland;
- Hedgerows;
- Scattered mature and semi-mature trees and scrub;
- Small wooded copses;
- Ditches; and
- Farm buildings associated with Higher Standen Farm and a single field barn and the stone remains of a barn

The site is bordered by the southern outskirts of Clitheroe town, a playing field and Pendle Road to the north. Further fields of agricultural pasture occupy the land to the east. To the south is Standen Hall and associated plantation woodland. Pendleton Brook and agricultural pasture occupy the land to the west and south-west.

A Phase 1 Habitat Survey plan is included as Figure 7.2.

**Improved and Semi-improved Grasslands, Calcareous Grassland and Marshy Grassland**

All fields are in current agricultural management (sheep and cattle grazing and silage) and contain agriculturally improved grassland. The fields of improved grassland have a similar plant species composition consisting of an abundance of agriculturally productive plant species such as Perennial Rye-grass, Yorkshire-fog, Rough-stalked Meadow-grass, White Clover and Meadow Foxtail. A plant species list is appended at Table 7.1.1 of Appendix 7.1.

The eastern end of Field 10 supports agriculturally improved grassland. The more steeply sloping ground falling towards Pendleton Brook has received less agricultural improvement and a transition towards semi-improved mesotrophic (neutral) grassland is apparent as annotated on Figure 7.2. Species such as Crested Dog's-tail, Fairy Flax, Ribwort Plantain, Wild Strawberry, Glaucous Sedge and Quaking-grass were detected, as described on Table 7.1.2 at Appendix 7.1.

The steepest sloping land near the Brook supports approximately 100 $m^2$ of grassland which contains a number of plant species indicative of alkaline/base-rich substrate such as Rough Hawkbit, Wild Strawberry, Quaking-grass, Glaucous Sedge and Mouse-eared Hawkweed. It is evident that the shallow soils over the steeply sloping land have escaped the most intensive agricultural improvement which has enabled the underlying calcareous rock to influence the pH of the soil and prevent the dominance of competitive plant species. A species list for the calcareous grassland remnant area is appended at Table 7.1.3 at Appendix 7.1. This small area is referred to as 'calcareous grassland' throughout the remainder of this assessment (refer to Figure 7.2).

The northern end of Field E is poorly drained and contains an area of marshy grassland. A full species list for the grassland is appended at Table 7.1.4 at Appendix 7.1.

The NVC communities and approximate areas of each field unit are presented in Table 7.9, below.

Table 7.9 **Field Units Listed by their Management, Associated Phase 1 Habitat Type and NVC Community (refer to Figure 7.2).**

| Field Ref. (Refer to Figure 7.2) | Phase 1 Habitat Type | NVC Communities |
|---|---|---|
| 1 | Improved grassland | MG7 Perennial Rye-grass ley |
| 2 | Improved grassland | MG7 Perennial Rye-grass ley |
| 3 | Improved grassland | MG7 Perennial Rye-grass ley |
| 4 | Improved grassland | MG7 Perennial Rye-grass ley |
| 5 | Improved grassland | MG7 Perennial Rye-grass ley |
| 6 | Improved grassland | MG7 Perennial Rye-grass ley |
| 7 | Improved grassland | MG7 Perennial Rye-grass ley |
| 8 | Improved grassland | MG7 Perennial Rye-grass ley |
| 9 | Improved grassland | MG7 Perennial Rye-grass ley |
| 10 | Improved grassland; | MG7 Perennial Rye-grass ley; |
| | Semi-improved mesotrophic (neutral grassland); and, | MG6 Perennial Rye-grass – Crested Dog s-tail grassland; and, |
| | Calcareous grassland | a grassland which contains both mesotrophic and calcareous grassland but does not conform to a specific NVC community |
| 11 | Improved grassland | MG7 Perennial Rye-grass ley |
| 12 | Improved grassland | MG7 Perennial Rye-grass ley |
| 13 | Improved grassland | MG7 Perennial Rye-grass ley |
| A | Improved grassland | MG7 Perennial Rye-grass ley |
| B | Improved grassland | MG7 Perennial Rye-grass ley |
| C | Improved grassland | MG7 Perennial Rye-grass ley |
| D | Improved grassland | MG7 Perennial Rye-grass ley |
| E | Improved grassland; | MG7 Perennial Rye-grass ley |
| | Marshy grassland | MG8 Crested Dog s-tail-Marsh Marigold grassland |

Narrow margins of tall herb vegetation associated with the field margins and boundary hedgerows are composed of locally abundant Common Nettle, Cleavers, Rough Meadow-grass and False Oat-grass. This vegetation is the OV24 Common Nettle-Cleavers open community and the MG1 False Oat-grass grassland of the NVC.

**Hedgerows**

Nineteen hedgerows (labelled H1 to H19 on Figure 7.2) border the site field margins. An additional 17 hedgerows are present at the boundaries of Fields A to E (labelled Ha to Hq on Figure 7.2). The hedgerows are characteristic of the W21 Hawthorn – Ivy scrub community of the NVC, with small areas of the W22 Blackthorn – Bramble scrub.

All hedgerows were assessed to determine whether they are 'important' in accord with *The Hedgerows Regulations 1997*. The raw data are appended at Appendix 7.1. A summary of the hedgerow survey and assessment is presented at Table 7.10.

**Table 7.10 Hedgerow NVC Community and Importance[1]**

| Hedgerow Ref. | NVC Communities | Important1 | Hedgerow Ref. | NVC Communities | Important1 |
|---|---|---|---|---|---|
| H1 | W21[2], W22[3] | Yes | H19 | W21 | Yes |
| H2 | W21 | No | Ha | W21 | Yes |
| H3 | W21 W22 | No | Hb | W21 | No |
| H4 | W21 | Yes | Hc | W21 | No |
| H5 | W21 | Yes | Hd | W21 | No |
| H6 | W21 | No | He | W21 | Yes |
| H7 | W21 | No | Hf | W21 | No |
| H8 | W21 | Yes | Hg | W21, W22 | No |
| H9 | W21 | No | Hh | W21 | No |
| H10 | W21, W22 | No | Hi | W21, W22 | No |
| H11 | W21 | No | Hj | W21 W22 | Yes |
| H12 | W21 W22 | Yes | Hk | W21, W22 | Yes |
| H13 | W21 | Yes | Hl | W21 | No |
| H14 | W21 | No | Hm | W21 W22 | Yes |
| H15 | W21 | Yes | Hn | W21, W22 | Yes |
| H16 | W21 | No | Ho | W21, W22 | No |
| H17 | W21 | No | Hp | W21 | No |
| H18 | W21, W22 | No | Hq | W21 | No |

[1] In accordance with the Wildlife and Landscape criteria of *The Hedgerows Regulations 1997*
[2]W21 Hawthorn – Ivy underscrub community of the NVC
[3]W22 Blackthorn – Bramble underscrub community of the NVC

In summary, eight of the nineteen hedgerows within the main development site and six hedgerows associated with the potential road/junction improvement works meet the criteria to qualify as 'important' in accordance with *The Hedgerows Regulations*.

**Scattered Trees**

The site supports a large number of semi-mature and mature broadleaf trees. Most of the trees are associated with field boundary hedgerows. Mature trees at the southern end of Field 10 line the route of a former Roman road

The species composition, frequency and relative age of the trees is presented in Table 7.11

**Table 7.11 Tree Species Composition, Relative Age and Frequency**

| Species | | Age and Frequency | | |
|---|---|---|---|---|
| **Scientific Name** | **Common Name** | **Young** | **Semi-mature** | **Mature** |
| Acer campestre | Field Maple | - | - | O |
| Acer pseudoplatanus | Sycamore | - | O | F |
| Alnus glutinosa | Alder | - | O | F |
| Fraxinus excelsior | Ash | F | A | A |
| Ilex aquifolium | Holly | R | R | - |
| Quercus robur | Pedunculate Oak | - | F | A |
| Salix sp. | Willow species | - | R | - |

**Key to DAFOR:** D = Dominant, A = Abundant, F = Frequent, O = Occasional & R = Rare

Table 7.11 shows that the highest proportion of trees within the site are mature and semi-mature Ash, followed by mature Pedunculate Oak.

**Wooded Copses**

At the northern end of Field E is a small wooded copse composed of abundant mature Sycamore trees with local Beech. The grassland beneath the trees is grazed and there is no understorey (i.e. shrub layer). The field layer vegetation (grass and other herb vegetation) is of a similar species composition to the grasslands of the wider fields of improved pasture and comprises abundant Meadow Foxtail, Perennial Rye-grass, Clustered Dock with frequent Meadow Buttercup and locally frequent stands of Lesser Celandine, Cow Parsley and Common Nettle. No woodland herbs are present beneath the trees in the copse but woodland herbs such as Primrose, Dog's Mercury, Arum Lily and non-native Bluebell are present on the margins associated with Hedgerow Hj.

At the southern end of Field B is a similar wooded copse composed of abundant mature Beech trees with occasional Ash. There is no shrub understorey and the field layer is accessible to grazing livestock and contains Meadow Foxtail, Perennial Rye-grass, Cow Parsley, Lesser Celandine, Cleavers and Creeping Buttercup.

**Ditches and Pendleton Brook**

Drainage ditches are present on the margins of some of the fields of agricultural pasture. All ditches and the section of Pendleton Brook adjacent to the site are annotated on Figure 7.2 and described in Appendix 7.2.

As annotated on Figure 7.2 Ditch 1 bisects Fields 10 and 11 and flows in a southerly direction towards Pendleton Brook. The ditch has a seasonal flow and the bed was dry during the bird survey of the 28 March 2011. The ditch channel is shaded by locally frequent mature Ash trees and Pedunculate Oak and constant shrubs including locally abundant Hawthorn, Hazel, Blackthorn and Holly. A full species list is appended at Table 7.1.5 at Appendix 7.1 and Ditch 1 is described at Table 7.2.1 at Appendix 7.2.

Ditch 1 is colonised by a mosaic of NVC communities including W21 Hawthorn-Ivy scrub, W22 Blackthorn – Bramble, W24 Bramble – Yorkshire-fog and the OV24 Common Nettle – Cleavers tall-herb community of open habitats.

Pendleton Brook (referred to as Ditch 2) flows adjacent to the south-western boundary of Field 10. The brook, which is described in Table 7.2.2 at Appendix 7.2, flows in a westerly direction. The vegetation surrounding the brook which lies adjacent to the south of Fields 11-13 is broadleaf woodland which contains mature Ash, Sycamore and Pedunculate Oak trees.

Pendleton Brook and its tributaries are currently of Moderate Ecological Status as defined by the Water Framework Directive. This status is evident by the detection of fish and aquatic invertebrate species associated with 'clean' water conditions such as Bullhead and Caddis-fly larvae respectively (refer to Appendix 7.2).

Ditch 3 is outside the boundary of the site at the eastern boundary of fields A, B and D. It has been described as three sections (a, b and c), due to it being culverted beneath Pendle Road and the A59 (refer to Tables 7.2.3 to 7.2.5 at Appendix 7.2).

Ditch 4 is outside the boundary of the site at the northern boundary of Field E and adjacent to Hedgerow Hm. It is described in Table 7.2.6 at Appendix 7.2. The ditch flows in an easterly direction.

**Buildings**

All buildings at Higher Standen Farm and the field barns are described in Appendix 7.5.

### 7.4.4 Habitats Immediately Adjacent to the Site

**Woodland Associated with Standen Hall**

Standen Hall which is located to the south of the site is surrounded by mature broadleaf woodland. The canopy is characterised by constant and frequent Beech, Ash and Sycamore. The shrub understorey is composed of locally frequent Rhododendron, Holly, Elder and young Beech and Ash saplings.

