

8. Cultural Heritage

8.1 Introduction

This chapter sets out an assessment of the potential effects of the application on the cultural heritage assets of the Standen Estates site. The assessment is based on historical records, a site walk-over and a comprehensive geophysical survey. Figure 8.1 shows the location of features of cultural heritage interest that have been identified on the site and within a 1 km radius of the centre of the site. Historical records contain inaccuracies in some cases and for this reason the locations provided in Figure 8.1 should be considered as indicative rather than definitive.

8.2 Context

8.2.1 Relevant Terminology

Archaeology can be described as the study of past human societies or people through physical evidence of their material culture. In this assessment, the term refers to sub-surface remains and artefacts and to surface features such as earthworks. Archaeological evidence can be described as 'in situ', which means that it has not been significantly disturbed or moved from its original place. Artefacts may also be in situ or they may be described as 'residual'. This means that they have been disturbed by later activity, accidental or deliberate, and so are found in a context which they did not occupy when in use.

Cultural heritage encompasses archaeological resources in addition to other built elements of heritage, such as historic buildings and structures, and other elements such as field systems which form historic landscapes.

In addition to the above generic terms, the following technical terminology has also been used in this assessment:

- **Agger:** the earthwork embankment of a Roman road;
- **Artefact:** An object (or part thereof) that has been created or worked by humans;
- **Borough:** a civil settlement granted some degree of self-government by a charter granted by the feudal lord;
- **Demesne:** land retained by the lord of a manor for his own use, under his own management. Such land might be in a number of parcels, not necessarily all contiguous with the manor house;
- **Ridge and furrow:** earthwork remains of medieval open-field cultivation. This appears as a characteristic pattern of long narrow ridges with a reversed 'S' plan;
- **Spindle whorl:** a small flywheel weight of stone, ceramic or metal fitted round the wooden spindle used in the hand-spinning of wool;

- **Terret ring:** a metal loop on horse harness, used to prevent the reins from becoming tangled with the rest of the gear;
- **Geophysical survey:** a range of ground-based remote sensing techniques used to identify and plot sub-surface features. At this site, because of the nature of the geology and soils, and the shallow nature of the anticipated targets, fluxgate gradiometry was chosen as the most effective survey method;
- **Setting of monuments:** the setting of a heritage asset is the surroundings in which that asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral;
- **Value:** this term refers to the cultural, communal, historical or information value of an asset, not its intrinsic worth

8.2.2 Technical Context

Cultural heritage is represented by a wide range of features, both extant and hidden, that have been created by past human occupation and use of the landscape. Such features, often referred to as 'heritage assets' or 'historic assets', are a non-renewable resource. Historic assets include invisible or near-invisible elements such as buried archaeological deposits or surface scatters of material; earthwork and landscape features; buildings, both in use and abandoned or ruined; and industrial remains.

The presence of cultural heritage features is a material consideration in determining planning applications. Early consultation with the local authority is encouraged as a matter of course in planning guidance. Since cultural heritage features are known to exist within the Standen Estates site, and since such features may be affected by future development, an assessment of the likely or potential impact of the scheme has been prepared.

Any assessment of this kind requires consideration of the following matters.

- Development can have an impact on features of cultural heritage interest directly, such as through the effects of construction on buried features, and indirectly, through such factors as changes to the ground-water regime or visual impacts on the setting of neighbouring monuments;
- Desk-based assessment and walk-over surveys involve the review of currently available information. It is possible that further features exist at the site that are invisible or not yet known. The potential for this may be assessed from ground conditions, features within the wider area and a history of land use in the proposed development area.

8.2.3 Planning and Guidance

This assessment has been informed by current best practice and by a range of international, national and regional planning policy and guidance documents. The importance of cultural heritage remains is recognised in legislation and in national and local policy. The English Heritage guide *Conservation Principles Policies and Guidance for the Sustainable*

Management of the Historic Environment has been used as a template for parts of this assessment.

Legislation

At the international level, the UNESCO *Convention Concerning the Protection of the World Cultural and Natural Heritage 1972* and the *European Convention on the Protection of the Archaeological Heritage 1992* both apply. The principles set out in these conventions are reflected in the principal legislation in force in England. This is the *Ancient Monuments and Archaeological Areas Act 1973, as amended by the National Heritage Act 1983 and 2002*. This gives provision for a schedule of monuments which are protected. By legal definition, these Scheduled Monuments are considered as being of national importance.

The Planning (Listed Buildings and Conservation Areas) Act 1990 provides for the definition and protection of listed buildings and conservation areas. Listed buildings are recognised as being of special architectural or historic interest.

Other legislation that may have an effect on the treatment of heritage assets includes the *Town and Country Planning Act 1990*, the *Burials Act 1857* and the *Treasure Act 1996*. The effects of the *Localism Act 2011* may also be relevant in some cases, though the likely impact of this recent legislation is still uncertain.

National Policy

National policy is set out in the National Planning Policy Framework (NPPF), published by the Department for Communities and Local Government in March 2012 as a replacement for *Planning Policy Statement 5: Planning for the Historic Environment* and the majority of the other Planning Policy Statements and Guidance notes. The NPPF requires local planning authorities to identify and assess the significance of heritage assets that may be affected by development. One of the core principles of the Framework is that 'Planning should ... 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'. Definitions of 'Historic environment', 'archaeological interest', 'heritage asset' and 'designated heritage asset' are set out (NPPF pp. 51-57).

Regional and Local Policy

The proposed development area is covered by Lancashire County, Ribble Valley Borough and Clitheroe Town Councils. Lancashire County Council formerly provided planning guidance through the *Joint Lancashire Structure Plan 2006* but after adoption of the Regional Spatial Strategy in 2008 the County-level structure plan was abandoned. Guidance and applicable policy is now provided at Borough level through the *Ribble Valley Districtwide Local Plan (RVDLP)*. This Plan also replaces guidance set out in the *Clitheroe Local Plan Review 1993*. Saved policies relevant to the proposed scheme are contained in Chapter 4, Environment, and Chapter 6, *Industry and Employment*. The Submission Version of the Draft Core Strategy: A Local Plan for Ribble Valley agreed by Ribble Valley Borough Council on 28 August 2012 as suitable for submission to the Secretary of State for examination, includes policies that are relevant to the proposed scheme. These are summarised in Table 8.1 below.

Table 8.1 Planning Policy Issues Considered in the Assessment of Cultural Heritage

Planning Policy	Policy Issues
NPPF, <i>Achieving sustainable development</i> , paragraphs 7 & 9	The planning system [should] perform ... an environmental role – contributing to protecting and enhancing our natural, built and historic environment [and] seeking positive improvements in the quality of the built, natural and historic environment.
NPPF, <i>Core Principles</i> , paragraph 17	Planning should ... 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
NPPF, Chapter 7, <i>Requiring good design</i> , paragraph 59	Design policies should ... concentrate on guiding the overall scale, density, massing, height, landscape, layout, materials and access of new development in relation to neighbouring buildings
NPPF Chapter 12, <i>Conserving and enhancing the historic environment</i> , paragraph 126	Local planning authorities should set out in their Local Plan a positive strategy for the conservation and enjoyment of the historic environment, including heritage assets most at risk through neglect, decay or other threats. In doing so, they should recognise that heritage assets are an irreplaceable resource and conserve them in a manner appropriate to their significance
paragraph 129	Local planning authorities should identify and assess the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset)
paragraph 132	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
paragraph 156	Local planning authorities should set out ... strategic policies to deliver ... conservation and enhancement of the natural and historic environment including landscape
paragraph 157	Crucially Local Plans should <ul style="list-style-type: none"> • identify land where development would be inappropriate, for instance because of its environmental or historic significance; and • contain a clear strategy for enhancing the natural, built and historic environment
RVDLP Chapter 4, <i>Environment</i> , Section 4.6: <i>Archaeological & Historic Heritage</i> , policy ENV 14	In considering development proposals, the Borough Council will apply a presumption in favour of the preservation of ancient monuments and other nationally important archaeological remains and their settings
RVDLP Chapter 6, <i>Industry/Employment</i> , policy EMP9	Planning permission will be granted for employment-generating uses in barns and other rural buildings, providing [certain] criteria are met
RVCS Chapter 5, <i>Environment</i> , Key Statement EN5	The Historic Environment and its Heritage Assets and their settings will be conserved and enhanced in a manner appropriate to their significance for their heritage value; their important contribution to local character distinctiveness and sense of place; and to wider social, cultural and environmental benefits
RVCS Chapter 10 <i>Development Management Policies</i> , Key Statement DMG1	In determining planning applications, all development must ... consider the implications of development on heritage assets such as Scheduled Ancient Monuments, listed buildings, conservation areas, registered parks and gardens

Table 8.1 (continued) Planning Policy Issues Considered in the Assessment of Cultural Heritage

Planning Policy	Policy Issues
RVCS Chapter 10, <i>Development Management Policies,</i> Key Statement DME4	<p>In considering development proposals the Council will make a presumption in favour of the preservation of important protection and enhancement of heritage assets and their settings</p> <p>In line with NPPF, Ribble Valley aims to seek positive improvements in the quality of the historic environment through the following:</p> <ol style="list-style-type: none"> a) Monitoring heritage assets at risk; b) Supporting redevelopment proposals which better reveal the significance of heritage assets or their settings; c) Production of design guidance; d) Keeping conservation area management guidance under review; e) Use of legal enforcement powers to address unauthorised works where it is expedient to do so
RVCS Chapter 10, <i>Development Management Policies</i> Key Statement DMB2	<p>Planning permission will be granted for employment generating uses in barns and other rural buildings provided all of the following criteria are met:</p> <ul style="list-style-type: none"> • The proposed use will not cause unacceptable disturbance to neighbours in any way; • The building has a genuine history of use for agriculture or other rural enterprise; • The building is structurally sound and capable of conversion for the proposed use, without the need for major alterations which would adversely affect the character of the building; • The impact of the proposal or additional elements likely to be required for the proper operation of the building will not harm the appearance or function of the area in which it is situated; • The access to the site is of a safe standard or is capable of being improved to a safe standard without harming the appearance of the area; • The design of the conversion should be of a high standard and be in keeping with local tradition particularly in terms of materials, geometric form and window and door openings; • That any existing nature conservation aspects of the existing structure are properly surveyed and where judged to be significant preserved or, if this is not possible then any loss adequately mitigated
Proposals will be assessed in accordance with national planning guidance	

8.3 Assessment Approach

8.3.1 Data Gathering and Survey Work

The study comprised the study of pertinent cartographic and other historical sources, records of previous archaeological interventions, and Historic Environment Record (HER) entries. HER references are referred to in brackets throughout the text of this report, and are listed in Appendix 8.1. A site walk-over survey and a detailed examination of the buildings were carried out (Archaeological Services 2011; Appendix 8.2). Following submission of the desk-based assessment, targeted geophysical survey work was undertaken to examine the route of a Roman

road (Archaeological Services 2012a; Appendix 8.3). This was followed by geomagnetic survey over the remainder of the strategic site (Archaeological Services 2012b, Appendix 8.4).

It should be noted that when the desk-based assessment was carried out the study area was larger than the site presently under consideration. Field 5 mentioned in the original desk-based assessment report is now excluded from the site. To avoid ambiguity, the original numbering of the other fields has been retained in this document and is shown in Figure 8.1.

8.3.2 Proposed Scope of Assessment

This assessment covers the entirety of the site together with surrounding features within a 1km radius of its centre. The study has been conducted in accordance with standard Archaeological Services' procedures for desk-based assessments, and following the Institute for Archaeologists' *Standard and Guidance* for historic environment desk-based assessment (2011).

The geophysical survey covers all land within the site boundary and two L-shaped blocks at either side of the Pendle Road/A59 junction; these provide a substantial sample of the land around the site of proposed junction improvements.

Potential Receptors

Designated Features

There are no scheduled monuments within or in the immediate vicinity of the site. The nearest scheduled site is Clitheroe Castle, about 1.2 km north-west of the centre of the site. There are listed buildings at Standen Hall, 150 m outside the south boundary of the site, Little Moor, on the western boundary, and at Lower Standen, approximately 350 m west of the site boundary.

On-site Features

Cultural heritage requires assessment as part of this EIA because a number of features of archaeological significance survive on and in the immediate vicinity of the site. There is the potential for survival of sub-surface remains within the site boundary.

Extant features within the site include:

- the earthwork of a Roman road in Field 15;
- the mid-19th-century buildings of Higher Standen Farm;
- two isolated agricultural buildings; and
- the hedged boundaries of pasture fields.

As well as these visible features, potential receptors have been identified through geophysical survey work. Several former field boundaries, paths and tracks were identified. Nothing of archaeological significance was found in the surveys of fields 6, 8, and 16, or on either side of the proposed roundabout site. Evidence of past ploughing was found in fields 7, 10, 11, 12, 14, 15 and 18.

On the north edge of field 7 a very weak and narrow, sinuous, positive anomaly was found. Such anomalies can sometimes reflect former stream courses, though the topography of the site suggests that this is unlikely in this instance. It could reflect a soil-filled feature of some sort.

On the north edge of field 9 a circular positive magnetic anomaly was detected. This almost certainly reflects a soil-filled ditch of approximately 20 m diameter. Such ring-ditches are often associated with round barrows or roundhouses, and could be of local significance, though other functions, such as stock enclosures or stack stands, are also possible.

In field 12 traces suggest the survival of elements of the Roman road, damaged by ploughing.

In field 13 groups of discrete positive magnetic anomalies were detected. These could reflect soil-filled features such as pits. Although these could possibly be archaeological their origin is uncertain. Some linear positive magnetic anomalies at the south-west of field 14 could reflect soil-filled features such as former ditches.

The Roman road survives as an earthwork feature in field 15.

On the south-east edge of field 17 the remains of a second possible ring-ditch were identified. This is incomplete and measures approximately 12 m in diameter.

Potential Significant Effects

The significance of an effect, whether direct or indirect, is dependent on the importance of a particular historic asset and the magnitude of change that will result from the proposed works. It is important to note that not all cultural heritage features are regarded as being of equal importance. The significance of individual assets, and of the changes that may result from a particular proposal, are assessed using nationally-agreed criteria and professional judgement.

Significant effects would result from the destruction by groundworks or other operations of high-value features within the site, or from major impacts on the setting of such features outside the site boundary.

8.3.3 Significance Evaluation Methodology

The evaluation of significant effects on a particular cultural heritage feature depends on an assessment of both the importance or value of the feature in question and the magnitude of change that is predicted to result from the proposed scheme. Legislation and policy sets out appropriate responses to potential direct effects on features in accordance with their importance, as set out below.

Sites of National Importance

By legal definition, scheduled monuments are considered to be of national importance. Since the process of scheduling is ongoing, features not presently scheduled may also meet the established criteria for statutory protection; such features may also be of national importance.

All listed buildings are given equal protection by law. Three grades, I, II* and II, are defined. English Heritage defines grade I buildings as those of exceptional interest, sometimes internationally important; grade II* buildings are particularly important buildings of more than special interest; grade II buildings are nationally important and of special interest. 92% of all listed buildings are in this class.

Sites of Regional and Local Importance



Archaeological sites and historic assets of regional or local importance are those which do not merit scheduling but which are nevertheless of interest. The assessment of the value of

non-designated features relies to some extent on professional judgement, based on such factors as condition, period, rarity, situation, setting and current documentation.

Assessment of the magnitude of an effect on a given feature of cultural heritage interest is essential to the evaluation of the significance of that effect. For example, the loss of part of a Bronze Age burial mound would significantly compromise its integrity and intrinsic value. However, in the event of the unavoidable loss of part of a medieval field system (with appropriate record), the remainder of the field system could still retain intrinsic value.

The significance of effects on cultural heritage receptors is a function of the magnitude of change experienced by the receptor, and the value of the receptor, as defined in Table 8.2.

Table 8.2 Significance Matrix

Magnitude of Change	Value of cultural heritage feature		
	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	

8.3.4 Technical Consultations

The desk-based assessment entailed consultation of the Lancashire HER, air photographs obtained from the National Monuments Record, and a variety of documentary and on-line sources. The Lancashire County Record Office was closed for refurbishment when the desk-based assessment was carried out; its on-line catalogue was consulted. Documents could not be inspected directly; however, because of the paucity of documentary material covering the study area, it is considered unlikely that this has affected the assessment. Copies of the desk-based assessment and the first geophysical survey reports were submitted to Dr Jennie Stopford, the English Heritage Inspector of Ancient Monuments for the region, and to Peter Iles, Specialist Advisor (Archaeology) and Douglas Moir, Planning Officer (Archaeology) at Lancashire County Council's Environment Directorate.

English Heritage have no comments because there are no Scheduled Monuments on the site. Douglas Moir has responded to say that the geophysical survey already carried out "cannot be regarded as an adequate sample to be applied to the archaeological potential of the site as a whole. Where sites are to be surveyed by means of geophysical survey we would normally consider 40% of the site area available for such survey to be an appropriate minimum sample size. As far as preservation of the line of the Roman road is concerned we would definitely recommend that this should apply to where the road can still be seen as a surviving earthwork, and therefore can be assumed to be in its best state of preservation. As for the other areas where the road survives purely as a buried feature, and has therefore been subject to some level of damage or destruction, archaeological excavation and recording in advance of construction

would be considered an appropriate mitigation strategy. The recommendation for building recording of the barns is one that we would agree on".

8.3.5 Final Scope of the Assessment

The comments received indicate that the scope of the assessment and the mitigation strategies proposed are appropriate both to the site and to the scale of the proposed development.

8.3.6 Information Gaps

A geophysical survey has identified a handful of possible archaeological features. Further investigation would be required to determine the significance of these features.

8.4 Baseline Conditions

8.4.1 Designated Features

There are no designated features within the site. Clitheroe Castle, a scheduled monument and grade I listed building, is over 0.8 km from the nearest point on the site boundary. Standen Hall, a grade II* listed country house, stands on lower ground about 140 m south of the site. A number of late 18th- and 19th-century houses at Little Moor, immediately outside the west boundary of the site at Field 18, are listed at grade II. Little Moor has become absorbed into the south end of the town through development along Littlemoor, so its formerly isolated state is no longer clearly visible. Lower Standen, a grade II listed building, lies approximately 350 m west of the site boundary.

8.4.2 On-site Features

Prehistory (to AD 100)

There is no direct evidence of prehistoric activity at the site. There is, however, evidence that the surrounding area was exploited in prehistory. Six Neolithic stone axes have been reported from the Clitheroe area, two over 2 km to the north-east, one at Sawley, several kilometres to the north-east and one at Bleasdale. Two further axes are reported to have come from Clitheroe but the find-spots are not recorded. A stone mace head (HER 195) and a bronze flanged axe head (HER 198) dating from the Bronze Age have been found in Clitheroe. There is little evidence of Bronze and Iron Age occupation in the region but agricultural settlements of these periods probably took the form of scattered hamlets and farmsteads. The distribution of stray finds suggests that an as-yet unidentified resource relating to prehistoric exploitation may survive within the site.

The value of any find of prehistoric material would depend on its context. A stray find of an individual artefact in topsoil would be of medium value; the discovery of such an artefact in association with definable features, whether related to occupation, land division or burial, would undoubtedly be regarded as of very high value.

The Romano-British Period (AD 100-400)

The line of a Roman road linking the forts at Ribchester (*Bremetennacum Veteranorum*) and Ilkley (*Verbeia*) runs through the west side of the site. The road has been recorded at several

places close to the south-west and north-east boundaries of the site (HER 1584, 15514, 15515, 15516).

This road was listed by Margary (1967, 372) as 72a and described in the vicinity of the site: '*[south of the Calder] a distinct turn to the north-east occurs, the new line being followed for six miles past the east side of Clitheroe to Downham Park, and this was done in order to pass around the north side of Pendle Hill conveniently ... the agger is traceable ... at various points near Clitheroe*'. The line of the Roman road is visible as an upstanding earthwork in Field 15. Geomagnetic survey found evidence indicating the survival of the road in Fields 12 and 15 (Appendix 8.3).

Evidence of Romano-British occupation of the site has been found in the form of a Roman coin of Tetricus II (AD270-273), half of a Roman seal box, part of a lock pin and a terret ring. These were recovered during metal detecting some 400 m east of the Roman road, near Higher Standen Farm (HER 31912, 31913, 31916 and 31917). There is no certainty about the precise location of these finds. Roman finds just outside the site include a burial at Whalley Road/Clitheroe Road (HER 720) and a Roman stone relief figure (HER 1869) built into a light well at Standen Hall.

Roman roads are associated with both road-side settlement and burials. No evidence of settlement has been found in the magnetic survey carried out as part of this assessment. The discovery of a variety of metal finds indicates that there is some potential for the survival of archaeological remains of this period, including settlement sites, away from the road. Any such survival would be of high value, as is the surviving earthwork in the south of the site. The significance of the road elsewhere has been degraded because of the damage caused by centuries of ploughing. It is not possible to state definitively that no burials are present along this stretch of road. No evidence of burials has been found in the geophysical survey data. However, graves are small and often shallow features filled with material derived from the ground into which they are cut, so they may not show as clearly as other archaeological deposits. The fact that the site is some distance away from any known Romano-British settlement, and the absence of evidence of such settlement in the geophysical survey results, means that the likelihood of roadside graves being present on the site is very small.

The Post-Roman and Medieval Periods (AD 400-1500)

The name Clitheroe is derived from the Old English *clyder* and *hoh*, or Old Scandinavian *haugr*, meaning a hill covered with stones. Despite this early name, and the suggestion that there was a pre-Norman wooden palisaded enclosure on the site of the castle, there is no archaeological evidence of occupation in the early medieval period (i.e. before the Norman conquest). Clitheroe is not mentioned by name in the Domesday survey and may have been little more than a scatter of small rural settlements at this time. The foundation date of the castle is unknown but there was a defended site at Clitheroe by 1102. Strongly sited on top of a limestone knoll, the castle contained a small keep, a chapel and other buildings surrounded by a curtain wall. The castle's gatehouse was demolished in post-medieval times. The keep was damaged during the Civil War and the structure was extensively repaired in the mid-19th century. The borough, now part of the Conservation Area that includes the castle, parish church and the centre of the town, was created between 1146 and 1177 by Henry de Lacy. Throughout the medieval period Clitheroe acted as a market place for the area; there were scattered rural settlements in the surrounding countryside.

Documentary evidence shows that in 1258 Standen, an area of land south of the town, was occupied by a grange or detached farm belonging to the lord of Clitheroe; two barns there were valued at seven shillings. In 1311 the Earl of Lincoln held 80 acres of demesne land, 36 acres of meadow and several pastures at Standen. It is probable that the whole of the site was agricultural land throughout the medieval period.

The recent geophysical survey found evidence of medieval ridge and furrow in Fields 12 and 15 in the west of the site. Medieval artefacts found at the site include a spindle whorl found in Field 15 and another from just outside the site boundary, south-west of Field 17 (HER 31867, 31875). Clitheroe lay on one of the main highways between Lancashire and Yorkshire. A route leading south to the ecclesiastical centre at Whalley, via Four Lane Ends, runs through the eastern edge of the site. The site of a medieval wayside cross has been identified close to Four Lane Ends (HER 3588).

The Post-medieval and Modern Periods (after AD 1500)

Standen Hall (HER 18024) is said to have been erected in the 15th century, though the present house is a remodelling of the mid-18th century. The Hall belonged to the Aspinall family.

Speed's 1610 map of the county shows Clitheroe but provides no detail of the surrounding landscape or roads. An early 17th-century coin (HER 12021) was found in the area in 1998. The land around Clitheroe, including the Standen Estate, was enclosed by an Act of Enclosure in the late 18th century. The pattern of fields seen across the site is characteristic of this period and markedly different from areas of older enclosure to the north and south, around Pendleton and Chatburn. The Yates map of 1786 shows the site as open land with a strip of trees around Four Lane Ends and along Pendle Road. Subsequent maps show open farm land with little change until the present day.

The town of Clitheroe developed and grew in the post-medieval period. A number of industries were established including a water-powered cotton mill built in 1787 (HER 5609). Limehouse Farm (HER 6112), south of the site, suggests the presence of a lime kiln in the area before the mid-19th century. A mill pond (HER 13673), created by a weir on Pendleton Brook, provided water power for the Primrose Printworks. Another weir (HER 13675) may have fed the Littlemoor Mill (HER 19227). Little Moor, immediately outside the site west of Field 18, was a small rural hamlet until the 20th century. The listed houses here are of 18th- and early 19th-century date (HER 17777, 17778, 17831).

Map evidence shows that the present Higher Standen Farm was built between 1857 and 1886; before that date the land appears to have been farmed from the older buildings between Higher Standen and Standen Hall. Higher Standen is a typical mid-19th-century planned farmstead, built of local brick for stock-rearing. The farm house stands on the south side of the drive to the older farm buildings just outside the site. The farm yard is a symmetrical group of shippens (cow houses), loose boxes and former stables. Inside the yard a long shelter shed formerly had two open yards on its south side, but these have been removed. The buildings were designed for efficiency, with a steam engine for threshing and feed processing attached to a central barn in the north-west range. Feed was carried to the shippens on railed trucks. The arrangements have been changed over the years, with alterations to the 19th-century buildings and the addition of covered yards and slurry-handling facilities on the north-east side of the old yard. The old stables are now occupied by a milking parlour and former pigsties are used as a calf-house.

Two outbuildings of early 19th-, or possibly late 18th-century, date survive on the site. The northern one is likely to have been built when the old farmstead between Standen Hall and High

Standen Farm was in operation. This building, in Field 6 in the northern part of the site, is now roofless and in a ruined state. It was in use as a shippon for 20 cows within living memory (pers. comm. Richard Collinge). The larger barn between Fields 17 and 18, near Little Moor, is disused but in a reasonable state of repair. A prominent earthwork shows the line of a track from the south-east side of Little Moor to this building. It appears that the barn and adjoining fields were part of a different holding at Little Moor, rather than part of Higher Standen Farm as they are today.

In the years after the Second World War the land to the north-west of the site was gradually built up as Clitheroe grew. The housing estates on the north side of the site date from the period between the World Wars and from the late 20th century.

8.5 Proposed Mitigation

8.5.1 Measures Incorporated to Mitigate Potential Significant Effects

Development in the field adjoining the listed buildings at Little Moor will be designed to ensure the retention of some open space around the former hamlet.

Groundworks on the line of the extant Roman road in field 15 are to be avoided and the upstanding earthwork is to be retained. The buried element of the road will be examined and recorded by archaeological excavation. The line of the road across the site will be retained as part of an open space. Groundworks in the vicinity of the road line will be monitored for the recovery of archaeological or artefactual material.

Recording of the agricultural buildings in their present state will be undertaken to provide a detailed picture of the structures and their former uses before demolition.

Where potentially significant features have been identified through geophysical survey, appropriate evaluation and assessment will be carried out. Changes may be made to mitigation strategies to avoid significant impact on cultural heritage features of high value revealed by such investigations. This might entail excavation and preservation by record or, in the case of very significant discoveries, preservation in situ, through the avoidance of development in a particular area.

Wherever sites of potential significance are identified, by geophysical survey or other means, archaeological monitoring of groundworks will be maintained to ensure that information about cultural heritage features is not lost.

8.5.2 Summary of Mitigation Measures

Table 8.3 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 8.3 Summary of Proposed Mitigation Measures

Receptor	Change(s) and Potential Effects	Incorporated Mitigation	Likely Effectiveness
Listed buildings adjoining the site at Little Moor	Loss of legibility of the former detached settlement	Appropriate design of buildings and open space on the west edge of the site near Little Moor	High
Roman road: earthwork	The partial or total loss of the visible feature; similar loss of any related artefactual material within the agger	Groundworks to be designed to avoid the road line	High
Roman road: buried remains	The partial or total loss of surviving elements and any related artefactual material	Excavation and recording in advance of construction work	High
Buildings at Higher Standen Farm	Demolition leading to the total or partial loss of the buildings and any related fabric or artefacts within them	Recording and retention through new beneficial uses achieved through employment of high-quality conversion schemes	High
Isolated agricultural buildings	Demolition leading to the total or partial loss of the buildings and any related fabric or artefacts within them	Detailed recording to provide an as-existing record in advance of demolition	High
Potential prehistoric, Romano-British or medieval features	The partial or total loss of buried features and any related artefactual material	Preservation by record or Preservation <i>in situ</i>	High
Stray finds (all periods)	The loss of artefacts, or their recovery without archaeological recording	Maintenance of archaeological monitoring during intrusive groundworks	High

8.5.3 Additional Measures Incorporated to Mitigate Possible Other Effects

Buried features, depending on their form and distribution, may be vulnerable to changes in the ground-water regime attendant on the change from agricultural land to housing or other uses. If such features are identified through geophysical survey, evaluation work or monitoring during groundworks, this matter will be considered. Where necessary, appropriate changes may be made to mitigation strategies to ensure that cultural heritage features do not suffer significant impact.

8.6 Assessment of Effects

8.6.1 Predicted Effects and their Significance

Designated Features

Clitheroe Castle

Clitheroe Castle is separated from the site by the south-eastern part of Clitheroe town, a sizeable area of low-rise post-war and later 20th-century housing built on ground that rises with distance from the centre of the town. The site is visible in the middle distance from the top of the Castle's keep. Given the wide separation between the site and the Castle, as well as the extent of existing development on this side of the town, it is considered that the proposals will not have a significant effect on the setting of the monument.

Standen Hall

Standen Hall and its Old Bothy are screened from the site by rising ground covered with a belt of woodland, so development would not have a significant effect on their setting. The visual impact on the Old Bothy will be slightly greater. This house does not have a screen of woodland, but it is separated from the site by a group of later unlisted buildings and some mature vegetation. The proposed mitigation, by ensuring the retention of open space around this group, will minimise the impact on this building.

Little Moor

The setting of the listed buildings at Little Moor has the potential to be directly affected by development in the site directly to the south. The proposed mitigation, by ensuring the retention of open space around the former hamlet, will minimise the impact on these buildings.

Lower Standen

The listed building at Lower Standen is about 350 m from the boundary at its nearest point but in this area, south of Little Moor, the development area is predominantly screened by trees. The proposed mitigation, by ensuring the retention of open space around the former hamlet, will set new buildings back behind the existing trees, therefore the impact on the listed house is negligible. The nearest part of the developed site, directly east of Lower Standen is about 550 m from the building. Though the land rises here towards the site boundary the existing mature treelines and hedges, together with the proposed mitigation through the provision of open space, ensure that the impacts of the development are minimised if not negated.

On-site Features

Roman Road

The upstanding earthwork remains of the road will be retained and the damaged sections will be examined and recorded. The net effect on the Roman feature will be insignificant.

Higher Standen Farm

The most sensitive post-medieval features on the site are the 19th-century agricultural buildings. Notwithstanding the local planning policies ENV 22, H 15-17 and EMP 9 mentioned in Table 8.1, there has been some concern over the incremental loss of the county's stock of such buildings in recent years. For this reason the preferred option for mitigation is in two stages. In

the first, a suitable record will be made of the farmstead buildings in their current state; in the second, appropriate designs for conversion to new uses, in accordance with best current practice, will be drawn up. This will ensure preservation of the historic significance of the buildings while providing economic new uses, so the net effect will be insignificant.

Agricultural Buildings

The two isolated buildings are of limited historical and architectural value. They will be recorded before removal or conversion.

Other Archaeological Remains

It is likely that buried medieval evidence would derive from agricultural activity rather than from settlement. Ridge and furrow is apparent on the ground in Field 15 and in a number of areas east of the site, and appears in geophysical survey results across much of the study area. Material such as the spindle whorls mentioned above commonly arrived on arable land with other domestic waste spread during manuring of the fields. Evidence of ridge and furrow and stray finds of this kind are of medium value, but the earthwork features have been significantly degraded by post-medieval ploughing. It is considered that development of the site would not result in a significant effect on medieval features of this kind.

Potential archaeological features, presently invisible, have been detected. The magnitude of the impact of the proposed scheme on these is assessed as medium. These features will be investigated in detail as part of the mitigation strategy for the site. Such investigation entails partial or total removal of the features from the site but ensures their preservation by record in appropriate local archives.

8.6.2 Conclusions

Following implementation of the mitigation measures the proposed development would not result in any significant effects on cultural heritage features.

8.7 Summary of Predicted Effects

Table 8.4 Summary of Effects and Evaluation of Significance

Receptor	Probability	Value	Magnitude	Significance	
				Level	Rationale
Listed buildings at Little Moor	Certain	High	Low	Not Significant	Good design reduces impact of new development
Roman road	Certain	High	Low	Not Significant	Preservation <i>in situ</i> and by record preserves the most important element
Agricultural buildings	Certain	Medium	Medium	Not Significant	Recording and good design reduces impact of new development Re-use ensures survival of the most significant buildings
Potential prehistoric, Romano-British or medieval features	Possible	Unknown	Medium	Not Significant	Impacts on buried remains will be mitigated through appropriate archaeological investigation and preservation

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

8.8 Implementation of Mitigation Measures

The principal mitigation proposed, field investigation of the buried features that have been revealed by the geophysical survey work, will need to be undertaken before the main contract operations begin. It would be normal for this work to be completed as part of a planning condition. Implementation of the mitigation strategy is summarised in Table 8.5.

Table 8.5 Implementation of Incorporated Mitigation and Monitoring Proposals

Mitigation Measure/Monitoring Proposal	Actioned By	Compliance Mechanism
Appropriate design of buildings and open space on the west edge of the site near Little Moor	Project design team, on behalf of the landowner/developer	Approval by planning authority
Groundworks to be designed to avoid the earthwork of the Roman road	Project design team on behalf of the landowner/developer	Approval by planning authority, as advised by Specialist Advisor and Planning Advisor (Archaeology)
Excavation and recording of the buried element of the Roman road	Archaeological contractor on behalf of the landowner/developer	Approval by planning authority, as advised by Specialist Advisor and Planning Advisor (Archaeology)
Investigation leading to preservation <i>in situ</i> or preservation by record, as appropriate	Archaeological contractor, on behalf of the landowner/developer	Approval by planning authority, as advised by Specialist Advisor and Planning Advisor (Archaeology)
Maintenance of archaeological monitoring during intrusive groundworks	Archaeological contractor, on behalf of the landowner/developer	Approval by planning authority, as advised by Specialist Advisor and Planning Advisor (Archaeology)
Detailed recording of buildings; retention through conversion to beneficial uses	Archaeological contractor on behalf of the landowner/developer; project architects	Approval by planning authority, as advised by Specialist Advisor and Planning Advisor (Archaeology)
Detailed recording to provide an as-existing record in advance of demolition	Archaeological contractor, on behalf of the landowner/developer	Approval by planning authority, as advised by Specialist Advisor and Planning Advisor (Archaeology)

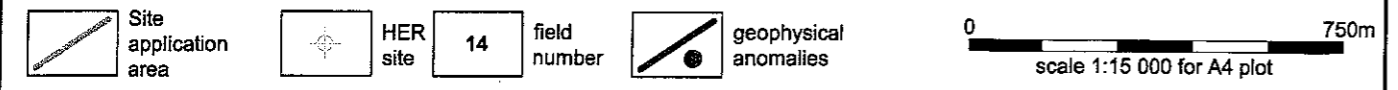
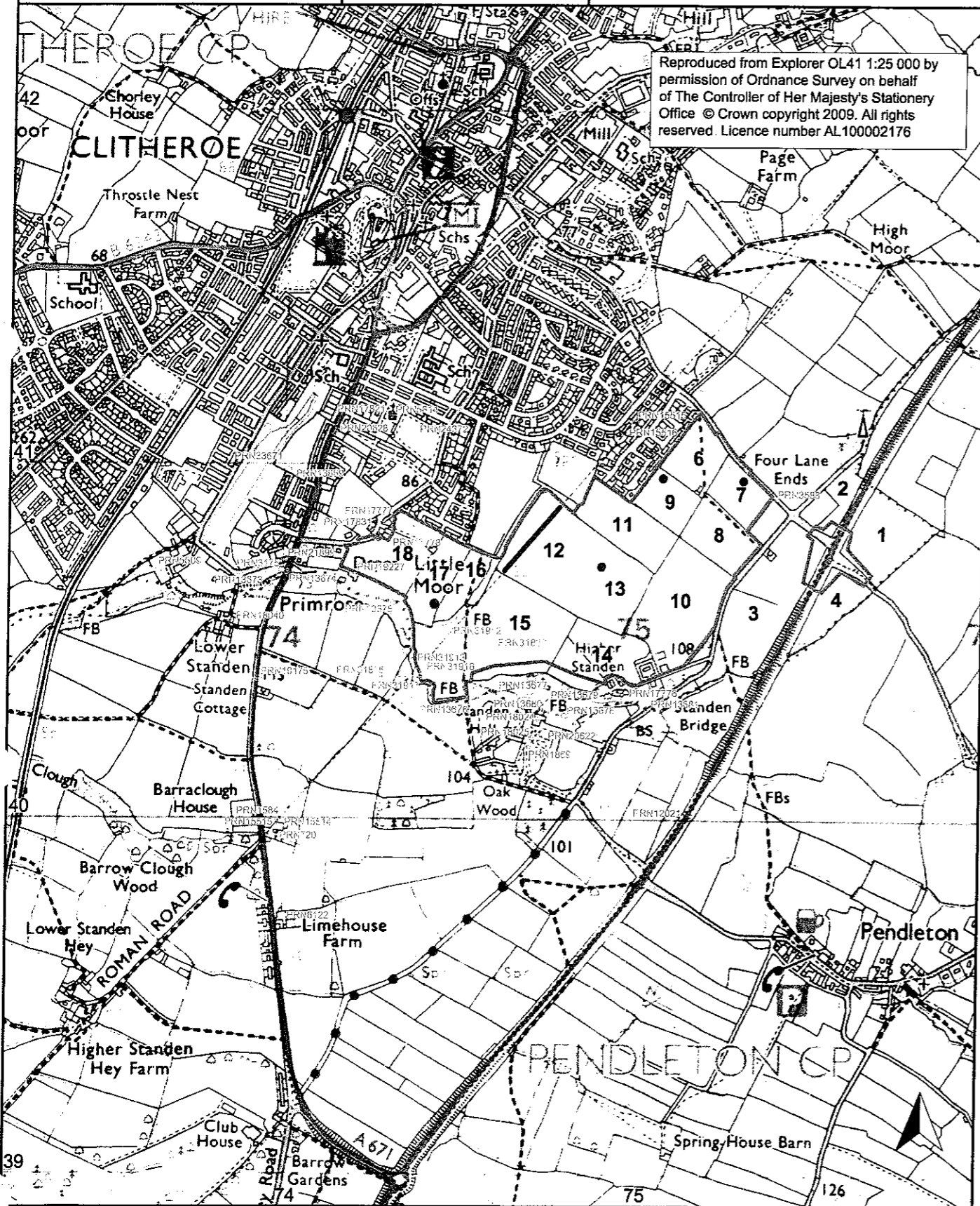
8.9 Technical References

1. Archaeological Services 2011 *Land at Higher Standen Farm, Clitheroe, Lancashire; archaeological desk-based assessment* Unpublished report no **2741** on behalf of Steven Abbott Associates LLP, for The Trustees of the Standen Estate; Archaeological Services Durham University.
2. Archaeological Services 2012a *Land at Higher Standen Farm, Clitheroe, Lancashire; geophysical survey* Unpublished report no **2811** on behalf of Steven Abbott Associates LLP, for The Trustees of the Standen Estate; Archaeological Services Durham University.
3. Archaeological Services 2012b *Land at Higher Standen Farm, Clitheroe, Lancashire, geophysical survey* Unpublished report no. **2945** on behalf of Steven Abbott Associates LLP, for The Trustees of the Standen Estate; Archaeological Services Durham University English Heritage 2008 *Conservation Principles: Policies and Guidance for the Sustainable Management of the Historic Environment*.



4. IfA 2011 *Standard and Guidance for historic environment desk-based assessment*, Institute for Archaeologists.
5. *National Planning Policy Framework* Department for Communities and Local Government, March 2012.

Figure 8.1: Site location and HER



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9. Landscape and Visual Assessment

9.1 Introduction

This chapter of the ES assesses the potential landscape and visual effects which would result from the construction and operation, or occupation, of the proposed scheme. The chapter describes the methods used to assess the effects and determines the baseline conditions currently existing at the site and surrounding area. Mitigation measures are detailed, where required, to prevent, reduce or offset the potential effects.

This chapter has been prepared by IBI Taylor Young Limited.

9.2 Context

9.2.1 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:

- **Enhancement:** Landscape improvement through restoration, reconstruction or creation;
- **Landcover:** Combinations of land use and vegetation that cover the land surface;
- **Landform:** Combinations of slope and elevation that produce the shape and form of the land;
- **Landscape:** Human perception of the land conditioned by knowledge and identity with a place;
- **Landscape capacity:** The degree to which a particular landscape character type or area is able to accommodate change without unacceptable adverse effects on its character. Capacity is likely to vary according to the type and nature of change being proposed;
- **Landscape character:** The distinct and recognisable pattern of elements that occurs consistently in a particular type of landscape, and how this is perceived by people. It reflects particular combinations of geology, landform, soils, vegetation, land use and human settlement. It creates the particular sense of place of different areas of the landscape;
- **Landscape effects:** Change in the elements, characteristics, character and qualities of the landscape as a result of development. These effects can be positive or negative;
- **Landscape feature:** A prominent eye-catching element, for example, wooded hilltop or church spire;

- **Landscape quality/condition:** This is based on judgements about physical state of the landscape, and about its intactness, from visual, functional, and ecological perspectives. It also reflects the state of repair of individual features and elements which make up the character in any one place;
- **Landscape sensitivity:** The extent to which a landscape can accept change of a particular type and scale without unacceptable adverse effects on its character;
- **Visual amenity:** The value of a particular area or view in terms of what is seen;
- **Visual effect:** Change in the appearance of the landscape as a result of development. This can be positive (i.e. beneficial or an improvement) or negative (i.e. adverse or a detraction);
- **Visual envelope:** Extent of potential visibility to or from a specific area or feature.

9.2.2 Technical Context

The proposals are to develop land on the southeast side of Clitheroe. The landscape is currently gently rolling fields with strong hedgerows as field boundaries with mature hedgerow trees and streams in steep sided incised valleys. The site is bounded by existing residential areas of Clitheroe town to the north. The site is not within the Forest of Bowland Area of Outstanding Natural Beauty (AONB) but is visible from the western slopes of Pendle Hill and in very distant views from Longridge Fell. The development is also visible from Clitheroe Castle, southern approach roads to the town, public footpaths.

The location of the site is shown on Figure 1.1 of this ES.

9.2.3 Planning and Guidance

This assessment will follow guidance set out in:

- *Landscape Character Assessment* (The Countryside Agency and SNH) 2002;
- *Guidelines for Landscape and Visual Impact Assessment* (Landscape Institute and Institute of Environmental Management and Assessment) 2002;
- *Landscape Institute Advice Note 01/04*;
- *Landscape Assessment Guidance* (CCP 4231993) (Countryside Commission); and
- *Interim Landscape Character Assessment Guidance* (SNH) 1999.

This assessment precedes publication of the 3rd Edition of the Landscape Institute's *Guidelines for Landscape and Visual Impact Assessment*

These guidelines are not prescriptive but seek to establish certain principles that will help to achieve a degree of consistency with regard to the production of Landscape and Visual Assessments. As such, the process of landscape and visual assessment uses a combination of quantitative and qualitative considerations involving the use of structured, informed and reasoned professional judgement. These considerations are dependent on the characteristics of the particular development being assessed, as well as the landscape context of the proposed development.

The land around Clitheroe is classified and a number of scales by a number of different documents as follows:

- National - Natural England's Landscape Character map of England National Joint Character Area JCA 33 Bowland Fringe and Pendle Hill;
- Regional - Northwest Regional Landscape Character Framework, Countryside Commission, August 2009;
- County - Lancashire Landscape Character Assessment, Lancashire County Council, December 2000;
- Forest of Bowland, Area of Outstanding Natural Beauty, Landscape Character Assessment, Natural England September 2009.

The relevant descriptions from these documents have been extracted in Section 9.4 Baseline Conditions.

The recently published *National Planning Policy Framework* (2012) places a new emphasis on the need to 'establish a strong sense of place, using streetscapes and buildings to create attractive and comfortable places to live, work and visit'. This will inform design proposals for the development.

9.3 Assessment Approach

9.3.1 Data Gathering and Survey Work

The *Guidelines for Landscape and Visual Assessment* recognise that landscape and visual assessments are separate, although linked, procedures. The following distinction can be made between landscape and visual impacts:

- Landscape impacts can be defined as physical changes in the fabric, character and quality of the landscape (as an environmental resource) as a result of the development and how this is experienced; and
- Visual impacts can be defined as changes that arise in the composition of available views of the landscape resulting from the development, and the effects of those changes on visual receptors (people) from the defined visual impact area around the site, as well as overall effects with respect to visual amenity;

This assessment has therefore been divided into two areas, both of which have the potential to be impacted upon by the proposal, as follows:

- An assessment of the potential changes and effects on existing landscape character; and
- An assessment of the potential changes and effects on views from existing key visual receptors.

Desk Study

A desk study assessment of the site and its surroundings was undertaken to establish the broad landscape planning context and landscape character context of the area in which the proposed

development is located, and to identify broad Zones of Visual Influence (ZVIs), anticipated key viewpoints, sensitive receptors, topography and landscape features.

Site Survey

Following completion of the desk based assessment, a field survey was performed to provide more detail and record information on the existing characteristics of the area within which the proposed development is located and to identify from observation the extent of the actual ZVIs, potential landscape and visual impacts.

The field survey was undertaken in March 2012 at which time vegetation in the area was not in leaf. The visual assessment is therefore based on the worst case scenario of anticipated views of the proposed development during the winter months.

9.3.2 Proposed Scope of the Assessment

The assessment is a full landscape and visual impact assessment of the proposals. The landscape impact assessment has reviewed national, regional and local landscape character studies including studies relating to the Forest of Bowland Area of Outstanding Natural Beauty.

The visual impact assessment study area was based on the ZVI determined during the desk study (see Figure 9.1). Viewpoints were selected from within the ZVI to represent all the visual receptors likely to be affected by the development including:

- Settlements/Properties;
- Public Rights of Way;
- Recreational Facilities and Heritage Sites; and
- Roads and Employment Areas

Draft viewpoints and ZVI were sent to Ribble Valley Borough Council Countryside Officer for review and comment prior to undertaking the assessment.

9.3.3 Significance Evaluation Methodology

Landscape Baseline Analysis

The LVIA describes the likely nature and scale of changes on individual landscape elements and characteristics known as 'receptors', as well as the effect on landscape character, as a result of the proposed development. The extent to which a landscape can accommodate change due to development varies according to a range of factors such as land use, the scale and pattern of the landscape, visual enclosure, and quality of view and the value of the landscape. Changes to the fabric and character of a particular landscape may affect the perceived value of that landscape, giving rise to changes in its quality. The scale or magnitude of landscape effects ranges from negligible, through minor to moderate and major. Such changes are described as either adverse or beneficial.

The guidelines describe how the use of existing landscape character assessment studies, as well as the carrying out of a local, site specific character assessment; can assist in informing the landscape character impact assessment process. The three main scales of landscape character assessment identified by The Countryside Agency (now part of Natural England) are:

- national and regional scale;
- local authority scale; and
- local scale.

This LVIA uses and presents a summary of the relevant published assessments at national/regional and local authority scales. These wider character assessments are normally used to provide the context for the local-scale landscape assessment. Due to the proximity of the AONB, the area in which this site is located has been the subject of an independent local scale assessment which will be used to inform this study.

An assessment of the site's landscape character area was then made to determine the following:

Condition: the state of an individual area of landscape. That is the maintenance and condition of the individual elements and features that occur to form a particular character area or unit.

Value: the landscape's importance at an international/national, county or local level (reflected in statutory or non-statutory designations) and also its perceived value to the local population.

Sensitivity: the degree or capacity to which a particular character type or unit is able to accommodate change without adverse impacts on its character.

The baseline condition, value, and sensitivity of the landscape character are assessed in accordance with the scales described in Tables 9.1 to 9.3 below. The perceived condition of the landscape and its value assists in determining the landscape's sensitivity to change.

Table 9.1 Landscape Condition

Category	Criteria
Exceptional	<p>Strong landscape structure characteristics patterns, balanced combination of landform and landcover.</p> <p>Appropriate management for land use and landcover</p> <p>Distinct features worthy of conservation.</p> <p>Sense of place.</p> <p>No detracting features</p>
High	<p>Strong landscape structure characteristic patterns and balanced combination of landform and landcover.</p> <p>Appropriate management for land use and landcover but potentially scope to improve</p> <p>Distinct features worthy of conservation</p> <p>Sense of place</p> <p>Occasional detracting features</p>
Good	<p>Recognisable landscape structure, characteristic patterns and combinations of landform and landcover are still evident.</p> <p>Scope to improve management for land use and land cover</p> <p>Some features worthy of conservation</p> <p>Some detracting features.</p>

Table 9.1 (continued) Landscape Condition

Category	Criteria
Moderate	Distinguishable landscape structure, characteristic patterns of landform and landcover Scope to improve management of vegetation. Some features worthy of conservation. Some detracting features
Poor	Weak landscape structures characteristic patterns of landform and landcover are often masked by land use. Mixed land use evident. Lack of management and intervention has resulted in degradation. Frequent detracting features
Very poor	Degraded landscape structure, characteristic patterns and combinations of landform and landcover are masked by land use Mixed land use dominates Lack of management/intervention has resulted in degradation. Extensive detracting features
Damaged landscape	Damaged landscape structure Single land use dominates Disturbed or derelict land requires treatment Detracting features dominate.

Table 9.2 Landscape Value

Value	Typical Criteria	Typical Scale	Typical Examples
Exceptional	High importance (or Quality) and Rarity. No or limited potential for substitution	International, National	World Heritage Site, National Park, AONB
High	High importance (or Quality) and Rarity Limited potential for substitution.	National, Regional, Local	National Park, AONB, AGLV, LCI, ALLI
Medium	Medium importance (or Quality) and Rarity Limited potential for substitution	Regional, Local	Undesignated but value perhaps expressed through non-official publications or demonstrable use
Poor	Low importance (or Quality) and Rarity	Local	Areas identified as having some redeeming feature or features and possibly identified for improvement
Very Poor	Low Importance (or Quality)and Rarity	Local	Areas identified for recovery

Table 9.3 Sensitivity to Change

Sensitivity to Change	Description
High	A landscape particularly sensitive to change. Proposed change would result in major adverse effects on landscape character/features/elements.
Medium	A landscape capable of accepting limited change. Proposed change could be accommodated with some adverse effects on landscape.
Low	A landscape capable of accepting or benefiting from considerable change. Proposed change could be accommodated with little or no adverse effects or would result in beneficial effects on landscape character/features/elements.

By the end of the baseline stage, an understanding is formed of the landscape's ability to accommodate the development envisaged and the likely nature and extent of potential effects, which in turn informs the next stage of the assessment process.

Visual Baseline Analysis

The assessment of visual effects describes the changes in the visual character of available views and in the visual amenity of local receptors arising from the development.

Initially, it is necessary to define the extent of visibility both within and outside the proposed development site. The area within which any of the activities of the proposed development, be they temporary or permanent, are likely to be visible is known as the Theoretical Zone of Visual Influence (TZVI), this is based on topography. This visual envelope forms the extent of the study area. The site survey then identifies the true Zone of Visual Influence from within this study area by direct observation.

Within the ZVI, viewpoints are then selected to represent views from the most commonly used locations in and around the site. These viewpoints have been selected on the basis of which points provide the clearest views of the proposed development site, and are representative of a number of individual receptors. Sometimes views from these receptors will in reality be obscured by vegetation or very distant, this will be discussed within the analysis.

During the baseline field survey the views from these viewpoints were recorded using photographs and a written record made of the existing view, type of receptor, and numbers of people likely to be affected, duration of views and potential screening effects.

Sensitivity

The sensitivity of each visual receptor is determined by factors including the location and context of the viewpoint; the expectations and occupation or activity of the receptor; and, the importance of the view (historical/number of visitors). The most sensitive receptors include users of public rights of way; views valuable to a particular community; and occupiers of residential properties. Other receptors include people at their place of work and people travelling through e.g. by road or rail. The hierarchy of visual receptors is set out below:

- High – Residents, walkers and cyclists using public rights of way for recreational purposes;
- Medium – Motorists and train travellers; and

- Low – People in their place of work.

By the completion of the visual baseline stage an understanding has been formed of the visual environment's ability to accommodate the development envisaged and the likely nature and extent of potential effects, which in turn informs the next stage of the assessment process

Assessment of Potential Landscape Effects

Magnitude of Landscape Effects

The magnitude of the effect on the receiving landscape is described by selecting the category below which best describes the effect on the receiving landscape:

- High – Total loss or substantial alteration to key elements/features/characteristics of the baseline or introduction of elements considered to be totally uncharacteristic when set within the attributes of the receiving landscape;
- Medium – Partial loss or alteration to one or more key elements/features/characteristics of the baseline or introduction of elements that may be prominent but may not necessarily be considered to be substantially uncharacteristic when set within the attributes of the receiving landscape;
- Low – Minor loss or alteration to one or more key elements/features/characteristics of the baseline or introduction of elements that may not be uncharacteristic when set within the attributes of the receiving landscape;
- Negligible – Very minor loss or alteration to one or more key elements/features/characteristics of the baseline or introduction of elements that are not uncharacteristic when set within the attributes of the receiving landscape.

Assessment of Potential Visual Effects

Scale or Magnitude of Visual Effects

The scale or magnitude of visual change is determined by the degree of change in view and the contrast or integration of new features or changes, which are influenced by factors which are listed below:

- Distance - The greater the distance from a feature/effect, the less detail is observable and the more difficult it is to distinguish the feature/effect from its background, thereby diminishing the visual impact;
- Elevation - Viewpoints lower than a feature/effect mean that it is more likely to be viewed against the sky, which typically increases its visual impact. Higher viewpoints mean that a feature/effect is more likely to be viewed against a backdrop, which diminishes the visual impact;
- Size - The greater the proportion of the view that is formed by new features and activities associated with a feature/effect, the greater the visual impact. Colour and form have an important role in reducing this impact;
- Context - The degree to which the feature/effect is in character with the context of the area, e.g. urban or rural, landform and vegetation;

- Activity - Effects such as the movement of vehicles, visible emissions (smoke and dust), and light reflections, highlight activity and draw the eye towards the effect;
- Change - The degree of change in the view and the speed of the process of change affect the degree of visual impact a feature/effect may present;
- Duration - Visual impacts may be temporary e.g. associated with construction activities, permanent or diminishing, the latter where mitigation measures have a beneficial effect over time e.g. a maturing landscape



The following definitions are used to classify the magnitude of potential visual effects:

- **High** – Total loss or substantial alteration to the baseline view or introduction of elements considered to be totally uncharacteristic to view;
- **Medium** – Partial loss or alteration to the baseline view or introduction of elements that may be prominent but may not necessarily be considered to be substantially uncharacteristic of the view;
- **Low** – Minor loss or alteration to the baseline view or introduction of elements that may not be uncharacteristic when set within the view;
- **Negligible** – Very minor loss or alteration to the baseline view or introduction of elements that may not be uncharacteristic when set within the view.

Significance of Effects

The significance of Landscape and Visual effects is determined by using the matrix below relating the magnitude of the effect and the sensitivity of the receiving landscape.

Table 9.4 Significance Matrix

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	

9.3.4 Technical Consultations

Consultation was undertaken with David Hewitt, Countryside Officer of Ribble Valley Borough Council who consulted further with: Adrian Dowd, Principal Planning Officer, Design and Conservation; the head of Planning Services, John Malcholic; and Sarah Westwood, Senior Planning Officer.

The methodology and viewpoints proposed for the assessment were sent to the Ribble Valley Borough Council Countryside Officer on 21 March 2012 for review and comment prior to undertaking the assessment.

The Zone of Visual Influence and location of visual receptors can be seen in Figure 9.1, the receptors are listed below in Table 9.5

Table 9.5 Visual Receptors

VP	Location	Receptor
1	Birdy Brow on Longridge Fell, OS 688 405	AONB, Public Right of Way (PROW), residential, public road
2	Whalley Road Barraclough House on the southern approach to Clitheroe OS 739 400	Residential Barraclough House Public Road
3	Viewpoint 03 - Whalley Road between Standen Cottages and Lower Standen on the southern approach to Clitheroe OS 739 406.	Residential Lower Standen PROW Public Road
4	Clitheroe Castle ramparts OS 742 416	Scheduled Monument and visitor attraction
5	Littlemoor OS 743 407	Residential and public road
6	Footpath through fields to the west of Standen Hall OS 745 403	PROW
7	Properties on Lingfield Avenue and Highfield Close Footpath through fields to the north of Standen Hall OS 745 407	Residential Properties and PROW
8	Properties on Peel Park Avenue, Langshaw Drive and Claremont Drive, Footpath along eastern edge of properties on Lingfield Avenue and Beechwood Avenue OS 747 411.	Residential Properties and PROW
9	Properties on the end of Shays Drive and along Gills Croft OS 748 409	Residential Properties
10	Residential properties on Pagefield Cr, Gills Croft and the end of Bretts Close and the public footpath passing through the proposed site from this point OS 753 412.	Residential Properties PROW
11	Residential property southwest of Four Lane Ends and public footpath passing through the proposed site from this point, OS 755 407	Residential Properties PROW
12	Junction of Pendle Rd and A59, OS 756 407	Public Road
13	Layby on A59 where crossed by public footpath, OS 753 404	PROW Public Road
14	Representative View including a limited number of properties on the north edge of Pendleton, public road (used as recognised leisure cycle route Lancashire Cycleway Regional Route 91) and bridleway between Pendleton Hall and Mearley Hall OS 753 404	Residential Properties PROW Cyclists on recognised cycle route Public Road
15	Representative View from Pendle Hill AONB, view from Ski slope and Wellsprings pub OS 773 389	AONB PROW Public Road

9.3.5 Final Scope of the Assessment

No response was received from Ribble Valley Borough Council to the methodology and viewpoints proposed for the assessment sent on 21 March 2012. This was re-sent on 3 April 2012 but no response was received so the final scope of the assessment is as set out above.

9.3.6 Information Gaps

There is comprehensive baseline information available for studying the landscape character of this area due to its location between two parts of the Forest of Bowland AONB.

Viewpoints representing residential properties are approximate with photographs taken from adjacent public paths at ground level.

9.4 Baseline Conditions

9.4.1 Review of Landscape Classification Texts

The land around Clitheroe is classified and a number of scales by a number of different documents as follows:

- National - Natural England's Landscape Character map of England National Joint Character Area JCA 33 Bowland Fringe and Pendle Hill;
- Regional - Northwest Regional Landscape Character Framework, Countryside Commission, August 2009;
- County - Lancashire Landscape Character Assessment, Lancashire County Council, December 2000; and
- Forest of Bowland, Area of Outstanding Natural Beauty, Landscape Character Assessment, Natural England September 2009.

The relevant descriptions from these documents are provided in full in Appendix 9.1 and are summarised below

National Scale - Natural England's Landscape Character Map of England National Joint Character Area JCA 33 Bowland Fringe and Pendle Hill

General Characteristics of JCA 33

- Undulating rolling landscape with local variation created by both the numerous river valleys and the outlying upland features of Beacon Fell, Longridge Fell and Pendle Hill;
- Strong outcrops of 'reef knolls' and limestone form distinct landscape features in the Ribble and Hodder Valleys;
- Meandering and commonly tree-fringed rivers with oxbow lakes form prominent features within the predominantly pastoral landscape;

- Predominantly Grade 3 agricultural land supporting permanent pasture, mostly improved, for dairy and livestock farming;
- Intensively managed landscape, with lush hay meadows in small- to medium-scale fields defined by well-maintained hedgerows with mature hedgerow trees. Some rough grazing at higher elevations;
- Extensive semi-natural woodland, much of which is ancient, on main valley bottoms, side valleys and ridges;
- Small villages, hamlets and scattered farmsteads, mostly in local stone, are well integrated into the landscape and connected by a network of winding hedge-lined country lanes;
- Bowland Fells provide a dramatic backdrop to the east and north.

The Changing Countryside - Where of Particular Relevance to this Proposal

- Decline of riverside woods due to excessive grazing and lack of management;
- Marked tendency for farm amalgamations though with less hedgerow removal than in arable parts of the Lancashire and Amounderness Plain;
- Loss of character caused by road widening schemes including loss of hedges and roadside trees;
- Substantial urban expansion pressures around major centres of population.

Shaping the Future

- The conservation and management of riparian woodland, semi-natural and ancient woodland, hedgerows, hedgerow trees, and avenues should be considered;
- Species-rich hay meadows form valuable landscape and ecological areas.

Note. The above are extracted quotes from the document.

Regional Scale - Northwest Regional Landscape Character Framework, Countryside Commission, August 2009

Regional Character Type - Valley Farmlands

Valley Farmlands: Undulating, settled, pastoral landscape with small ancient woodlands in field corners. Trees are scattered along small streams and rivers.

Location: This type often forms intermediate land between upland fringes and lowland valleys or plains in Cumbria, Lancashire, and southern fringes of Cheshire.

Broad Regional Landscape Character Type: Farmed Lowland and Valley Landscapes

- A wooded landscape with open areas. Small ancient woods in field corners link to settlement/watercourses. Occasional conifer plantations and estate woods;
- Major road routes/motorways and mainline railways are localised interruptions within what is otherwise a tranquil and peaceful landscape;

- This is a settled landscape and the sense of scale created through enclosure and woodland forms a comfortable sense of intimacy;
- Views vary: being greater from higher ground but the general openness creates long views although undulations, woodlands and hedgerows can be limiting.

Note: The above are extracted quotes from the document

Regional Character Area - Ribble Valley Lowlands

This is an area of pastoral slopes and valleys associated with the River Ribble and its wide floodplain and often deeply incised wooded tributaries. It comprises undulating lush lowland pastures and is well wooded. Historic limestone built nucleated villages and parkland landscapes add to the area's local distinctiveness.

County Scale - Lancashire Landscape Character Assessment, Lancashire County Council, December 2000

Set within the framework provided by National Character Areas, the Lancashire Landscape Character Assessment classifies the landscape within the Forest of Bowland AONB into 10 separate Landscape Character Types and 31 Landscape Character Areas. The Lancashire Landscape Classification provides the framework for the definition of more detailed Landscape Character Types and Areas within the Forest of Bowland. Clitheroe is located in Character Type: 5 Undulating Lowland Farmland - Character Area: 5e Lower Ribblesdale (Clitheroe to Gisburn) this is described in more detail below. Clitheroe is not identified as one of Lancashire's Urban Landscape Character Types

Character Type: 5 Undulating Lowland Farmland - Character Area: 5e Lower Ribblesdale (Clitheroe to Gisburn)

This lowland landscape is traversed by deeply incised, wooded cloughs and gorges. There are also many mixed farm woodlands, copses and hedgerow trees, creating an impression of a well wooded landscape from ground level and a patchwork of wood and pasture from raised viewpoints on the fells. Some of the most picturesque stone villages of the county occur within this well settled landscape type. The towns of Longridge and Clitheroe also occur within this type, but are not typical of the settlement pattern. The area also has many country houses whose boundary walls and designed landscapes add to the species diversity and visual appeal.

Local Character Area 5e: Lower Ribblesdale (Clitheroe to Gisburn)

This area forms the southern valley side of the Ribble, between Copster Green and Gisburn, on the lowland fringes of Pendle Hill. It is a particularly well settled area and provides a corridor for communication routes along the Ribble Valley. The A59(T) runs the length of the area, linking the settlements of Copster Green, Whalley, Clitheroe, Chatburn and Gisburn. The railway links the valley to Blackburn and Yorkshire. This communication structure has encouraged built development and industry; the large cement works at Clitheroe is a prominent visual landmark for miles around. This character area is underlain by limestone and has some good examples of limestone reef knolls, particularly around Clitheroe; Clitheroe Castle is located on top of one of these knolls.

Forest of Bowland Area of Outstanding Natural Beauty Landscape Character Assessment (Sept 2009, Natural England)

Clitheroe and its environs, including the proposed site, are not within the AONB but are covered in the landscape assessment. The AONB does encompass Pendle Hill to the south-east and the Bowland Fells to the north-east both of which are, to some extent, within the Zone of Theoretical Visual Influence

The Forest of Bowland Landscape Classification

Undulating Lowland Farmland Character Type is sub-classified in the Forest of Bowland Classification as Character Types:

- E. Undulating Lowland Farmland;
- F. Undulating Lowland Farmland with Wooded Brooks;
- G. Undulating Lowland Farmland with Parkland;
- H. Undulating Lowland Farmland with Settlement and Industry.

Landscape Character Types and Areas

The majority of the site is: H - Undulating Lowland Farmland with Settlement and Industry:

- Character Area H 1 Clitheroe and Chatburn.

The north-east corner of the site includes: E - Undulating Lowland Farmland:

- Character Area E7 Worston.

Adjacent Landscape Classification Area to the south within type H - Undulating Lowland Farmland with Settlement and Industry is:

- Character Area H2 Higher and Lower Standen (H - Undulating Lowland Farmland with Settlement and Industry).

Guidelines For Managing Landscape Change

The overall strategy for the Undulating Lowland Farmland with Settlement and Industry Landscape Character Type is to conserve and enhance the network of mature hedgerows and hedgerow trees that contribute to the distinctive landscape pattern. The retention and restoration of historic and vernacular building materials and details, and the careful design of new buildings should also be encouraged. Where landscape features have been neglected, opportunities should be sought for restoration. There is also a need to ensure that potential new development at the edges of urban areas, utilises local vernacular limestone and gritstone and includes a robust planting structure of native tree and shrub species, particularly at the edges. Opportunities also exist to screen existing urban edges using native trees and shrubs.

9.4.2 Landscape Character of Proposed Development Site and Immediate Environs

Development Site Edges

The site is part of the character area dominated by Clitheroe, including the suburban residential areas which bound the site to the north. These suburban residential areas run in to the historic hamlet of Little Moor at the western boundary of the site.

The southern boundary of the site is coincident with the boundary between the H1 and H2 Character Areas which follows the course of a stream running from east to west in a relatively deep, steep-sided, wooded valley. This southern edge of the site has characteristics described in the H2 Character Area e.g. the "patches of woodland contributing to an intermittent sense of enclosure" and "intact patchwork of predominantly pastoral fields".

Beyond the southern boundary is Standen Hall (as listed building), outbuildings and grounds (which are all owned by the Standen Estate). The grounds are behind a dense woodland belt and stream in a steep-sided valley (mentioned above) beyond the site boundary.