The field layer contains an abundance of woodland herbs comprising constant and frequent Common Nettle, Wood Avens, locally frequent Ivy, Garlic Mustard, Dog's Mercury, non-native Bluebell, Creeping Buttercup and Herb-Robert, with very local Creeping Jenny, Remote Sedge and Common Figwort

The woodland is separated from the agricultural fields by high stone walls and stock-proof fencing. Between the commencement of the ecological surveys in spring 2011 and January 2012 the woodland was extended by the planting of a wide belt of native broadleaf trees at the southern end of Field 10.

### 7.4.5 Evaluation of Flora

The entire site contains seven broad habitat types as detailed in Table 7.12, below and Figure 7.2

**Table 7.12 Approximate Areas of Broad Habitat Types within the Site**

| Habitat Type | Whole Site (approx. $m^2$) | Percentage of Total Area |
|---|---|---|
| Improved grassland | 641968 | 90 66% |
| Semi-improved grassland | 31450 | 4 44% |
| Calcareous grassland | 100 | 0 01% |
| Marshy grassland | 3171 | 0 45% |
| Hedgerows (measured as a linear area and multiplied by 2 metres to account for width) | 12526 | 1 77% |
| Wooded copses | 4915 | 0 69% |
| Ditch 1 and associated scrub | 5451 | 0 77% |
| Buildings | 8600 | 1 21% |
| **TOTAL AREA** | **708181** | **100%** |

The intensively managed agriculturally improved grassland and associated tall-herb marginal vegetation that account for the majority (91%) of the whole site are neither species-rich nor of substantive ecological value in terms of their plant species composition The improved grasslands are typical of habitats that have received agricultural improvement over a long period. The improved grasslands are of negligible nature conservation value and are therefore scoped-out of the detailed assessment

Similarly, although of greater species diversity, the semi-improved grassland in Field 10 is not of substantive nature conservation value and the species indicative of a more species-rich sward such as Quaking-grass, Wild Strawberry, Fairy Flax and Rough Hawkbit are of very local or rare frequency and present at <1% cover. The gradient of the land at the south-western end of Field 10 and the undevelopable buffer to be applied along Pendleton Brook will protect a high proportion of the semi-improved grassland from adverse effects The semi-improved grasslands are of low nature conservation value and are therefore scoped-out of the detailed assessment

The small (approx 100 $m^2$) area of calcareous grassland on the steeply sloping land adjacent to Pendleton Brook is too small an area to be representative of the Lowland Calcareous grassland Habitat of Principal Importance. However, in the context of the surrounding low value improved grasslands it is concluded that the calcareous grassland is of Local Value only Guidance in relation to the conservation of an undeveloped buffer along the Brook corridor is detailed on Figure 7.3 and will encompass the area of calcareous grassland. The development proposals provide a significant opportunity to secure appropriate and favourable management at the retained grassland which will substantially increase its species-richness and enhance its biodiversity and nature conservation value Further information is provided in Section 7.7.

The small (approximately 0.3 hectare) area of marshy grassland along the northern edge of Field E is of Local Value in the context of the species diversity present in the context of the surrounding improved grassland habitats. This habitat is outside the area of land to be affected by the development as the whole of Field E has now been removed from the site area

The Habitat of Principal Importance status and wildlife corridor function of the hedgerows and tree lines within the Site are evident from the surveys. Of particular ecological value are

Hedgerows H1, H4, H5, H8, H12, H13, H15, H19, He, Hj, Hk, Hm and Hn which qualify as 'important' in accordance with *The Hedgerows Regulations* criteria. The hedgerows and tree lines (including the ditch corridor network, particularly Ditch 1), are considered to be of County Value.

No protected species or significant fauna or flora were detected along the ditch corridors (excluding Pendleton Brook), with the exception of foraging bats. The ditch corridors are considered to be of Local Value owing to their secondary value as minor wildlife corridors and habitats for use by breeding birds.

Although Pendleton Brook is outside the site boundary and will not be directly affected by the development proposals, there is potential for effects on this receptor and its associated fauna from site run-off or discharges. The Pendleton Brook corridor is considered to be of County Value owing to its wildlife corridor function and likely qualification as a Habitat of Principal Importance and a Lancashire BAP habitat.

The Valued Ecological Receptors in terms of vegetation and habitats are evaluated above. In conclusion, there are no semi-natural habitats at the site, the limited assemblage of species-poor NVC communities at the site is of widespread occurrence and are characteristic of the habitats present and intensive agricultural management of the site. No rare or locally uncommon plant species were detected at the site.

The stand of Japanese Knotweed, an invasive species listed on Schedule 9 of the *Wildlife and Countryside Act 1981,* at the extreme southern boundary of the site adjacent to Pendleton Brook is of Negative Value.

**Summary**
A summarised list of all Valued Ecological Receptors is presented at Table 7.7.

### 7.4.6 Detailed Survey Methodologies: Fauna

**Great Crested Newt**
There are no ponds within the site boundary.

The survey approach and results of the Great Crested Newt Habitat Suitability Index assessment are presented at Appendix 7.3.

A full licensed Great Crested Newt survey was carried out at a single pond (Pond 1) located 50 m to the south of the site boundary. The survey methodology and results are appended at Appendix 7.3.

**Badger**
A thorough search for Badger activity was carried out. The survey area covered the land within the red line boundary including the land around the new potential junction and extended to the accessible land within a radius of 50 m from the site boundary, where access was possible. Private gardens were excluded from the survey.

The search included detailed examination of the site for the following signs of Badger activity:

- 'D' shaped sett entrances at least 25 cm wide, wider than they are high and with large spoil mounds;

- Discarded bedding at sett entrances (this includes grass and leaves);
- Scratching posts on shrubs and trees close to a sett entrance;
- The presence of Badger hairs which are coarse, up to 100 mm long with a long black section and a white tip;
- Dung pit latrines and footprints; and
- Trampled pathways through vegetation and beneath fences.

**Water Vole**

Water Vole surveys were carried out at Ditch 1 which runs through the north-western quarter of the site, the section of Pendleton Brook adjacent to a section of the south-eastern boundary of the site and Ditches D3 to D4 (see Figure 7.2).

Both banks of the brook and ditches were inspected for evidence of the presence of Water Vole, in accord with the methodologies described in the *Water Vole Conservation Handbook* (Strachan and Moorhouse 2006). The surveys involved wading upstream and searching the banks of the brook and ditch for burrows, latrines, feeding stations, above ground nests, chewed lengths of vegetation, runs and footprints

The ditches and the brook were assessed for their habitat suitability for use by Water Vole.

**Otter**

Searches were carried out for evidence of Otter activity (holts, potential holt sites, spraints, fish remains and footprints) along Pendleton Brook and the single ditch. All habitats within the Site were assessed for their potential to provide suitable 'lying-up' habitat for sheltering Otter. The habitats within the Site were also assessed for their potential to provide connectivity between two areas of habitat which could potentially be used by Otter

As Otter can typically occupy a territory of up to 25 km along a watercourse, the survey covered a wide area and did not merely concentrate on the site. The survey included the section of Pendleton Brook adjacent to the site, the upstream section (500 m beyond (upstream) of the site boundary) and over 50 m downstream of the site boundary.

The methodologies as described in *Proposals for future monitoring of British mammals* (JNCC 1998) were followed and searches were carried out for field signs including footprints, fish remains and Otter spraints on prominent places including large rocks, tree stumps, grassy mounds and grass tufts. The weather conditions for at least 72 hours prior to the survey dates had been dry. The preceding dry weather will have ensured maximum detection of evidence of the presence of Otter as rain will not have washed away any evidence of activity including spraints.

As no surveys were undertaken which would have caused potential disturbance to an Otter or Otter habitat, no specific survey licences were required.

**Breeding Birds**

All birds encountered either by sight or by call and song identification were recorded and all habitats were assessed for their value to support breeding birds

Two breeding bird surveys were conducted in accordance with the guidance and principles of the Breeding Bird Survey (BBS) methodology devised by the British Trust for Ornithology (Marchant 1983).

The cattle shed and farm buildings were searched for evidence of use by breeding and roosting birds including Barn Owl, Swallow, Starling, Kestrel etc.

**Licensed Bat Surveys**

Licensed bat surveys were carried out at all buildings and trees. The surveys were carried out in accordance with the guidance detailed in *Bat Surveys – Good Practice Guidelines* (Hundt 2012) The methodologies applied are described in Appendix 7.5.

The scope of licensed bat survey comprised (with reference to Figure 7.2):

- A daylight inspection of the interior and exterior of Buildings 1 and 2;
- A daylight inspection of the interior and exterior of the buildings at Higher Standen Farm;
- Nocturnal emergence and dawn re-entry surveys at Building 2;
- Nocturnal emergence survey at the buildings at Higher Standen Farm;
- A bat activity transect survey;
- An inspection for hibernating bats at Buildings 1 and 2 in January 2012; and
- A Stage 1 inspection and assessment of the bat roost opportunities at all trees

**Reptiles**

An assessment of potential habitat value was made in relation to reptiles, with consideration of:

- Connectivity, for example the presence or absence of wildlife corridors connecting with the site; and
- Suitability of the site for the support of sheltering, basking, breeding and hibernating reptiles

### 7.4.7 Baseline Conditions: Fauna

**Great Crested Newt (and Other Amphibians)**

The results of the Habitat Suitability Index assessment full Great Crested Newt survey at Pond 1 are presented at Appendix 7.3.

No Great Crested Newts were detected so it is reasonable to conclude that Great Crested Newts and their habitats will not be affected by the proposals.

The absence of Great Crested Newt and the presence of only a small population of Smooth Newt is attributed to the presence of a large number of small and coarse fish. Fish are the principal predators of newt larvae and eggs and can prevent successful breeding by Great Crested Newts. Therefore Great Crested Newt populations are usually absent from ponds containing large numbers of fish

A breeding population of Common Toad, a Species of Principal Importance, was detected at Pond 1. Common Toad is more tolerant of the effects of fish predation owing to the large quantity of spawn laid by adult Toads

**Badger**

No evidence of Badger activity was detected within the site or within a 50 m radius from the site boundaries. Badgers and their habitats will not be directly affected by the proposals

**Water Vole**

No evidence of Water Vole was detected at Ditches 1, 3, 4 or 5. The banks of the ditches are composed of stone which can inhibit burrowing Water Voles.

No evidence of Water Vole activity was detected along the surveyed banks of Pendleton Brook adjacent to the site.

**Otter**

No Otter spraints, holts or potential holt sites were detected along the surveyed section of Pendleton Brook.

The habitats within the site offer poor opportunities for Otter. With the exception of the tree-lined Ditch 1 corridor which is connected to Pendleton Brook, there is no favourable lying up habitat for Otter.

**Breeding Birds**

Bird species detected within the site during the two breeding bird surveys are listed at Appendix 7.4.

The surveys detected 24 species of bird within the site and associated with the land immediately adjacent to the site boundary during the survey on 28 March 2011 and 32 species on 02 June 2011. A total of 35 species were detected over the course of both surveys. Most detected birds are passerine (perching) species associated with the field boundary hedgerows and trees.

Seven Species of Principal Importance were detected. Six of these (Dunnock, House Sparrow, Bullfinch, Song Thrush, Curlew and Lapwing) were recorded in territorial song and are likely to have bred at the site (or very close by). The seventh species, Starling, was detected feeding in the fields and is more likely to have bred at neighbouring buildings.