The H1 and H2 Character Areas are described as:

H1 Clitheroe and Chatburn

- Landscape pattern within this Landscape Character Area is dominated by the large town of Clitheroe, which is situated at the convergence of major road and railway corridors;
- These corridors introduce a source of noise and visual intrusion and disturb the overall sense of tranquillity;
- Clitheroe contains an assortment of housing (much of which is terraced and built from local stone) and commercial buildings;
- The tower of Clitheroe Castle (situated on a limestone outcrop above the town) is a landmark within views towards this area;
- At the eastern edge of the area, the small village of Chatburn, with its rows of terraced cottages, further contributes to settlement pattern;
- Large-scale quarries and associated works (including tall vertical chimneys) to the east of Clitheroe and west of Chatburn are a dominant human influence within views to this landscape from surrounding Landscape Character Types and Areas;
- Views northwards, across the corridor of the River Ribble are dominated by the rising mass of the central Moorland Hills and Plateau, whilst Pendle Hill contributes to recognisable sense of place within views southwards;
- At the edges of the urban development, patchworks of predominantly pastoral fields are delineated by, in places remnant, hedgerows, with frequent hedgerow trees.

H2 Higher and Lower Standen

- This relatively small landscape character area encompasses an intact patchwork of predominantly pastoral fields, which are interspersed with small patches of mixed woodland;
- This woodland, alongside hedgerows at field boundaries contributes to an intermittent sense of enclosure throughout the area;
- Overall sense of tranquillity is disturbed as a result of traffic on the A671 and A59 main road corridors;
- To the west, dramatic open views across the Ribble Valley contribute to recognisable sense of place, whilst to the east, views to Pendle Hill provide orientation;
- From the northern edge of the area, the urban edge of Clitheroe is clearly visible within views northwards.

9.4.3 Landscape Condition, Value and Sensitivity

Based on site visits and the baseline information available the Landscape Condition, Value and Sensitivity are analysed below.

Landscape Condition

As described in the Forest of Bowland Area of Outstanding Natural Beauty Landscape Character Assessment, the overall condition of the Undulating Lowland Farmland with Settlement and Industry Landscape Character Type is considered to be 'moderate'. Most landscape features are generally well managed. Patches of unmanaged hedgerows are, however, visible and there is also evidence of over-mature hedgerow trees. This would appear to agree with the assessment of the development site according to the methodology set out in Section 9.3.2, Table 9.1 where a 'Moderate' Condition Landscape is described as:

- Distinguishable landscape structure, characteristic patterns of landform and landcover;
- Scope to improve management of vegetation;
- Some features worthy of conservation; and
- Some detracting features.

It is considered however that the development site could be described as being in a 'Good' condition:

- Recognisable landscape structure, characteristic patterns and combinations of landform and landcover are still evident;
- Scope to improve management for land use and land cover;
- Some features worthy of conservation; and
- Some detracting features.

The Landscape Condition of the site has therefore been classified as 'Good/Moderate'.

Landscape Value

According to the criteria set out in Table 9.2 in Section 9.3.2, the site can be described as having 'Medium' value as the landscape is undesignated but is used locally for recreation with people utilising the footpaths across the site. The site has value as part of the countryside surrounding Clitheroe, its development will expand the periphery of Clitheroe bringing the urban edge closer to other areas of countryside, though its value is partially diminished by the starkness of the existing urban edge bounding the site. The development of the site will result in a reduction in the overall quantum of countryside. The landscape is not of High value as it is not part of the Bowland Fells AONB. The landscape is not of Low importance as the footpaths through it have recreational value to the local population and it forms the edge to the urban area of Clitheroe.

Landscape Sensitivity

The Forest of Bowland Area of Outstanding Natural Beauty Landscape Character Assessment, set out an interpretation of Landscape Sensitivity covering the area within which the site lies:

"The ecological sensitivity of this Landscape Character Type is represented by the combination of hedges, hedgerow trees and diverse narrow stream corridors. There is also a rich built heritage within the main towns and villages. In addition, the landscape displays a mature structure of hedgerows and hedgerow trees. Overall, landscape character and visual sensitivity is considered to be moderate. In places, hedgerows limit views, whilst there is strong intervisibility with the Unenclosed and Enclosed Moorland Hills, which provide a backdrop to most views from this lower landscape. Industrial chimneys and other industrial buildings at the edges of Clitheroe are also visible within most views to this Landscape Character Type from adjacent Landscape Character Types and Areas within the AONB."

This would agree with our interpretation using Table 9.1 where a landscape with 'Medium Sensitivity' is described as:

"A landscape capable of accepting limited change. Proposed change could be accommodated with some adverse effects on landscape."

9.5 Proposed Mitigation

9.5.1 Measures Incorporated to Mitigate Potential Significant Effects

Guidance

Managing Landscape Change

The Forest of Bowland Area of Outstanding Natural Beauty Landscape Character Assessment (Natural England, 2009) sets out a strategy for landscape change which should inform mitigation measures. The overall strategy for the Undulating Lowland Farmland with Settlement and Industry Landscape Character Type is to *"conserve and enhance the network of mature hedgerows and hedgerow trees that contribute to the distinctive landscape pattern"*. The retention and restoration of historic and vernacular building materials and details, and the careful design of new buildings should also be encouraged. Where landscape features have been neglected, opportunities should be sought for restoration. There is also a need to ensure that potential new development at the edges of urban areas, utilises local vernacular limestone

and gritstone and includes a robust planting structure of native tree and shrub species, particularly at the edges. Opportunities also exist to screen existing urban edges using native trees and shrubs. Open views towards the Unenclosed and Enclosed moorland hills Landscape Character Types, and framed views across the River Ribble should also be conserved.

Specific guidelines set out in the AONB Character Assessment relevant to the Standen Estate site include:

Physical Character: Conserve and enhance hedges and hedgerow trees.

Ecological Character:

- Conserve and enhance herb-rich stream banks;
- Create new hedgerows and regenerate existing hedges to maintain and enhance key landscape linkages;
- Encourage farmers to adopt less intensive farming practices so that the vitality of existing woodlands is not compromised and to facilitate natural regeneration in and around woodland habitats;
- Encourage conservation of existing key landscape features and habitats;
- Restore semi-natural habitats; and
- Encourage habitat linkage to increase robustness to climate change.

Cultural and Historic Character:

- Ensure that any potential new urban development includes a robust planting of native tree and shrub planting at the edges;
- Encourage sympathetic new uses for disused farm buildings to ensure that they remain a viable and contributory feature within this landscape;
- Encourage the use of local building materials, in particular gritstone and limestone;
- Ensure that highway improvement schemes respect and reflect local character and encourage the use of traditional signage where possible;
- Ensure new development does not extend onto prominent hillsides;
- Maintain consistency of building materials, details and design;
- Conserve the pattern and distinctive settings to settlements; and
- Give careful consideration to the siting and design of car parks and visitor facilities, which should be well screened by trees and woodlands.

Aesthetic and Perceptual Character:

- Conserve open views towards the surrounding higher Moorland Plateaux and Unenclosed and Enclosed Moorland Hills Landscape Character Types;
- Conserve open and framed views across and into the corridor of the River Ribble; and

- Maintain the distinctive pattern of hedgerows at field boundaries.

Sensitive Landscape Receptors

Sensitive Landscape Receptors can be drawn from the H1 and H2 character area descriptions, the Forest of Bowland Area of Outstanding Natural Beauty Landscape Character Assessment (Natural England, 2009) and an overview of the character of the site as follows:

- Development pattern of Clitheroe and loss of vernacular building style;
- Patchwork of pastoral fields;
- Patches of mixed woodland;
- Hedgerow with frequent mature trees;
- River valleys and water courses; and
- Existing historic farm buildings.

Proposed Mitigation Measures

The following mitigation measures are proposed. These have been developed from a comprehensive analysis and take account of the recommendations for managing landscape change 9.5.1. The measures have been designed into the scheme masterplan to reduce the landscape and visual effects of the envisaged development:

- Working within the existing landscape framework;
- Extensive open space and landscaping;
- Appropriate scale, layout and density for the context;
- Sensitive edge treatment;
- Considered land use disposition;
- Retention of hedgerows and mature trees as far as is possible;
- Retention of stream valley as open space ; and
- Provision of footpaths and cycleways.

9.5.2 Summary of Mitigation Measures

Table 9.6 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).

Table 9.6 Summary of Proposed Mitigation Measures

Receptor	Change(s) and Potential Effects	Incorporated Mitigation	Likely Effectiveness
Development pattern of Clitheroe and loss of vernacular building style	Extend the development area of Clitheroe. Increased urban sprawl. Inappropriate building style	Sensitive design of: masterplan particularly edge treatment, houses, streets, open space, retention of hedgerows and mature trees, new tree and hedgerow planting, retention of river valley as open space and improved ecological value of rivers	High
Patchwork of pastoral fields	Loss of green fields and patchwork nature of pastoral fields in the character area	Sensitive design of: masterplan particularly edge treatment, retention of hedgerows and mature trees, tree planting, new hedgerow and tree planting, retention of river valley as open space and improved ecological value of rivers	Medium
Patches of mixed woodland	Loss of patches of woodland	Sensitive design of: masterplan to incorporate as much of existing patches of woodland into, open space, retention of hedgerows and mature trees, tree planting hedgerow planting, retention of stream valley as open space and improved ecological value of watercourses	Medium
Hedgerow with frequent mature trees	Loss of hedgerow and mature trees	Sensitive design of: masterplan to incorporate existing hedgerow into transport corridors and open space retention of hedgerows and mature trees. tree planting, hedgerow planting, retention of stream valley as open space and improved ecological value of watercourses	Medium
Stream valleys and water courses	Loss of river valley environment and habitat	Sensitive design of: masterplan to incorporate retention of stream valley as open space and improved ecological value of watercourses	High

9.5.3 Additional Measures Incorporated to Mitigate Possible Other Effects

No other mitigation measures are proposed.

9.6 Assessment of Landscape Effects

9.6.1 Predicted Effects and Their Significance

The predicted effects are assessed during construction and post-completion. The post-completion assessment assumes all mitigation measures are performing their proposed function. Most mitigation measures relate to design, open space or the brook and these will be

integral to the development or effective within the first year post-development. It is assumed for the purpose of this assessment that new tree planting, which forms a significant function both: screening the development; and setting it into its context, will take 15 years to be fully effective though there will be substantial and steadily increasing levels of mitigation provided by the tree planting between years 1 and 15. The assessment therefore is based on the 15 year post-development situation.

Magnitude of Landscape Effect

Magnitude of Landscape Effect During Construction

The development is likely to be delivered in a number of phases so the area of the site that is characterised by construction activity might be 25% of the site at a time. The area of the site under construction will be totally uncharacteristic when set within the attributes of the receiving landscape and for the period there will be Total loss or substantial alteration of key elements/features/characteristics of the receiving landscape. The Magnitude of Landscape Effect will therefore be High according to the definitions set out in 9.3.3 of this section.

Magnitude of Landscape Effect Post-development (15 years post-development)

The development proposals aim to retain and enhance the majority of the key features of the landscape such as hedgerow, mature trees and river valleys where possible. The introduction of housing into the H1 Character Area will be prominent but need not necessarily be considered to be substantially uncharacteristic when set within the attributes of the receiving landscape.

The description in 9.3.3 therefore, which best meets the likely Magnitude of Landscape Effect of this development would be Medium:

"Partial loss or alteration to one or more key elements/features/characteristics of the baseline or introduction of elements that may be prominent but may not necessarily be considered to be substantially uncharacteristic when set within the attributes of the receiving landscape."

Significance of Landscape Effect

Significance of Landscape Effect During Construction

Based on the definition of Significance of Landscape effect in the Methodology (Section 9.3.2) and using Table 9.4, the likely Significance of Landscape Effect would be Moderate/Substantial which is described as Significant. This is derived from the stated Medium level of Landscape Sensitivity (see 9.4.3) and the High Magnitude of Landscape Effect stated above.

Significance of Landscape Effect Post-development (15 years post-development)

Based on the definition of Significance of Landscape effect in the Methodology (Section 9.3.2) and using Table 9.4, the likely Significance of Landscape Effect would be Moderate which is described as **Not Significant**. This is derived from the stated Medium level of Landscape Sensitivity (see 9.4.3) and the Magnitude of Landscape Effect stated above.

9.6.2 Possible Other Mitigation

The Forest of Bowland Area of Outstanding Natural Beauty Landscape Character Assessment set out Guidelines for Managing Landscape Change in Character Areas H1 and H2. These can inform the Standen Estates management practices to improve the quality of these character areas.

9.6.3 Conclusions

The proposals are essentially an extension of the existing urban edge of Clitheroe and a subsequent reduction in the quantum of arable and pastoral farmland in the area.

The assessment is based on the parameters plan, design and access statement and illustrative masterplan and include the following mitigation measures:

- Working within the existing landscape framework;
- Extensive open space and landscaping;
- Appropriate scale, layout and density for the context;
- Sensitive edge treatment;
- Considered land use disposition;
- Retention of hedgerows and mature trees as far as is possible;
- Retention of stream valley as open space ; and
- Provision of footpaths and cycleways.

Field pattern, mature trees and river valleys will be protected whilst there will be a substantial increase in the tree cover in the area as a result of the development as tree cover is currently restricted to field boundaries and river valleys. This to an extent will mitigate the impact on Landscape Character. The impact on the nearby AONB will be limited due to the distances involved and the mitigation measures but there will be an increased urbanisation of the valley which will impact on the AONB, more so to the south and east than the main, more distant, area of the Bowland Fells to the north and west where the development is barely perceptible

9.7 Assessment of Visual Effects

9.7.1 Predicted Effects and Their Significance

Figure 9.1 shows in the shaded green area the zone of visual influence (ZVI) of the development which was discerned from a visual survey on 6 March 2012, before the trees were in leaf.

Viewpoint locations were chosen as being representative from within the ZVI and these are also shown on Figure 9.1. The Viewpoint locations were sent to Ribble Valley Borough Council but no comments were returned

Each viewpoint was analysed and the visual effects during construction and post-development. The post-completion assessment assumes all mitigation measures are performing their proposed function. Most mitigation measures relate to design, open space or the river and these will be integral to the development or effective within the first year post-development. It is assumed for the purpose of this assessment that new tree planting, which forms a significant function both: screening the development; and setting it into its context, will take 15 years to be fully effective though there will be substantial and steadily increasing levels of mitigation provided by the tree planting between years 1 and 15. The assessment therefore is based on the 15 year post-development situation.

Table 9.7 summarises the findings of the analysis, which are detailed along with photographs from each viewpoint, in Appendix 9.2. The following viewpoints were found to experience significant effects:

- Construction phase viewpoints 13, 14, 15; and
- Construction and post-development phases: viewpoints 3, 4, 5, 6, 7, 8, 9, 10, 11.

Summary of Effects on Settlements and Properties

Residents living along the south eastern boundary of Clitheroe, in Little Moor and at Four Lane Ends (Viewpoints 5, 7, 8, 9, 10 and 11) are likely to experience significant effects as a result of the development. Existing views over pastoral fields towards Pendleton Moor will be interrupted by new housing. This will be ameliorated to a degree by the rolling topography, existing mature hedgerow and new tree planting but the basic change in view will remain. Higher Standen Farm will have a similar level of impact but has not been considered in this study as it is part of the Standen Estate who are proposing the development.

Lower Standen Cottages (Viewpoint 3) will have eastward views towards the new development, these views will be less affected than those from properties bounding the site but there will still be a significant change to the view. Existing trees and new planting will substantially mitigate the effects on this view but the impact on the view is still considered significant, whereas from Barraclough House and Barraclough Cottage (Viewpoint 2) the impact is low and of moderate significance due to distance and vegetation screening views.

Some properties on the northern edge of Pendleton will have views of approximately 1 km to the new development but the effect on these receptors is not considered to be significant due to the distance and new and existing vegetation screening views.

Summary of Effects on Public Rights of Way

There are two public footpaths running through the proposed development and each will experience a significant adverse effect with the developed extent of Clitheroe being pushed out into the pastoral landscape. These routes will be protected within the proposals but their character will be significantly altered.

Additionally the public footpath from Standen Hall to Lower Standen has views over the southern boundary of the development and so will also experience a significant adverse effect.

Other footpaths in the area will have very limited views of the development. The footpath leading from Higher Standen to the A59 dips into the river valley so views are only glimpsed until you are near to the A59 where the edge of the development will be visible. Here the effect is described as Medium during the construction period and Low post development, and therefore not significant. Walkers using this route will already have their sense of tranquillity disturbed by the busy A59.

Summary of Effects on Recreational Facilities and Heritage Sites

Key recreational facilities and heritage sites considered here include Clitheroe Castle and users of the Bowland Fells AONB. The main area of the AONB to the west is little impacted by the development which will be barely discernible. The Pendleton Moor portion of the AONB to the east of Clitheroe will have elevated views down onto the development. During the construction phase there is likely to be a significant effect on views from the Castle and Pendleton Moor but

post-development, once new trees have begun to establish, this effect will be reduced and it is considered that it would no longer be considered significant.

Summary of Effects on Roads and Employment Areas

There are no employment areas considered as visual receptors in this analysis. Users of roads that may be impacted are as follows:

- A59;
- A671 approaching Clitheroe from the south; and
- Roads emanating from Four Lane Ends.

Users of roads are considered medium sensitivity receptors. Users of the A671 around Lower Standen Cottages (Viewpoint 3) are subjected to a medium level of effect, which is not significant. At Four Lane Ends the level of effect would be high and therefore significant. Users of the A59 would experience a lower level of effect due to screening, topography and distance and this effect is not significant.

9.7.2 Conclusions

The most significant visual effects will be experienced by users of public footpaths through and adjacent to the development and resident on the south-eastern side of Clitheroe and those around Little Moor and Four Lane Ends. To a lesser degree significant effect will be felt from Standen Cottages.

Other visual receptors significantly affected will be at Clitheroe Castle and from within the AONB to the east but this will only occur during the construction period. Once new tree planting has established these views will be broken up and screened to reduce the effect.

Table 9.7 Summary of Visual Effects

VP	Location	Receptor	Sensitivity	Magnitude Construction Period	Significance Construction Period	Magnitude of Visual Effect	Significance of Visual Effect
1	Birdy Brow on Longridge Fell, OS 688 405	ACNB, Public Right of Way (PROW), residential, public road	High	Negligible	Slight	Negligible	Slight
2	Whalley Road BarracloUGH House on the southern approach to Clitheroe OS 739 400	Residential BarracloUGH House Public Road	High	Low	Moderate	Low	Moderate
3	Whalley Road between Standen Cottages and Lower Standen on the southern approach to Clitheroe OS 739 406	Residential Lower Standen PROW Public Road	High	Medium	Moderate/Substantial Significant	Medium	Moderate/Substantial Significant
4	Clitheroe Castle ramparts OS 742 416	Scheduled Monument and visitor attraction	High	Medium	Moderate/Substantial Significant	Low	Moderate
5	Littlemoor OS 743 407	Residential and public road	High	High	Substantial Significant	High	Substantial Significant
6	Footpath through fields to the west of Standen Hall OS 745 403	PROW	High	High	Substantial Significant	High	Substantial Significant
7	Properties on Lingfield Avenue and Highfield Close, Footpath through fields to the north of Standen Hall OS 745 407	Residential Properties and PROW	High	High	Substantial Significant	High	Substantial Significant
8	Properties on Peel Park Avenue, Langshaw Drive and Claremont Drive, Footpath along eastern edge of properties on Lingfield Avenue and Beechwood Avenue OS 747 411	Residential Properties and PROW	High	High	Substantial Significant	High	Substantial Significant
9	Properties on the end of Shays Drive and along Gills Croft OS 748 409	Residential Properties	High	High	Substantial Significant	High	Substantial Significant

Table 9.7 (continued) Summary of Visual Effects

VP	Location	Receptor	Sensitivity	Magnitude Construction Period	Significance Construction Period	Magnitude of Visual Effect	Significance of Visual Effect
10	Residential properties on Pagefield Cr, Gills Croft and the end of Bretts Close and the public footpath passing through the proposed site from this point, OS 753 412	Residential Properties PROW	High	High	Substantial Significant	High	Substantial Significant
11	Residential property southwest of Four Lane Ends and public footpath passing through the proposed site from this point, OS 755 407	Residential Properties PROW	High	High	Substantial Significant	High	Substantial Significant
12	Junction of Pendle Rd and A59, OS 756 407	Public Road	Medium	Low	Slight/Moderate	Low	Slight/Moderate
13	Layby on A59 where crossed by public footpath, OS 753 404	PROW Public Road	High	Medium	Moderate/Substantial Significant	Low	Moderate
14	Representative View including a limited number of properties on the north edge of Pendleton, public road (used as recognised leisure cycle route Lancashire Cycleway Regional Route 91) and bridleway between Pendleton Hall and Mearley Hall OS 753 404	Residential Properties PROW Cyclists on recognised cycle route Public Road	High	Medium	Moderate/Substantial Significant	Low	Moderate
15	Representative View from Pendle Hill AONB, view from Ski slope and Wellsprings pub OS 773 389	AONB PROW Public Road	High	Medium	Moderate/Substantial Significant	Low	Moderate

9.8 Summary of Predicted Effects

9.8.1 Landscape Effects

Generally the landscape effects are due to an extension to the developed boundary of Clitheroe with a subsequent loss of pastoral landscape. Key landscape features such as hedgerow, mature trees and river valley landscape will be retained but their setting will have changed. There will be new tree planting which will result in more tree cover than at present

During Construction

It is likely that development will be phased so 25% of the overall site at a time might have the character of a construction site. The magnitude of Landscape Effect for the portion of the site affected by construction activities has been described as High and the sensitivity of the landscape is Medium therefore the Significance of Landscape Effect is Moderate/Substantial and therefore described as Significant.

Post-development (15 years post-development)

The magnitude of Landscape Effect has been described as Medium and the sensitivity of the landscape also Medium therefore the Significance of Landscape Effect is moderate and therefore as Not Significant

9.8.2 Visual Effects

Generally the long-term visual effects will be significant on residential properties on the south-eastern edge of Clitheroe which currently have views over open pastoral fields including Little Moor, For Lane Ends and Lower Standen Cottages and public rights of way (PROW) running through or immediately adjacent to the site. The properties affected are a limited number of residences located on the following roads within the existing developed part of the south eastern sector of Clitheroe:

- Shays Dr;
- Peel Park Av;
- Gills Croft;
- Langshaw Dr;
- Hillside Close;
- Lingfield Av;
- Beechwood Av;
- Langshaw Drive; and
- Littlemoor Road.

There are elevated viewpoints to the east of the site some of which are located within the Forest of Bowland AONB. Due to the distance of the view from these viewpoints it is judged that the change to the view will not be significant once planting associated with the development has

established (approximately 10 years). These views will though experience significant effects during the construction phase. A similar assessment is made of the views from Clitheroe Castle.

The development amounts to an extension to the urban edge of Clitheroe and encroachment into the countryside. The development proposed runs up to an existing watercourse to the south and to the roads emanating from Four Lane Ends to the north and east which act as natural restriction on further development.

9.9 Implementation of Mitigation Measures

Table 9.8 sets out the mitigation measures and proposals for compliance monitoring that have been incorporated into the proposals to mitigate the effects on receptors. It also includes details of who would be responsible for the implementation of the measures, and the suggested mechanism of compliance to ensure that the proposals would be carried out as envisaged.

Table 9.8 Implementation of Incorporated Mitigation and Monitoring Proposals

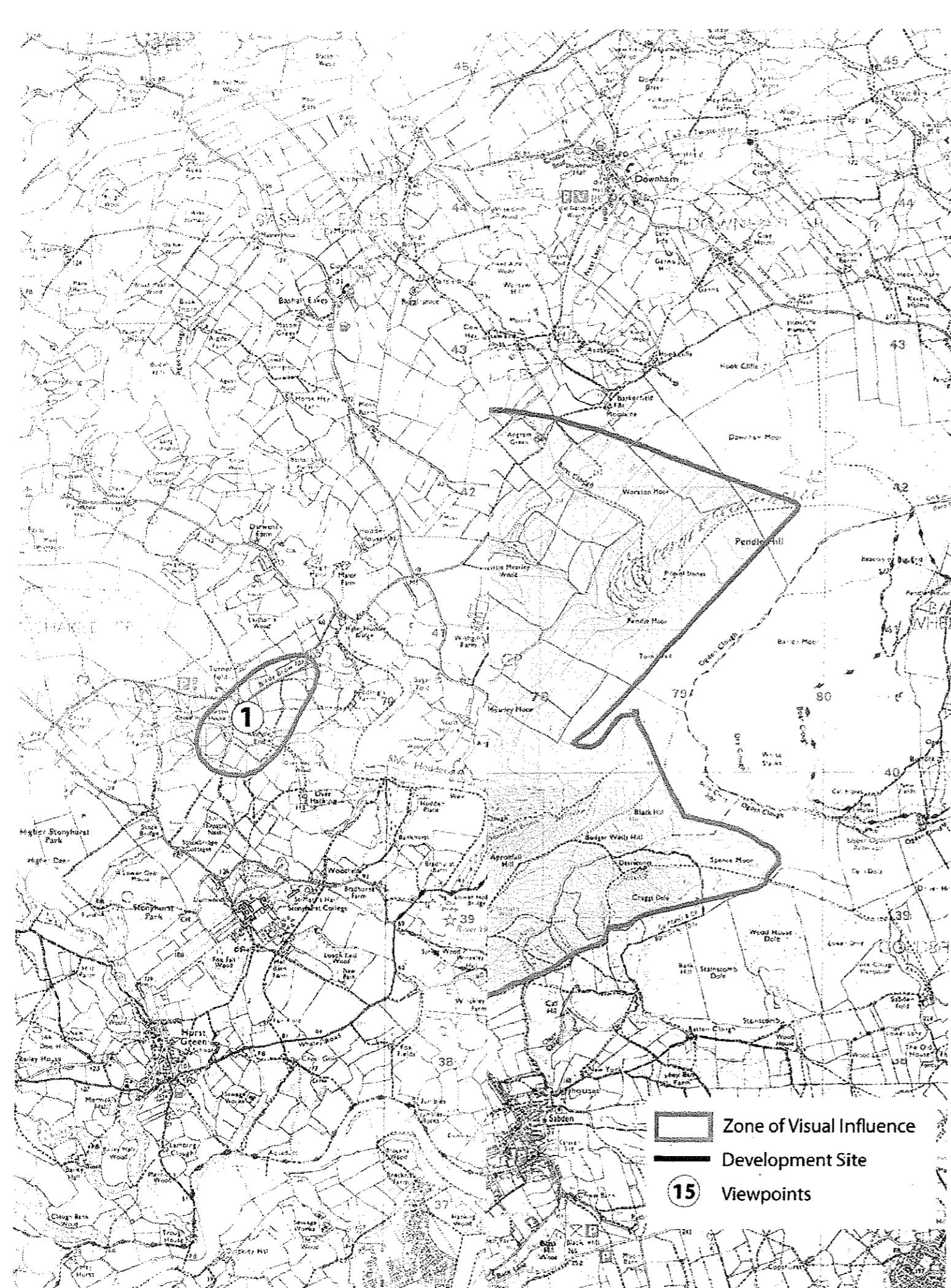
Mitigation Measure/Monitoring Proposal	Actioned By	Compliance Mechanism
Screening of site to local views during construction phase	Site management	By planning condition drafted by Ribble Valley Borough Council
Appropriate management during construction phase	Site management	By planning condition drafted by Ribble Valley Borough Council
Sensitive design of: masterplan, particularly edge treatment, houses, streets, open space, retention of hedgerows and mature trees, new tree and hedgerow planting	Developer	By agreement with Ribble Valley Borough Council
Sensitive layout of open space and streets to be in-keeping with vernacular.	Developer	By agreement with Ribble Valley Borough Council
Sensitive selection of materials.	Developer	By agreement with Ribble Valley Borough Council
Sensitive detailed design to retain and improve ecological and recreational value of river valley	Developer	By agreement with Ribble Valley Borough Council
Existing historic buildings will be reused in a sensitive manner respecting their setting	Developer	By agreement with Ribble Valley Borough Council
Long term maintenance of site to ensure proper establishment of new planting.	Developer	By agreement with Ribble Valley Borough Council

9.10 Technical References

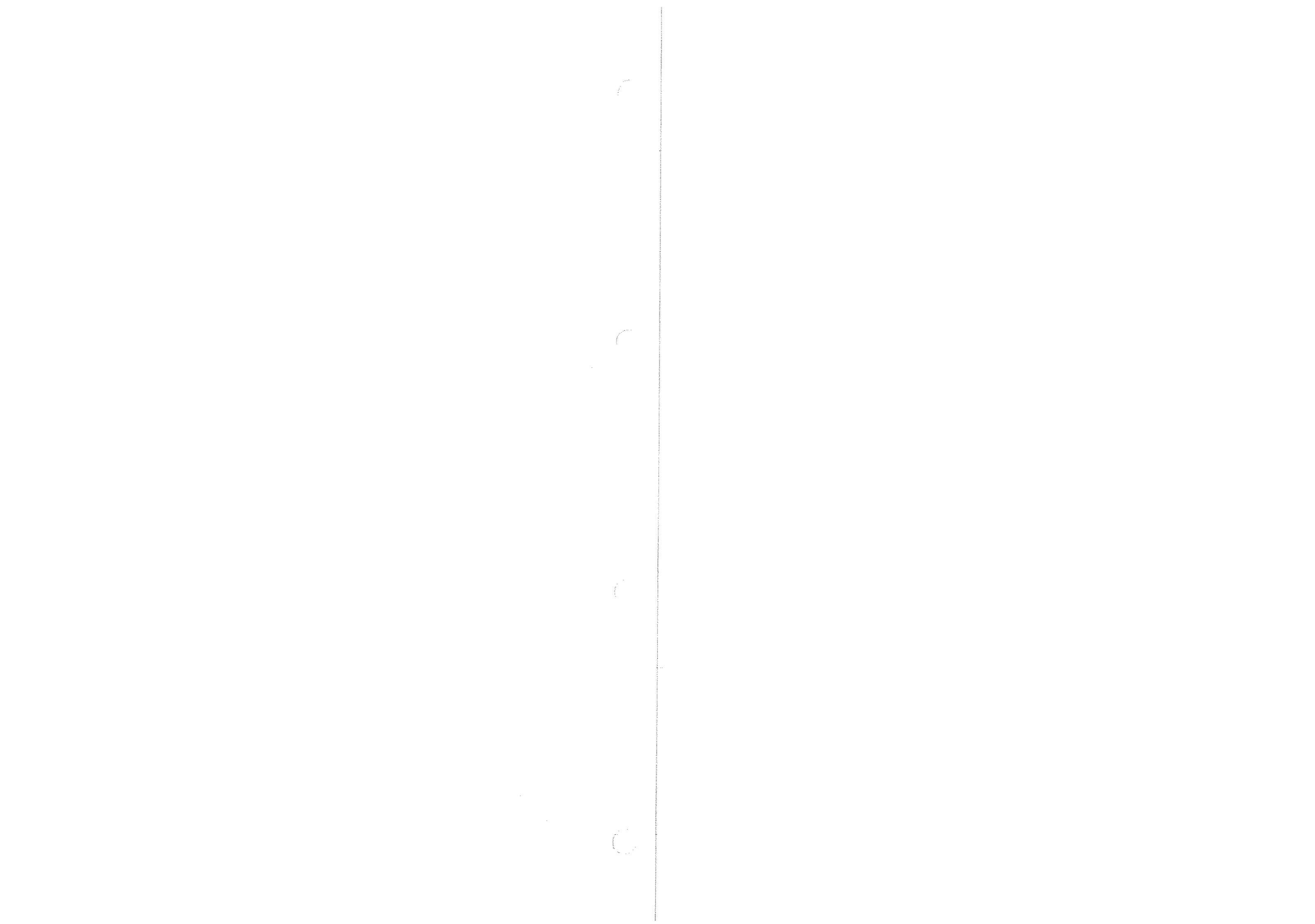
- 1 The National Planning Policy Framework (March 2012).
- 2 Guidelines for Landscape and Visual Impact Assessment (Landscape Institute and Institute of Environmental Management and Assessment) 2002
- 3 Landscape Institute Advice Note 01/04.

4. Landscape Assessment Guidance (CCP 4231993) (Countryside Commission).
5. Interim Landscape Character Assessment Guidance (SNH) 1999
6. Landscape Character Assessment (The Countryside Agency and SNH) 2002.
7. National - Natural England's Landscape Character map of England National Joint Character Area JCA 33 Bowland Fringe and Pendle Hill
8. Regional - Northwest Regional Landscape Character Framework, Countryside Commission, August 2009
9. County - Lancashire Landscape Character Assessment, Lancashire County Council, December 2000.
10. Forest of Bowland, Area of Outstanding Natural Beauty, Landscape Character Assessment, Natural England September 2009.





- Zone of Visual Influence
- Development Site
- 15 Viewpoints



10. Noise and Vibration

10.1 Introduction

Noise and vibration can have an effect on the environment and quality of life enjoyed by individuals and communities. This chapter addresses the potential effects of the proposed development of land at Standen, Clitheroe (the proposed development) upon noise levels at existing noise sensitive receptors in the vicinity of the site. Additionally, the potential effects of noise and vibration upon the proposed receptors at the development (e.g. the proposed residential, commercial and educational users) due to existing road traffic noise sources in the vicinity of the development have been assessed. The noise assessment evaluates the magnitude and significance of the effects described above and should be read in conjunction with the development description presented in Chapter 2.

Following a summary of relevant policy and legislation, this chapter outlines the data gathering methodology that was adopted as part of the noise and vibration assessment. Current baseline conditions at the site are described based on the results of the measured data. This leads on to a description of the mitigation measures that have been incorporated into the proposed development, the scope of the assessment, the assessment methodology and, for each category of noise effect, an assessment of potential effects. The chapter concludes with a summary of the results of the assessment.

10.2 Context

10.2.1 Technical Context

Noise can have an effect on the environment and on the quality of life enjoyed by individuals and communities. The effects of noise can therefore be a material consideration in the determination of planning applications. The proposed development will introduce new noise sources into the area, during both the construction and occupational phases.

A noise assessment has therefore been undertaken to determine the effects of noise at the nearest neighbours to, and future occupants of, the proposed development site. Future noise levels are predicted and compared to noise limits imposed by British Standards to determine whether significant adverse effects are likely to occur.

10.2.2 Planning Context

National Policy

The National Planning Policy Framework (NPPF) was published in March 2012. The NPPF is taken into account by Local Authorities when preparing their local and neighbourhood plans which form the basis for noise policies within an area.

Paragraph 109 of the NPPF states that the planning system should contribute to and enhance the natural and local environment by, (amongst others) *“preventing both new and existing*

development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, water or noise pollution or land stability”.

The NPPF goes on to state in Paragraph 123 that “Planning policies and decisions should aim to:

- *Avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;*
- *Mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through use of conditions;*
- *Recognise 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 use since they were established, and*
- *Identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value”.*

The NPPF document does not refer to any other documents regarding noise other than the Noise Policy Statement for England (NPSE, 2010). The noise exposure categories (NECs) originally described in the now superseded PPG 24 did provide a means of determining the impact of noise in relation to new residential developments. Whilst no longer part of current Government advice, NECs still provide a useful context for assessing the acceptability of levels of noise exposure for residential developments. The noise levels which define the NECs are based upon guidance provided by the World Health Organisation (WHO¹³) for both day-time and night-time noise levels. The WHO provides guideline noise values for specific environments, above which there are observed health effects. The use of NECs is also still considered relevant as PPG24 is referred to within many Local Plans and it will take some time for Local Authorities to update their Local Plans to include noise policies

Assignment of NECs is dependent upon the daytime and night-time noise levels affecting the site, and the categories range from A to D, reflecting an increasing level of concern with regards to the noise climate. A full description of the NEC categories is included in Section 10.3. Additionally, there are a number of separate guidance documents which contain advice on the assessment and control of noise from different sources, such as roads, railways and other forms of transportation, construction operations and/or industrial plant etc. These are summarised (along with other relevant guidance documents) in Table 10.1

¹³ *Environmental Health Criteria 12 – Noise*. WHO, 1980. Replaced by *Guidelines for Community Noise*. WHO, 1999 and *Night Noise Guidelines for Europe*. WHO, 2009

Table 10.1 Noise Guidance Documents

Guidance Document	Summary
BS5228:2009 Code of practice for noise and vibration control on construction and open sites	This document provides guidance on the assessment and control of noise and vibration on construction sites, in two separate volumes along with suggestions for the derivation of guideline noise limits
Calculation of Road Traffic Noise (1988)	Prediction methodology for road traffic noise.
Design Manual for Roads and Bridges Vol 11 Environmental Assessment Part 7 Noise and Vibration (2011-Revision 1) ¹⁴	Contains advice on the assessment of noise from road traffic, particularly that from new/altered roads
BS8233:1999 Sound insulation and noise reduction for buildings – a code of practice	Presents good and 'reasonable' design criteria for internal noise levels in residential living rooms during the day, and in bedrooms at night
World Health Organisation Guidelines for Community Noise (1999)	Presents guideline noise levels for community noise in specific residential environments e.g. outdoor living areas, outside bedrooms
DfES Building Bulletin 93: Acoustic Design of Schools (2003)	Provides internal noise level criteria for classrooms, lecture halls and other educational areas, to provide suitable conditions for learning and outdoor noise limits for outdoor teaching areas / playing fields etc
BS4142:1997 Method for rating industrial noise affecting mixed residential and industrial areas	This British Standard provides a methodology for determining whether a new or existing industrial or commercial noise source is likely to cause noise complaints by comparing the operational noise level (noise due to the industrial source) with the background level (noise level without the industrial source)

Regional/Local Policy

Table 10.2 lists policy guidance and policies relevant to the assessment of effects on noise, and the issues included in these policies/guidance that needed to be considered when determining the scope of this assessment

Table 10.2 Policy Issues

Policy Document	Issues to be considered
National Policy	
National Planning Policy Framework (2012)	Sets out Government policy on planning including minimising any significant adverse impacts of noise
Submission Version of the Draft Core Strategy: A Local Plan for Ribbles Valley	
DMG1 General Considerations	General policy requests that development should not have a detrimental effect on amenity of the area (which would include noise).

¹⁴ *Manual for Streets 2* (Department for Transport) does not contain any guidance for assessing road traffic impacts. It only states an objective of 'reducing noise and air pollution'

Legislative Requirements

Legislation on noise issues is primarily focussed on the control of noise emissions for example through statutory nuisance or the control of occupational exposure to noise. Key relevant legislation includes the following:

- *Environmental Protection Act 1990, Part III;*
- *Noise Act 1996; and*
- *Control of Pollution Act 1974*

10.2.3 Relevant Terminology

Key noise terminology used in this assessment is explained in Appendix 10.1.

10.3 Assessment Approach

10.3.1 Preliminary Data Gathering and Survey Work

Desk Study

A number of key information requirements were identified in order to facilitate preparation of this ES chapter. Information obtained in order to fully assess the noise effects of the proposals includes the following:

Base Mapping

A comprehensive noise model of the proposed development site was developed using Ordnance Survey base mapping data to show the relative positions of the major road traffic noise sources in the area. On-site development areas and hence the positions of key future receptors on site were identified from the development masterplan (see Figure 2.1).

Traffic Data

Traffic data was supplied by Royal Haskoning for all major routes in the vicinity of the proposed development. Data supplied included information on the With and Without Development scenarios for the Baseline (2020) and Future assessment (2035) years. The data included total 2-way traffic flows and HGV percentages for each affected road segment included in the road traffic model. At the time of assessment, information pertaining to proposed routes within the proposed development site boundary (i.e. operational residential/commercial access routes) was not available.

Site Operations

Details regarding uses and potential noise sources associated with the proposed development were obtained from the development masterplan.

10.3.2 Proposed Scope of the Assessment

A Scoping Report was submitted to Ribble Valley Borough Council (RVBC) in October 2011. The report included details of the proposed scope of the noise assessment including the methodology to be followed, and suggested that, in order to assess the potential noise effects

upon the development, and to determine current, baseline noise levels noise monitoring should be undertaken at key locations on and surrounding the proposed development site.

Potential Receptors

There are two major groups of receptors which have the potential to be affected by noise during the construction and operational phases of the development:

- Existing noise sensitive receptors – local residents in areas surrounding the proposed development site, and on major populated road traffic routes potentially experiencing a significant change in road traffic noise levels;
- Future site occupants – including all proposed future noise sensitive residential, educational or commercial (office) uses

A summary of the receptors is detailed below

Existing Receptors

The existing noise sensitive receptors which have the potential to experience noise effects are located not only in close proximity to the development site, but also on roads potentially experiencing an increase in road traffic during both the construction and operational phases of the development.

Existing noise sensitive receptors in close proximity to the proposed site are located as follows:

- Residential properties to the west of the site on Langshaw Drive (adjacent to the western boundary of the site);
- Residential properties to the north of the site on Shays Drive (adjacent to the northern boundary of the site);
- Residential properties to the east of the site at Four Lane End Cottages (west of A59); and
- Residential properties to the south of the site at Higher Standen Farm (adjacent to the southern boundary of the site).

In addition to the above, any existing residential receptors on the local road network covered by the Transport Assessment submitted in support of this EIA (Royal Haskoning, 2012) may potentially be affected by changes in road traffic volumes resulting from operation of the proposed development.

For the purposes of this assessment, it is assumed that existing residential receptors located on or close to road segments predicted to experience an increase in total 2-way traffic movements greater than 25% or a decrease of more than 20% (or a substantial change in the percentage of HGV traffic) may potentially be affected by changes in road traffic noise resulting from the proposed development

Future Site Occupants

Future residential, educational or commercial (office/retail) site occupants of the proposed development are likely to experience noise from road and possibly industrial/commercial noise emissions at the boundaries of the proposed development zones.

Worst affected receptors are likely to include, in particular, those units located on site boundaries close to existing main roads off-site (or major traffic routes within the site) and proposed commercial land uses within the proposed development.

Whilst the location of individual residential/educational/commercial buildings will not be finalised until the Reserved Matters stage, the strategic masterplan for the proposed development¹⁵ clearly delineates areas proposed for the respective land uses. We also understand that this has been used as a framework to inform the parameters plans being developed to support the outline planning application for the development.

For the purposes of this assessment, future occupants of the site have been divided into the following key receptor groups:

- Future residential occupants, including retirement living (in the north-east of the site, near A59/Pendle Road junction);
- Future office occupants (proposed business area in the south-east of the site, near Higher Standen Farm); and
- Possible educational occupants (proposed primary school site in north of the site, close to Pendle Road).

Potential Significant Effects

The following effects have the potential to be significant, or as the proposal is at the outline stage information is not currently available to conclude they are unlikely to be significant, as a result of the proposed development:

Construction Phase

- Increase in ambient noise levels affecting existing noise sensitive receptors, due to construction/demolition of the proposed development (including the operation of all fixed and mobile plant on each site) and associated road improvements at the A59/Pendle Road junction.

Operational Phase

- Increase in road traffic noise levels affecting existing noise sensitive receptors during the operational phase of the proposed development, due to additional development related traffic on the local network;
- Increase in ambient noise levels due to proposed operational activities at the proposed development site potentially affecting existing noise sensitive receptors in the vicinity;
- Potential effects on the suitability of the proposed development site for the proposed noise sensitive uses (residential/educational/commercial) due to existing and/or future ambient noise affecting the site (including noise emissions from local roads and commercial/industrial noise sources).

¹⁵ Drawing no 5381_101_D Masterplan

10.3.3 Significance Evaluation Methodology

Overview

The determination of significance has largely been based on the relevant assessment criteria for the specific noise issue being assessed, although these assessment criteria are not directly related to the categories of 'Significant' and 'Not Significant' that underpin EIA.

The determination of significance in EIA is based on the sensitivity of a particular receptor (which depends on local circumstances), as well as the magnitude of change in noise levels (which is related to existing ambient noise levels, and predicted noise levels due to the development). The absolute noise level (predicted noise level) can also influence the determination of significance, since it may either exceed or comply with relevant guideline noise limits, irrespective of the amount of change predicted.

Noise Sensitivity

Patients in hospitals, hospices or other healthcare facilities represent the receptors with the highest sensitivity to noise. The WHO guidelines state that 'patients have less ability to cope with stress' and identifies people with particular diseases, medical problems and people in hospitals as 'vulnerable subgroups'. These receptors would normally be assigned a sensitivity of 'high', however no such receptors have been identified around the proposed development.

Typically, the existing residential properties in the area would be considered to be of medium sensitivity. Future residents of the proposed development itself are considered less sensitive than the existing residents, as they have a 'vested interest' in the proposed development, however they would still be assigned a 'medium' sensitivity. Potential use of the primary school site would also be considered of 'medium' sensitivity. Commercial and industrial premises in the local area would be considered to be of a 'low' sensitivity. No receptors of 'high' sensitivity have been identified, although for reference, examples of highly sensitive receptors can include hospitals, hospices and some care homes.

Noise Magnitude

The magnitude of effect has been based on the noise predictions that have been undertaken. However, since the noise predictions have been based on worst-case assumptions, it would be inappropriate to conclude that a high magnitude has arisen simply because the relevant noise limits have been predicted to be breached. The amount by which the limits are predicted to be breached, along with the duration of the effect should also be taken into account. The apportionment of a magnitude rating has therefore taken this situation into account by applying an element of professional judgement.

In terms of the amount of change in noise levels, this would only potentially become significant if the change is perceptible. Table 10.3 summarises typical responses to changes in steady noise levels, based on laboratory conditions. It is considered likely that changes in a variable or moving noise source would be perceived at lower levels.

Table 10.3 Perception of Changes in Steady Noise Levels

Change in Noise Level dB(A)	Response
<3	Difficult to perceive
>3	Perceptible
<10	Up to a doubling of perceived loudness
>10	Over a doubling of perceived loudness

With respect to the total amount of noise that would be potentially significant in a given development situation, determination of magnitude takes into account noise levels and limits outlined in the relevant guidance documents.

Construction Noise (fixed and mobile plant on site)

In accordance with the example methodologies presented in BS5228-1:2009, the determination of criteria for significance of construction phase noise effects is based upon pre-existing ambient noise levels at the receptors.

BS5228-1:2009 states that where existing ambient noise levels are below 65dB $L_{Aeq, T}$ (when rounded to the nearest 5dB), a noise limit of 65dB $L_{Aeq, 12hr}$ (0700-1900hrs) should be considered for total ambient noise plus construction noise.

Based upon the long term monitoring data obtained on site 1-5 March 2012, pre-existing ambient noise levels are not expected to exceed 60dB $L_{Aeq, 12hr}$ at any of the existing noise sensitive receptors in the vicinity of the proposed development, hence a limit of 65dB $L_{Aeq, 12hr}$ (0700-1900hrs) would be appropriate for all receptors (higher limits would apply where pre-existing ambient noise levels are greater).

The magnitude of construction noise effects would be considered high where the total ambient noise, plus construction noise exceeds this value. For a low magnitude, the total ambient noise level plus construction noise would not exceed 5dB(A) below this limit, i.e. would not exceed 60dB $L_{Aeq, 12hr}$. A medium magnitude effect would fall between these two levels, i.e. total pre-construction ambient noise level plus construction noise is between 60-65dB $L_{Aeq, 12hr}$ at the receptor(s).

Traffic Noise (operational)

The *Design Manual for Roads and Bridges (Vol 11, 2011, Revision 1)* requires the magnitude of change in noise to be categorised in both the baseline (short-term) and future (long-term) assessment years and this magnitudes are defined in Table 10.4 and Table 10.5 respectively.

Table 10.4 DMRB Classification of Magnitude of Noise Impacts in the Short-term

Noise Change in dB LA10,18hr	Magnitude of Impact
0	No Change
0.1-0.9	Negligible
1-2.9	Minor
3-4.9	Moderate
5+	Major

Table 10.5 DMRB Classification of Magnitude of Noise Impacts in the Long-term

Noise Change in dB LA10,18hr	Magnitude of Impact
0	No Change
0.1-2.9	Negligible
3-4.9	Minor
5-9.9	Moderate
10+	Major

The classification of magnitude of effect used in this chapter is based on a three step, (low, medium, high) magnitude of effect. To ensure a conservative assessment, the magnitude criteria used in this chapter for short-term impacts will be low (0-1dB), medium (1-3dB) and high (3dB+), and low (0-3dB), medium (3-5dB) and high (5dB+)

Determination of significance for road traffic noise effects is based upon comparison of predicted noise emissions for the With and Without Development scenarios in the baseline (2020) and future (2035) years.

Site Suitability (residential)

Determination of site suitability for residential use is based upon the assignment of Noise Exposure Categories (NEC), applied to proposed new dwellings as noise receptors. The categories range from A to D to reflect an increasing level of concern regarding the noise climate, as summarised in Table 10.6.

Table 10.6 Noise Exposure Categories

Noise Exposure Category	Description
A	Noise need not be considered as a determining factor in granting planning permission, although the noise level at the high end of the category should not be regarded as a desirable level.
B	Noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to ensure an adequate level of protection against noise.
C	Planning permission should not normally be granted. Where it is considered that permission should be given, for example because there are no alternative quieter sites available, conditions should be imposed to ensure a commensurate level of protection against noise.
D	Planning permission should normally be refused.

The former PPG24 provided a specified range of noise levels for each of the four exposure categories, according to the nature of the predominant noise source and based on WHO guidance. Since the proposed development site is expected to be affected primarily by road traffic noise, the target noise limits for 'road traffic' have been used, as shown in Table 10.7. Noise limits for both the daytime and night-time periods, which are defined as 0700-2300hrs and 2300-0700hrs relate to measured or predicted external free field noise levels.

Table 10.7 Noise Levels Corresponding to the Noise Exposure Categories for New Dwellings
 $L_{Aeq,T}$ (dB)

	Noise Exposure Category			
	A	B	C	D
Road traffic				
07.00-23.00 day time	<55	55-63	63-72	>72
23.00-07.00 night time	<45	45-57	57-66	>66

Additionally, if any measured or predicted night time maximum noise levels (L_{Amax}) exceed 82dB(A) several times in any hour, the site should be treated as NEC C.

Where significant levels of noise exist outside noise sensitive dwellings, reference is made to BS8233 'Sound Insulation and noise reduction for buildings – Code of Practice' (1999), which presents design criteria to ensure acceptable internal noise levels for resting in living rooms during the day, and for resting and sleeping in bedrooms during the night, as shown in Table 10.8.

Table 10.8 BS 8233 Internal Noise Level Criteria (residential)

Criterion	Typical Situations	Design Range $L_{Aeq,T}$ dB	
		Good	Reasonable
Reasonable Resting or Sleeping Conditions	Living Rooms	30	40
	Bedrooms	30	35

Additionally, BS8233 states that for a reasonable standard in bedrooms at night, individual noise events (measured with fast time-weighting) should not regularly exceed 45dB L_{Amax} .

Assessment of site suitability for residential use is based upon the assumption that the external envelope of all residential buildings will be design to meet BS8233 criterion for reasonable conditions for resting in living rooms during the day, and for resting/sleeping in bedrooms at night

BS8233 is based upon the WHO 'Guidelines for Community Noise' (1999), but allows for some deviation from it. In addition to consideration of internal noise levels, the WHO guidelines recommend a noise level of L_{Aeq} 55dB to avoid serious annoyance in outdoor living areas (i.e. gardens, balconies etc.). However it should be noted that the levels proposed in the WHO guidance are considered to be guideline, aspirational values only. The WHO guidance itself states that approximately 40% of the population of the European Union is exposed to road traffic noise in excess of the 55dB(A) value, and that more than half of all European Union residents live in areas that do not ensure acoustical comfort. These guideline values are therefore often viewed as aspirational targets and should not be considered as mandatory limits.

Site Suitability (offices/retail)

For noise levels affecting proposed commercial/office development, BS8233 provides additional internal noise level criteria to ensure reasonable conditions for study and work requiring concentration. A range of internal noise level criteria are provided for various typical offices spaces, as shown in Table 10.9.

Table 10.9 BS8233 Internal Noise Level Criteria (offices/retail)

Criterion	Typical Situations	Design Range $L_{Aeq,T}$ dB	
		Good	Reasonable
Reasonable speech or telephone communications	Department store	50	55
Reasonable conditions for study and work requiring concentration	Cellular office	40	50
	Meeting room, executive office	35	40

Assessment of site suitability for office/commercial use is based upon the assumption that the external envelope of all office/commercial buildings will be design to meet BS8233 criterion for reasonable conditions for communication and/or work requiring concentration during the day.

Site Suitability (school)

For noise levels affecting proposed new schools, Building Bulletin 93 'Acoustic Design of Schools' (Part E4 of Building Regulations 2000, 2003 Edition BB93) specifies acceptable levels of internal noise in critical spaces, including classrooms, libraries, resources areas, design and technology labs etc. Upper limits for indoor ambient noise levels are specified for each type of room, depending on noise tolerance e.g. classrooms have a low noise tolerance (noise limit 35dB $L_{Aeq, 30min}$), but dining rooms have a high noise tolerance (noise limit 50dB $L_{Aeq, 30min}$).

As of 2003, BB93 has been a mandatory requirement in the design of new schools and hence external building elements must be designed to ensure sufficient attenuation of external noise levels to meet the internal noise limit criteria.

Note that BB93 also applies to outdoor teaching areas e.g. playing fields, playgrounds etc., and hence further noise mitigation measures e.g. noise barriers may be required for external teaching spaces exposed to excessive environmental noise

Assessment of site suitability for education use is based upon the assumption that the external envelope of all school buildings will be design to meet BB93 guidelines for internal noise levels in various noise critical educational spaces (e.g. classrooms, resource areas etc.)

Summary

Table 10.10 provides a summary of how noise magnitude will be determined for this assessment

Table 10.10 Summary of Noise Magnitude Criteria

Noise Issue	Low	Medium	High
Construction Phase			
Increase in ambient noise due to construction (fixed and mobile plant on site), affecting existing noise sensitive receptors	Construction noise + total pre-construction ambient noise level does not exceed 60dB $L_{Aeq, 12hr}$ (0700-1900hrs)	Construction noise + total pre-construction ambient noise level does not exceed 65dB $L_{Aeq, 12hr}$ (0700-1900hrs)	Construction noise + total pre-construction ambient noise level exceeds 65dB $L_{Aeq, 12hr}$ (0700-1900hrs)
Operational Phase			
Increase in ambient noise due to additional development related road traffic on local routes, affecting existing noise sensitive receptors	Short-term: <1 dB(A) increase in traffic noise levels	Short-term: 1-3dB(A) increase in traffic noise levels.	Short-term:>3 dB(A) increase in traffic noise levels
	Long-term: <3 dB(A) increase in traffic noise levels	Long-term: 3-5dB(A) increase in traffic noise levels.	Short-term:>5 dB(A) increase in traffic noise levels
Noise emissions from Site operations affecting existing (and future) residential receptors in the vicinity of the Site	Industrial noise rating levels are 10 dB(A) or more below existing background noise levels	Industrial noise rating levels are within 5dB(A) of existing background noise levels	Industrial noise rating levels are more than 5dB(A) above existing background noise levels

Table 10.10 (continued) Summary of Noise Magnitude Criteria

Noise Issue	Low	Medium	High
Operational Phase (continued)			
Site suitability for proposed residential use	<p>Predicted external noise levels in NEC A, i.e. $<55\text{dBL}_{\text{Aeq, 16hr}}$ (day); $<45\text{dBL}_{\text{Aeq, 8hr}}$ (night) and</p> <p>Compliance with 'good' BS8233 criteria for internal noise levels in living rooms during the day, and in bedrooms at night, i.e. $30\text{dBL}_{\text{Aeq, 16hr}}$ (daytime) and $30\text{dBL}_{\text{Aeq, 8hr}}$; $45\text{dBL}_{\text{Amax}}$ (night)</p>	<p>Predicted external noise levels in NEC B, i.e. $55\text{--}63\text{dBL}_{\text{Aeq, 16hr}}$ (day); $45\text{--}57\text{dBL}_{\text{Aeq, 8hr}}$ (night), or</p> <p>Predicted Noise levels in NEC C $63\text{--}72\text{dBL}_{\text{Aeq, 16hr}}$ (day); $57\text{--}66\text{dBL}_{\text{Aeq, 8hr}}$ (night), and</p> <p>Compliance with 'reasonable' BS8233 'criteria for internal noise levels in living rooms during the day, and in bedrooms at night, i.e. $40\text{dBL}_{\text{Aeq, 16hr}}$ (daytime) and $35\text{dBL}_{\text{Aeq, 8hr}}$ (night) $45\text{dBL}_{\text{Amax}}$ (night)</p>	<p>Predicted external noise levels in NEC D, i.e. $>72\text{dBL}_{\text{Aeq, 16hr}}$ (day); $>66\text{dBL}_{\text{Aeq, 8hr}}$ (night) or</p> <p>Non-compliance with BS8233 criteria for internal noise levels in living rooms during the day and/or in bedrooms at night i.e. $>40\text{dBL}_{\text{Aeq, 16hr}}$ (daytime), or $>35\text{dBL}_{\text{Aeq, 8hr}}$ (night) $45\text{dBL}_{\text{Amax}}$ (night)</p>
Site suitability for proposed commercial/office use	<p>Compliance with 'good' BS8233 criteria for internal noise levels in critical areas, e.g. $35\text{dB L}_{\text{Aeq, T}}$ for meeting rooms/executive offices</p>	<p>Compliance with 'reasonable' BS8233 criteria for internal noise levels in critical areas, e.g. $40\text{dB L}_{\text{Aeq, T}}$ for meeting rooms/executive offices</p>	<p>Non-compliance with BS8233 criteria for internal noise levels in critical areas.</p>
Site suitability for proposed educational use (primary school)	<p>Internal noise levels are 5dB or more below the requirements of BB93 in various teaching spaces and</p> <p>External noise levels are 5dB or more below the requirements of BB93 in outdoor teaching areas.</p>	<p>Internal noise levels comply with the requirements of BB93 in various teaching spaces and</p> <p>External noise levels comply with the requirements of BB93 in outdoor teaching areas.</p>	<p>Non-compliance with indoor ambient noise requirements of DfES Building Bulletin 93, or</p> <p>External noise levels do not comply with the requirements of BB93 in outdoor teaching areas</p>

As stated previously, significance is related to sensitivity and magnitude. Table 10.11 presents a matrix which shows the interaction between sensitivity and magnitude, and how this has been used to determine the significance of any noise effects.

Table 10.11 Significance Matrix

Magnitude	Sensitivity		
	High	Medium	Low
Low	Not Significant	Not Significant	Not Significant
Medium	Significant	Not Significant	Not Significant
High	Significant	Significant	Not Significant

10.3.4 Technical Consultations

The response received from RVBC's Environmental Services Department indicated that the approach outlined in the Scoping Report, which referred to the use of PPG24 as an appropriate methodology to adopt, was suitable. RVBC also indicated that they wished to have the opportunity to agree the locations of the noise monitoring prior to any surveys being undertaken.

Following the Scoping Opinion from RVBC, consultation was undertaken with James Russell (Head of Environmental Health Services). During this consultation process, the location of noise monitoring was agreed.

10.3.5 Final Scope of the Assessment

The scope of the assessment is largely as described by the Scoping Report and in Section 10.3.2.

Following consultation with RVBC, locations for the background noise monitoring were agreed (see Section 10.4.1).

Identification of road segments for detailed assessment was based upon data provided by Royal Haskoning. Full screening of the traffic data for all major routes in the vicinity of the site was carried out as detailed in Appendix 10.4.

Potentially significant increases in road traffic were found on the following road segments during the 18hr daytime period 0600-2400hrs:

- Pendle Road between the A671 and Goosebutts Lane (Link 8);
- Pendle Road between Goosebutts Lane and the new site access road (Link 10A);
- Pendle Road between the new site access road and the A59 (Link 10B);
- A59 between A671 (Whalley Road) and Pendle Road (Link 11); and
- Taylor Street (Link 13).

A number of potential effects have been scoped out during the EIA process, which were not explicitly addressed during the scoping stage. These are detailed below, along with the reasons why the effects are considered unlikely to be significant:

- *Increase in vibration levels (construction phase) affecting existing residential receptors in close proximity to the proposed construction site, due to piling operations on site:* A review of the proposed development areas with respect to existing residential receptors indicates that piling activities would not progress close to existing residential buildings, and hence would be unlikely to lead to significant levels of nuisance vibration;
- *Increase in road traffic noise levels affecting existing noise sensitive receptors during the construction phase of the development, due to additional development related traffic on the local network:* Since a detailed construction programme is not currently available, it is not possible to quantify the volume of additional light and heavy vehicle traffic which would be routed on the local network as a result of construction of the proposed development. However, it is expected that construction traffic movements would be confined to daytime hours only, and

would be of a level significantly below predicted levels of operational traffic as construction of the proposed development would be undertaken in small phases over a longer period. It is concluded that daytime road traffic movements resulting from construction operations would also not significantly increase ambient road traffic noise levels above the baseline;

- *Increase in road traffic noise levels affecting existing noise sensitive receptors due to road improvements at the A59/Pendle Road junction:* Since a detailed design of the proposed new roundabout is not yet available, it is not possible to quantify the changes in noise levels associated with realignment of road traffic on the A59 and Pendle Road. However, it is expected that due to the separation distance between the new roundabout and the closest noise sensitive receptors (Four Lane End Cottages), and predicted changes in traffic flows on these roads, these works would not significantly increase ambient road traffic noise levels above the baseline.

10.4 Baseline Conditions

10.4.1 Baseline Monitoring Locations

A baseline noise survey was undertaken at various locations in the environs of the proposed development from Thursday 1 March-Monday 5 March 2012. The purpose of the monitoring was to establish existing baseline noise levels at key noise sensitive receptors in the vicinity of the proposed development (and potentially affected road traffic routes in the area), and also existing ambient noise levels on the proposed development site.

Noise monitoring was undertaken at a total of six locations, as agreed in advance with the Environmental Health Department of RVBC. The noise monitoring locations are shown on Figure 10.1, and are described as follows:

- M1 Western edge of development site. Representative of properties on Lingfield Avenue/Langshaw Drive
- M2 Northern part of development site. Representative of properties on Shays Drive/Gills Croft
- M3 Eastern edge of development site at Four Lane Ends Cottages
- M4 Southern boundary of development site at Higher Standen Farm
- M5 Centre of development site
- M6 Ribblesdale School, Queens Road

10.4.2 Data Collection

The equipment (a series of Rion NL-31 Class 1 integrating sound level meters (SLMs), housed in environmental protection apparatus) was installed on-site at locations M1-M5 during the daytime of Thursday 1 March 2012 between 1500-1615hrs. Following installation, noise levels were monitored continuously at each location (consecutive 5-minute logging periods).

The equipment was collected from each location after four days. The noise monitoring therefore includes both daytime (0700-2300hrs) and night-time (2300-0700hrs) measurements

for both weekday and weekend periods. In addition, at location M6 (Ribblesdale School), attended noise monitoring was undertaken for a period of 1-hour on Monday 5 March 2012 between 1400hrs-1500hrs.

All noise monitoring was undertaken in accordance with BS 7445-1:2003, i.e. with microphones mounted to a height of 1.2-1.5 m, and in free-field conditions (at least 3 m away from any noise reflecting surfaces, other than the ground)

Calibration levels for all equipment were checked prior to and on completion of the survey, with no significant drift in calibration recorded in any of the instrumentation utilised. Full laboratory calibration details for the instrumentation used in the survey are provided in Appendix 10.2.

The prevailing meteorological conditions during the noise monitoring surveys are detailed in Table 10.12. This data is taken from a nearby weather station. Due to the weather conditions on 4 and 5 March, noise measurements from these periods have been excluded from the baseline monitoring data. Observed weather conditions during the attended noise monitoring at location M6 on 5 March were favourable (i.e. wind speeds less than 5 m/s and no precipitation). Therefore data gathered during this period are considered valid.

Table 10.12 Meteorological Conditions During Noise Monitoring

Date	Time Period	Temperature Range(°C)	Precipitation	Wind Speed Regularly >5 m/s
1 March 2012	Day (after 1500hrs)	7-12	N	N
	Night	6-8	N	N
2 March 2012	Day	4-10	N	N
	Night	4-6	N	N
3 March 2012	Day	6-10	N	N
	Night	3-7	N	N
4 March 2012	Day	1-3	Y	Y
	Night	0-3	N	Y
5 March 2012	Day (before 1200hrs)	2-5	N	Y

SOURCE: ILANCASH21, 1200hrs 1 March 2012-1200hrs 5 March 2011. Approx. 6.5 km south-east of proposed development (source: www.wunderground.com)

10.4.3 Baseline Monitoring Results

A summary of baseline noise levels at the six monitoring locations is shown in Table 10.13. Full noise monitoring data is presented graphically in Appendix 10.3.

Table 10.13 Baseline Noise Monitoring Results

Location	Time Period	$L_{Aeq, T}$ (dB)	L_{Amax} (dB)	$L_{A10, T}$ (dB)*	$L_{A90, T}$ (dB)
Daytime (0700-2300hrs)					
M1 – Lingfield Avenue	0700-2300hrs	45.9	81.4	47.4	40.6
M2 – Gills Croft	0700-2300hrs	48.0	73.4	49.5	41.6
M3 – Four Lane Ends Cottages	0700-2300hrs	53.6	78.9	55.6	43.5
M4 – Higher Standen Farm	0700-2300hrs	46.7	76.1	46.9	39.3
M5 – Centre of site	0700-2300hrs	46.8	73.8	48.2	41.8
M6 – Ribblesdale School	1400-1500hrs	59.6	84.2	61.2	51.1
Night-time (2300-0700hrs)					
M1 – Lingfield Avenue	2300-0700hrs	45.6	79.3	39.3	40.1
M2 – Gills Croft	2300-0700hrs	47.8	73.4	42.4	40.9
M3 – Four Lane Ends Cottages	2300-0700hrs	52.7	78.9	46.8	41.6
M4 – Higher Standen Farm	2300-0700hrs	46.5	77.4	39.2	38.2
M5 – Centre of site	2300-0700hrs	46.5	73.8	41.6	41.2
M6 – Ribblesdale School	2300-0700hrs	n/a	n/a	n/a	n/a

Average noise levels are determined as follows: L_{Aeq} – logarithmic average; L_{A10} & L_{A90} – arithmetic average; L_{Amax} – maximum recorded during period

* Averages for L_{A10} in accordance with CRTN, i.e. daytime, 18hr (0600-2400hrs); night-time, 6hr (0000-0600hrs)

10.4.4 Commentary

General notes on the positions of the noise monitoring equipment, site observations of the noise sources noted during the survey and the general noise climate at each location are detailed as follows:

- M1 At this location, the SLM was located in a free-field position at the rear garden of No.10 Lingfield Avenue. The dominant noise source identified during the survey was road traffic, primarily from the A59 road to the east. Other identified noise sources included traffic noise coming from nearby roads, occasional trains passing to the west, birdsong, and wind in trees.
- M2 The SLM at this location was located in a free-field position at the rear garden of No.1 Gills Croft off Shays Drive. The dominant noise source identified during the survey was road traffic, primarily from the A59 road to the east. Other identified noise sources included traffic noise coming from nearby roads such as Pendle Road to the north, dogs on nearby public paths used by local residents to walk their dogs, birdsong, and wind in trees.
- M3 At this location the SLM was located in the rear garden of Four Lane Ends Cottages, in a free-field position. The dominant noise source identified during the survey was road traffic, primarily from the A59 road to the east. Other identified noise sources

included traffic noise coming from nearby roads, nearby public path used by local residents to walk their dogs, birdsong, and wind in trees.