With regard to farmland birds, particularly ground nesting species such as Curlew and Lapwing, only one (pair) of Curlew was detected in Field 9 on 02 June and two (pairs) of Lapwing were detected in Field 5 in June 2011. These numbers represent very low densities (Lapwing 0.35 pairs/hectare based on the size of Field 5) of farmland birds after allowing for the size of the site.

Building 2 is infested with nesting Feral Pigeon.

A Little Owl was detected at a tree in Field 10; the trees with large cavities are suitable for use by breeding Little Owl.

A nesting Dipper was recorded near the weir at Pendleton Brook to the south and west of the Site during the Water Vole survey.

No evidence of the current use of any of the buildings by nesting or roosting Barn Owl was detected. Two very old Barn Owl pellets were detected at Building G at Higher Standen Farm. The short grazed grassland of the agriculturally improved grassland at the site does not provide significant opportunities for hunting Barn Owls.

Buildings at Higher Standen Farm are used by nesting Swallow and active nests were detected in May 2012

**Licensed Bat Surveys**

The full results of the licensed bat surveys are presented at Appendix 7.5. In summary:

- Despite suitable cracks and crevices in the stone elevation walls and slate roof at Building 2 no evidence of roosting or hibernating bats was detected;
- Building 1 is unsuitable for use by roosting bats owing to its exposed and dilapidated condition;
- The bat activity transect survey detected low levels of Common Pipistrelle activity associated with the field boundary hedgerows and mature trees;
- Occasional contacts with Soprano Pipistrelle bat calls were detected;
- A single Daubenton's Bat was detected foraging over Pendleton Brook (outside the site boundary);
- The brick built cattle sheds at Higher Standen Farm have pitched slate-covered roofs. Gaps beneath the ridge copings and roof slates are suitable for bat access into a crevice but at most buildings the bitumen underfelt is in a poor condition with frequent holes which create draughty and unfavourable conditions for use by roosting bats. No bats or bat droppings were detected during the daylight inspection in May 2012. A single Common Pipistrelle summer roost was detected beneath a ridge coping at Building G in July 2012 (refer to Appendix 7.5);
- The buildings associated with Higher Standen Farm such as the main farmhouse and cottages (all outside the site boundary) offer more favourable opportunities for use by roosting bats;
- 38 trees have been assessed to have definite bat roost suitability (Category 1) (although no evidence of a roost was detected).

**Reptiles**

No reptiles were detected during any of the site visits. The habitats of the site are unfavourable for use by reptiles owing to the intensively grazed grassland, limited physiognomy and no connectivity to favourable habitats which may support reptile populations.

There are no historic records of reptiles within the local area. The presence of reptiles at the Site is reasonably discounted.

**Invertebrates**

A list of bee and butterfly species detected at the site is presented at Table 7.4.3 in Appendix 7.4.

Five common butterfly species were detected at the site during the surveys and six bumblebee species All species identified were present in low numbers and were associated with the hedgerows and woodland and gardens which border the site

All detected species are widespread in the UK with the exception of the Tree Bumblebee (*Bombus hypnorum*) which is a recent coloniser (circa 2001) to Britain and, whilst uncommon in the local area, is increasing its range throughout Britain

The lack of semi-natural habitats, species-rich grassland and the abundance of intensively managed habitats within the site limits habitat suitability for a diversity and abundance of invertebrate species.

**Other Species**

A single Brown Hare, a Species of Principal Importance, was detected in Fields 10 and 11 on 28 March 2011 and in Field 9 in January 2012. Three Brown Hares were recorded in Field 9 in May 2012. Three Brown Hares were detected in a field to the south of Pendleton Brook in September 2011.

Three Bullhead fish, a Species of Principal Importance, were detected beneath stones in Pendleton Brook on 02 June 2011.

### 7.4.8 Evaluation of Fauna

**Breeding Birds**

No bird species listed on Schedule 1 of the *Wildlife and Countryside Act 1981* have been detected at the site.

Seven bird species with UK Biodiversity Action Plan (BAP) Priority Species/ Species of Principal Importance status have been detected at the Site. Six of these species (Dunnock, Song Thrush, House Sparrow, Curlew, Bullfinch and Lapwing) breed at the site

The site contains no favourable habitats and is not managed in an appropriate way to attract an abundance and/or high diversity of farmland birds. The presence of a low diversity and abundance of Species of Principal Importance and Lancashire BAP species is of Local Value. The presence of other breeding birds is of no greater than Local Value.

To conserve the bird Species of Principal Importance (and other bird species) interest at the site it is essential that the suitable areas of established habitats are retained within the developed site with good connectivity to habitats in the local area. This is discussed further in Section 7.7.

**Bat Species**

Following the comprehensive surveys no significant bat roosts (i.e. a maternity roost, hibernation roost, a roost used by a rare species or a large number of bats) have been detected at the site.

A single bat roost used by a common bat species (Common Pipistrelle) has been detected. The roost is assessed to be of Local Value.

The surveys have not identified use of the habitats within the site boundary by a significant number or diversity of foraging bats (although it is accepted that the properties, woodland

margins and Pendleton Brook corridor outside the site boundary are favourable habitats and attract foraging and likely roosting bats).

The presence of 38 trees assessed to be of definite suitability for use by roosting bats is of Local Value.

The surveys have demonstrated that two species of Pipistrelle bat, including Soprano Pipistrelle a UK BAP Priority Species/ Species of Principal Importance, forage over the Site and Daubenton's Bat are associated with Pendleton Brook, outside the site. Bats are listed on the Lancashire Biodiversity Action Plan (BAP)

Overall, the bat species are of Local Value in accordance with Table 7.4.

**Other Species of Principal Importance**

The use of the habitats at the southern end of the site by a low density of Brown Hare, a Species of Principal Importance and Lancashire BAP species, is of Local Value when considered in context with the availability and suitability of the surrounding habitats for use by Brown Hare.

Common Toad, a Species of Principal Importance, breeds at Pond 1, an off-site pond. The terrestrial habitats around Pond 1 are of greater suitability for use by sheltering toad than the grazed improved grasslands within the site. The presence of Common Toad is of Site Value only.

The presence of Bullhead, a Species of Principal Importance, in Pendleton Brook is of Local Value and will be assessed in connection with the assessment of effects on Pendleton Brook.

**Other Wildlife**

The detected invertebrate species are of negligible nature conservation value.

**Summary**

A summarised list of all Valued Ecological Receptors is presented at Table 7 7

### 7.4.9 Predicted Baseline

Higher Standen Farm and the associated farmland within the site boundary have been farmed by the same family since the mid-1800s.

Based on the assumption that the land will remain in agricultural management for the foreseeable future it is concluded that in the short-term (0 to 10 years) and medium-term (10 to 30 years) the ecological value of the site will not change significantly.

Based on the assumption that the conservation value of the habitats and species of fauna detected remains the same as the current status, the list of Valued Ecological Receptors is unlikely to change over the short to medium term.

None of the habitats within or adjacent to the site has significant *potential value* to be easily converted or enhanced within the remit of the current agricultural management. None of the site is managed under a Stewardship scheme (or similar) to achieve environmental benefits.

Of importance in relation to planning policy, none of the habitats present is suitable or capable of being easily (or quickly) restored or enhanced to create new Priority Habitats. However the enhancement of habitats to achieve a net gain in biodiversity is encouraged in the *National*

*Planning Policy Framework* and, where feasible, recommendations for enhancement are made in Section 7.7

This assessment will be applicable and valid over the short to medium terms

No significant bat roosts have been detected at the buildings within the site boundary to date. The poor condition of the bitumen underfelt of many of the cattle shed buildings at Higher Standen Farm limit their value for the attraction of large bat colonies and use by a maternity roost is considered unlikely. The value of the buildings for use by roosting bats will not improve in the short to medium term.

No evidence of Otter was detected along Pendleton Brook in 2011. The habitats are favourable for this species and it is suggested that in future years Otter may colonise and/or pass along Pendleton Brook. As discussed in Section 7 6 the impact assessment and the Diagrammatic Masterplan have taken into account Pendleton Brook and its associated fauna and this includes the potential for future colonisation by Otter.

## 7.5 Proposed Mitigation

### 7.5.1 Assumptions

The assessment of significant impacts of the development at the land at Standen Estates is based on the illustrative masterplan prepared by IBI Taylor Young (Figure 2.1) which was prepared with ecological input from an early stage.

The assessment presented in Section 7.6 and in the EcIA at Table 7.14 makes the following assumptions:

- Owing to the size of the site the construction will be carried out in a series of phases over a protracted time period arranged in a logical and practical manner across the site;
- Only the margins of Fields A to D will be directly affected owing to the proposed road junction improvement works; the remainder of the fields will be outside the construction zone where they will be available for habitat creation and habitat enhancement;
- A minimum 8 m wide buffer from the edge of the water at Pendleton Brook will be demarcated as a protective undevelopable zone. No buildings or roads will be constructed within at least 8 m of the water's edge;
- Owing to the existing topography of the land, the presence of existing riparian woodland to be retained along the majority of the northern bank of Pendleton Brook, and the need to protect the wildlife corridor, a protective biodiversity zone up to 50 m wide will be demarcated along the watercourse. This protective zone will ensure the protection of the 100 $m^2$ area of calcareous grassland. Land in this zone will be available for habitat enhancement and creation as discussed in Section 7.7 and illustrated on the masterplan;

- The protective zone along Pendleton Brook will ensure that the stand of Japanese Knotweed lies remains outside the construction zone (although eradication is recommended for the purposes of ecological enhancement);
- Where possible, hedgerows and tree lines will be retained and incorporated into the site layout with an appropriate buffer and tree protection zone;
- Severance of hedgerows will be minimised (based on the current illustrative masterplan (Figure 2.1) only ten sections of hedgerow will be severed/removed by access roads);
- Where a ditch crossing is necessary (it is likely that the ditch corridors will only need to be traversed at one location on Ditch 1) the crossing will be limited to a single crossing designed to be as narrow as possible and of a design to encourage the passage of wildlife beneath the crossing.

Some of these specifications were identified by the relevant consultees during the pre-application enquiries.

Care has been taken to ensure that the assumptions listed above are broad categories and principles only as it is accepted that in order for this EcIA to assess accurately the significance of effects, commitment from future developers through design informed by experts and RVBC (conditions on planning permissions) to the specific mitigation measures is necessary. More specific mitigation and compensatory measures to address any significant effects identified beyond the assumptions listed above are described in Section 7.5.2 and Appendix 7.5.

In order to comply with the IEEM guidelines and to provide a transparent assessment the EcIA summary table (refer to Table 7.14) presents an assessment of the magnitude and significance of the proposals in the Valued Ecological Receptor both before mitigation and after mitigation.

### 7.5.2 Measures Incorporated to Mitigate Potential Significant Effects

The mitigation measures described below assume the measures described at Section 7.5.1 have been implemented and applied throughout the design of the site.

**Additional Measures to be Applied During the Detailed Design of the Site Proposals**

In addition to the assumptions detailed at Section 7.5.1 the impact assessment has identified the need to apply the following mitigation measures to avoid a significant effect on the Valued Ecological Receptors:

- Site the road crossing at Ditch 1 as far north along the corridor and away from Pendleton Brook as possible to minimise fragmentation effects and conserve as long a section of ditch between the brook and the crossing as possible;
- Design and construction of a clear span crossing over Ditch 1 and avoidance of culverting to minimise fragmentation effects and encourage the continued passage of wildlife beneath the crossing;
- Avoid positioning the road network through hedgerow sections with mature and semi-mature trees. Where possible, select existing defunct sections or gaps in hedgerows to Site the roads and footpaths;

- Sympathetic use and design of a lighting scheme, see below.