- M4 The SLM was located in the rear garden of Standen Hall Farm House, in a free-field position. The dominant noise source identified during the survey was road traffic, primarily from the A59 road to the east. Other identified noise sources included nearby public path used by local residents to walk their dogs, birdsong, and wind in trees.
- M5 At this location, the SLM was located in a free-field position in the middle of an agriculture field. The dominant noise source identified during the survey was the road traffic especially from the A59 to the east. Other identified noise sources included wind in trees and birdsong.
- M6 The SLM was located in a patch of grass directly opposite of Ribblesdale School in a free-field position. The dominant noise source identified during the survey was the road traffic from surrounding roads. Other identified noise sources included car passing occasionally on Queens Road, wind in trees and birdsong.

10.4.5 Predicted Future Baseline

Ambient noise levels at key receptors in the vicinity of the site are expected to be subject to changes in road traffic flows. Information regarding changes in road traffic volumes on key routes has been provided by Royal Haskoning which has factored this traffic growth (as well as other cumulative development schemes) into the calculation of baseline road traffic noise levels for both the Baseline (2020) and Future (2035) years.

The results of the baseline noise monitoring survey correlated well with the modelled 2012 Without development predictions at all locations except M6 (Ribblesdale School) (see Table 10.14). Traffic data was not available for Queens Road or Turner Street and measured noise levels at M6 are higher than those predicted by the noise model. However, due to the good correlation of results elsewhere in the model, the results of the future predicted noise levels in 2020 and 2035 are considered valid.

Table 10.14 Predicted Baseline

Locations	Measured $L_{A10, 18\text{-hour}}$ (dB)	Predicted $L_{A10, 18\text{-hour}}$ (dB) in With-out Development Scenarios		
	2012	2012	2020	2035
M1 – Lingfield Avenue	47.4	47.7	48.1	49.0
M2 – Gills Groft	49.5	48.1	48.5	49.4
M3 – Four Lane Ends Cottages	55.6	56.4	56.8	57.8
M4 – Higher Standen Farm	46.9	47.7	48.0	49.0
M5 – Centre of site	48.2	47.8	48.2	49.1
M6 – Ribblesdale School	61.2	55.9	56.3	57.2

10.5 Proposed Mitigation

10.5.1 Measures Incorporated to Mitigate Potential Significant Effects

Construction Noise (fixed and mobile plant on site)

Construction works, such as those which will be involved in the implementation of the Clitheroe Sustainable Urban Extension, are often characterised by temporary increases in ambient noise levels which may result in short-term disturbance to nearby sensitive receptors. Such disturbance can be avoided through the use of appropriate noise mitigation measures. Examples of such measures include:

- Use of equipment fitted with effective silencers/insulation;
- Use of 'SMART' or 'broadband' reversing alarms to reduce the effect of reversing beepers on site vehicles;
- All plant to be regularly serviced, maintained and operated in accordance with manufacturer's instructions. Machines that are intermittently used should be shut down in the intervening periods between work or throttled down to a minimum;
- Erection of site hoardings, to act as noise barriers reducing emissions to nearby noise sensitive receptors;
- Appointment of site contact to whom complaints/queries about construction activity can be directed. Any complaints to be investigated and action taken where appropriate;
- All construction activity to be undertaken in accordance with good practice as described in BS5228-1:2009; and
- Routing of HGVs to be agreed with the Local Authority.

The noise management scheme to be implemented at the site would be sufficiently developed to ensure that noise emissions comply with the noise limit criteria of BS5228-1:2009, at all nearby noise sensitive residential receptors.

Prior to development, the site will be registered with the Considerate Constructors Scheme

Construction activities will be restricted to 07:00-19:00 Monday to Friday, and 07:00-13:00 on Saturday. Work will not normally be carried out during the evening, night or on Sundays or Bank Holidays. If work during any of these periods is required to meet specific demands, consultation with the Local Authority would be undertaken in advance, with the purpose of seeking appropriate agreement and identifying the means of noise control. Local residents will be advised of these normal hours of operation, and of any material alterations to them.

It is envisaged that implementation of mitigation for construction noise may be the subject of a 'Prior Consent' Agreement under Section 61 of the *Control of Pollution Act 1974* (CoPA). These consents would allow the contractor/developer and the Local Authority to agree an appropriate noise management strategy prior to the commencement of works, which may include restrictions on noisy activities, working times, type of construction technique/equipment used, etc.

Site Suitability (residential)

The external envelope of all proposed residential units (including the proposed retirement living area) will be designed to ensure that daytime and night-time noise levels in habitable rooms (i.e. living rooms and bedrooms) meet prescribed internal noise level criteria in accordance with BS8233:1999.

Residential units will be designed to ensure that internal noise levels resulting from external noise exposure comply with, at a minimum, the 'reasonable' noise level criteria of BS8233 to provide acceptable conditions for resting and sleeping. Indicative façade sound insulation requirements, in order to achieve the above, are presented in Section 10.9.

Site Suitability (offices/retail)

The external envelope of all proposed office units will be designed to ensure that daytime noise levels in critical spaces meet prescribed internal noise level criteria in accordance with BS8233:1999.

Office buildings will be designed to ensure that internal noise levels resulting from external noise exposure comply with, at a minimum, the 'reasonable' noise level criteria of BS8233 to provide acceptable conditions for study and work requiring concentration. Indicative façade sound insulation requirements, in order to achieve the above, are presented in Section 10.10.

Site Suitability (school)

At detailed design stage, the external envelope of any school buildings can be designed to achieve applicable BB93 criteria for ambient internal noise levels in noise critical teaching areas (e.g. classrooms, workshops etc.).

Should a school proposal come forward, glazing specifications to the various internal spaces in accordance with BB93 can form part of the detailed design process in accordance with conditions attached to any outline planning permission.

The effects of ambient noise upon external levels in outdoor teaching spaces (e.g. playing fields etc.) have been assessed based on predicted future noise levels affecting the proposed development site. It was concluded that adequate provision can be made to achieve BB93 criteria with careful design of the school layout plan (ref: Section 10.11)

10.5.2 Summary

Table 10.14 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 10.15 Rationale for Incorporation of Mitigation Measures

Potential Receptor	Predicted Changes and Potential Effects	Incorporated Measure	Likely Effectiveness
Existing residential properties in the vicinity of proposed construction areas	Increase in ambient noise levels due to construction activities (fixed and mobile plant on site).	Noise management and control measures, as listed above, including e.g. limitations to hours of operation and erection of site boundary hoardings etc Noise control measures to achieve noise emission levels as follows: Construction noise + existing ambient noise not to exceed 65dB $L_{Aeq, 12hr}$ (0700-1900hrs) at the worst affected existing residential properties	High
Proposed future residential units on the proposed development site	Future road noise levels affecting residential amenity	Residential units designed to achieve, at minimum the 'reasonable' internal noise level criteria of BS8233:1999 for living rooms and bedrooms External living areas (gardens etc.) could be positioned on the opposite side of residential units from the major road traffic noise sources	High
Proposed commercial/office development in south-east and north-east of the proposed development site	Future road traffic noise levels affecting commercial/office use	Commercial units designed to achieve, at minimum, the 'reasonable' internal noise level criteria of BS8233:1999 for various office spaces.	High
Proposed primary school site in north-west of the proposed development site	Future road traffic noise levels affecting use of the school	School buildings to be designed to meet the internal noise level criteria of BB93 within specified noise sensitive use areas (e.g. classrooms, workshops etc). Outdoor teaching areas/layout with respect to school building designed to achieve outdoor noise level criteria of BB93	High

10.6 Assessment of Effects: Construction Noise (Fixed and Mobile Plant on Site)

10.6.1 Data Collection and Interpretation Methodology

As detailed construction programmes are not currently available, quantitative predictions of construction noise emission levels from the site have not been undertaken. While the works will

comprise numerous different activities, construction need not occur in close proximity to any particular existing or proposed residential receptors for extended periods of time.

As an alternative, noise limits have been proposed for construction activities at the nearest potentially affected noise sensitive receptors. The noise limits are based on existing pre-construction ambient noise levels, in accordance with the guidance of BS5228-1:2009. Existing pre-construction ambient noise levels at each of the potentially affected receptors were measured on 1-5 March 2012 as part of the baseline noise monitoring scheme.

10.6.2 Predicted Effects and their Significance

Provisional construction noise limits have been determined as follows:

- Total existing ambient noise + construction noise not to exceed $65\text{dBL}_{\text{Aeq}, 12\text{h}}$ at any nearby noise sensitive receptor

A range of best practice mitigation measures have been incorporated into the scheme in order to minimise and manage noise effects due to construction operations. These are described in detail in Section 10.5, and include restricted hours of operation for construction activities.

Taking these mitigation measures into account, and assuming that the noise management scheme is developed sufficiently to allow the site to operate within the limits specified above, it is considered that the most appropriate magnitude to be assigned to construction noise effects is medium. For existing/proposed residential receptors in the areas surrounding the site (which are of medium sensitivity), it is concluded that the effects of construction noise would not be significant.

10.7 Assessment of Effects: Road Traffic Noise

10.7.1 Data Collection and Interpretation Methodology

The prediction method for calculating road traffic noise increases on the local network as a result of additional development-related traffic movements is based upon the methodology presented in the *Calculation of Road Traffic Noise (CRTN)*.

Calculations undertaken in accordance with CRTN allow determination of road traffic noise emissions (Basic Noise Level, BNL) for various routes around the site, for both the With and Without Development scenarios in 2020 and 2035. The year 2035 has been chosen to reflect the highest traffic flow within fifteen years of completion of the proposed development and is in line with the Transport Assessment (Royal Haskoning, 2012) submitted in support of the proposals. A comparison between the two sets of noise levels gives a value for the predicted change in noise emissions for each road segment, as a result of additional development related traffic on the local network.

Calculations to determine road traffic noise emissions With and Without Development in Baseline (2020) and Future (2035) years were undertaken based on traffic flow data provided by Royal Haskoning. The information provided includes total two-way traffic volumes for each segment under consideration, HGV percentages and average vehicle speeds for all road segments predicted to experience a change in road traffic as a result of the proposed development.

10.7.2 Predicted Effects and Their Significance

A comparison between noise levels generated on each road segment during the two scenarios was used to determine the predicted magnitude of noise effect on each affected road segment, as shown in Table 10.16. Full CRTN calculations are detailed in Appendix 10.5.

**Table 10.16 Predicted Change in BNL Road Traffic Noise Levels (short-term): Baseline (2020)
>With Development (2020)**

Road Segment	BNL, Baseline (2020), dB L_{A10} , 18hr	BNL, With Development (2020), dB L_{A10} , 18hr	Development Noise Level Increase, dB(A)	Magnitude
Pendle Road between the A671 and Goosebutts Lane (Link 8)	65.7	67.2	1.5	Medium
Pendle Road between Goosebutts Lane and the new site access road (Link 10A)	67.2	68.9	1.7	Medium
Pendle Road between the new site access road and the A59 (Link 10B)	67.2	69.2	2.0	Medium
The A59 between the A671 and Pendle Road (Link 11)	74.9	75.6	0.7	Low
Taylor Street (Link 13)	61.9	62.7	0.8	Low

As shown in Table 10.16, the predicted change in road traffic noise levels on Pendle Road are of medium magnitude in 2020. On residential receptors (of medium sensitivity) the effect is therefore considered to be not significant.

**Table 10.17 Predicted Change in BNL Road Traffic Noise Levels (long-term): Baseline (2020)
>With Development (2035)**

Road Segment	BNL, Baseline (2020), dB L_{A10} , 18hr	BNL, With Development (2035), dB L_{A10} , 18hr	Development Noise Level Increase, dB(A)	Magnitude
Pendle Road between the A671 and Goosebutts Lane (Link 8)	65.7	67.9	2.2	Low
Pendle Road between Goosebutts Lane and the new site access road (Link 10A)	67.2	69.6	2.4	Low
Pendle Road between the new site access road and the A59 (Link 10B)	67.2	69.7	2.5	Low
The A59 between the A671 and Pendle Road (Link 11)	74.9	76.3	1.4	Low
Taylor Street (Link 13)	61.9	63.6	1.7	Low

As shown in Table 10.17, the predicted change in road traffic noise levels on Pendle Road are of low magnitude in 2035. On residential receptors (of medium magnitude) the effect is therefore considered to be not significant. Without the proposed development, road traffic noise levels are predicted to increase by between 0.9-1dB(A) in the long-term (2020 to 2035).

10.8 Assessment of Effects: Site Operational Noise

10.8.1 Predicted Effects and Their Significance

As detailed design and layout of the proposed development is not available at the stage, it has not been possible to undertake detailed predictions of noise levels associated with on-site operational activities. However, it has been assumed that RVBC will require a noise rating level for fixed items of plant which is 5dB below existing background noise levels. Table 10.18 shows the existing night-time noise levels at the closest residential properties to the proposed commercial areas and the rating level required to meet expected RVBC requirements. In accordance with BS4142:1997, it has been assumed that a 5dB correction will be added to the specific noise level to account for any irregular nature in the noise source.

Table 10.18 BS4142 - Operational Noise Assessment

Receptor	Existing Background Noise Level dB $L_{A90, 5min}$	Specific Noise Level dB $L_{Aeq, Tr}$	Rating Noise Level dB dB $L_{Ar, Tr}$
Pagefield Crescent/Gills Croft (M2)	41	31	36
Four Lane End Cottages (M3)	42	32	37
Higher Standen Farm (M4)	39	29	34

It is anticipated that any other noise from night-time activities, including but not limited to noise from delivery vehicles and reversing alarms on delivery vehicles is limited to the appropriate rating level in order to minimise the likelihood of complaints received from future occupants of the nearest residential receptors.

Assuming that the noise rating levels detailed above are met, then the magnitude of noise effect for existing and future residents of the site (including the proposed retirement living) would be, at worst, of medium magnitude and hence not significant.

The development masterplan indicates that the area of land to the north-east corner of the site, adjacent to Pendle Road, is designated for 'ancillary retail/local services/community use'. At the time of assessment, no further information was available regarding the potential future use of this area. However, it has been assumed that any noise generated by use of this area would be subject to the noise limits specified above, in Table 10.18.

10.9 Assessment of Effects: Site Suitability (Residential)

10.9.1 Data Collection and Interpretation Methodology

In order to determine the suitability of the proposed development for its proposed residential use, a comprehensive noise model was developed using Cadna-A, a computational noise modelling suite. The noise model was developed to include the effects of road noise sources upon the noise climate across the proposed development site.

The Cadna-A noise model allows a 3-dimensional environmental model to be constructed using digital mapping and topographic data. Cadna-A can implement a number of methodologies for the calculation of noise levels, including CRIN for the calculation of road traffic noise and ISO 9613-2 for the attenuation of sound during propagation outdoors.

The noise modelling process is complex, but in simple terms it takes into account the following data:

- *Noise source location* – based on the positioning of road traffic noise sources, as shown by the OS digital mapping data;
- *Noise emission data* – sound power levels or sound pressure levels calculated from road traffic volumes, percentage HGVs, segment speeds etc. (CRIN);
- *Distance between noise source and receptor* – based on the Masterplan and OS digital data;
- *Ground contours* – from OS digital data and on-site topographic survey;
- *Ground attenuation* – related to the ground cover between the source and the receptor.

Cadna-A allows the calculation of noise levels at specific points (e.g. at selected receptors) or on a grid basis at a specified height interval. Due to the potential nature of residential development, a series of noise maps was developed to show noise propagation across the site, at the following heights:

- Daytime: 1.5 m (ground level);
- Night-time: 4.0 m (first floor)

The effects of road traffic noise in 2020 and 2035 were used in the assessment of site suitability using NECs. Noise levels were obtained for the daytime (0700-2300hrs) and night-time (2300-0700hrs) periods. NECs for proposed residential units at the site were assigned based on the results of the noise mapping for daytime and night-time road traffic.

Road Traffic Noise Modelling

Road traffic noise modelling was undertaken based upon data provided by Royal Haskoning for the With Development scenarios in 2020 and 2035. Road traffic routes included in the noise model consisted of major existing routes in the vicinity of the proposed development site. At the time of assessment, data was not available for proposed routes inside the proposed development boundary.

Based on the data provided, road traffic noise levels were modelled in terms of $L_{A10, 18hr}$ (daytime) and $L_{A10, pk-hr}$ (night-time), in accordance with CRIN. The road traffic model was based upon total vehicle flow, percentage HGV and average speed data for the daytime 18-hour (0600-2400hrs) and night-time peak hour (0500-0600hrs).

In order to allow the road traffic noise model to be used in the assessment of site suitability, the daytime and night-time calculated road traffic noise levels, in terms of $L_{A10, 18hr}$ and $L_{A10, pk-hr}$ were converted to daytime and night-time L_{Aeq} values, in accordance with the assessment periods $L_{Aeq, 16hr}$ (daytime, 0700-2300hrs) and $L_{Aeq, 8hr}$ (night-time, 2300-0700hrs). The following corrections were applied:

- Daytime: $L_{Aeq, 16hr} = L_{A10, 18hr} - 2dB$;
- Night-time: $L_{Aeq, 8hr} = L_{A10, pkhr} - 6.5dB$ ¹⁶

In addition to the above, maximum night-time noise levels at worst affected positions at the boundaries of the site (closest to the road traffic noise sources) were determined, based upon typical maximum noise emission levels for HGVs (106dB L_w), and corrected for distance to the nearest proposed residential areas.

10.9.2 Predicted Effects and Their Significance

Assignment of NECs for residential units on the proposed development site was based on an analysis of the noise maps for daytime ($L_{Aeq, 16hr}$) and night-time ($L_{Aeq, 8hr}$) noise. The models for the With Development scenario in 2020 and 2035 include the growth in road traffic on existing routes predicted to occur and changes in road traffic levels (on local routes) associated with the consent and operation of the development itself.

Daytime (0700-2300hrs), 1.5 m (Figures 10.2 and 10.3)

The noise maps for daytime noise emissions in both 2020 and 2035, at 1.5 m above ground level, show that the majority of residential units on the site would fall in NEC A, as shown on Figures 10.2 and 10.3. Some areas close to the A59 and Pendle Road, including the area proposed for retirement living fall into NEC B.

Night-time (2300-0700hrs), 4.0 m (Figures 10.4 and 10.5)

The noise maps for night-time noise emissions to the site, at first floor height (i.e. 4.0 m above ground level), for both 2020 and 2035 show that the majority of residential units on the site would fall in NEC A, with some areas located close to the Pendle Road, namely the area proposed for retirement living, falling into NEC B.

Night-time maximum noise levels for units in closest proximity to Pendle Road could be expected to be no greater than 64dB L_{Amax} (at 50 m minimum).

¹⁶ Correction consists of 3dB to convert $L_{A10, 1hr}$ to $L_{Aeq, 1hr}$ (in accordance with PPG24), and -3.5dB to convert $L_{Aeq, 2hr}$ (including both peak hours) to $L_{Aeq, 8hr}$ (S. Bird, Bird Acoustics 2002). The -3.5dB is a method for converting a measured $L_{Aeq, 2hr}$ to an $L_{Aeq, 8hr}$, including the effects of two peak hours. In the modelling, we only consider one peak hour, and so this correction is effectively an overstatement of noise levels over the full 8-hour night-time period.

Assessment of the Effectiveness of Mitigation Measures

The NEC categories were set out in Table 10.7. Determination of glazing requirements for the site is based principally upon the assignment of NECs for residential units across the site e.g. all living room windows in areas of NEC B will be designed to achieve façade noise reduction based on external noise level in the upper limit of NEC B, i.e. 63dB $L_{Aeq, 16hr}$.

The sound reduction performance required for living room and bedroom windows at residential units within areas of the site assigned to NEC A and B are shown in Table 10.19 and Table 10.20, based on assessment in accordance with BS8233:1999. Reference to Figures 10.2 to 10.5 shows broadly the areas requiring these glazing specifications, based on the L_{Aeq} noise emissions to the site only.

Table 10.19 BS 8233 Assessment – Sound Reduction Requirements for Living Room Windows in NEC Categories A and B

Receptors	Living Rooms, NEC A	Living Rooms, NEC B
External Noise Level $L_{Aeq,T}$ dB (Free field)	55	63
External Noise Level $L_{Aeq,T}$ dB (Facade)	58	66
Glazing Spec (mm)	4/12/4	4/12/4
Façade Reduction closed windows dB	-29dB R_{TRA} *	-29dB R_{TRA} *
Internal Noise Level (dB)	29	37
BS8233 Criterion	30dB (Good); 40dB (Reasonable)	30dB (Good); 40dB (Reasonable)
Compliance with BS8233 Criteria?	Yes (Good)	Yes (Good)

* Based on typical 40% glazed area of total living room/bedroom façade (+4dB correction), and assuming average room absorption is higher than $\sigma = 0.15$ (typically, inhabited rooms will be in the range $\sigma = 0.4-0.8$)

Table 10.20 BS 8233 Assessment – Sound Reduction Requirements for Bedroom Windows in NEC Categories A and B (L_{Aeq} only)

Receptors	Bedrooms, NEC A	Bedrooms, NEC B
External Noise Level $L_{Aeq,T}$ dB (Free field)	45	57
External Noise Level $L_{Aeq,T}$ dB (Facade)	48	60
Glazing Spec (mm)	4/12/4	4/12/4
Façade Reduction closed windows dB	-29dB R_{TRA}^*	-29dB R_{TRA}^*
Internal Noise Level (dB)	17	31
BS8233 Criterion	30dB (Good); 35dB (Reasonable)	30dB (Good); 35dB (Reasonable)
Compliance with BS8233 Criteria?	Yes (Good)	Yes (Good)

* Based on typical 40% glazed area of total living room/bedroom façade (+4dB correction), and assuming average room absorption is higher than $\sigma = 0.15$ (typically, inhabited rooms will be in the range $\sigma = 0.4-0.8$)

Further consideration of mitigation requirements for the control of maximum noise level events during the night-time period is also required. The glazing performance requirements for control of maximum noise levels due to road traffic are shown in Table 10.21. Note that these glazing specifications supersede those shown above, and where there is an apparent conflict, the higher glazing specification for a given position on site should always be used.

Table 10.21 BS 8233 Assessment – Sound Reduction Requirements for Bedroom Windows 4.0 m (maximum noise levels due to road noise sources)

Receptors	Bedrooms, Minimum 50 m from Nearside Carriageway of Pendle Road
External Noise Level L_{Amax} dB (Free field)	64
External Noise Level L_{Amax} dB (Facade)	67
Glazing Spec (mm)	4/12/4
Façade Reduction, closed windows dB	-35dB R_w^*
Internal Noise Level (dB)	32
BS8233 Criterion	No regular exceedances of 45dB
Compliance with BS8233 Criteria?	Yes

* Based on typical 40% glazed area of total living room/bedroom façade (+4dB correction), and assuming average room absorption is higher than $\sigma = 0.15$ (typically, inhabited rooms will be in the range $\sigma = 0.4-0.8$).

The above scheme of glazing would be sufficient to control external noise levels to acceptable internal levels for resting in living rooms during the day, and for resting and sleeping in bedrooms during the night. Glazing requirements and the need for any acoustic trickle vents can be dealt with once the layout of individual plots are confirmed. For example, alternative mitigation might include siting of habitable living room and bedroom windows on facades facing away from road noise sources, in which case a reduction of up to 15dB L_{Aeq}/L_{Amax} could be reasonably expected due to screening provided by the building itself. In most situations, based on predicted noise levels at this site, this will allow use of standard double glazing (typical construction 4 mm glass/12 mm cavity/4 mm glass) throughout.

External Noise Levels

It should be noted that some of the site would be exposed to daytime free-field noise levels of 55dB $L_{Aeq,1}$ or above (i.e. NEC B or above, see Figures 10.2 and 10.3). The WHO Guidelines recommend a noise limit value of 55dB $L_{Aeq,1}$ to avoid serious annoyance in outdoor living areas (gardens, balconies etc.).

It is therefore recommended that outdoor living areas be placed, where possible, on the opposite side of the buildings from the nearest road traffic noise sources, in order to reduce noise exposure in outdoor living areas. Screening provided by the residential units themselves could be reasonably expected to provide up to 15dB $L_{Aeq,1}/L_{Amax}$ of noise reduction to outdoor living areas. Based on predicted noise levels at this site, this would bring external daytime noise levels within the criterion for most areas of the site.

However, it should be noted that the levels proposed in the WHO guidance are considered to be guideline values only, as approximately 40% of the population of the European Union is already exposed to road traffic noise in excess of the 55dB(A) value, and more than half of all European Union residents live in areas that do not ensure acoustical comfort. However, the limit can be considered an aspirational target to improve the amenity of residential use on site, while not a strict statutory limit.

Summary

Assuming that the internal noise level requirements of BS8233:1999 are met at the detailed design stage, then the magnitude of noise effect for future residents of the site (including the proposed retirement living) would be, at worst, of medium magnitude and hence not significant.

General guideline design advice has been provided to provide compliance with the external noise level criteria of the WHO *Guidelines for Community Noise* (1999), although compliance with these values do not form part of the assessment of significance for site suitability.

10.10 Assessment of Effects: Site Suitability (Offices/Retail)

10.10.1 Data Collection and Interpretation Methodology

The results of the noise modelling were used to determine predicted external noise levels at the proposed employment/commercial area in the south-east of the proposed development and the proposed retail area to the north-east of the site.

As the exact positioning and configuration of the layout of the buildings has not been finalised at this stage, it is not possible to undertake a full quantitative assessment of noise effects for the proposed commercial area. However, predicted noise levels at the worst affected areas of the site are provided to give some context for the detailed design stage.

10.10.2 Predicted Effects and Their Significance

The results of noise modelling (ref. Figures 10.2 and 10.3) indicate that daytime noise levels at the south-east boundary of the proposed commercial site (i.e. close to Higher Standen Farm) would be in NEC A i.e. below 55dB $L_{Aeq, 16hr}$. The area to the north-east of the site proposed for retail adjacent to Pendle Road would be in NEC B i.e. between 63dB and 72dB $L_{Aeq, 16hr}$.

The glazing performance requirements for control of daytime noise levels due to road traffic in the worst affected areas of the site are shown in Table 10.22.

Table 10.22 BS 8233 Assessment – Sound Reduction Requirements for Office Windows at Upper Limit of NEC A

Receptors	Offices, NEC A	Retail, NEC C
External Noise Level $L_{Aeq,T}$ dB (Free field)	55	72
External Noise Level $L_{Aeq,T}$ dB, Facade)	58	75
Glazing Spec (mm)	4/12/4	4/12/4
Facade Reduction closed windows dB	-26dB R_{TRA}^*	-26dB R_{TRA}^*
Internal Noise Level (dB)	32	49
BS8233 Criterion (executive office/ meeting room)	35dB (Good); 40dB (Reasonable)	50dB (Good); 55dB (Reasonable)
Compliance with BS8233 Criteria?	Yes (Good)	Yes (Good)

* Based on typical 80-90% glazed area of total living office facade, and assuming average room absorption is higher than $\sigma = 0.15$ (typically, inhabited rooms will be in the range $\sigma = 0.4 - 0.8$).

Office/commercial developments often include mechanical ventilation systems ameliorating the need for building facade rapid/purge ventilation. However, where building facade ventilation elements are utilised in preference, these should be carefully selected to ensure that the sound reduction performance of the facade is not degraded below the values specified.

Assuming that the internal noise level requirements of BS8233:1999 are met at the detailed design stage, then the magnitude of noise effect for future users of the commercial/office development would be of low magnitude and hence not significant.

10.11 Assessment of effects: Site Suitability (School Site)

10.11.1 Data Collection and Interpretation Methodology

The results of the noise modelling have been used to determine predicted external noise levels at the proposed school site in the north of the proposed development.

Again, as the exact positioning and configuration of the layout of the buildings is not known, it is not possible to undertake a full quantitative assessment of noise effects for the potential primary school location. However, predicted noise levels at the worst affected areas of the school site are provided to give some context for the detailed design stage.

BB93 guidance also includes consideration of external areas e.g. playgrounds etc. The criteria for external areas are compared with the predicted worst case noise levels affecting the school site to provide context for future development of noise mitigation measures for external areas e.g. acoustic barriers etc.

10.11.2 Predicted Effects and Their Significance

BB93 indicates that noise levels in external teaching areas (e.g. sports pitches etc.) should not exceed 55dB $L_{Aeq, 30mins}$ and at least some areas should be provided where noise levels do not exceed 50dB $L_{Aeq, 30mins}$.

The results of noise modelling for the proposed development (Figures 10.2 and 10.3) indicate that daytime noise levels at the northern-most boundary of the site (i.e. close to Pendle Road) would be in NEC B i.e. between 55dB and 63dB $L_{Aeq, 16hr}$, with approximately one third of the site being classified as NEC A i.e. below 55dB $L_{Aeq, 16hr}$. A small section of the site, approximately 20 m from Pendle Road, is predicted to experience noise levels greater than 63dB $L_{Aeq, 16hr}$ i.e. NEC C. It should therefore be feasible to provide outdoor teaching areas compliant with BB93 criteria, depending on the final chosen layout of any school buildings/playing field areas. Ideally, any school buildings would be located to the north of the site, and playing fields to the rear (south). Additional screening of road traffic noise (by the school buildings) would allow provision of outdoor areas meeting the BB93 criterion of 50dB $L_{Aeq, 30mins}$.

Any school buildings should be designed to achieve a level of sound reduction compliant with BB93 criteria for ambient internal noise levels in critical teaching areas (e.g. classrooms, workshops etc.). As full details of the layout/design of the school development do not exist, it is not currently possible to fully evaluate the sound reduction requirements of the external envelope. However, in accordance with the guidance of BB93, this could be developed comprehensively at detailed design stage should a proposal come forward.

Assuming that the internal and external noise level requirements of BB93 are met, then the magnitude of noise effect for future occupants of a school would be, at worst, of medium magnitude and hence not significant.

10.12 Conclusions

The assessment has considered the potential noise and vibration effects of the proposed development upon both existing and future receptors during the construction and operation phases.

The assessment has demonstrated that during construction, with implementation of the mitigation measures suggested, noise levels at existing residential receptors will not exceed the proposed 65dB $L_{Aeq, T}$ threshold given in BS5228

Although at the time of assessment detailed design information is not available, the assessment concludes that, based on predicted future noise levels and with the proposed mitigation measures suggested, noise levels will comply with the relevant noise limits for the proposed residential, commercial, retail and educational uses as set out in the development masterplan

10.13 Summary of Predicted Effects

Table 10.23 shows a summary of all predicted noise effects considered in this chapter of the ES. Through implementation of the mitigation measures detailed, it is expected that no significant effects will arise due to the construction and operation of the development.

Table 10.23 Summary of Effects and Evaluation of Significance

Receptor	Probability	Sensitivity/ Value	Magnitude	Significance	
				Level	Rationale
Construction Phase					
Increase in ambient noise due to construction (fixed and mobile plant on site), affecting existing noise sensitive receptors	Likely	Medium	Medium	Not significant	Construction/demolition programme undertaken in accordance with best practice guidelines/registration with Considerate Constructors Scheme, etc. to meet BS5228-1:2009 emissions levels i.e. total ambient noise plus construction noise not to exceed 65dB $L_{Aeq, 12hr}$ at worst affected residential properties.
Operational Phase					
Increase in ambient noise due to development related road traffic on local routes, affecting existing noise sensitive receptors	Likely	Medium	Medium/Low	Not significant	In both the baseline (short-term) and future (long-term) assessment years, increases in predicted road traffic noise levels are below 3dB(A)
Noise emissions from site operations affecting existing (and future) residential receptors in the vicinity of the site	Likely	Medium	Medium	Not significant	Fixed noise sources to be subject to detailed design to comply with appropriate noise rating level.