**Protection of Existing Vegetation and Use of Demarcation Fencing**

As detailed on Figure 7.3 (Ecological Constraints Plan) it is recommended that all semi-mature and mature trees and hedgerows are conserved and incorporated into the site layout with an appropriate buffer.

It is recognised that some minor hedgerow and tree removal may be necessary to install roads, visibility splays and for health and safety reasons. Mitigation measures to be applied to protect fauna during the removal of vegetation are described below.

Guidance in relation to appropriate planting to compensate for the removal of vegetation is described in Section 7.7.

Prior to the commencement of any site clearance, demolition or construction activities the areas of vegetation to be retained and protected will be surrounded by temporary demarcation fencing A Tree Protection Plan will be prepared.

The temporary fencing will be installed in accordance with BS5837:2005 *Trees in Relation to Construction* and will extend outside the canopy of any trees to avoid damage to any trees or root protection zones from passing machinery. The fencing will be maintained throughout the construction period and can be removed once all heavy machinery has been removed from the Site. All contractors will be informed of the purpose of the fencing.

**Protection of Breeding Birds**

All wild birds are protected under the *Wildlife and Countryside Act 1981* while they are breeding. It is mandatory that any trees, shrubs, Bramble scrub, buildings or other suitable breeding bird habitat which are to be removed as part of the proposals are only removed outside the bird breeding season, unless it can be adequately demonstrated by an ecologist that no breeding birds, active nests, eggs or fledglings are present in the area to be cleared. The bird breeding season typically extends from March to August inclusive.

**Protection of Bats and Their Habitats**

The measures described below and in Appendix 7.5 will be applied to protect bats and their habitats.

*Buildings*

Building 1

There are no ecological restrictions (subject to the presence of nesting birds, see above) to the demolition of Building 1.

Building 2

No evidence of a bat roost has been detected at Building 2. If this building is scheduled for removal/restoration it is mandatory that the works are scheduled for September to October to avoid the bird breeding season and the bat hibernation season (no evidence of use by hibernating bats has been recorded but stone buildings with crevices may be used).

Higher Standen Farm

Buildings A, B, D, F and J at Higher Standen Farm have negligible opportunities for use by roosting bats and, subject to the presence of nesting birds; there are no ecological constraints on the removal of or works at these buildings.

Buildings C, E, G, H and I have a similar construction. Opportunities (albeit limited) for bat access beneath the ridge copings and between the slates and underfelt where the felt is in a satisfactory condition are present and Building G contains a single Common Pipistrelle roost.

The measures described at Appendix 7.5 will be applied prior to and during works at Higher Standen Farm to ensure compliance with wildlife legislation, planning policy and best practice.

Importantly, it is concluded, appropriate measures to mitigate satisfactorily for any adverse effects on the roost, including the removal of the roost, are entirely feasible and are achievable within the remit of the redevelopment of the farmyard. The licensing requirements in accordance with Regulation 53 of *The Conservation of Habitats and Species Regulations 2010* are discussed in Appendix 7.5. Works at the farmyard and buildings will not adversely affect the features that attract bats to the area such as the woodland margins and bats will continue to be attracted to the area. Opportunities for roosting bats can be easily accommodated within the converted buildings and/or new buildings to be constructed at the site, refer to Appendix 7.5.

It is recommended that features for use by roosting bats are designed into the redeveloped farm buildings in any case to enhance the opportunities for roosting bats and achieve a net biodiversity gain for European protected species.

**Trees**

The measures described at Appendix 7.5 will be applied prior to and during any arboricultural works to ensure compliance with wildlife legislation, planning policy and best practice

Importantly, it is concluded, if a bat roost is detected at the trees in the future, appropriate measures to mitigate satisfactorily for any adverse effects on a roost in accordance with current Natural England guidance are entirely feasible within the remit of the development proposals.

**Lighting Scheme**

Any lighting to be used at the site during construction will be directional and screened where possible.

The lighting scheme to be installed at the site must be arranged to prevent the artificial illumination of the boundary vegetation and areas of habitat creation. Light overspill may deter use of the habitats and the local area by wildlife such as foraging bats and birds.

If lighting is necessary for health and safety reasons, prevention of light overspill may involve the use of low level bollard lighting, screening with the use of landscape planting or the use of cowls or hoods over lamps to minimise upward light spill.

**Brown Hare**

Removal of areas of dense vegetation and hedgerows will avoid the Brown Hare breeding season (typically February to September). Removal of dense vegetation during this period will be preceded by an inspection for Brown Hare forms and leverets

**Pollution Prevention Guidelines (PPG)**
The minimum 8 m (up to 50 m) wide protective buffer to be demarcated along Pendleton Brook and construction operations will be maintained.

The Brook and the Ditch Corridors will be additionally protected during the construction and operational phase through the implementation of best practice measures that will be discussed and agreed with the Environment Agency. In particular, the following Pollution Prevention Guidance (PPG) will be adhered to:

PPG1: *General Guide to the Prevention of Pollution*

PPG5: *Works in, Near or Liable to Affect Watercourses*

PPG6: *Working at Demolition and Construction Sites*

PPG7: *Refuelling Facilities*.

**Japanese Knotweed Eradication Management Plan**
A Japanese Knotweed Eradication Management Plan will be prepared and implemented to treat the single stand of Japanese Knotweed in accordance with Environment Agency guidance.

**Mechanism for Ensuring Implementation/Construction Environmental Management Plan (EMP)**
An Environmental Management Plan (EMP) or similar document will be prepared prior to the commencement of works. The EMP will encompass the specification of the following:

- Protection of breeding birds;
- Tree and hedgerow fencing and protection in accordance with BS5837:2005;
- Location and type of protective demarcation fencing along Pendleton Brook (and the calcareous grassland) and other important habitat such as Ditch 1;
- Mandatory and precautionary measures to protect bats and their habitats including licensing requirements;
- Construction lighting scheme;
- Pollution Prevention Guidelines (PPG) and protocol including surface water monitoring along the Ditches and Pendleton Brook;
- Eradication Management Plan for Japanese Knotweed; and,
- General construction best practice measures to minimise dust, noise, muck on roads etc

### 7.5.3 Summary of Mitigation Measures

Table 7.13 lists the receptors that could be affected by the proposed development, the potential environmental changes that could affect these receptors, and the consequent results of these changes. This table also summarises the mitigation measures that have been incorporated into the development proposals/master-planning process in order to avoid, reduce or compensate for

potential adverse effects. The likely effectiveness of these mitigation measures is defined as follows:

- High certainty of effectiveness: The measure can be expected to be effective in avoiding or reducing the potential effect, and so can be relied on in assessment;
- Medium certainty of effectiveness: The measure can reasonably be expected to be effective based on the available information (and so can be relied on in assessment), although additional data may require review of the measures;
- Uncertainty of effectiveness: The measure may be beneficial but cannot necessarily be relied on and therefore should not therefore influence the assessment of the effect. However, the measure has been incorporated into the design of the scheme on the basis that, despite its potential ineffectiveness, it is worthwhile.

**Table 7.13 Summary of Proposed Mitigation Measures**

| Receptor | Change(s) and Potential Effects | Incorporated Mitigation | Likely Effectiveness |
|---|---|---|---|
| Pendleton Brook and associated fauna | Degradation of habitats as a result of direct habitat loss, pollution and deterioration of water quality | Demarcation of a minimum 8 metres wide buffer between water's edge and any construction activities (in most areas a buffer wider than 8 metres will be retained)<br><br>Best practice construction methods stipulated in Environmental Management Plan (EMP) and applied<br><br>Adherence to relevant Pollution Prevention Guidelines (PPG) and monitoring of surface water quality throughout works and speciation of mechanism for remedial actions as required. | High |
| Hedgerows and treelines | Minor (estimated 8%) habitat loss and fragmentation | Protection and conservation of hedgerows and tree lines during design and construction.<br><br>Avoidance of mature trees and selection of already defunct or gappy sections of hedgerows to create road crossings<br><br>Protect adjacent trees and shrubs with temporary fencing in accordance with BS5837:2005<br><br>Supplementary and compensatory planting of native trees and hedgerows over a greater area than that to be removed to compensate for loss | High |

**Table 7.13 (continued) Summary of Proposed Mitigation Measures**

| Receptor | Change(s) and Potential Effects | Incorporated Mitigation | Likely Effectiveness |
|---|---|---|---|
| Ditch corridors | Habitat loss and fragmentation to create road crossings | Restrict to only one crossing sited as far north and away from Pendleton Brook as possible<br><br>Use as narrow working width as possible.<br><br>Compensatory planting elsewhere along ditch corridor<br><br>Additional ditch/swale network to be created as part of SUDS<br><br>Design and implement a clear span crossing to permit passage of wildlife beneath | High |
| Calcareous grassland | Habitat loss and degradation | Demarcation of the protective buffer between water's edge and Pendleton Brook and any construction activities will protect area of calcareous grassland<br><br>Best practice construction methods stipulated in Environmental Management Plan (EMP) and applied | High |
| Marshy grassland | Habitat loss and degradation owing to alteration in hydrological regime | Avoid by demarcation of junction improvement working areas away from marshy grassland.<br><br>Best practice construction methods stipulated in Environmental Management Plan (EMP) and applied | High |
| Japanese Knotweed | Spread of rhizomes and colonisation | Treated and eradicated in accordance with current EA guidelines and best practice | High |
| Bats | Habitat loss and disturbance owing to removal of features and pruning<br><br>Demolition/conversion of Building G at Higher Standen Farm resulting in loss of a single bat roost<br><br>Deterrence of foraging bats owing to installation of unsympathetic lighting strategy | Adherence to guidance in Hundt (2012) regarding soft felling of trees and soft strip of buildings.<br><br>Avoidance of works at the sensitive time of year in the bat's seasonal calendar; in accordance with Natural England guidance<br><br>Updated licensed bat surveys prior to the commencement of works<br><br>Installation of roosting opportunities for long-term use by bats at trees, converted farm buildings and new properties.<br><br>Works at Building G in accordance with current Natural England licensing procedure.<br><br>Preparation and implementation of a lighting strategy prepared with input from an Ecologist | High |

Table 7.13 (continued) **Summary of Proposed Mitigation Measures**

| Receptor | Change(s) and Potential Effects | Incorporated Mitigation | Likely Effectiveness |
|---|---|---|---|
| Breeding Birds | Damage to bird nests and loss of habitat | Avoidance of site clearance in the bird breeding season. | High |
| Brown Hare | Loss of habitat and disturbance | Removal of areas of dense vegetation and hedgerows will avoid the Brown Hare breeding season (typically February to September). Removal of dense vegetation during this period will be preceded by an inspection for Brown Hare forms and leverets | High |

## 7.6 Assessment of Effects

### 7.6.1 Potential Effects and their Significance: Construction Phase

Refer to Table 7.14 for the completed EcIA.

**Pendleton Brook and associated Fauna**

Owing to the steep gradient of the land to the north of Pendleton Brook up to a 50 m wide protective buffer to be applied from the water's edge, no direct construction impacts on the integrity of Pendleton Brook and the conservation status of its associated fauna are likely. The proposals will not directly affect Pendleton Brook (other than by modifications of the existing ditch outfall for the proposed SuDS). No fragmentation or destruction of the riparian habitat will occur.

The buffer (and the application of an appropriate Environmental Management Plan (EMP) during construction) will also minimise the risk and severity of any accidental pollution incidents and sedimentation. Indirect effects on Pendleton Brook are extremely unlikely. No deterioration in water body status in accordance with the Water Framework Directive is likely. No significant effects on this receptor are therefore anticipated.