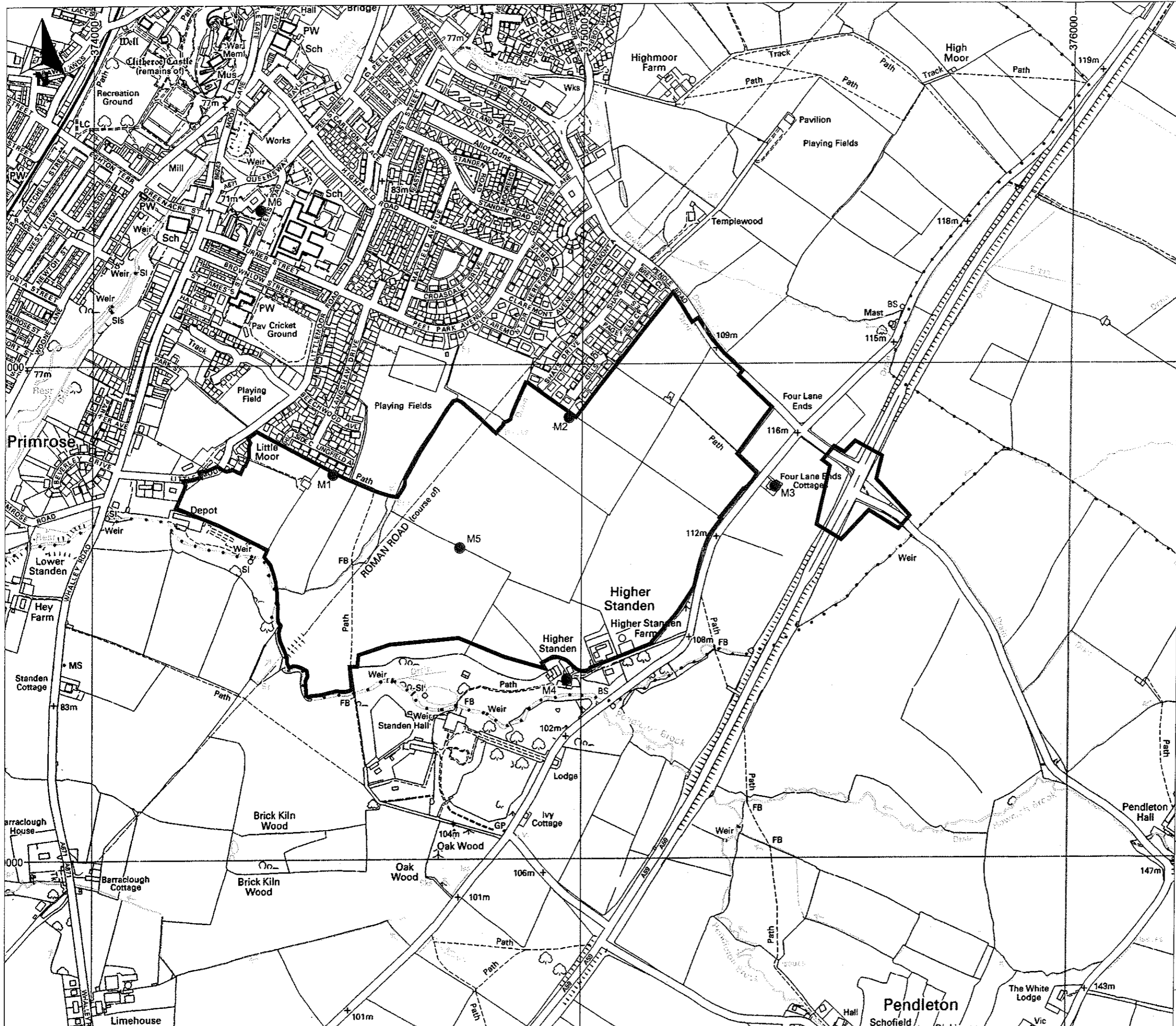
Table 10.23 (continued) Summary of Effects and Evaluation of Significance

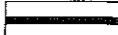

Receptor	Probability	Sensitivity/ Value	Magnitude	Significance	
				Level	Rationale
Operational Phase (continued)					
Site suitability for proposed residential use	Likely	Medium	Medium	Not significant	Road traffic noise levels meet NECs A-B and external envelopes of all residential buildings will be subject to detailed design to comply with BS8233 internal noise level criteria for living rooms and bedrooms
Site suitability for proposed commercial/office use	Likely	Medium	Low	Not significant	External envelope of all office buildings to be subject to detailed design such that internal noise levels in all noise critical spaces meet BS8233 internal noise level criteria
Site suitability for proposed educational use (primary school)	Likely	Medium	Medium	Not significant	External envelope of any school buildings to be subject to detailed design such that internal noise levels in all noise critical spaces meet the requirements of BB93 and Noise to outdoor teaching areas mitigated to provide suitable external noise levels for teaching of sports etc
Key:	Probability	Value	Magnitude	Significance	
	Certain	High	High	Significant	
	Likely	Medium	Medium	Not Significant	
	Possible	Low	Low		
	Unlikely				

10.14 Technical References

1. British Standards (1997) BS4142 - Rating Industrial Noise Affecting Mixed Residential and Industrial Areas. British Standards Institute; London.
2. British Standards (1999) BS8233 - Sound Insulation and Noise Reduction for Buildings: Code of Practice. British Standards Institute; London
3. British Standards (2003) BS7445-1 - Description and measurement of environmental noise – Part 1: Guide to quantities and procedures. British Standards Institute; London
4. British Standards (2009) BS5228 - Code of practice for noise and vibration control on construction and open sites. Part 1: Noise. British Standards Institute; London
5. Department for Communities and Local Government (2012) National Planning Policy Framework. London; The Stationary Office.

6. Department for Education and Skills (2003). Building Bulletin 93 – Acoustic Design of Schools. London; The Stationary Office.
7. Department of the Environment (1994). Planning Policy Guidance 24: Planning and Noise. London; HMSO.
8. Department of Transport and the Welsh Office (1988). Memorandum of Calculation of Road Traffic Noise. London: HMSO
9. Highways Agency (2011) - Design Manual for Roads and Bridges. Volume 11. Section 3, Part 7. Noise and Vibration (HD213/11-Revision 1). London; The Stationary Office.
10. World Health Organisation (1999) Guidelines for Community Noise. WHO; Geneva



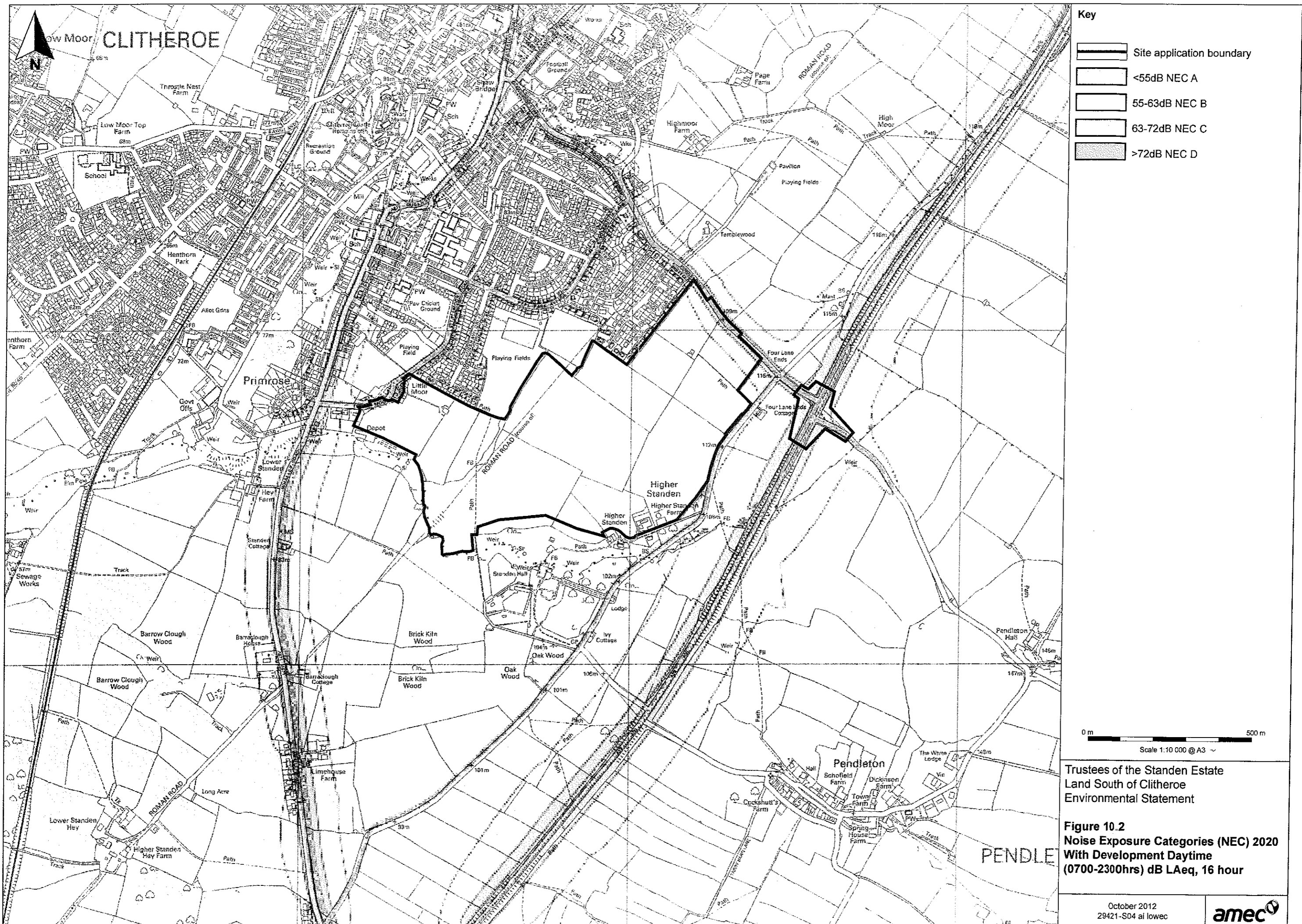
- Key**
-  Site application boundary
 -  Noise monitoring receptor
- M1 Lingfield Avenue
M2 Gills Croft
M3 Four Lane Ends Cottages
M4 Higher Standen Farm
M5 Centre of Site
M6 Ribblesdale School



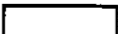
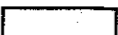

0 m 400 m
Scale 1:7500 @ A3

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Figure 10.1
Noise Monitoring Locations

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- Key**
-  Site application boundary
 -  <math>< 55\text{dB}</math> NEC A
 -  55-63dB NEC B
 -  63-72dB NEC C
 -  >72dB NEC D

0 m 500 m
 Scale 1:10 000 @ A3

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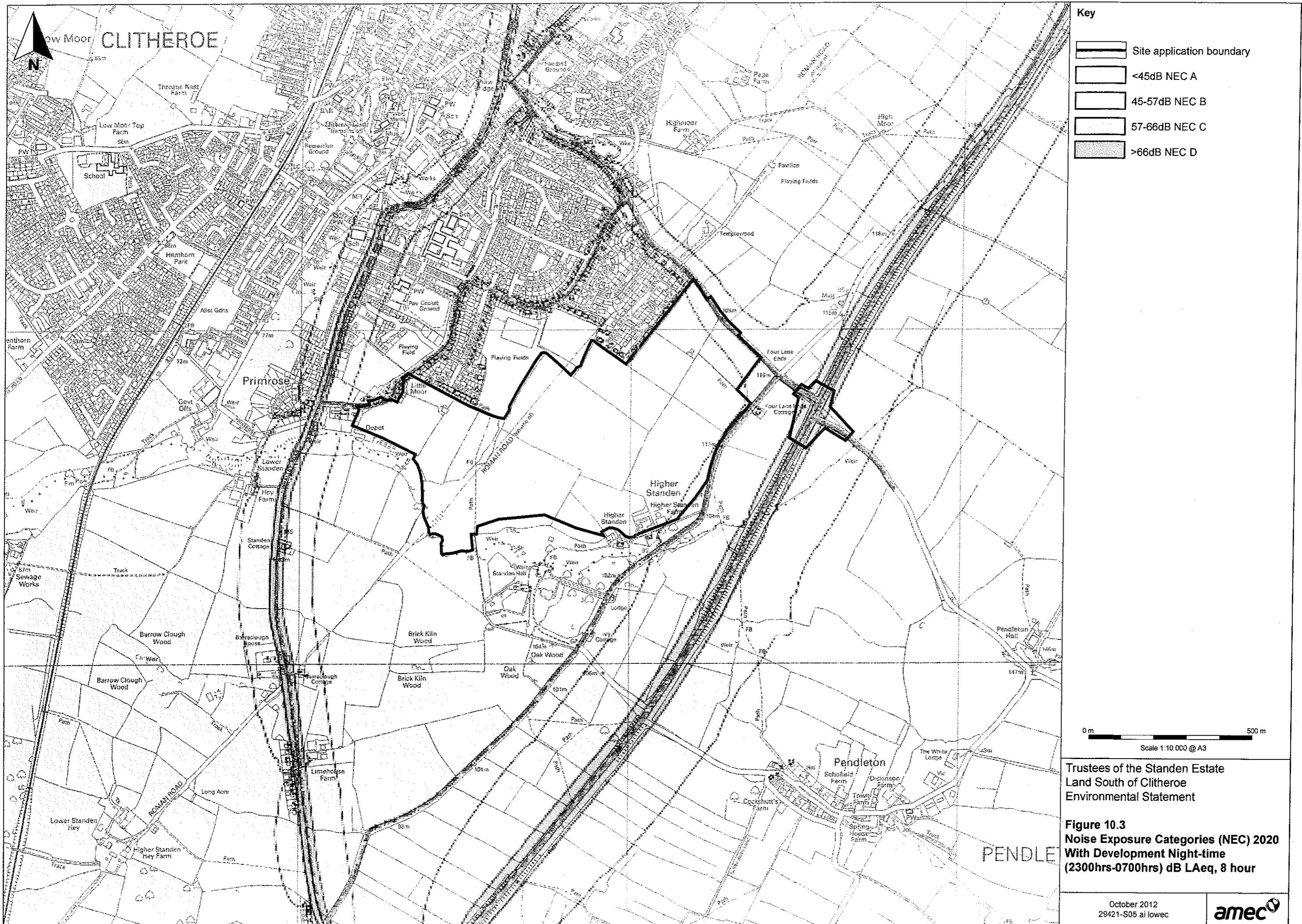
Figure 10.2
Noise Exposure Categories (NEC) 2020
With Development Daytime
(0700-2300hrs) dB LAeq, 16 hour

October 2012
 29421-S04 at lowec








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Key

-  Site application boundary
-  <45dB NEC A
-  45-57dB NEC B
-  57-66dB NEC C
-  >66dB NEC D

0 m 500 m
 Scale 1:10,000 @ A3

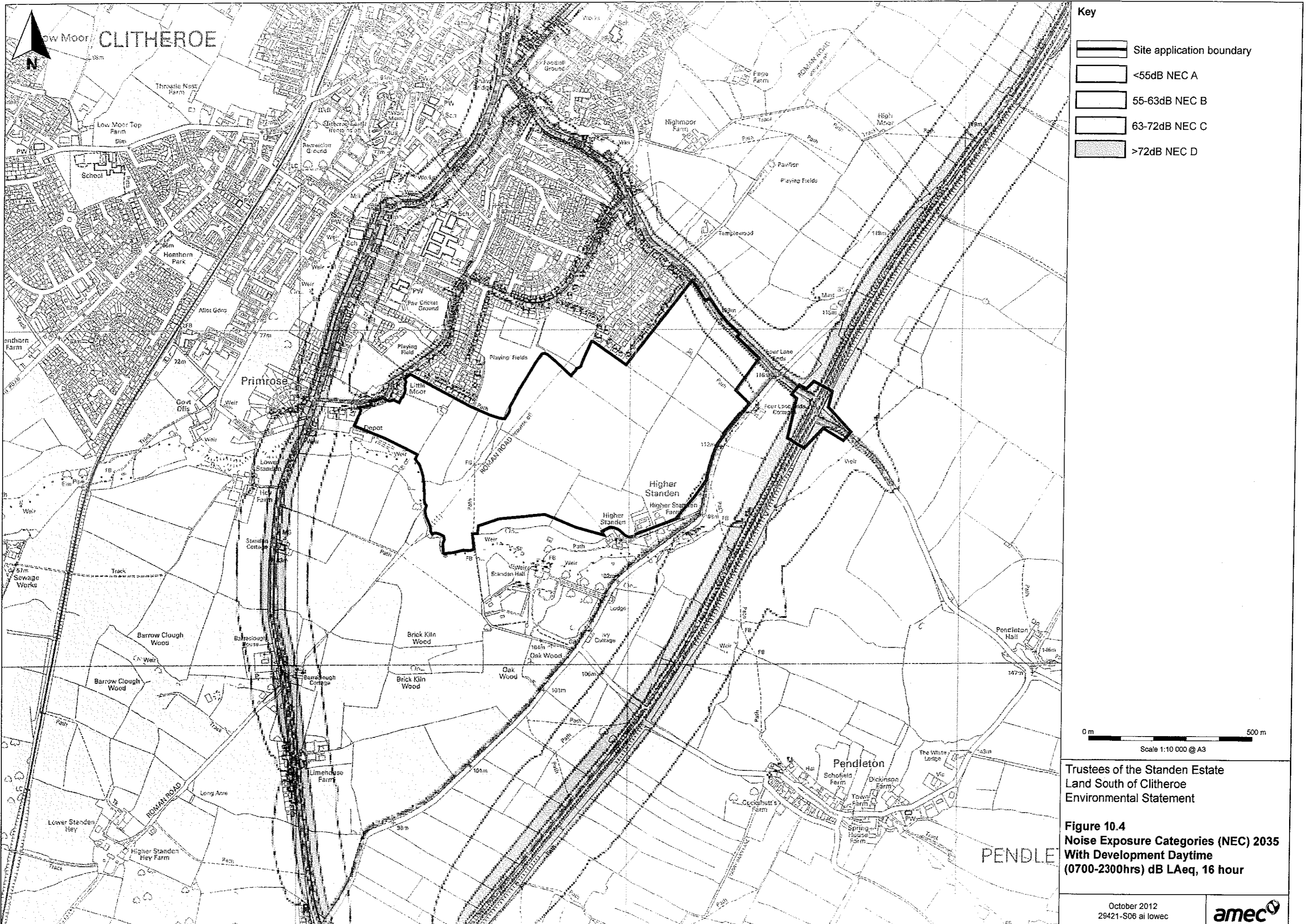
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Figure 10.3
Noise Exposure Categories (NEC) 2020
With Development Night-time
(2300hrs-0700hrs) dB LAeq, 8 hour






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Key

-  Site application boundary
-  <55dB NEC A
-  55-63dB NEC B
-  63-72dB NEC C
-  >72dB NEC D

0m 500m
 Scale 1:10 000 @ A3

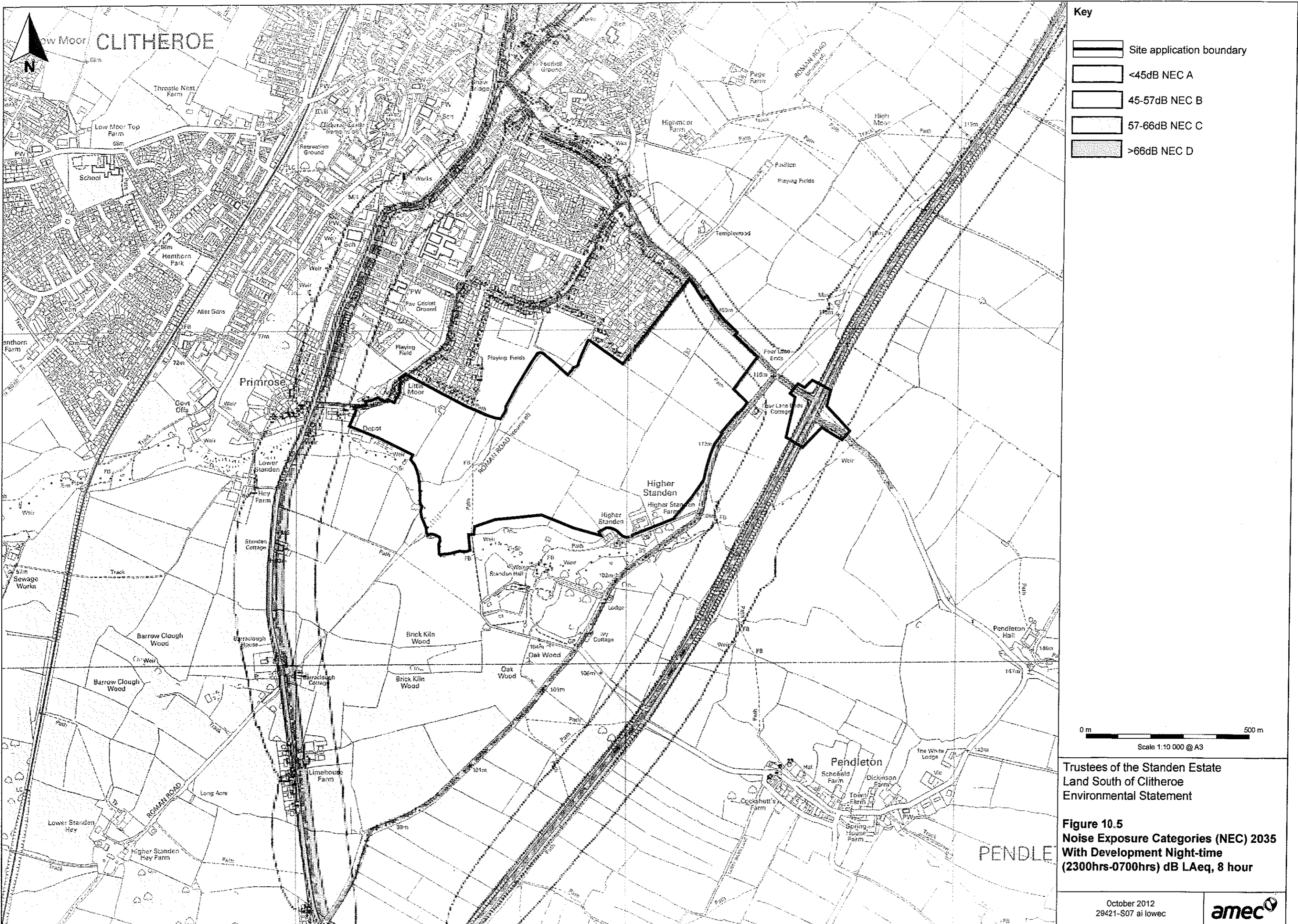
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Figure 10.4
Noise Exposure Categories (NEC) 2035
With Development Daytime
(0700-2300hrs) dB LAeq, 16 hour

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- Key**
-  Site application boundary
 -  <45dB NEC A
 -  45-57dB NEC B
 -  57-66dB NEC C
 -  >66dB NEC D

0 m 500 m
 Scale 1:10 000 @ A3

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Figure 10.5
Noise Exposure Categories (NEC) 2035
With Development Night-time
(2300hrs-0700hrs) dB LAeq, 8 hour

October 2012
 29421-S07 ai lowec



11. Air Quality

11.1 Introduction

The proposed scheme could affect air quality in Clitheroe and in its vicinity. This chapter assesses these potential effects. The chapter should be read in the light of the project description in chapter 2. The chapter outlines the assessment methodology that was adopted as part of the air quality assessment which is then followed by a summary of the relevant policy and guidance in relation to air quality at the development site. This leads on to a description of the overall baseline conditions, the scope of the assessment, the environmental measures that have been incorporated into the scheme and, an assessment of potential effects at identified receptor locations. The chapter concludes with a summary of the results of the assessment and a significance evaluation.

11.2 Assessment Methodology

11.2.1 Relevant Terminology

The terminology relevant to the air quality section is outlined in Table 11.1.

Table 11.1 Relevant Terminology

Term/Abbreviation	Description
AADT	Annual Average Daily Traffic
Annualisation	Process of converting short periods (3-6 months) of monitoring data to an annual average
AQAP	Air Quality Action Plan
AQMA	Air Quality Management Area
AQO	Air Quality Objective
AQS	Air Quality Standard
AURN	Automatic Urban and Rural Network
Bias Correction	Process of correcting diffusion tube data against ratified continuous monitoring data to improve confidence in monitoring results
BRE	Buildings Research Establishment
CEMP	Construction Environmental Management Plan
CO	Carbon Monoxide
DMRB	Design Manual for Roads and Bridges
EHO	Environmental Health Officer
EPUK	Environmental Protection UK

Table 11.1 (continued) Relevant Terminology

Term/Abbreviation	Description
EU	European Union
GLA	Greater London Authority
HGV	Heavy Goods Vehicle
IAQM	Institute of Air Quality Management
Km	Kilometres
Kmph	Kilometres per hour
LAQM	Local Air Quality Management
m	Metres
$\mu\text{g m}^{-3}$	Microgrammes per cubic metre
NMVOG	Non-methane Volatile Organic Compounds
NPPF	National Planning Policy Framework
NO ₂	Nitrogen dioxide
NO _x	Nitrogen Oxides
Part A and B Processes	Industrial processes regulated either by the Environment Agency (A1 processes) or the Local Authority (A2 and B processes)
PM ₁₀	Particulate Matter less than 10 microns in diameter
PM _{2.5}	Particulate Matter less than 2.5 microns in diameter
PPSs	Former Planning Policy Statements
PPGs	Former Planning Policy Guidance Notes
SCR	Selective catalytic reduction
SO ₂	Sulphur dioxide
SSSI	Site of Special Scientific Interest
Verification	Process of verifying predicted output of modelling against monitoring data

11.2.2 Technical Context

The scheme is for a mixed-use development of predominantly housing with some retail, business and community facilities, including a new primary school. Developments of this nature can generate traffic which can pollute that can affect air quality at existing residential receptor locations as well as at the new residential receptors associated with the scheme.

This assessment has focused on Nitrogen dioxide (NO₂) and particulate matter (PM₁₀ and PM_{2.5}) as these are the pollutants of greatest health concern associated with road traffic. Emissions of other exhaust gases, essentially, Carbon monoxide (CO), small quantities of Sulphur dioxide (SO₂) and non-methane volatile organic compounds (NMVOC) including 1,3-butadiene and benzene, will also occur from vehicles. National level measurement and

modelling assessments carried out by Defra¹⁷ have shown that policy measures already in place should reduce levels of CO, 1,3 butadiene and benzene to ensure compliance with the respective standards and objectives, even at busy roadside locations. The small incremental change due to the emission of these pollutants from the proposed development would not change this situation and, therefore, this assessment will focus only on Nitrogen oxides (NO_x), PM₁₀ and PM_{2.5}. The primary NO_x emitted from combustion sources undergoes photochemical oxidation in the atmosphere to form secondary NO₂, which is the pollutant of concern for local air quality, primary NO₂ is also emitted from road traffic sources. For the purposes of this assessment it has been assumed as a worst-case that all of the PM₁₀ emitted by road traffic is actually PM_{2.5}.

The construction of the development may also generate dust, which could affect nearby existing residents as well as earlier phases of the development whilst later phases are being built. Dust is generated during activities such as vegetation clearance, earthworks to allow foundations to be dug and the construction the development itself. Dust may also be associated with stock-piles of material and track-out from vehicles on-site travelling onto the public highway

11.2.3 Planning and Guidance

Legislation

The European directive on air quality and cleaner air for Europe (2008/50/EC) and the European directive relating to arsenic, cadmium, mercury, nickel, and polycyclic aromatic hydrocarbons in ambient air (2004/107/EC) are the principal instruments governing outdoor ambient air quality policy in the EU. They set binding Limit Values for concentrations of pollutants in the air we breathe.

The Air Quality Standards Regulations 2010 transpose into UK legislation these two European directives, the Council's decision on exchange of information, as well as replacing the Air Quality Standards Regulations 2007. The Air Quality Standards Regulations 2010 came into force in the UK on 11 June 2010. The Air Quality Limit Values are transposed into the updated Regulations as Air Quality Standards (AQS) with attainment dates in line with the European Directives.

In the UK, action on air quality is driven by the health-based Objectives for key air pollutants made statutory through the Air Quality Regulations 2000, as amended in 2002 and set out in the 2007 Air Quality Strategy for England, Scotland, Wales and Northern Ireland. The Air Quality Objectives (AQOs) are based on medical and scientific reports on how and at what concentration each pollutant affects human health. The AQOs are based on the Air Quality Standards/Air Quality Limit Values, with interim target dates to help the UK move toward the achievement of the Air Quality Limit Values. The AQOs in the Air Quality Strategy are a statement of policy intentions or policy targets and as such, there is no legal requirement to meet these objectives except as far as these mirror any equivalent legally binding Limit Values in EU legislation.

Part IV of the Environment Act 1995 requires local authorities to periodically review concentrations of the UK Air Quality Strategy pollutants within their areas and to identify areas where the AQOs may not be achieved by their relevant target dates. This process of Local Air Quality Management (LAQM) is an integral part of delivering the Government's AQOs detailed

¹⁷ Defra 2006, Trends in Primary Nitrogen Dioxide in The UK, Draft report for comment, prepared by Air Quality Expert Group, August 2006.

in the Regulations. When areas are identified where some or all of the Objectives might potentially be exceeded and where there is relevant public exposure, i.e. where members of the public would regularly be exposed over the appropriate averaging period, the local authority has a duty to declare an Air Quality Management Area (AQMA) and to implement an Air Quality Action Plan (AQAP) to reduce air pollution levels towards the AQOs, to the extent that emission sources are under their control.

Table 11.2 sets out the air quality objectives that are relevant to this assessment, and the dates by which they are to be achieved

The UK Government and the Devolved Administrations have set national air quality objectives for particulate matter smaller than 2.5 µm diameter (PM_{2.5}). These objectives have not been incorporated into LAQM Regulations, and authorities have no statutory obligation to review and assess air quality against them. Although the PM_{2.5} objectives (see Table 11.2) are not included in the Regulations, PM_{2.5} has been included in this assessment to ensure that it is robust.

Table 11.2 Summary of Relevant Air Quality Standards and Objectives

Pollutant	Objective (UK)	Averaging Period	Date to be Achieved By and Maintained Thereafter (UK)
Nitrogen dioxide - NO ₂	200 µg m ⁻³ not to be exceeded more than 18 times a year	1-hour mean	31 Dec 2005
	40 µg m ⁻³	Annual mean	31 Dec 2005
Particles - PM ₁₀	50 µg m ⁻³ not to be exceeded more than 35 times a year	24-hour mean	31 Dec 2004
	40 µg m ⁻³	Annual mean	31 Dec 2004
Particles - PM _{2.5}	25 µg m ⁻³	Annual mean	2020
	Target of 15% reduction in concentration at urban background locations	3 year mean	Between 2010 and 2020

The main issue in terms of the objective for NO₂ is the more stringent annual mean objective. Guidance available from Defra¹⁸ states that the hourly NO₂ AQO is unlikely to be exceeded unless the annual mean NO₂ concentration is above 60 µg m⁻³. For PM₁₀, the 24hour mean objective is more stringent than the annual mean.

National Policy

At a national level the National Planning Policy Framework (NPPF) states that:

“Planning policies should sustain compliance with and contribute towards EU limits values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas. Planning decisions should ensure that any new development in Air Quality Management Areas is consistent with the local air quality action plan ”

¹⁸ Defra 2009 Local Air Quality Management Technical Guidance (LAQM TG09).

Local Policy

RVBC are currently drafting their Local Development Framework, which may include air quality considerations. The saved policies from the Local Plan 1998 for Ribble Valley Borough Council (RVBC), do not consider air quality. Policy DMG1 'General Considerations' of the Submission Version of the Draft Core Strategy: A Local Plan for Ribble Valley is a general policy which requests that the potential impacts of development on air quality (and where feasible, mitigation provided) should be considered in assessing proposals.

Air Quality Guidance

Environmental Protection UK (EPUK)¹⁹ has developed guidance regarding the assessment of air quality issues within planning applications, which includes a summary of relevant legislation and the assessment of significance. The guidance indicates that the weight given to air quality issues in determining planning applications depends on the following factors:

- The severity of impacts on air quality;
- The air quality in the area surrounding the development;
- The likely use of the development (relating to length of exposure at the location); and
- Positive benefits provided through other material considerations

Dust Guidance

Local communities may be concerned that development activities (particularly construction works) would result in regular and persistent dust annoyance, which may affect local amenity and quality of life. The level of concern, and potential for annoyance, is directly related to the existing baseline dust levels, the number and proximity of residential areas to the site, and the exact nature of the activities on-site. The degree of actual annoyance would also depend on factors, such as, the rate of dust deposition, and the application of mitigation measures on site.

Dust complaints are usually associated with periods of peak deposition, occurring during particular weather conditions. There is a 'normal' level of dust deposition in every community and it is only when the rate of deposition is high relative to the norm that complaints tend to occur. The effects of dust on a community will therefore be determined by the following factors:

- the activities being undertaken (demolition, number of vehicles and plant etc.);
- the duration of these activity;
- the size of the site;
- the meteorological conditions (wind speed, direction and rainfall);
- the proximity of receptors to the activity;
- the adequacy of the mitigation measures applied to reduce or eliminate dust; and
- the sensitivity of the receptors to dust.

¹⁹ Environmental Protection UK 2010 Development Control: Planning for Air Quality (Update 2010)

The amount of dust that might cause annoyance in a particular circumstance is very difficult to determine and there are no statutory limits such as those applicable to suspended particulates or gaseous pollutants.

The Institute for Air Quality Management (IAQM)²⁰ has recently produced guidance on the assessment of the impacts of construction on air quality. This guidance presents a series of steps to be undertaken to determine whether dust effects associated with construction activities are likely to be significant. This guidance has been used in this assessment to determine the effects associated with dust during the construction phase. IAQM have also recently (March 2012) produced a list of mitigation measures to accompany this new guidance. The mitigation measures produced by IAQM relate to the classification of sites as being of low, medium or high risk in terms of dust effects. These mitigation measures will also be referred to in this assessment.

The Building Research Establishment (BRE)²¹ has developed guidance for controlling the dust from construction and demolition activities. This guidance presents measures for the control of dust from construction sites depending on the potential source of dust on-site.