**Hedgerows and Tree-lines**

As outlined above the large field units and presence of fenced field boundaries (rather than hedgerows) in the central areas of the site will minimise the need to sever hedgerows and tree-lines to create road accesses to serve the development.

Based on the assumption that only ten sections of hedgerow may need to be traversed by roads and that the working areas will be 50 m wide it is concluded that the loss of only 8% of the total linear length of hedgerows and treelines will not significantly affect the integrity of this habitat. The potential impact is further minimised by the introduction of supplementary and compensatory planting of native hedgerows and wooded belts elsewhere in the site, as described in Section 7.7. The conservation of the hedgerows and treelines will avoid a significant effect on the habitat connectivity around and through the site.

**Ditch Corridors**

Based on the illustrative masterplan, only Ditch 1 will be traversed by a road crossing or directly affected by the proposals.

Ditch 1 will be fragmented as a result of the crossing and this is likely to affect adversely the integrity of the habitat and restrict movement of wildlife.

The significance of the habitat loss and fragmentation impacts can be reduced by siting the crossing at the northern end of Ditch 1, away from Pendleton Brook, to secure the conservation of a longer ditch section with connectivity to the Brook and by appropriate design of the crossing to minimise fragmentation effects, as described in Section 7.5.2.

**Calcareous Grassland**

The small area (100 $m^2$) of calcareous grassland is within the protective buffer zone along Pendleton Brook. No direct effect on the area of calcareous grassland during construction will occur.

**Marshy Grassland**

The marshy grassland at the northern boundary of Field E lies outside the site and construction zone and will not be directly affected by the proposals.

Indirect effects as a result of an alteration in the hydrological regime are unlikely as the marshy grassland is fed by a ditch channel which is not hydrologically connected to any ditches at the site.

**Japanese Knotweed**

The stand of Japanese Knotweed lies outside the construction zone. No direct negative effects during construction will occur.

Appropriate treatment/eradication of the knotweed during construction will result in a positive effect owing to the reduced risk of spread of this invasive species along Pendleton Brook in future years, as discussed in Section 7.5.2. Spread of knotweed would displace native flora and associated fauna due to shading and root competition for nutrients. Eradication of the knotweed will facilitate the conservation and natural spread of native flora and associated fauna, thereby conserving and enhancing native biodiversity, resulting in a positive effect.

**Bat Species**

Comprehensive surveys have identified a single common Pipistrelle roost at Building G and 38 trees to have definite suitability for use by roosting bats. Works at Building G and removal of these trees will have an adverse effect on bats which in the absence of mitigation and compensation is likely to be significant. The licensing requirements in accordance with Regulation 53 of *The Conservation of Habitats and Species Regulations 2010* are discussed in Appendix 7.5.

In the absence of mitigation (when taking into consideration the consideration status and not the legal status of the bat species detected) effects of the scheme on roosting bats are unlikely to be significant.

In the presence of the measures described at Appendix 7.5 the risk of a significant effect on roosting bats and their roosts is further decreased.

Best practice and compensatory measures to ensure there is no net loss of roost opportunity at the site (and in practice a likely increase of roost opportunity) can easily be achieved in conjunction with the development proposals.

Conservation of the hedgerows and tree lines and avoidance of the Pendleton Brook corridor will ensure there are no significant effects on foraging bats.

No significant effects on this receptor are therefore anticipated.

**Breeding Birds**

All breeding passerine birds detected at the site were associated with the field boundary hedgerows and trees. Conservation of the hedgerows and trees with an appropriate buffer, in accordance with the illustrative masterplan, will conserve habitats used by these species including the Species of Principal Importance (House Sparrow, Bullfinch, Song Thrush and Dunnock) None of the passerine bird species detected is specifically associated with farmland, for example Corn Bunting and Yellowhammer were not detected. All detected bird species are those regularly associated with residential areas.

Ground nesting farmland birds detected at the site, namely Curlew and Lapwing, both of which are Species of Principal Importance, were recorded in single field units at very low densities (0.2 pairs Curlew per hectare (1 pair) and 0 35 pairs Lapwing per hectare (2 pairs)). Winspear and Davies (RSPB 2005) states that Lapwing can nest at densities up to 6 pairs per hectare. The low density is attributed to the improved and grazed management the site receives and the relatively small field units (Lapwing are reported to typically select fields greater than 5 hectares in size).

The phased removal of the grassland used by low numbers/density of Curlew and Lapwing pairs as the development progresses is unlikely to have a significant effect on the conservation status of the species in the local area The fields surrounding the site offer similar and in most cases better quality opportunities for use by nesting farmland birds. The breeding pairs will be displaced to adjacent suitable habitats and will not be lost from the site locality.

The agricultural management of the grasslands is currently unfavourable for attracting high densities of farmland birds, as demonstrated by the breeding bird surveys. However, as described in Section 7.7 the development provides an opportunity to secure the long-term management of an area specifically for farmland birds including Curlew, Skylark and Lapwing. This proposal will satisfactorily off-set any minor adverse impact of the development on ground nesting birds and is likely to contribute to a net gain in opportunities for ground-nesting birds

**Brown Hare**

Brown Hares require a diverse mixture of agricultural land-use including arable crops for food in the spring, improved grassland in the summer and resting habitats in woodlands, hedgerows and shelterbelts (Game Conservancy Trust). The quality of the habitat available to Brown Hare at this site is dependant on the agricultural vegetation present at the time There is a large area of accessible habitat present in the wider area, particularly to the south of Pendleton Brook, for the support and dispersal of Brown Hare as confirmed during the surveys. The Brown Hare will be displaced to adjacent suitable habitats and will not be lost from the site locality Therefore development of the site is unlikely to result in a significant effect on the conservation status of Brown Hare in the local area.

### 7.6.2 Predicted Effects and their Significance: Operational Phase

The extent or magnitude of any effects during the operational, or occupation, phase is difficult to assess in the absence of a detailed site layout and proposals plan.

In the EcIA it has therefore been appropriate to make the following assumptions:

- The development will be designed and implemented in accordance with the principles of the illustrative masterplan as informed by the Ecological Constraints Plan (refer to Figure 7.3);
- Run-off from the developed site will be managed using a Sustainable Urban Drainage System (SuDS) to prevent significant changes to the water quality or hydrological regime of Pendleton Brook (see Chapter 6 and Appendix 6.1 for further information);
- All appropriate measures to minimise the risk of pollution events such as the installation of oil and petrol interceptors at the Sustainable Urban Drainage System (SuDS) have been designed in and will be implemented;
- The development will ensure/secure the protection and appropriate long-term management of all retained habitats and features for nature conservation;
- The development will ensure/secure the appropriate long-term management of all compensatory planting *and* habitat creation for nature conservation; and,
- The additional measures to be applied at the detailed design stage to minimise operational effects associated with fly-tipping etc. such as the positioning of properties to face the habitats to be retained and created such as the Pendleton Brook corridor the associated buffer, the hedgerows and associated buffers and substantive areas of new planting/public open space will be implemented.

Based on these assumptions it is concluded that any effects on the Valued Ecological Receptors during the operational phase are unlikely to be significant (refer to the EcIA at Table 7.14 )

**Table 7.14 Ecological Impact Assessment (EcIA) Summary Table**

| Proposed Activity | Characterisation of the Unmitigated Impact on the Feature | Significance Without Mitigation and Confidence Level | Mitigation and Enhancement (refer to Sections 7.5 and 7.7) | Residual Significance and Confidence Level |
|---|---|---|---|---|
| **Valued Ecological Receptor/Feature: Pendleton Brook and Associated Fauna** | | | | |
| **Construction Impacts** | | | | |
| Habitat Loss (and Disturbance) | No operations to be carried out within the 8 m to 50 m wide designated protective buffer along northern bank of Pendleton Brook.<br><br>No physical damage.<br><br>No machinery will cross Pendleton Brook to access the Site. | No direct impact: certain. | Ensure an appropriate Environment Management Plan (EMP) is prepared and implemented. Plan to include temporary demarcation fencing at buffer.<br><br>This plan will detail that all machinery must only operate within permitted zones and outside the brook protective zone. | No direct impact: certain. |
| Water pollution/ Sedimentation | Decrease in surface water quality as a result of removal of vegetation and disturbance of earth in fields which are located at a higher level than watercourse.<br><br>Spillage of potentially polluting substances.<br><br>Negative<br><br>Direct and Indirect<br><br>Likely<br><br>Minor to Moderate | Significant effect at the County Level: Likely. | Preparation and implementation of good working procedures to be detailed in an Environment Management Plan (EMP).<br><br>Adherence to the relevant EA Pollution Prevention Guidelines (PPG).<br><br>Monitoring of surface water throughout works.<br><br>Implementation of mechanism for remediation of any poor results reported by monitoring. | Significant effect at the County Level: extremely unlikely. |

**Table 7.14 (continued) Ecological Impact Assessment (EcIA) Summary Table**

| Proposed Activity | Characterisation of the Unmitigated Impact on the Feature | Significance Without Mitigation and Confidence Level | Mitigation and Enhancement (refer to Sections 7.5 and 7.7) | Residual Significance and Confidence Level |
|---|---|---|---|---|
| **Operational Impacts** | | | | |
| Disturbance | Recreational disturbance to the brook corridor and associated buffer as a result of human activities (walking, dog walking and horse riding).<br>Negative<br>Direct<br>Probable<br>Moderate | Significant effect at the County Level: unlikely.<br>Significant effect at the Local Level: likely. | Preparation and implementation of a Long-term Landscape and Ecological Management Plan for the Site which will include inspections and repair of the footpaths to encourage users to remain on the path.<br>Signage indicating use of dog leads and informing visitors of the sensitive times of year. | Significant effect at the County and Local Levels: unlikely. |
| **Valued Ecological Receptor/Feature: Hedgerows and Tree-lines** | | | | |
| **Construction Impacts** | | | | |
| Habitat Loss (and Damage) | Removal of approximately 8% of the total linear length of hedgerows to create road crossings.<br>Risk of damage to adjacent sections of retained hedgerows and trees during construction of roads.<br>Negative<br>Direct<br>Unlikely<br>Minor | Significant effect at County Level: unlikely. | Avoid mature trees during planning of road crossings; select already defunct or gappy sections of hedgerows for road crossings.<br>Protect existing adjacent hedgerows and trees and associated root protection zones during works with the use of protective demarcation fencing in accordance with BS 5937:2005.<br>Design in and implement supplementary and compensatory planting of native hedgerows and wooded belts as part of the landscape schedule. | Significant effect at County Level: extremely unlikely. |

**Table 7.14 (continued) Ecological Impact Assessment (EclA) Summary Table**

| Proposed Activity | Characterisation of the Unmitigated Impact on the Feature | Significance Without Mitigation and Confidence Level | Mitigation and Enhancement (refer to Sections 7.5 and 7.7) | Residual Significance and Confidence Level |
|---|---|---|---|---|
| **Operational Impacts** | | | | |
| Disturbance and Damage | Damage to trees and hedgerows as a result of fly-tipping, fire, vandalism and unsympathetic management.<br><br>Negative<br><br>Direct<br><br>Likely<br><br>Minor | Significant effect at County Level: unlikely.<br><br>Significant effect at Site Level: unlikely. | Arrange properties to face wooded belts and substantive hedgerows to act as a surveillance tool and minimise the risk of future harm.<br><br>Preparation and implementation of a Long-term Landscape and Ecological Management Plan for the Site to include management of hedgerows and trees for nature conservation. | Significant effect at County Level: extremely unlikely.<br><br>Significant effect at Site Level: extremely unlikely. |
| ***Valued Ecological Receptor/Feature: Ditch Corridors*** | | | | |
| **Construction Impacts** | | | | |
| Habitat Loss (and Disturbance) | Loss of habitats along a section of Ditch 1 to create a road crossing and working area.<br><br>Negative<br><br>Direct<br><br>Certain<br><br>Minor | Significant effect at Local Level; likely | Ensure an appropriate Construction Environment Management Plan (EMP) is prepared and implemented.<br><br>This plan will detail that all machinery must only operate within permitted zones and outside the brook protective zone.<br><br>Compensatory planting of trees and shrubs and other habitats along the remainder of the ditch corridor.<br><br>Additional ditch/swale network to be created as part of the SUDS. | Significant effect at Local Level: unlikely. |

Table 7.14 (continued) Ecological Impact Assessment (EcIA) Summary Table

| Proposed Activity | Characterisation of the Unmitigated Impact on the Feature | Significance Without Mitigation and Confidence Level | Mitigation and Enhancement (refer to Sections 7.5 and 7.7) | Residual Significance and Confidence Level |
|---|---|---|---|---|
| **Construction Impacts (continued)** | | | | |
| Fragmentation | Integrity of Ditch 1 likely to be severed by creation of crossing.<br>Negative<br>Direct<br>Certain<br>Major | Significant effect at Local Level; likely. | Site the crossing at the northern end of Ditch 1 (further from Pendleton Brook) to increase length of ditch connected to Pendleton Brook and reduce fragmentation effects.<br>Design and construction of a clear span crossing to permit passage of wildlife beneath. | Significant effect at Local Level: unlikely. |
| Water pollution/ Sedimentation | Decrease in surface water quality as a result of removal of vegetation and disturbance of earth in fields which are located at a higher level than watercourse.<br>Spillage of potentially polluting substances.<br>Negative<br>Direct and Indirect<br>Likely<br>Minor to Moderate | Significant effect at the Local Level: Likely. | Preparation and implementation of good working procedures to be detailed in an Environment Management Plan (EMP).<br>Adherence to the relevant EA Pollution Prevention Guidelines (PPG).<br>Monitoring of surface water throughout works.<br>Implementation of mechanism for remediation of any poor results reported by monitoring. | Significant effect at the Local Level: extremely unlikely. |

**Table 7.14 (continued) Ecological Impact Assessment (EcIA) Summary Table**

| Proposed Activity | Characterisation of the Unmitigated Impact on the Feature | Significance Without Mitigation and Confidence Level | Mitigation and Enhancement (refer to Sections 7.5 and 7.7) | Residual Significance and Confidence Level |
|---|---|---|---|---|
| **Operational Impacts** | | | | |
| Disturbance | Recreational disturbance to the Ditch Corridors as a result of human activities (walking and dog walking).<br>Negative<br>Direct<br>Unlikely<br>Minor | Significant effect at the Local Level: unlikely. | Preparation and implementation of a Long-term Landscape and Ecological Management Plan for the Site which will include inspections and repair of the footpaths to encourage users to remain on the path. | Significant effect at the Local Level: extremely unlikely. |
| ***Valued Ecological Receptor/Feature: Calcareous Grassland*** | | | | |
| **Construction Impacts** | | | | |
| Habitat Loss | No operations to be carried out within the 8 m to 50 m wide designated protective buffer along northern bank of Pendleton Brook.<br>No physical damage. | No significant effect at Local Level: certain. | Ensure an appropriate Environment Management Plan (EMP) is prepared and implemented. Plan to include temporary demarcation fencing at buffer. | No direct effects: certain. |

Table 7.14 (continued) Ecological Impact Assessment (EcIA) Summary Table

| Proposed Activity | Characterisation of the Unmitigated Impact on the Feature | Significance Without Mitigation and Confidence Level | Mitigation and Enhancement (refer to Sections 7.5 and 7.7) | Residual Significance and Confidence Level |
|---|---|---|---|---|
| **Operational Impacts** | | | | |
| Degradation of habitat quality | Damage to and degradation of calcareous grassland habitat as a result of trampling and unsympathetic management.<br>Negative<br>Direct<br>Likely<br>Minor | Significant effect at Local Level: unlikely.<br>Significant effect at Site Level: unlikely. | Preparation and implementation of a Long-term Landscape and Ecological Management Plan for the site to include management and enhancement of calcareous grassland for nature conservation.<br>Ensure management prescriptions seek to enhance and increase area of calcareous grassland. | Significant effect at Local Level: extremely unlikely.<br>Possible positive effect: likely. |
| **Valued Ecological Receptor/Feature: Marshy Grassland** | | | | |
| **Construction Impacts** | | | | |
| Habitat Loss (and Disturbance) | Marshy grassland lies outside the construction zone.<br>No physical damage.<br>No machinery will need to operate near to the marshy grassland. | No direct effects: certain. | Ensure an appropriate Construction Environment Management Plan (EMP) is prepared and implemented.<br>The EMP will illustrate the careful demarcation of the construction zone and permitted development area. | No direct effects: certain. |
| Alteration to hydrological regime | Marshy grassland may be flooded or desiccated if the construction operations alter the hydrological regime.<br>Negative<br>Indirect<br>Extremely unlikely<br>Minor | Significant effect at Local Level: extremely unlikely. | Ensure an appropriate Construction Environment Management Plan (EMP) is prepared and implemented.<br>The EMP will illustrate the careful demarcation of the construction zone and permitted development area. | No significant effect: certain. |

Table 7.14 (continued) Ecological Impact Assessment (EclA) Summary Table

| Proposed Activity | Characterisation of the Unmitigated Impact on the Feature | Significance Without Mitigation and Confidence Level | Mitigation and Enhancement (refer to Sections 7.5 and 7.7) | Residual Significance and Confidence Level |
|---|---|---|---|---|
| **Operational Impacts** | | | | |
| None expected. | | | | |
| ***Negative Ecological Receptor/Feature: Japanese Knotweed*** | | | | |
| **Construction Impacts** | | | | |
| Disturbance and risk of spread of this invasive species | No operations to be carried out within the designated protective buffer along northern bank of Pendleton Brook. This area contains the single stand of Japanese Knotweed.<br><br>No direct disturbance to stand or surrounding earth. | No direct effects: certain. | Preparation and implementation of a Japanese Knotweed Eradication Management Plan. | Positive effect: certain. |
| **Operational Impacts** | | | | |
| Not applicable. | | | | |

**Table 7.14 (continued) Ecological Impact Assessment (EcIA) Summary Table**

| Proposed Activity | Characterisation of the Unmitigated Impact on the Feature | Significance Without Mitigation and Confidence Level | Mitigation and Enhancement (refer to Sections 7.5 and 7.7) | Residual Significance and Confidence Level |
|---|---|---|---|---|
| ***Valued Ecological Receptor/Feature: Bat species*** | | | | |
| **Construction Impacts** | | | | |
| Habitat loss and Disturbance | Tree felling and pruning.<br><br>Building removal/conversion.<br><br>Both of these activities may result in the loss of a roost and disturbance to bats, in the absence of mitigation.<br><br>Negative<br><br>Direct and Indirect<br><br>Likely<br><br>Moderate | Significant effect at Local Level: Likely. | Avoidance of works at the sensitive time of year in the bat's seasonal calendar; in accordance with Natural England guidance.<br><br>Updated licensed bat surveys prior to the commencement of works.<br><br>Adherence to guidance in Hundt (2012) regarding soft felling of trees and soft strip of buildings.<br><br>Installation of roosting opportunities for long-term use by bats at tree, converted farm buildings and new properties.<br><br>Works at Building G in accordance with current Natural England licensing procedure. | Significant effect at Local Level: extremely unlikely.<br><br>Positive effect: certain. |
| **Operational Impacts** | | | | |
| Disturbance | Installation and operation of inappropriate and unsympathetic lighting. | Significant effect at Local Level: Likely. | Preparation and implementation of a lighting strategy prepared with input from an Ecologist. | Significant effect at Local Level: extremely unlikely. |

**Table 7.14 (continued) Ecological Impact Assessment (EcIA) Summary Table**

| Proposed Activity | Characterisation of the Unmitigated Impact on the Feature | Significance Without Mitigation and Confidence Level | Mitigation and Enhancement (refer to Sections 7.5 and 7.7) | Residual Significance and Confidence Level |
|---|---|---|---|---|
| **Valued Ecological Receptor/Feature: Breeding Birds** | | | | |
| **Construction Impacts** | | | | |
| Habitat loss | Removal of grassland at Fields 5 and 9 used by low numbers/density of nesting Curlew and Lapwing.<br><br>Negative<br><br>Direct<br><br>Certain<br><br>Minor | Significant effect at Local Level: probable | Gradual and phased removal of vegetation and development.<br><br>Removal of vegetation and soil strip operations outside the bird nesting season to ensure compliance with wildlife legislation.<br><br>Specification of the timing constraint in the Environmental Management Plan (EMP).<br><br>Allocation of a field (e.g. Field E) for application of long-term management specifically for farmland birds in accordance with RSPB recommendations. | Significant effect at Local Level: extremely unlikely.<br><br>Positive effect: certain. |
| **Operational Impacts** | | | | |
| Disturbance | Application of inappropriate timing of maintenance and management of retained and new habitats. | Significant effect at Local Level: probable. | Preparation and implementation of a Long-term Landscape and Ecological Management Plan for the Site to include the protection afforded to nesting birds and the appropriate timing of work. | Significant effect on conservation status at Local Level: extremely unlikely. |

Table 7.14 (continued) Ecological Impact Assessment (EcIA) Summary Table

| Proposed Activity | Characterisation of the Unmitigated Impact on the Feature | Significance Without Mitigation and Confidence Level | Mitigation and Enhancement (refer to Sections 7.5 and 7.7) | Residual Significance and Confidence Level |
|---|---|---|---|---|
| **Valued Ecological Receptor/Feature: Brown Hare** | | | | |
| **Construction Impacts** | | | | |
| Habitat Loss | Removal of grasslands used by feeding and possibly breeding Brown Hare.<br>Negative<br>Direct<br>Certain<br>Minor | Significant effect at Local Level: unlikely. | Careful removal of dense vegetation, if present and search for leverets.<br>Removal of dense areas of vegetation, if present, outside the Brown Hare breeding season.<br>Conservation of habitat connectivity via hedgerows to fields in the wider area. | Significant effect on conservation status at Local Level: extremely unlikely. |
| **Operational Impacts** | | | | |
| Not applicable. | | | | |

## 7.7 Recommendations and Ecological Enhancement

In addition to the mitigation measures outlined above the development of the site will secure an opportunity to enhance biodiversity and ecological value The measures described below are in addition to the mitigation and compensation measures and aim to achieve a net gain in biodiversity associated with the developed site:

### 7.7.1 Recommendations at the Retained and Protected Hedgerows and Tree Belts (and compensatory planting)

As detailed in Section 7.5.1 and on Figure 7.3 conservation and protection of the hedgerows and tree lines is strongly recommended.

**Hedgerow and Tree Removal and Compensatory Planting**

In order to comply with Policy DP7 of the current Regional Spatial Strategy (RSS) in relation to the quality and quantity of biodiversity, the new hedgerow planting within and around the Site must equate to, at least, the length of hedgerow to be lost.

To enhance and conserve green links around and through the Site new linear planting must be connected (or in close proximity) to existing hedgerows and tree belts (both within the Site and the local area). This arrangement will maximise the green infrastructure opportunities at the Site and contribute to the attraction of wildlife to the site

**Supplementary Planting**

The proposals provide an opportunity to strengthen green links with the use of native supplementary tree and shrub planting.