The London Best Practice Guidance²² contains a comprehensive set of mitigation measures to be used based on the classification of a site as being of low, medium or high risk in terms of likely dust effects. This guidance is also often applied as best practice outside of London.

The BRE, IAQM and the London Best Practice Guidance have been used in this assessment to determine the likely dust risk and defining the appropriate mitigation measures in terms of minimising the effects of demolition and construction dust associated with the site.

11.2.4 Significance Evaluation Methodology

Construction Phase - Dust

The IAQM²⁰ guidance provides a method for assessing the significance of demolition and construction dust impacts by considering the annoyance due to dust soiling as well as harm to ecological receptors and the risk of health effects due to significant increases in PM₁₀ concentrations.

Construction site activities are divided into four types to reflect their different potential impacts. These activities are:

- demolition – an activity involved with the removal of an existing structure or structures;
- earthworks – the processes of soil-stripping, ground-levelling, excavation and landscaping;
- construction – an activity involved in the provision of a new structure; and

²⁰ Institute of Air Quality Management 2012. Guidance on the Assessment of the Impacts of Construction on Air Quality and the Determination of their Significance.

²¹ Kukadia, Upton and Hall, 2003. Control of Dust from Construction and Demolition Activities. BRE

²² GLA and London Councils 2006. The control of dust and emissions from construction and demolition activities. Best Practice Guidance.

- track-out – the transport of dust and dirt from the site onto the public road network. This arises when lorries leave site with dusty materials or transfer dust and dirt onto the road having travelled over muddy ground on-site.

A high risk of significant effects occurring due to construction site activities for each of the four types defined above occurs when a sensitive receptor is located within 350 m from the site boundary for demolition, earthworks and construction and/or within 100 m of the route(s) used by vehicles on the public highway, up to 500 m from the site entrance(s) for track-out. Where these activities are of a scale and nature to result in significant risk of dust arising.

Once a site has been determined as either High, Medium or Low risk, appropriate mitigation measures for the site can then be implemented.

Although it is acknowledged that the construction of the development would be phased over approximately 15-20 years, as details of construction are not currently available this assessment is based on one construction phase.

Operational Phase - Road Traffic Emissions

Although no formal procedure exists for classifying the magnitude and significance of air quality effects from a new development, guidance issued by EPUK¹⁹ suggests ways to address the issue. In the EPUK guidance, the magnitude of impact due to an increase/decrease in annual mean NO₂ and PM₁₀ and other pollutants in general is described using the criteria in Table 11.3. These criteria are based on the change in concentration brought about by a new development as a percentage of the assessment level, or the equivalent mass basis. When describing the impact at a specific receptor, the actual concentration at that receptor should be taken into account, in combination with the magnitude of change, using the approach detailed in Table 11.4. The shaded cells in Table 11.4 are applicable to those changes which may be considered as significant, whereas the changes in the non-shaded cells can be considered as not significant, although the assessment of overall significance is based on professional judgement.

Table 11.3 Definition of Impact Magnitude for Changes in Annual Mean Concentration

Magnitude of Change	Annual Mean Concentration - NO ₂ and PM ₁₀	Number of Exceedences of 24 Hour Average PM ₁₀ AQO	Annual Mean Concentration – PM _{2.5}
Large	Increase/decrease >4 µg m ⁻³	Increase/decrease > 4 days	Increase/decrease >2.5 µg m ⁻³
Medium	Increase/decrease 2-4 µg m ⁻³	Increase/decrease 2-4 days	Increase/decrease 1.25-2.5 µg m ⁻³
Small	Increase/decrease 0.4-2 µg m ⁻³	Increase/decrease 0.4-2 days	Increase/decrease 0.25-1.25 µg m ⁻³
Imperceptible	Increase/decrease <0.4 µg m ⁻³	Increase/decrease <0.4 days	Increase/decrease <0.25 µg m ⁻³

Table 11.4 Impact Descriptors for Changes in Concentrations

Absolute Concentration in Relation to Objective			Increase in Concentration		
NO ₂ and PM ₁₀ Annual Mean	Number of Exceedences of 24 Hour Average PM ₁₀ AQO	PM _{2.5} Annual Mean	Small	Medium	Large
Above objective with scheme (>40 µg m ⁻³)	Above objective with scheme (>35 days)	Above objective with scheme (>25 µg m ⁻³)	Slight Adverse	Moderate Adverse	Substantial Adverse
Just below objective with scheme (36-40 µg m ⁻³)	Just below objective with scheme (32-35 days)	Just below objective with scheme (22.5-25 µg m ⁻³)	Slight Adverse	Moderate Adverse	Moderate Adverse
Below objective with scheme (30-36 µg m ⁻³)	Below objective with scheme (26-32 days)	Below objective with scheme (18.75-22.5 µg m ⁻³)	Negligible	Slight Adverse	Slight Adverse
Well below objective with scheme (<30 µg m ⁻³)	Well below objective with scheme (<26 days)	Well below objective with scheme (<18.75 µg m ⁻³)	Negligible	Negligible	Slight Adverse

Absolute Concentration in Relation to Objective			Decrease in Concentration		
Above objective without scheme (>40 µg m ⁻³)	Above objective without scheme (>35 days)	Above objective without scheme (>25 µg m ⁻³)	Slight Beneficial	Moderate Beneficial	Substantial Beneficial
Just below objective without scheme (36-40 µg m ⁻³)	Just below objective without scheme (32-35 days)	Just below objective without scheme (22.5-25 µg m ⁻³)	Slight Beneficial	Moderate Beneficial	Moderate Beneficial
Below objective without scheme (30-36 µg m ⁻³)	Below objective without scheme (26-32 days)	Below objective without scheme (18.75-22.5 µg m ⁻³)	Negligible	Slight Beneficial	Slight Beneficial
Well below objective without scheme (<30 µg m ⁻³)	Well below objective without scheme (<26 days)	Well below objective without scheme (<18.75 µg m ⁻³)	Negligible	Negligible	Slight Beneficial

Notes: An imperceptible magnitude of change is considered to have a negligible impact

When considering the overall significance of effects of a development the following should also be taken into consideration:

- number of properties affected by slight, moderate or substantial air quality impacts;
- number of people exposed to poor air quality when a development introduces new exposure into an existing area of poor air quality;
- magnitude of the changes and descriptions of the impacts at receptors;
- is an exceedence of an objective or limit value predicted to arise in a study area where none existed before or where an exceedence area is substantially increased;

- whether or not the study area exceeds an objective or limit value and this exceedence is removed or the exceedence area is reduced;
- interfere significantly with or prevent the implementation of actions within an AQAP;
- interfere significantly with the implementation of a local air quality strategy;
- the uncertainty of the results; and
- the extent to which an objective or limit value is exceeded.

11.3 Baseline Conditions

11.3.1 Data Gathering and Survey Work

Data for the ES baseline has been gathered through a desk-top study. This has involved collating data regarding air quality in the area surrounding the development from the various sources listed below:

- Air Quality Monitoring data from the national Automatic Urban and Rural Network (AURN);
- Estimated background pollution concentration maps from Defra);
- Passive and continuous monitoring data from Ribble Valley Borough Council (RVBC);
- RVBC's Air Quality Review and Assessment Reports;
- Ordnance Survey maps and aerial photographs of the area to identify land use, sensitive receptor locations and potential sources of pollutants;
- Website www.magic.defra.gov.uk to obtain information regarding ecological receptors in the local area in addition to discussions with the project ecologists; and
- Consultation with the Environmental Health Officer (EHO) at RVBC responsible for air quality.

No survey work has been required in order to undertake this assessment, as existing data available for the area was considered sufficient to inform the baseline.

The site is mainly surrounded by arable farmland with the A59 dual carriageway to the south-east of the site, although this is more than 200 m from the site boundary. The southern edge of Clitheroe is adjacent to the northern site boundary. The desk top study has found that there are no Part A or B industrial facilities within 1km of the site. From consultation with the EHO and from looking at maps and aerial photographs of the area, no other sources of pollutants in close proximity to the site have been identified, except road traffic on roads in the area.

The local authority has declared a section of the nearby Whalley Road in Clitheroe as an AQMA for exceedences of the annual mean AQO for NO₂. This was declared in 2010 based on diffusion tube monitoring for NO₂ in 2009.

Concentrations at the diffusion tubes within the Whalley Road AQMA and one other site to the north of the AQMA in Clitheroe (Whittle Close) for the past three years are shown in Table 11.5. The monitoring undertaken within Clitheroe is the closest air quality monitoring taking place to the site, and is located approximately 500 m to the north-west of the site boundary. However, the pollutant concentrations within the AQMA are not considered to be representative of the site, as the AQMA is designated for a busy, narrow street in the centre of Clitheroe, whereas the site will be mainly residential areas, a business centre, school site, ancillary retail and community facilities; and extensive open space. Pollutant concentrations at the site are likely to be more like those monitored in Whittle Close. The development traffic from the site could however travel into the AQMA and have an adverse effect on pollutant concentrations within the AQMA.

The pollutant concentrations within Clitheroe for the past three years show a sharp increase in annual mean NO₂ concentrations at Whittle Close, Royal British Legion and Whalley Road. However, the monitored concentration at Greenacre Street shows a decrease in concentrations in 2011 when compared to 2009 and 2010. Reviewing the raw data received from RVBC, there are anomalous results in the data for 2009 and 2010 where the change in monthly concentrations is considerable and there is also a large amount of variation in the average monthly concentrations from the triplicate diffusion tube location. This is likely to have affected the annual mean NO₂ concentrations. In addition the monitoring results for 2011 are for 5 months only (August to December) and although these results have been annualised, the monitored concentrations for the rest of the year, may have shown lower monthly concentrations, which could have affected the annual mean.

Table 11.5 Annual Mean NO₂ Concentrations Within Whalley Road AQMA (2009 to 2011)

Monitoring Location	Site Type	Within AQMA?	Annual Mean NO ₂ Concentration (µg m ⁻³)		
			2009 ^a	2010 ^b	2011 ^c
Whittle Close	Urban Background	No	n/a	12.96	16.49
Royal British Legion*	Roadside	Yes	30.21	32.70	44.87
Whalley Road	Roadside	Yes	32.52	30.06	39.06
Greenacre Street	Roadside	Yes	30.32	36.00	26.34

Notes: Exceedences of annual mean AQO for NO₂ (40 µg m⁻³) shown in bold.

* Triplicate tube location, values reported are the average of the three tubes.

^a Bias adjusted with factor of 0.94. Raw data provided by RVBC has been averaged by AMEC.

^b Bias adjusted with factor of 0.9. Raw data provided by RVBC has been averaged by AMEC.

^c Bias adjusted with factor of 0.93. Data capture for 2011 is less than 75% (5 out of 12 months = 42%).

Data annualised using the continuous monitoring stations of Glazebury and Manchester South (as per Defra Guidance¹⁸, these are the closest background monitoring stations within 50km of the site) and results from this annualisation bias adjusted. Annualisation and bias adjustment undertaken by AMEC (Appendix 11.1), bias adjustment factor supplied by RVBC.

11.3.2 Technical Consultations

Discussions took place with the local EHO at RVBC, who raised concerns regarding the potential for traffic from the development to worsen air quality within the existing AQMA. Although the traffic data shows a change in traffic numbers of less than 5% along Whalley Road (within the AQMA) with the development in place, the assessment has included the AQMA as a receptor within the assessment and has utilised the diffusion tubes in the AQMA to verify the model.

The EHO also confirmed that there is a large quarrying operation to the north of Clitheroe, which has currently suspended operation. This operation was to be the subject of a Detailed Assessment in relation to particulate matter. However this has been put on hold whilst operations at the site are suspended. Operations at this site are however unlikely to affect the development site should they resume in the future as the development site is over a kilometre in distance from the boundary of the quarry. In addition the traffic from the quarry was unlikely to travel into Clitheroe to join the A59 and therefore was unlikely to have any influence on the traffic in the AQMA for the past three years.

11.3.3 Proposed Scope of Assessment

Potential Receptors – Road Traffic

EPUK¹⁸ guidance states that typically there is a need for an assessment on roads where there is a change in the Annual Average Daily Traffic (AADT) or peak traffic flows of more than 5-10% usually on roads with more than 10 000 AADT flows. Guidance²³ states that only receptors within 200 m of an affected route or corridor need to be considered in the assessment.

Potential effects on air quality experienced by sensitive receptors (i.e. residential properties and schools) adjacent or close to the roads which meet the criteria defined above as a result of operational traffic increasing overall road traffic flows and therefore levels of pollutants will be assessed in this ES.

Guidance states that designated ecological sites within 200 m of an affected route or corridor need to be considered within an assessment. There are two Sites of Special Scientific Interest (SSSI) located within 200 m of two of the roads which meet the criteria above. However these SSSIs have been designated for their geological formations and are not for any ecological habitat. These SSSIs have therefore not been included within the assessment.

Receptors included within this assessment for road traffic are outlined in Table 11.6

²³ Highways Agency 2007. The Design Manual for Roads and Bridges, Volume 11, Section 3, Part 1, Air Quality. The Stationery Office.

Table 11.6 Receptors Included in the Assessment

Ref	Receptor	Roads Nearby	Distance to Road Centreline
1	Brett Close	Pendle Road	13
2	Goosebutts Lane	Pendle Road	7
		Goosebutts Lane	8
3	Smithies House	Waterloo Road	10
		Shawbridge Street	30
4	Taylor Street	Taylor Street	4
5	Diffusion Tube – Royal British legion	Whalley Road	4
		Greenacre	10
6	Farm Pendle Road	Pendle Road	97
		A59	122
7	Worston	A59	48
8	Park Farm	A59	149
9	Diffusion Tube - Whalley Road	Whalley Road	4
10	Diffusion Tube - Greenacre	Whalley Road	5
		Greenacre	3.5

Potential Receptors – Construction

A detailed assessment of dust effects is required²⁰ where a sensitive human or ecological (defined as an ecologically designated site) receptor is located within 350 m from the site boundary and/or within 100 m of the route(s) used by vehicles on the public highway, up to 500 m from the site entrance(s).

As this is an outline proposal the different phases of the construction have not yet been finalised. Therefore the assessment has considered all those receptors located within 350 m of the site boundary. However it should be remembered that activities that generate dust are unlikely to take place at the site boundary itself and this report therefore presents a worst-case assessment of dust effects.

Potentially Significant Effects

As discussed, the potentially significant effects relating to the Development, which are subject to further assessment in this chapter, are:

- construction dust effects on the nearby existing residential receptors within 350 m of the site boundary; and
- potentially significant air quality effects due to emissions from future traffic associated with the development at existing residential receptors within the vicinity of the development.

Effects associated with construction traffic have been scoped out of the assessment as the number of construction vehicles on the local road network will not be significant in air quality terms and the duration of the construction period is such that the construction traffic will not have a long-term effect on the achievement of the AQOs. Construction vehicles can also access the site from the A59 and will therefore not need to travel through Clitheroe itself. Routing will be agreed with RVBC and Lancashire County Council as a condition of any planning permission.

11.3.4 Information Gaps

There is currently no detailed information available regarding the phasing of construction on-site. Therefore as a worst case, all those existing residential receptors located within 350 m of the site boundary have been considered in terms of dust effects. This will ensure that appropriate dust mitigation measures can be determined for the site to ensure that dust effects are minimised and is not considered as a constraint to the outcome of this assessment.

The data capture for the diffusion tubes in 2011 is below 75% (42% only) and therefore the results from these tubes have been annualised. The annualisation process should account for any uncertainty in the diffusion tube results. In order that the adjusted annual mean concentrations can be compared to the AQO

11.4 Proposed Mitigation

11.4.1 Measures Incorporated to Mitigate Potential Significant Effects

Construction Effects

Measures to mitigate potential significant effects associated with dust from the construction activities will be incorporated into a Construction Environmental Management Plan (CEMP) for the site. This will specify the most appropriate dust control measures for the site and the activities that are likely to take place

Operational Effects

The traffic from the development has the potential to generate emissions of pollutants within the surrounding area. This could affect the achievement of the annual mean AQO for NO₂ within the nearby AQMA in Clitheroe. Although it is not anticipated that the development will lead to a 5% change in traffic flows in Clitheroe, mitigation measures to further reduce traffic movements and therefore emissions associated with the development will be included. These include developing travel plans for the site especially for the businesses and possible school as well as encouragement of the use of alternative means of transport such as public transport, walking and cycling through the planning of the development

11.4.2 Summary of Mitigation Measures

Table 11.7 lists the receptors that could be affected by the proposed development, the potential environmental changes that could affect these receptors, and the consequential 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 11.7 Summary of Proposed Mitigation Measures

Receptor	Change(s) and Potential Effects	Incorporated Mitigation	Likely Effectiveness
Existing residential receptors and potential new residential receptors at the development site	Dust effects associated with construction of the development.	Dust mitigation measures incorporated into the CEMP	High
AQMA and existing residential receptors in the area	Increase in traffic resulting in an increase in traffic emissions associated with the development affecting annual mean NO ₂ concentrations within the AQMA and the surrounding area	Travel Plans, bus routes to Clitheroe and nearby local destinations provisions for walkers and cyclists to access nearby amenities within Clitheroe and the local area	Medium

11.4.3 Additional Measures Incorporated to Mitigate Possible Other Effects

No additional measures to mitigate other possible effects have been considered at this stage

11.5 Assessment of Effects

11.5.1 Data Collection and Interpretation Methodology

Construction Effects – Dust

The assessment of effects of dust from the construction phase of the development has been undertaken qualitatively using the guidance developed by IAQM²⁰. The Guidance proposed by IAQM suggest a method to assess the significance of construction dust impacts by considering the annoyance due to dust soiling as well as harm to ecological receptors and the risk of health effects due to significant increases to PM₁₀.

Construction site activities are divided into four types to reflect their different potential impacts. These activities are:

- demolition – an activity involved with the removal of an existing structure or structures;

- earthworks – the processes of soil-stripping, ground-levelling, excavation and landscaping;
- construction – an activity involved in the provision of a new structure; and
- track-out – the transport of dust and dirt from the site onto the public road network
This arises when lorries leave site with dusty materials or transfer dust and dirt onto the road having travelled over muddy ground on-site.

The detailed assessment is a three-stage process; construction sites are classified according to the risk of effects, appropriate site-specific mitigation measures are identified and the significance of effects is determined.

The risk of dust effects considers the impact of potential activities; demolition, earthworks, construction and track-out on the receptor. The assessment assumes no mitigation, except that required by legislation. This therefore defines the baseline against which the change in effect as a result of mitigation can be measured. The risk of dust effects would therefore be determined by:

- The scale and nature of the works, which determines the risk of dust arising; and
- The proximity of sensitive receptors.

Site-specific mitigation for each of the four potential activities is determined, through a consideration of on the risk of dust impacts. Examples of best practice dust mitigation are included Local Authority publications, such as that for London and are also provided by IAQM. It is considered that the dust mitigation measures for projects in London are likely to be suitable for projects outside the capital

Operational Effects – Road Traffic

Assessing the potential effects that road traffic may have on local ambient air quality is normally carried out by calculating the increase in concentrations of air pollutants that would arise as a result of the proposals. This is combined with baseline air quality concentrations and compared with relevant air quality criteria. The prediction method can be evaluated by comparison with measured pollutant concentrations; this process is known as verification. Verification can only take place where there is local monitoring data available and is representative of the site. The assessment then predicts pollutants concentrations with and without the proposed development traffic in order to determine the magnitude of significance of the changes to air quality with the proposed development in place.

DMRB Methodology

The Highways Agency's Design Manual for Roads and Bridges (DMRB)²² screening methodology has been utilised for this assessment in order to quantify the likely ground level concentrations of NO₂, PM₁₀ and PM_{2.5} that the existing residential receptors will be exposed to as a result of the ambient air quality that exists in the area. Both the with-development scenario and the without the development scenario have been undertaken for the assessment year of 2020, as this is the year when the site will be fully operational if the development takes place.

Model Inputs

The DMRB assessment incorporates road traffic, vehicle speeds on the local roads and the breakdown of the traffic composition. The vehicle speeds have been taken from actual traffic

data, where available, and adjusted where road junctions have been included in the assessment, to take account of slower moving traffic. The traffic data used in the assessment is shown in Appendix 11.2. This data has been provided by Royal Haskoning UK Ltd. The results of the DMRB assessment are provided in Appendix 11.5.

The background air quality concentrations have been taken from the estimated concentrations compiled by Defra. Defra recently released new background concentrations for NO₂ based on the emissions in 2010. Previous to this the background concentrations were based on emissions in 2008. For this assessment the latest 2010 based background concentrations from Defra have been used. There is a marked difference in background concentrations for future years between the 2008 based data and the 2010 based data, with the 2010 based data showing higher background concentrations. This suggests background concentrations are not falling in line with previous expectations. Using the 2010 based background concentrations in the assessment as 2011 background concentrations therefore provides a more accurate prediction of background concentrations in the area, and provides a "worst-case" assessment of pollutant concentrations. The assessment has utilised the 2020 forecast background concentrations and 2020 emission factors in the DMRB model to predict future NO₂ annual mean concentrations. This therefore represents a "best-case" assessment of pollutant concentrations. It is likely that actual pollutant concentrations at receptor locations when the development is operational will be somewhere between the "best" and "worst" case assessment of pollutant concentrations.

Although there is one diffusion tube in the area which is representative of urban background locations, it was felt that using the result from one tube when there appears to be uncertainties in the monitored concentrations of the diffusion tubes in the area would create further uncertainties in the modelling results.

Model Outputs

The total background values available from Defra have been used in the DMRB model to calculate predicted total concentrations of PM₁₀. The likely number of exceedences of the 24-hour mean PM₁₀ objective have been calculated using the methodology provided by Defra in LAQM IG (09) using the predicted annual average PM₁₀ concentrations.

For the prediction of annual mean PM_{2.5} concentrations, the predicted road PM₁₀ contribution has been combined with the predicted PM_{2.5} background concentration for the area supplied by Defra. This is likely to result in an overestimation of PM_{2.5} concentrations as it assumes all of the road contribution PM₁₀ is actually PM_{2.5}, which is unlikely to be the case.

For the prediction of NO₂ concentrations, total background concentrations have not been used in the DMRB model itself and instead the output of the model for NO_x has been converted to NO₂, for all modelled scenarios, using the methodology in LAQM IG (09)²⁴ and NO_x to NO₂ conversion tool developed by AEA Technology for Defra²⁴. This assessment has utilised version 2.1 of the NO_x to NO₂ conversion tool. All results presented for NO₂ are the converted results.

Verification

The process of verification enables an estimation of uncertainty and systematic errors associated with the modelling components of the air quality assessment to be considered. There are many explanations for these errors, which may stem from uncertainty in the modelled number of

²⁴ http://laqm.defra.gov.uk/documents/no2tonox8_ja-forweb_jan2010.xls

vehicles, speeds and vehicle fleet composition. Defra has provided guidance in terms of preferred methods for undertaking dispersion model verification and this methodology has been followed in this assessment.

Verification of the DMRB assessment has been undertaken using the diffusion tubes within the Whalley Road AQMA. The calculation of the verification factor used in the assessment is shown in Appendix 11.3. The verification factor has been used to verify the annual mean NO_x road contributions and then the NO_x to NO₂ calculator has been used to determine the annual mean NO₂ concentrations. As can be seen from the verification process in Appendix 11.3, the DMRB model appears to have been under predicting the annual mean NO₂ concentrations at two of the diffusion tube locations (Royal British Legion and Whalley Road) but showed an overestimation of the annual mean NO₂ concentration at the remaining tube within the AQMA (Greenacre Street). Using all three tubes for the verification resulted in the predicted annual mean concentration at the Royal British Legion and Whalley Road diffusion tubes significantly underestimating pollutant annual mean NO₂ concentrations when compared to the monitored concentrations whereas at the Greenacre Street diffusion tube the verified annual mean NO₂ concentration was significantly higher than the monitored result. Using just the Royal British Legion and Whalley Road tubes for verification produces a better comparison between the monitored and modelled annual mean NO₂ concentrations at these tubes, as is shown in Appendix 11.3. However, using this verification factor results in much higher concentration at the diffusion tube on Greenacre Street when compared to the monitored concentration at this location, such that the verified result shows an exceedence of the annual mean NO₂ AQO of 40 µg m⁻³. Therefore, although the verification factor from the two diffusion tubes (Royal British Legion and Whalley Road) have been used to verify the results of the DMRB assessment this is likely to result in worst-case pollutant concentrations at all of the modelled receptor locations and a significant overestimation of the annual mean NO₂ concentrations at Greenacre Street.

The predicted road contribution to PM₁₀ concentrations has also been verified using the same factor as the NO₂ annual mean concentrations. This is likely to present a worst-case assessment of PM₁₀ concentrations, although there is no PM₁₀ monitoring within the area in which to compare the verified modelled PM₁₀ concentrations. Concentrations of PM_{2.5} have been verified in the same way as PM₁₀.

Uncertainty in Future Air Quality

Following the introduction of catalytic converters and European emission standards in 1992, emissions from cars and heavy-duty vehicles have been decreasing due to the penetration of new vehicles and trucks meeting the emission regulations. Future emissions (per vehicle) are therefore likely to be reduced as new vehicles, meeting the increasingly stringent emission regulations, replace older vehicles and form a greater part of the UK fleet. Market demand and future UK and European policies are likely to achieve further reductions in vehicle emissions.

However, in recent years there has also been a trend in the stabilisation of NO₂ emissions, and only a very slight downward trend in NO_x emissions, based on observed monitoring data. The precise reason for this disparity is currently not fully understood and is thought to be related to actual on-road performance of diesel road vehicles when compared to calculations based on the Euro standards. Preliminary studies suggest:

- NO_x emissions from petrol vehicles appears to be in line with current projections and has decreased since the introduction of catalytic converters;

- NO_x emissions from diesel cars under urban driving conditions do not appear to have declined substantially up to and including Euro 5. There is limited evidence to suggest that this same pattern may occur for motorway driving conditions; and
- NO_x emissions from HGV vehicles equipped with SCR reduction are much higher than expected when driving at low speeds.

It is unclear exactly how the balance between NO_x emission reductions and increases in primary NO₂ percentages will influence the achievements of the objectives and limit values in 2010 and beyond, because of the uncertainty associated with estimates of future emissions. Based on the current findings of ongoing investigations it appears that Euro standards will only deliver marginal, if any, reductions in NO_x and NO₂ concentrations until the Euro 6 emission standards begin, as is currently forecast, to play a major role (circa after 2015).

To take into account the uncertainty regarding the predicted emission factors for future years the assessment has considered the effect of the use of the baseline year (2011) for the emissions factors in the DMRB model with traffic data for future years. Using this approach assumes the background concentrations and emission factors are as they were in 2011 with only the traffic forecast altering. It is likely that there will be some reduction in background NO₂ concentrations and this therefore provides a worst-case assessment of potential annual mean NO₂ concentrations.

Scenarios Modelled

The scenarios modelled in this assessment are:

- Existing baseline (2011);
- Future baseline without development (2020) – best-case: Future baseline traffic in the area with all committed developments in the area using 2020 background concentrations and emission factors;
- Future baseline without development (2020) – worst-case: Future baseline traffic in the area with all committed developments in the area using 2011 background concentrations and emission factors;
- Future baseline with development (2020) – best-case: Future baseline traffic in the area with all committed developments in the area, and the development traffic using 2020 background concentrations and emission factors; and
- Future baseline with development (2020) – worst-case: Future baseline traffic in the area with all committed developments in the area, and the development traffic using 2011 background concentrations and emission factors.

11.5.2 Predicted Effects and their Significance

Construction Effects – Dust

The assessment of dust effects has utilised the IAQM Guidance methodology²⁰. The tables used to assess the effect of dust associated with the development are shown in Appendix 11.4.

As a result of the size of the site and the close proximity of the existing residential receptors to the site boundary on the northern edge of the site, the existing residential receptors are

considered to be at high risk of dust effects from the site. However, as there are no demolition activities taking place on the site, the existing receptors are only at high risk of dust effects from the earthworks and construction activities. Track-out associated with the construction is considered to be a medium risk to the existing receptors as there are very few receptors located on the main road providing access to the site. As there are no designated ecological sites within 350 m of the site, these have not been considered within the dust assessment.

Using dust mitigation measures appropriate for a high risk site, as outlined in the IAQM guidance²⁰, the risk of dust effects at the existing residential receptors is reduced to slight adverse, resulting in an overall significance of dust effects occurring at the existing residential receptors of slight adverse. Dust effects associated with the site are therefore not considered to be significant with the inclusion of appropriate mitigation measures.

Operational Effects – Road Traffic

The results of the road traffic (DMRB) assessment are shown in Appendix 11.5. All results presented for annual mean NO₂, PM₁₀ and PM_{2.5} concentrations are the verified results.

The additional road traffic associated with the development does not result in an increase in pollutant concentrations such that the AQOs for NO₂, PM₁₀ and PM_{2.5} are exceeded where they were not previously exceeded.

For nitrogen dioxide the two scenarios modelled to show the best-case and worst-case prediction of NO₂ concentrations are presented, as discussed previously.

Nitrogen Dioxide (NO₂) - Year 2020 ambient background and year 2020 vehicles emission factors (best-case)

The maximum predicted annual mean NO₂ concentration with the development in place was predicted at receptor 10, (diffusion tube located on Greenacre Street) with an annual mean NO₂ concentration of 42.07 µg m⁻³. This is an increase in annual mean NO₂ concentrations from the without development scenario of 0.42 µg m⁻³ from 41.65 µg m⁻³ to 42.07 µg m⁻³. The AQO for annual mean NO₂ concentrations is 40 µg m⁻³ and therefore the AQO is predicted as being exceeded prior to the operational phase of the development.

The modelling predicted an overestimate of annual mean NO₂ concentrations prior to verification at this location (receptor 10), with a predicted annual mean NO₂ concentration of 30.75 µg m⁻³, when compared to the monitored concentration of 26.34 µg m⁻³. With the use of the verification factor based on the two other diffusion tubes in the AQMA (Appendix 11.3), the predicted concentration at this receptor in 2011 is increased to 45.58 µg m⁻³. Therefore, there is great uncertainty in whether an exceedence of the annual mean NO₂ AQO will actually occur at this receptor location in future years, as predicted by the modelling.

An exceedence of the annual mean NO₂ AQO of 40 µg m⁻³ also occurred at location 5 (diffusion tube Royal British Legion). The predicted annual mean NO₂ concentration with the development in place was 41.94 µg m⁻³. This is an increase in annual mean NO₂ concentrations at this receptor with the development in place of 0.41 µg m⁻³, from 41.53 µg m⁻³ to 41.94 µg m⁻³.

The largest change in predicted annual mean NO₂ concentrations was at receptor 3 (Smithies House), with an increase in the annual mean NO₂ concentration of 0.71 µg m⁻³ from 31.19 µg m⁻³ to 31.90 µg m⁻³. This receptor is located just off Waterloo Road, which is predicted to experience an increase in traffic of more than 10% as a result of the development being place. This increase does not result in an exceedence of the annual mean AQO for NO₂.

The magnitude of change, after the description in Table 11.3, in annual mean NO₂ concentrations is considered to be either small or imperceptible at the modelled receptor locations with the development in place in 2020. As receptor locations 5 and 10 have predicted annual mean NO₂ concentrations which are considered to be above the annual mean NO₂ AQO of 40 µg m⁻³, the significance of effects, at these locations, is considered to be slightly adverse. However, as already discussed the predicted concentration at receptor 10 is likely to be an overestimation of the actual concentrations at this receptor and therefore the significance of effects is likely to be reduced. For all the other receptor locations, as predicted concentrations were below the annual mean NO₂ AQO of 40 µg m⁻³, the significance of effects of the development at these locations is considered to be negligible.

Overall therefore the effect of the development on NO₂ concentrations in the area is considered to be not significant when assuming background annual mean NO₂ concentrations and emission factors are for future years.

Nitrogen Dioxide (NO₂) - Year 2011 ambient background and year 2011 vehicles emission factors (worst-case).

Using the 2011 emission factors and background values with the 2020 traffic data has also been considered in this assessment. This is to take into account the uncertainty in the prediction of future background annual mean concentrations of NO₂. It is likely that background annual mean concentrations in the UK will continue to fall between 2011 and 2020 and therefore this presents a worst case assessment of potential annual mean NO₂ concentrations at the receptor locations in 2020.

The results of the assessment using the 2011 background and emission factors in the DMRB model results in two receptor locations (5 and 10) showing exceedences of the AQO for annual mean NO₂ concentrations with the development in place, with predicted annual mean NO₂ concentrations of 47.30 µg m⁻³ and 47.36 µg m⁻³ respectively. Without the development in place the predicted concentrations at these two receptors (5 and 10) was also above the annual mean AQO for NO₂ with predicted concentrations of 46.85 µg m⁻³ and 46.91 µg m⁻³ respectively. As mentioned previously the predicted concentration at receptor 10 is likely to be an overestimation of the actual concentration at this receptor location, as a result of the verification process.

In terms of significance of effects, four receptors are predicted to experience small magnitude of change effects with the development in place, with the remaining receptors predicted to experience imperceptible magnitude of change in annual mean NO₂ concentrations with the development in place. The four receptors which experience a small magnitude of change in annual mean NO₂ concentrations are receptors 3, 4, 5 and 10. Of these receptors only receptors 3, 5 and 10 are predicted to experience effects which are considered to be slight adverse, as the other receptors are all predicted annual mean NO₂ concentrations well below the annual mean NO₂ AQO and therefore effects at these receptors are considered to be negligible. Receptor 3 is predicted to experience effects which are considered to be slightly adverse due to the predicted concentration with the development in place considered to be just below the annual mean NO₂ AQO of 40 µg m⁻³ (38.15 µg m⁻³) and a small magnitude of change.