**Plant Species Selection**

All woody species planting schedules should contain only native species appropriate to the area In accordance with the guidance generally provided by Lancashire County Council Ecologists the following species are appropriate:

| | |
|---|---|
| Alder | *Alnus glutinosa* |
| Ash | *Fraxinus excelsior* |
| Silver Birch | *Betula pendula* |
| Holly | *Ilex aquifolium* |
| Pedunculate Oak | *Quercus robur* |
| Rowan | *Sorbus aucuparia* |
| Blackthorn | *Prunus spinosa* |
| Hawthorn | *Crataegus monogyna* |
| Hazel | *Corylus avellana* |

In addition, herb species that typically occur beneath hedgerows in the local area and provide habitats for breeding and feeding invertebrates such as Red Campion, native Bluebell, Garlic Mustard (foodplant for Orange Tip butterfly larvae), Male Fern, Arum Lily, Greater Stitchwort

and Bugle should be introduced to the field layers (herbaceous ground hedge-bottom flora) of existing and new hedgerows.

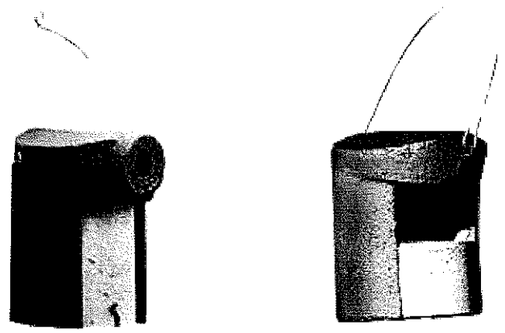
**Creation of Habitats for Breeding Birds**

The mature and established trees to be retained within the Site (particularly the wooded copses in Field B) are suitable for the installation of bird boxes

Schwegler woodcrete 1B bird boxes (refer to Insert 7.1) should be installed as high as possible (without causing monitoring and maintenance access difficulties) on suitable trees. An appropriate number of bird boxes can be determined once the Site layout has been finalised.

**Insert 7.1** Schwegler 1B Woodcrete Bird Box

Bird boxes specifically designed for specific bird species present in the wider area can also be installed (refer to Insert 7.2).



**Insert 7.2** Boxes Designed for Use by Nuthatch (left) and Spotted Flycatcher (right)

Ecological guidance in relation to the installation and positioning of the boxes for maximum success can be provided as required.

### 7.7.2 Conservation and Enhancement of the Buffer Along the Pendleton Brook Corridor Which Incorporates the Area of Calcareous Grassland

It is recommended that tree and shrub planting within the protective buffer to be conserved along the northern bank of Pendleton Brook is avoided. In its current condition the brook is an established wildlife corridor.

Rather, it is recommended that the brook corridor is managed for its grassland. Application of fertilisers must be avoided and the plant species more indicative of the semi-improved and

calcareous grassland such as Quaking-grass, Fairy Flax, Glaucous Sedge, Mouse-eared Hawkweed and Wild Strawberry will be encouraged. An appropriate cutting or grazing regime will be necessary.

### 7.7.3 The Built Areas of the Site Specifically at Areas of Public Open Space, Retained Vegetation, Roadside Verges, SUDS and the New Buildings

**Landscape Planting**

The built areas of the Site comprise the retained hedgerows and trees (discussed earlier). This area is also likely to encompass new areas of landscape planting at the public open spaces, pocket parks and road verges.

Landscape planting should maximise the use of native species and species known to be attractive to wildlife (such as species that flower and produce fruit/berries).

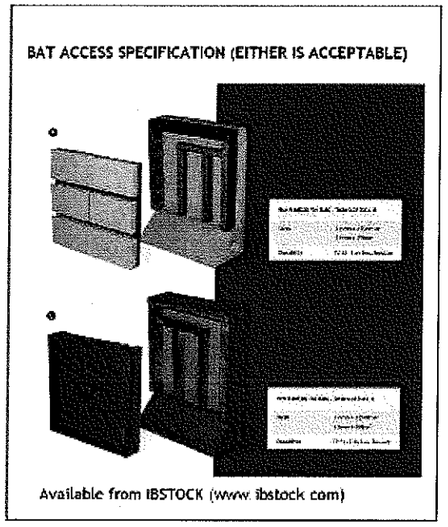
Long-term management of the areas of Public Open Space to maximise opportunities for breeding birds and invertebrates by minimising cutting regimes and leaving verges of taller grass species is encouraged and can be achieved by preparation and implementation of a Long-term Landscape and Ecological Management Plan, as discussed below.

**Opportunities for Roosting Bats**

In addition to the conservation of habitats suitable for use by foraging bats the proposals create an opportunity to incorporate suitable provisions for use by roosting bats (listed on the Lancashire BAP)

Provisions for use by roosting bats can be fitted to the new buildings at the time of construction. Guidance in relation to the installation of bat roost provisions in suitable plots and building elevations can be provided once the site layout has been designed in detail.

The bat roost provisions may include the use of commercially available bat tubes (refer to Insert 7.3) that can be fitted into the outer cavity wall. This provision will ensure bats are confined to the outer shell of the buildings to prevent any bats from entering the living area of the house. Provisions should be fitted to south, east or west facing elevations with free flight access to the wider area. Care must be taken to avoid siting the bat roost provisions above doorways or windows where accumulation of droppings may cause a nuisance, if occupied.




**Insert 7.3** Suggested Provisions for Bats

### 7.7.4 Sustainable Urban Drainage System

The surface water drainage system at the site must encompass a series of attenuation ponds and swales (rather than or in conjunction with underground tanks). A series of small ponds connected with vegetated swales can provide opportunities for the creation of low maintenance ponds and wetlands that will attract wildlife including aquatic invertebrates, as well as drinking and bathing birds. Further information on SuDS is provided in Chapter 6 and Appendix 6.1.

### 7.7.5 The Areas of Grassland Around the Junction Improvement Works for Use by Farmland Birds and Brown Hare

As described in the assessment of impacts the development of the areas of improved grassland will have a direct habitat loss impact on very low numbers of nesting farmland bird such as Curlew, Skylark and Lapwing. The fields in the surrounding land to the Site offer opportunities for these species. However, it is suggested that as the grazed improved grassland in Fields A to D will only be marginally affected by junction improvement works this provides an opportunity to enhance the remainder of the fields for use by farmland birds.

This can be achieved by the application of the following:

- Impeding drainage in some areas of the fields by re-profiling the drainage ditches so that the water inundates parts of the fields and initiates and increases natural colonisation by tussocky vegetation such as rushes and Tufted Hair-grass, as well as aquatic invertebrates. This habitat enhancement/habitat creation approach would attract farmlands birds such as wintering and feeding Snipe;
- Allocation of a portion or a field or a single field as set-aside;
- Grazing with cattle to create a mosaic of sward heights; and

- Reduction in livestock numbers in early April to late June (the bird breeding season)

The application of appropriate management for farmland birds is a target/action of the Lancashire BAP.

### 7.7.6 Code for Sustainable Homes and BREEAM

The new buildings can be designed and implemented in accordance with the requirements of sustainable building schemes such as the Code for Sustainable Homes and BREEAM. Ecological guidance to maximise the ecological enhancement and credit achievement can be provided

### 7.7.7 Plan

All recommendations described above can be incorporated into an *'Ecological Protection and Enhancement Plan'*

### 7.7.8 Long-term Landscape and Ecological Management Plan

To ensure the long-term conservation of the conserved, enhanced and created habitats a *'Long-term Landscape and Ecological Management Plan'* can be prepared for the Site and the surrounds

Confirmation of the commitment to implement and fund the management will be required.

The scope of the 'Long-term Landscape and Ecological Management Plan' will encompass:

- Monitoring of the establishment of all landscape planting and habitat planting;
- Aftercare of all landscape planting and habitat enhancement in accordance with conservation and biodiversity objectives;
- Monitoring and treatment of invasive species;
- Monitoring of condition of and maintenance of footpaths to encourage use and avoid the creation of informal footpaths that may damage other habitats;
- Monitoring and maintenance of bat and bird boxes;
- Maintenance of a SUDS; and
- Appropriate timings of management works to ensure avoidance of bird nesting seasons etc

The Plan will be a reviewable document that will be informed by the site monitoring activities and amended as required

## 7.8 Consideration of the Do-nothing Option and Exploration of Alternatives

This section of the EcIA covers the assessment of the do-nothing option and aims to provide the information requested by the consultees in relation to the need to provide evidence of the alternative options that have been considered.

### 7.8.1 Consideration of Alternatives

The identification of the subject site as a strategic one for development (mainly housing) is a function of a formal process initiated and managed by Ribble Valley Borough Council as part of its statutory obligations as a local planning authority. The process involves the publication of a Core Strategy and involves extensive consultation and community engagement.

The Core Strategy has been published and will be submitted to the Secretary of State soon

An examination in public (EIP) into the Core Strategy will also take place this year

Part of the due process, fundamental to it, is the spatial strategy. The strategy chosen by the Council is one of a number considered. The subject site was specifically chosen as a preferred location for development and more particularly a unique one on which sustainable development can take place over a 15-20 year period in accordance with NPPF. Thus, it is the LDF Core Strategy process which has considered the options and chosen the subject site.

**Do-nothing Option**

In consideration of the 'do-nothing' option it is concluded that the agricultural management currently applied at the site will continue in perpetuity.

This option would fail to secure the positive and beneficial effects that are likely to occur and be secured by the development proposals such as protection of hedgerows and trees. The farming practice could apply to remove hedgerows and trees which would otherwise be protected and managed by the management agreements and Tree Preservation Orders (TPO) to be secured by the development

Similarly, the development proposes the allocation of an area for the long-term and specific management for farmland birds; this would not necessarily occur in the absence of the proposals.

The additional features of benefit for biodiversity such as provisions for roosting bats and nesting birds and creation of a SUDS with the associated wetlands, swales and pond habitats for wildlife would not be secured or implemented in the absence of the proposals

The EcIA has demonstrated that the residual effects of the proposals on nature conservation interests is not significant (refer to Section 7.10). The allocation of this Site to meet the housing and services need in the area is a more appropriate and favourable option, in terms of nature conservation, than another location which may have a residual and/or long-term significant adverse effect on designated sites, protected species and nature conservation interests.

## 7.9 Cumulative Effects

There are no known consented development proposals within the zone of likely influence that may contribute to any in-combination effects on the Valued Ecological Receptors.

A proposed residential development on land on the west side of Littlemoor (opposite the west boundary of the subject site - also owned by the Standen Estate) has been considered.

Our ecological assessment for that site concluded:

> "*.. in accordance with the principles of the National Planning Policy Framework avoidance and protection of features of biodiversity value, namely the trees that have features for use by roosting bats, is feasible. The planting of hedgerows and trees to compensate for the areas to be removed to facilitate the development is appropriate and acceptable. Further, the opportunity to incorporate biodiversity in and around the development such as habitat creation for roosting bats, nesting birds and maintenance of wildlife links for wildlife is encouraged and is entirely feasible within the remit of the development*".

Based on this assessment no significant cumulative or in-combination effects on the Valued Ecological Receptors are likely

## 7.10 Summary of Predicted Effects

The Ecological Impact Assessment (EcIA) presented at Table 7.14 has demonstrated that, in the absence of mitigation, no significant effects at a level greater than County Level are certain or even probable. This is attributed to the relatively low geographical value of the Valued Ecological Receptors (no greater than County Value) and the assumptions made by adhering to the illustrative masterplan as informed by the Ecological Constraints Plan (Figure 7.3).

As demonstrated in the EcIA, given appropriate mitigation, no significant effects are predicted (at any level). All mitigation measures are concluded to be feasible within the remit of the proposals.

Importantly, as described in Section 7.7 a sympathetically designed and implemented development proposal will secure opportunities to enhance significantly the nature conservation interests of areas of the Site by habitat creation and appropriate sustainable management over the long-term. The measures described in Section 7.7 seek to ensure a net gain for biodiversity in accordance with the principles of the National Planning Policy Framework (NPPF). The measures are summarised below:

- Use of native species in landscape planting schemes including woody species, wildflower planting and herbs;
- Installation of a SuDS and associated habitat creation for biodiversity (swales, ditches, ponds etc.);
- Habitat creation for nesting passerine birds;
- Habitat creation and roosting opportunities for bats;

- Conversion of improved grassland to favourable habitat for use by farmland birds;
- Encouragement of an increase in area of calcareous grassland; and
- Application of long-term management in accordance with nature conservation and biodiversity objectives

**Table 7.15 Summary of Effects and Evaluation of Significance**

| Receptor | Probability | Value | Magnitude | Significance Level | Rationale |
|---|---|---|---|---|---|
| **Pendleton Brook and associated fauna** | Extremely unlikely | County | Minor to moderate | NS | Avoidance and protection of brook with an appropriate buffer during design of site and construction.<br><br>Application best practice to minimise risk of pollution and sedimentation by adherence to a Construction Environmental Management Plan (EMP) and Pollution Prevention Guidelines (PPG)<br><br>Long-term Landscape and Ecological Management Plan to ensure conservation and management of buffer in accordance with nature conservation objectives |
| **Hedgerows and tree-lines** | Extremely unlikely | County | Minor | NS | Avoidance and protection during design of site and construction<br><br>Compensatory native planting of hedgerows and application of long-term management in accordance with nature conservation objectives |
| **Ditch corridors** | Unlikely | Local | Major | NS | Avoidance and protection during design of site and construction<br><br>Minimising fragmentation effects by careful design of location of road crossing and crossing design/engineering<br><br>Compensatory native planting of hedgerows and application of long-term management in accordance with nature conservation objectives<br><br>Application best practice to minimise risk of pollution and sedimentation by adherence to a Construction Environmental Management Plan (EMP) and Pollution Prevention Guidelines (PPG)<br><br>Long-term Landscape and Ecological Management Plan to ensure conservation and management of buffer in accordance with nature conservation objectives. |

Table 7.15 (continued) Summary of Effects and Evaluation of Significance

| Receptor | Probability | Value | Magnitude | Significance | |
|---|---|---|---|---|---|
| | | | | Level | Rationale |
| **Calcareous grassland** | Extremely unlikely | Local | Minor | NS | Avoidance and protection during design of site and construction<br>Long-term Landscape and Ecological Management Plan to ensure conservation and management of buffer in accordance with nature conservation objectives |
| **Marshy grassland** | Certain | Local | Minor | NS | Avoidance and protection during design of site and construction |
| **Japanese Knotweed** | Certain | Negative | Positive | NS | Eradication and long-term monitoring |
| **Roosting and Foraging bats** | Extremely unlikely | Local | Minor to positive | NS | Only a single bat roost of a common species detected<br>Mitigation comprising avoidance, pre-work inspections and application of soft-felling and soft stripping during works will minimise any effects<br>Conservation of hedgerows and tree lines<br>Accommodation of compensatory habitats/roosts within the site layout is entirely feasible and will be a positive effect and contribute to net gain |
| **Breeding Birds** | Extremely unlikely | Local | Minor | NS | Avoidance and protection during design of site and construction<br>Avoidance of clearance of vegetation and buildings at sensitive times of year<br>A phased construction will further reduce any effects<br>Habitat creation and long-term management |
| **Brown Hare** | Extremely unlikely | Local | Minor | NS | Avoidance of clearance of dense vegetation at sensitive times of year<br>Habitat creation and long-term management |

| Key: | Probability | Value | Magnitude | Significance |
|---|---|---|---|---|
| | Certain | International | Major | Significant (S) |
| | Likely | National | Moderate | Not Significant (NS) |
| | Possible | Regional | Minor | |
| | Unlikely | County | None | |
| | | Local | Positive | |
| | | Negative | | |

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# Standen Ecology Plan

Clitheroe Castle Knoll BHS

Salthill and Bellmanpark Quarries SSSI

Primrose Lodge BHS

Barrow Clough Wood BHS

## Legend

- Standen
- Lancashire_BAP_Provisional_List
- Standen 2km buffer
- Biological Heritage Sites
- SSSI
- Local Geodiversity Sites
- LWT_nature_reserves

Figure 7.1



Boundary of Surveyed Site

Trustees of Standen Estate
Land South of Clitheroe
Environmental Statement

Lancashire County Council

**Key to Map Symbols:**

- Broadleaf woodland
- Coniferous plantation
- Broadleaf trees
- Young trees and shrubs
- Hedgerows
- Japanese Knotweed
- Tall herb vegetation
- SI — Semi-improved neutral grassland
- Calcareous grassland
- Marshy grassland
- I — Improved grassland
- A — Amenity grassland
- Buildings
- Walls
- Fences
- Gates
- Footpaths
- Ponds and ditches
- Gradient indication
- Site boundaries

**Project Name:**
Trustees of Standen Estate
Land South of Clitheroe
Environmental Statement

**Title:**
Phase 1 Vegetation and Habitat Plan

| Scale: | Drawing No. | Date: |
|---|---|---|
| 1:5,000@A3 | Figure 7.2 | May 2012 |

| Central Grid Ref: | Reference No. |
|---|---|
| SD 7495 4069 | ERAP Ltd 2010_270 |

Scale Bar: 0m 100m

N

Pendle Road

Building 1
Building 2

Field 1 I
Field 2 I
Field 3 I
Field 4 I
Field 5 I
Field 6 I
Field 7 I
Field 8 I
Field 9 I
Field 10 I
Field 11 I
Field 12 I
Field 13
Field A I
Field B I
Field C I
Field D I
Field E I

SI

A

Ditch 4
Ditch 1
Ditch3a
Ditch3b
Ditch3c

Japanese Knotweed

100m² area of Calcareous grassland

Pendleton Brook (Ditch 2)

Pond 1

Higher Standen Farm
(refer to Appendix 7.5)

H1 H2 H3 H4 H5 H6 H7 H8 H9 H10 H11 H12 H13 H14 H15 H16 H17 H18

Ha Hb Hc Hd He Hf Hg Hh Hi Hk Hl Hm Hn Ho Hp Hq

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Key to Map Symbols:

Site Boundary

Minimum 8 metres up to 50 metres wide protective buffer to be applied from edge of water at Pendleton Brook. This buffer will include area of calcareous grassland and Japanese Knotweed.

Existing woodland and new planted trees to be conserved with an appropriate buffer to include root protection zone.

Hedgerows and tree-lines to be conserved with an appropriate buffer to include root protection zone.

Buildings: No bat roosts detected to date but timing restrictions on removal and/ or conversion works to protect nesting birds and precautionary actions to protect bats.

Higher Standen Farm. Single Common Pipistrelle roost bat present. Licensed mitigation and compensation measures necessary . Timing restrictions on removal and/or conversion works to protect nesting birds and bats.

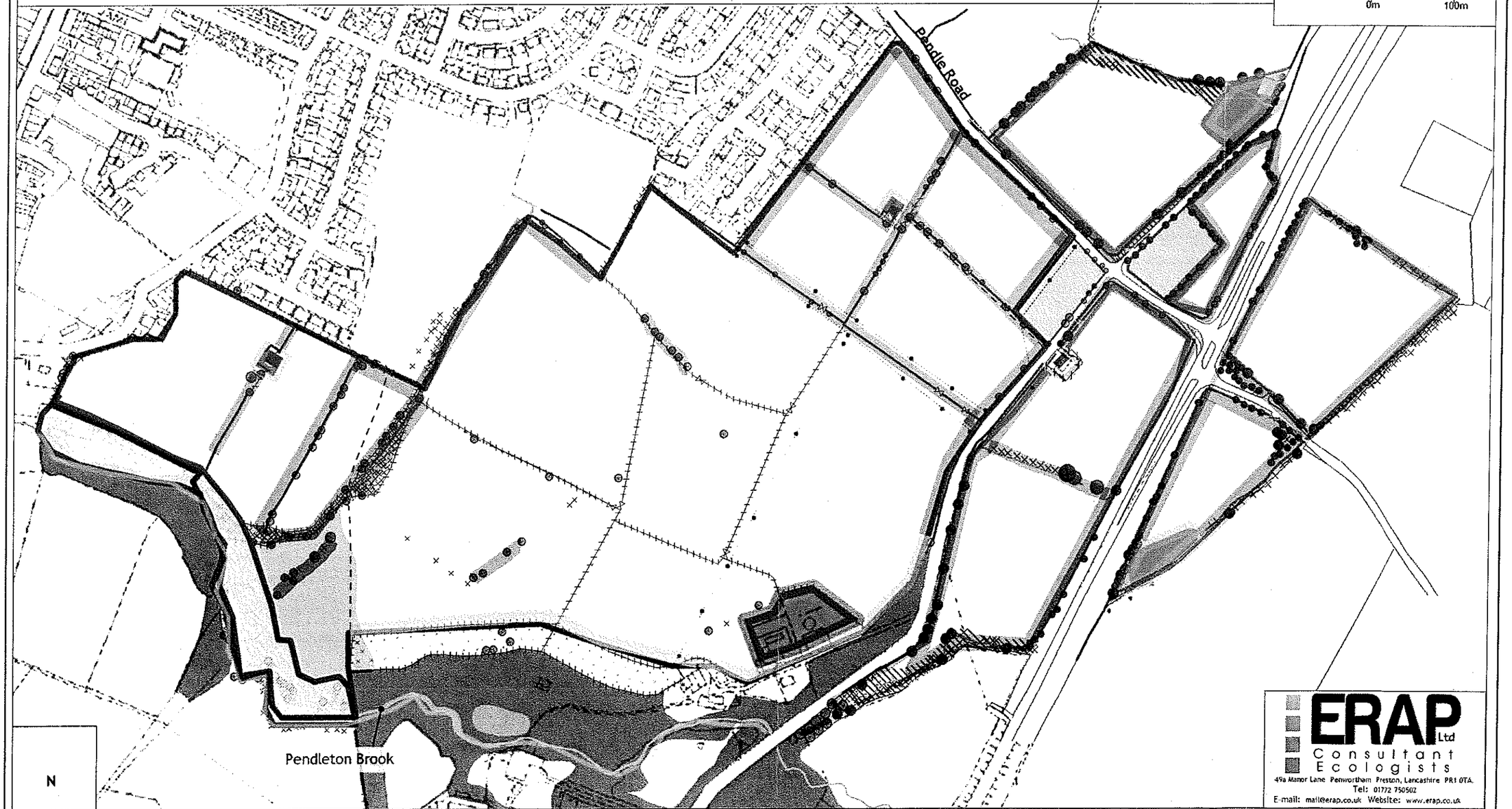
**Project Name:**
Trustees of Standen Estate
Land South of Clitheroe
Environmental Statement

**Title:**
Ecological Constraints Plan

| Scale: | Drawing No. | Date: |
|---|---|---|
| 1:5,000@A3 | Figure 7.3 | May 2012 |

| Central Grid Ref: | Reference No. |
|---|---|
| SD 7495 4069 | ERAP Ltd 2010_270 |

Scale Bar: 0m 100m

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