Comparing the worst case results presented above against the best case results presented in the previous section, it appears that although the absolute value of the predicted concentrations alters depending on the use of the background concentrations and emission factors, the change

in concentrations with the development in place scenario from the without development in place scenario does not alter and therefore, the conclusions of the assessment are the same

Overall therefore the effect of the development on NO₂ concentrations in the area is considered to be not significant when assuming background annual mean NO₂ concentrations and emission factors will not alter in the future

Particulate Matter – PM₁₀ and PM_{2.5}

The maximum predicted annual mean PM₁₀ concentration with the development in place was also predicted at receptor 10, with an annual mean PM₁₀ concentration of 16.70 µg m⁻³. This is an increase in annual mean PM₁₀ concentrations from the without development scenario of 0.05 µg m⁻³.

The largest change in predicted annual mean PM₁₀ concentrations was also at receptor 3, with an increase in annual mean PM₁₀ concentrations of 0.21 µg m⁻³ from 15.77 to 15.98 µg m⁻³. This increase does not result in an exceedence of the annual mean AQO for PM₁₀ of 40 µg m⁻³.

The maximum predicted number of days which exceed the 24 hour mean AQO for PM₁₀ (50 µg m⁻³ with 35 permitted days of exceedences in a calendar year) was 4 days. This was predicted at receptors 5 and 10. There was no change in the predicted number of days which exceeded the 24 hour mean AQO for PM₁₀ at all of the identified receptor locations.

The maximum predicted annual mean PM_{2.5} concentration with the development in place was also predicted at receptor 10, with an annual mean PM_{2.5} concentration of 16.53 µg m⁻³. This is an increase from the without development scenario of 0.12 µg m⁻³ from 16.41 µg m⁻³ to 16.53 µg m⁻³.

The largest change in predicted annual mean PM_{2.5} concentrations was also at receptor 3, with an increase of 0.49 µg m⁻³ from 14.39 to 14.88 µg m⁻³. This increase does not result in an exceedence of the annual mean AQO for PM_{2.5} of 25 µg m⁻³.

The magnitude of change in annual mean PM₁₀ and PM_{2.5} concentrations is considered to be either imperceptible or small at the modelled receptor locations with the development in place in 2020. The magnitude of change in the number of days which are predicted to exceed the PM₁₀ 24-hour mean AQO is considered to be imperceptible at the modelled receptor locations with the development in place in 2020. As the predicted annual mean concentrations for PM₁₀ and PM_{2.5} are considered to be below the relevant objectives, the significance of effects on annual mean PM₁₀ and PM_{2.5} concentrations and the number of days which are predicted to exceed the PM₁₀ 24-hour mean AQO is considered to be negligible.

Overall, the effect of the development on particulate concentrations in the area is considered to be not significant.

11.5.3 Possible Other Mitigation

No other possible mitigation other than that already considered in this assessment has been put forward.

11.5.4 Conclusions

The dust effects associated with the construction of the development will be minimised using the most appropriate best practice techniques and therefore dust effects are considered to be not significant.

The assessment concludes that the development itself will have, modelled as both a best-case and worst-case assessment, a slight adverse effect on annual mean NO_2 concentrations at two of the modelled receptor locations within the existing AQMA. At one of the modelled locations, the AQO was predicted to be exceeded both with and without the development in place. At all other modelled locations the effect of the development was found to be imperceptible. No exceedences of the annual mean PM_{10} and $\text{PM}_{2.5}$ AQOs or the 24 hour mean PM_{10} AQO were predicted at any of the receptor locations and the effect of the development on concentrations of PM_{10} and $\text{PM}_{2.5}$ was predicted to be imperceptible at all receptor locations. The modelled receptor locations were chosen to be representative of worst case receptor locations and therefore other receptors in the area which were not included in the modelling assessment are likely to experience lower pollutant concentrations. The development does not result in any new areas exceeding of the AQOs.

The effect of the development on air quality in the area is therefore considered to be not significant.

11.6 Cumulative Effects

The traffic data has been factored to include future traffic growth in the area, including potential development. Therefore cumulative effects are considered with the DMRB assessment. As discussed previously this has concluded that no significant air quality effects would arise as a result of the additional road traffic.

11.7 Summary of Predicted Effects

Table 11.8 presents a summary of the predicted effects associated with the development and their significance in terms of air quality.

Table 11.8 Summary of Effects and Evaluation of Significance

Receptor	Probability	Value	Magnitude	Significance	
				Level	Rationale
Existing residential receptors – dust effects	Possible	Medium	Low	Not Significant	Appropriate best practice mitigation methods will be employed on-site to minimise dust effects
Existing residential receptors – changes in air quality due to an increase in traffic in the area associated with the development	Possible	Medium	Low	Not Significant	The magnitude of change in pollutant concentrations due to the development at receptor locations is considered to be either imperceptible or small and therefore the significance of effects is either imperceptible or slight adverse The effect of the development on air quality is therefore considered to be not significant

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

11.8 Implementation of Mitigation Measures

The implementation of the mitigation measures, outlined in Section 11.5 are outlined in Table 11.9. This defines who will be ensuring the mitigation measure is implemented and how compliance will be achieved

Table 11.9 Implementation of Incorporated Mitigation and Monitoring Proposals

Mitigation Measure/Monitoring Proposal	Actioned By	Compliance Mechanism
Best practice dust mitigation measures	Developer	CEMP
Encouragement of alternative modes of transport and provision for these on-site	Developer	Planning Approval

11.9 Technical References

1. Defra 2006, Trends in Primary Nitrogen Dioxide in The UK, Draft report for comment, prepared by Air Quality Expert Group, August 2006.
2. Defra 2009, Local Air Quality Management, Technical Guidance LAQM IG (09)
3. Environmental Protection UK 2010. Development Control: Planning for Air Quality (Update 2010).

4. Institute of Air Quality Management 2012. Guidance on the Assessment of the Impacts of Construction on Air Quality and the Determination of their Significance
5. Kukadia, Upton and Hall 2003 Control of Dust from Construction and Demolition Activities. BRE.
6. GLA and London Councils 2006. The control of dust and emissions from construction and demolition activities. Best Practice Guidance
7. Highways Agency 2007. The Design Manual for Roads and Bridges, Volume 11, Section 3, Part 1, Air Quality. The Stationery Office.

12. Community

12.1 Introduction

This section evaluates the potential social and economic effects of the development upon the existing and future community. It has been produced with the benefit of data available on the NOMIS and National Statistics websites which contain information and profiles on national and local labour markets to allow the development proposals to be placed in context.

12.2 Context

12.2.1 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:

Direct Employment: temporary and permanent employment arising immediately from the proposed mixed use development;

Indirect Employment: employment created/supported in the businesses which supply the products, materials and services during the construction phase of the scheme;

Induced Employment: employment supported by persons employed directly and indirectly who spend part of their incomes in the local area;

Inward Investment: the introduction of new businesses into an area and the expansion of established businesses;

Indices of Deprivation 2010: these were produced as a means of comparing different measures of deprivation in different parts of England. As with the 2007 and 2004 Indices they were calculated for both Local Authorities (LAs) and Lower Layer Super Output Areas (LSOAs). Local authorities are ranked from 1 (most deprived) to 326 (the least deprived), with LSOAs ranked similarly over a larger range from 1 to 32482. The Communities and Local Government website (CLG) states that the Indices of Deprivation enable small pockets of deprivation to be pinpointed and highlights variations between geographical areas.

12.2.2 Technical Context

The proposed mixed use development at the Standen site has the potential to affect the community in a number of ways. However many of these, including the amenity related issues of visual, noise, vibration, air quality and traffic, have been dealt with in the relevant technical and cumulative sections of this ES and will not be dealt with again here.

The purpose of this section will not be to provide an economic analysis of the effects associated with the development, but to consider the likely demographic and social and economic effects of the development process. In particular it considers the effects on the local employment base,

housing provision, education and recreational facilities. In addition it considers the wider effects of the scheme upon social and wider local authority area.

12.2.3 Planning and Guidance

The assessment has been carried out taking account of prevailing national, strategic and local planning guidance.

National Policy

There is little national guidance concerning the specific social and economic changes resulting from development through the planning process. However, social and economic issues underpin many of the topic based sections within National Planning Policy Framework (NPPF) which outlines how sustainable development should be delivered.

Section 6 outlines the role that housing development can play in the facilitating the social vitality of places. Paragraph 50 states:

“To deliver a wide choice of high quality homes, widen opportunities for home ownership and create sustainable, inclusive and mixed communities, local planning authorities should:

- *plan for a mix of housing based on current and future demographic trends, market trends and the needs of different groups in the community (such as, but not limited to, families with children, older people, people with disabilities, service families and people wishing to build their own homes),*
- *identify the size, type, tenure and range of housing that is required in particular locations, reflecting local demand, and*
- *where they have identified that affordable housing is needed, set policies for meeting this need on site, unless off-site provision or a financial contribution of broadly equivalent value can be robustly justified (for example to improve or make more effective use of the existing housing stock) and the agreed approach contributes to the objective of creating mixed and balanced communities. Such policies should be sufficiently flexible to take account of changing market conditions over time ”*

Section 8 outlines how the planning system can play an important role in facilitating social interaction and creating healthy, inclusive communities. Paragraph 70 states:

“To deliver the social, recreational and cultural facilities and services the community needs, planning policies and decisions should:

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,

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

. . . .ensure an integrated approach to considering the location of housing, economic uses and community facilities and services.

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 advises Local Authorities to:

"give great weight to the need to create, expand or alter schools, and work with schools promoters to identify and resolve key planning issues before applications are submitted."

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. 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.

Regional Policy

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 12.1 North West of England Regional Plan

Key Statement	Summary
Spatial Principles	
Spatial Principles	The following principles underpin RSS (incorporating RTS): <ul style="list-style-type: none"> • promote sustainable communities; • promote sustainable economic development; • make the best use of existing resources and infrastructure; • manage travel demand, reduce the need to travel, and increase accessibility; • marry opportunity and need; • promote environmental quality; • mainstreaming rural issues; • reduce emissions and adapt to climate change
RDF2: Rural Areas	Plans and Strategies should identify Key Service Centres which act as service centres for surrounding areas. Development should be concentrated in these Key Service Centres and be of a scale and nature appropriate to fulfil the needs of local communities for housing, employment and services, and to enhance the quality of rural life.
Working	
W1: Strengthening the Regional Economy	Giving positive support to the sustainable diversification and development of the rural economy through the growth of existing businesses and the creation of new enterprise
W3: Supply of Employment Land	Provision should be made for a supply of employment land ... the most appropriate range of sites in terms of market attractiveness and social, environmental and economic sustainability ... appropriate provision is made in Key Service Centres and full consideration given to the innovative re-use of agricultural buildings to facilitate the growth and diversification of the rural economy

Table 12.1 (continued) North West of England Regional Plan

Key Statement	Summary
Living	
L1: Services Provision	There should be provision for all members of the community (including older people, disabled people and the black & minority ethnic population) for educational facilities, health facilities and sport, recreation and cultural facilities
L4: Regional Housing Provision	Local Authorities should monitor and manage the availability of land identified in plans and strategies and through development control decisions on proposals and schemes, to achieve the housing provision in Table 7 1 - these targets have been replaced in RVBC by and Interim Policy to housing supply. The reasoned justification sets out for Central East Lancashire the relevant housing objectives are: ... support for potential economic growth and regeneration ... where appropriate, the development of a wider range of housing types (including high quality market housing). This should be achieved while ensuring that local and affordable housing needs can be met elsewhere
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
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

Local Policy

The Submission Version of the Draft Core Strategy: A Local Plan for Ribble Valley was agreed by the Council on 28 August 2012. At this advanced stage it is appropriately considered here especially as there are few saved policies to the Local Plan.

A number of 'Key Statements' set out proposals to deliver the Core Strategy, a number of which are relevant and set out in Table 12 2.

Table 12.2 Submission Version of the Draft Core Strategy

Key Statement	Summary
General	
DS1: Development Strategy	The majority of new housing development will be concentrated within an identified strategic site located to the south of Clitheroe towards the A59 and the main urban areas of the borough
Housing	
H1: Housing Provision	Land for residential development will be made available to deliver 4 000 dwellings, estimated at an average annual completion rate of at least 200 dwellings per year over the period 2008 to 2028 in accordance with baseline information
H2: Housing Balance	Planning permission will only be granted for residential development providing it can be demonstrated that it delivers a suitable mix of housing that accords with the projected future household requirements and local need across the Ribble Valley as a whole as evidenced by the Strategic Housing Market Assessment
H3: Affordable Housing	<p>Within the settlement boundaries of Clitheroe and Longridge, on housing developments of 10 units or more dwellings (or sites of 0.5 hectares or more, irrespective of the number of dwellings) an element of affordable, local needs housing will be required on all schemes. The Council will seek affordable housing provision at 30% of units on the site</p> <p>In all other locations in the borough, on developments of 5 or more dwellings (or sites of 0.2 hectares or more irrespective of the number of dwellings) the council will require 30% affordable units on the site</p> <p>The Council will only consider a reduction in this level of provision, to a minimum of 20% only where supporting evidence, including a viability appraisal, fully justifies a lower level of provision to the council's satisfaction</p> <p>Providing housing for the elderly is a priority for the Council within the Housing Strategy. Within the negotiations for housing developments 15% of the units will be sought for elderly provision. Within this 15% figure a minimum of 50% would be affordable and be included within the overall affordable housing threshold of 30%. The remaining 50% (i.e. the remaining 50% of the 15% elderly-related element) will be for market housing for elderly groups</p>
Economy	
EC1 Business and Employment Development	The Council, in line with the evidence it has gathered, will aim to allocate an additional 9 hectares of land for employment purpose in appropriate and sustainable locations during the lifetime of this plan
EC2 Development of retail, shops and community facilities	<p>Development that supports and enhances the vibrancy, consumer choice and vitality and unique character of the area's important retail and service centres of Clitheroe Longridge and Whalley will be supported in principle</p> <p>Proposals that have an adverse impact on existing community facilities would only be permitted as an exception where the proposed development would bring defined and demonstrable benefits</p>

Table 12.2 (continued) Submission Version of the Draft Core Strategy

Key Statement	Summary
Delivery Mechanisms and Infrastructure	
DMI1 Planning Obligations	<p>Planning Obligations will be used as a mechanism to deliver development that contributes to the needs of local communities and sustainable development. Contributions can either be in kind or in the form of financial contribution with a clear audit trail of how any monies will be spent and in what time frame</p> <p>Obligations will be negotiated on a site-by-site basis. The council has resolved to seek contributions in the following order of priority:</p> <ul style="list-style-type: none"> • Affordable Housing (also taking into consideration the detailed Affordable Housing Key Statement); • Improvements required for highway safety that cannot be covered by planning condition or S278 Agreement; • Open Space; • Education <p>Where there is a question of viability the council will require an open book approach to be taken when agreeing development costs and developers will be required to meet the Council's costs for independent evaluation. The Council will develop, as appropriate, a Community Infrastructure Levy approach to infrastructure delivery</p>
DMI2 Transport Considerations	<p>New development should be located to minimise the need to travel. Also it should incorporate good access by foot and cycle and have convenient links to public transport to reduce the need for travel by private car.</p> <p>In general, schemes offering opportunities for more sustainable means of transport will be supported</p>
Strategic Site	
The Strategic Site	<p>A strategic site at Standen, to the south east of Clitheroe will be developed in a comprehensive and sustainable manner as a mixed site to meet a significant proportion of the Borough's housing requirement in the plan period. The range of uses will include housing (including affordable housing), employment, community uses, local retail and service provision to serve the site, open space and recreational uses</p>
Development Management Policies	
DMH1 Affordable Housing Criteria	<p>Where proposals involve the provision of affordable housing units, the residential development must be expressly for the following groups of people:</p> <ul style="list-style-type: none"> • First time buyers currently resident in the parish or an adjoining parish; • Elderly people currently resident in the parish or an adjoining parish; • Those employed in the parish or an immediately adjoining parish but currently living more than 5 miles from their place of employment; • Those who have lived in the parish for any 5 of the last 10 years having left to find suitable accommodation and also with close family remaining in the village; • Those about to take up employment in the parish; • People needing to move to the area to help support and care for a sick, elderly or infirm relative

Table 12.2 (continued) Submission Version of the Draft Core Strategy

Key Statement	Summary
Development Management Policies (continued)	
DMB4 Open Space Provision	On all residential sites of over 1 hectare, the layout will be expected to provide adequate and usable public open space The Council will also negotiate for provision on smaller sites, or seek to secure a contribution towards provision for sport and recreational facilities or public open space within the area where the overall level of supply is inadequate. Any green infrastructure should be multi functional and encourage where possible, walking and cycling opportunities
DMB5 Footpaths and Bridleways	The Borough Council will seek to ensure the retention, maintenance and improvement of by-ways and unsurfaced/unclassified roads as part of the public rights of way network. The Borough Council will, unless suitable mitigation measures are made, protect from the development footpaths which: <ul style="list-style-type: none"> • provide a link between towns/villages and attractive open land; • link with the Ribble Way footpath; • are associated to the Local Nature reserves; and • are heavily used.

The Saved Ribble Valley Local Plan (1998)

This is still the adopted Local Plan for the District. This is currently in the process of being replaced by the evolving Local Development Framework.

Once adopted this will supersede the Local Plan, however until then the Local Plan and policies which were saved subject to the 2007 Local Development Framework (LDF) review process are still valid and those which are relevant to the social and economic assessment of the proposals are outlined below in Table 12.3.

Table 12.3 Ribble Valley Local Plan Policies

Policy	Summary
Recreation and Tourism	
RT8 Open Space Provision	On all residential sites of over 1 hectare the layout will be expected to provide adequate and usable public open space. The Council will also negotiate for provision on smaller sites, or seek to secure a contribution towards provision for sport and recreational facilities or public open space within the area where the overall level of supply is inadequate
RT18 Footpaths and Bridleways	Improvement of public rights of way, bridleways and byways/unsurfaced, unclassified roads in the plan area will be permitted. The Borough Council will also seek to ensure the retention and maintenance of by-ways and unsurfaced, unclassified roads as part of the public rights of way network.
RT19 Footpaths and Bridleways	Development that prejudices footpaths which: <ul style="list-style-type: none"> i) provide a link between the towns/villages and attractive open land; ii) link with the Ribble Way footpath; iii) are associated to the Local Nature Reserves; and iv) are heavily used; will not be permitted.

The proposals being promoted by the Trustees as designed to be compliant with the development plan and The Core Strategy in particular.

12.3 Assessment Approach

12.3.1 Data Gathering and Survey Work

Social and Economic

At the scoping stage preliminary data collected consisted of the proposed output, timescale and potential number of direct jobs that potentially would be created was considered to be relevant. In addition, data was gathered which included population breakdown, employment and unemployment data, housing statistics, community facilities, development activity and general 'quality of life' indicators.

This information includes the following:

- Unemployment statistics in local, regional and national context;
- Economic growth rates and drivers;
- Key employment sectors;
- Population and Deprivation Characteristics;
- Housing Need;
- Educational Provision; and
- Current recreational facilities within the area including footpaths, cycleways and playing fields.

Quantitative Analysis of Employment Generation

Although potential effect on direct employment is usually the most important issue to consider, it is also potentially the easiest to assess, since it can be based on a simple estimation of the number of full time employees. The process by which indirect and induced effects are created is more complex and requires knowledge of the flow of non-wages and salary expenditure through the economy.

In advance of the development, this type of information is not known precisely and therefore the most practical approach is to apply a multiplier to the level of direct employment to capture indirect and induced effects. A composite multiplier is available from English Partnerships Additionality Guide, 2008 which combines both the indirect and induced multipliers.

For the purpose of this report one multiplier factors will be used, 1.29 for B1 office space (this takes account of indirect and induced effects). NB: This does not take into account the small retail or educational element of the scheme.

12.3.2 Proposed Scope of Assessment

Potential Receptors

The following potential social and economic receptors were identified:

- **Clitheroe's Employment base**, i.e. the local population that falls within the 16-65 age group (includes temporary and permanent employment);
- **Inward Investment**, the increased revenue and competition the development brings to the area;
- **Housing**, including the existing housing stock and other proposed housing land allocations within the Borough;
- **Educational facilities**, impacts of new educational provision on existing facilities and against local need;
- **Recreation**, impacts on local recreational facilities (footpaths within the site boundary, cycleways, playing fields etc);
- **Community perception**, the scale of the development will create considerable local interest.

12.3.3 Significance Evaluation Methodology

As discussed in Section 12.2.2, there is potential for significant social and economic effects to occur in Clitheroe, and more specifically Littlemoor ward, and the determination of significance is based on a combination of value and magnitude.

Employment

In assessing the extent to which the development contributes significantly to the generation of employment within the immediate locality, predicted employment generation must be related to prevailing local unemployment rates and the existing skills base of the available workforce. This provides the magnitude of change. In addition, the assessment must take cognisance of value issues. This is determined qualitatively and is based on the nature of the existing employment base and the type of jobs that would be created at the Standen site. Skilled or managerial jobs will therefore have a higher value than unskilled jobs, and permanent employment a higher value than temporary jobs.

Inward Investment

With regard to the extent to which the proposed development may affect inward investment in Clitheroe, the analysis of significant effects is more difficult to assess because it is a largely subjective judgement. For the purpose of this assessment, the magnitude of change will be assessed in terms of the potential of new businesses that would be provided by a development and how this relates to percentage terms to the commercial allocation.

Housing

In terms of the provision of housing, the value or importance of an allocation is determined by local factors such as demand and this in turn is usually quantified in the relevant development plan. The magnitude of change would be assessed in terms of the number of houses that would

be provided by a development and how these relate in percentage terms to the housing allocation.

Education



In terms of education provision, the value of importance is determined by local need and assessing against existing local provision. The magnitude of change would be assessed in terms of what type of educational facility is being provided by the development and how this relates in terms of consequential need

Recreational (Public Rights of Way and Cycleways)

As with the other issues the determination of significance is based on a combination of the value of a particular footpath or cycleway, together with the magnitude of change that would result from the development. For the purposes of this assessment, significant effects would normally require a footpath/cycleway of a high value to be subject to a high or medium magnitude of change.

How these indicators are assessed and recorded in a predicted level of significance is set out within Table 12.4

Table 12.4 Significance Matrix

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	

12.3.4 Technical Consultations

Consultation with RVBC did not raise any concerns on the proposed and methodology scope of the EIA.

12.3.5 Final Scope of the Assessment

The scope of the assessment remains as stated in Section 12.3.2.

12.3.6 Information Gaps

There have been some assumptions made with regards to jobs creation. These have been made for both the employment and education elements of the scheme.

In addition, long terms proposals for the existing PRoW have still to be confirmed although at this stage it is assumed that they will either be retained or subject to local diversions

12.4 Baseline Conditions

12.4.1 Qualitative Analysis of Effects on Clitheroe

Baseline information on the socio economic profile of Ribble Valley and more specifically, Clitheroe and Littlemoor ward has been obtained from:

- Ribble Valley Employment Land and Retail Study (October 2008);
- Indices of Multiple Deprivation, 2010;
- Ribble Valley Local Plan (1998);
- Ribble Valley LDF (Submission Version of the Draft Core Strategy);
- National Statistics Neighbourhood Profile, Ribble Valley;
- Labour Market Profile Ribble Valley;
- Ward Labour Market Profile Littlemoor;
- Strategic Housing Land Availability Assessment (SHLAA);
- Strategic Housing Market Assessment (SHMA);
- Clitheroe Housing Needs Survey 2008;
- Annual Monitoring Report 2011.

These documents set out information relating to current employment, unemployment, housing allocations, demographics and business and industry sectors. They also set out RVBC's aspirations for the development of the economy over the coming years. The documents have been reviewed and interpreted to provide baseline information for the purposes of this assessment.

12.4.2 Overview

Background

RVBC has a population of approximately 58 000²⁵ with Clitheroe, the main administrative centre having 15 000²⁶ inhabitants. Clitheroe lies centrally within the Borough, whilst the smaller town of Longridge lies to the west. The remainder of the area is mainly rural with a number of villages ranging in size from large villages such as Sabden, and Chatburn through to small hamlets such as Great Mitton and Paythorne.

Based on information contained with the Council's Annual Monitoring Report 2011 (AMR) there are 24 482²⁷ households in the Borough of which over half of the working age population commute out of the Borough each day to work, with the majority travelling by car.

²⁵ Based on ONS mid year population estimates, 2010

²⁶ Based on ONS ward population estimates, 2007.

²⁷ Valuation office 2007.

In terms of the natural and built environment, the Bowland Forest AONB, six SSSIs, 39 biological heritage sites, 21 conservation areas and over 1000 listed buildings all lie within the Borough. In terms of open space the AMR states that "there is over 92 ha of formal open space and a further 62.1 ha of open space." There is also 5.54 ha of children's play areas. Overall the amount of open space equates to 0.003 ha per head of the population.

Clitheroe

The town is a traditional Lancashire market town and was built on the cotton industry boom (today only one mill survives). The town is served by a rail connection with a newly established bus/rail interchange. It lies in the A59 trunk road corridor linking the town to Blackburn, Preston, and southwest Lancashire to the west; and to east Lancashire, North and West Yorkshire and the Yorkshire Dales to the east.

Consequently, many Clitheroe residents commute to work in Pendle, Burnley, Preston and further afield. As a result, there is a demand for housing that generates high house prices within the town.

Clitheroe has good educational opportunities with Clitheroe Royal Grammar School being one of the country's highest achieving schools; with over 90% of sixth form students going on to higher education.

RVBC's Employment Base

The Borough has a mixed economy with good employment opportunities and maintains a consistently low rate of unemployment. Given the rural nature of the area the agricultural sector is a significant employer. Other significant employers are major national and multi-national companies such as Johnson Matthey, Hanson Cement and BAE Systems.

The statistics relating to RVBC's employment base have been obtained for economic activity, employment by occupation and Jobseeker's Allowance (JSA) claimants.

Figures are provided for the Littlemoor ward, where the proposed development site is situated, as well as RVBC and Great Britain for comparison.

Economically Active

Table 12.5 outlines the total number of people economically active in Littlemoor. These have been converted into a percentage based on working age population.

Table 12.5 Labour Supply (2001 Census and 2011/12 Annual Population Survey)

All People	Littlemoor Ward (numbers)	Littlemoor Ward (%)	RVBC (%)	North West (%)	Great Britain (%)
2001 Census					
Economically Active	1,225	74.0	78.2	74.3	74.0
In Employment	1,161	70.1	76.2	68.2	69.8
Employees	1,024	61.8	62.3	59.8	61.0
Self Employed	137	8.3	13.9	7.9	8.8
Unemployed	64	5.2	2.6	8.2	5.7
2010/11 Annual Population Survey					
Economically Active			83.7	74.3	76.1
In Employment			79.6	68.2	70.0
Employees			64.8	59.8	60.5
Self Employed			14.8	7.9	9.1
Unemployed			3.3	8.2	7.9

Source: Ward Figures 2001 Census of Population (Table CAS028)
Borough and National Figures based on ONS annual population survey (2010/2011)

Table 12.5 shows that in 2001, RVBC had an appreciably higher percentage of economically active than the nation as a whole although the Littlemoor ward lagged slightly behind the Borough's performance. This is reflected in the lower percentage of people in employment against the national average (74% to 76.1%). Unemployment figures however for the Littlemoor ward are better than the national average level of unemployment (5.2% to 5.7%).

It is therefore concluded that the Borough performs well in terms of labour supply but that Littlemoor ward performs rather less well despite this being comparable with national performance.

Although ward level data for 2011/12 is not available, Table 12.5 suggests that the economically active proportion of the population in RVBC has increased appreciably by over 5% and that it performs markedly better than the region and the nation as a whole. Despite an increase in unemployment rates, these are still very significantly lower than for the region and for Great Britain.

Employment by Occupation

Table 12.6 outlines the economic breakdown of people by occupation in Littlemoor

Table 12.6 Employment Breakdown by Occupation

All People	Littlemoor Ward (numbers)	Littlemoor Ward (%)	RVBC (%)	North West (%)	Great Britain (%)
2001 Census					
Soc 2010 Major Group 1-3 ¹	418	36.0	44.3	0	39.8
Soc 2010 Major Group 4-5 ²	247	21.3	24.6	0	24.9
Soc 2010 Major Group 6-7 ³	199	17.1	13.3	0	14.8
Soc 2010 Major Group 8-9 ⁴	297	25.6	17.8	0	20.5
2010/11 Annual Population Survey					
Soc 2010 Major Group 1-3 ¹			35.7	39.2	43.3
Soc 2010 Major Group 4-5 ²			27.3	22.3	21.9
Soc 2010 Major Group 6-7 ³			19.6	19.3	17.2
Soc 2010 Major Group 8-9 ⁴			16.1	19.3	17.6

Source: Ward Figures 2001 Census of Population.

Borough and National Figures based on ONS annual population survey (2010/2011)

1 Managers, directors and senior officials/professional/Associate professional and technical

2 Administrative and secretarial/skilled trades

3 Personal services/sales and customer services

4 Process plant and machine operatives/elementary occupations

Table 12.6 illustrates that in 2001 Littlemoor ward had a lower level of people employed in the professional and managerial professions than both the wider RVBC area and, more notably, at the national level. These levels may be lower due to the predominant nature of housing stock as well as other areas of the Borough being closer to major employers to the east both within and outside the Borough boundaries.

Over the past decade the ONS data suggests that the growth in the local economy has been mainly upon employment groups 4 to 7 (administrative and secretarial, skilled trades, personal services/sales and customer services) with a corresponding fall in managerial and professional roles as well in operative and elementary occupations. These trends run contrary to trends at a national level. Comparison with regional trends is not possible although a relatively low proportion of professional and managerial professions in the Borough is evident.

In conclusion, the occupational statistics would suggest that the local economy has more people in lower paid professions than the national average and that as a consequence the ward and the region may be less affluent compared to other parts of Great Britain.

Jobseekers Allowance (JSA) Claimants

Table 12.7 outlines the total number of JSA claimants and the male/female breakdown for the Littlemoor ward. The percentage figures show the number of JSA claimants as a proportion of resident working-age people.

Table 12.7 Total Jobseekers Allowance Claimants

	Littlemoor Ward (numbers)	Littlemoor Ward (%)	RVBC (%)	North West (%)	Great Britain (%)
Total (2001 Census)	63	3.7	1.5		4.1
Males	44	5.1	2.1		5.5
Female	19	2.2	1.0		2.7
Total (ONS 2011/12)			1.5	4.7	4.1
Males			2.1	6.5	5.5
Female			1.0	2.9	2.7

Source: Ward Figures 2001 Census of Population (Table CAS028)
Borough and National Figures based on ONS annual population survey (2010/2011).

In 2001, the Littlemoor ward had locally high rates of JSA claimants (3.7%), compared to the very low 1.5% recorded within RVBC although still below the national average of 4.1%. This disparity in figures between ward, Borough and national levels is largely down to the differing levels (over 3%) of males claiming benefits. The data also suggests that unemployment rates in Littlemoor have not improved since the 2001 Census.

Index of Social Deprivation

The Index of Multiple Deprivation 2010 combines a number of indicators, chosen to cover a range of economic, social and housing issues, into a single deprivation score for each small area in England. The model of multiple deprivation underpinning the Indices is based on the idea of distinct domains of deprivation which can be recognised and measured separately. These domains are experienced by individuals living in an area. People may be counted in one or more of the domains, depending on the number of types of deprivation that they experience.

Each domain represents a specific form of deprivation experienced by people and each can be measured individually using a number of indicators. Seven distinct domains have been identified in the English Indices of Deprivation; Income Deprivation, Employment Deprivation, Health Deprivation and Disability, Education Skills and Training Deprivation, Barriers to Housing and Services, Living Environment Deprivation, and Crime.

This allows each area to be ranked relative to one another according to their level of deprivation. As with the 2007 and 2004 Indices, the Indices of Deprivation 2010 have been produced at LSOA level, of which there are 32,482 in the country. Lower numbers indicate higher deprivation.

A relative ranking of areas, according to their level of deprivation is then provided. At local authority level, there are six district summary scores for each of the 326 authorities in England and Ribble Valley is ranked 290 which places it within the top 15% least deprived authorities in England.

Table 12.8 ranks the LSOA covering the site (Ribble Valley 002A) against the total of 32,482 which shows that it is consistently within the top third performing areas in England.

Table 12.8 Indices of Multiple Deprivation 2010 Ranking for the Site

Lower Super Output Area	Overall	Income	Employment	Health	Education	Housing	Environment	Community Safety
Ribble Valley 002A	20 821	19 054	12 322	20,255	19,135	26,669	17 402	29 379
% Position	64%	59%	38%	62%	59%	82%	54%	90%

Source: The English Index of Multiple Deprivation 2010

The LSOA performs well in terms of housing provision and community safety falling within the top 20% of LSOAs. However, it should be noted that performance is not as good in terms of employment provision (not far above bottom third LSOAs) and the likely reason for this is that other areas of the Borough being closer to major employers to the east both within and outside the Borough boundaries and the lack of housing stock for the commuting population.

Housing

The issue of housing is recognised as a key priority for RVBC, providing a range of additional houses including meeting the housing needs of older people and affordable homes, especially in rural areas.

Supporting the preparation for the LDF, RVBC have produced a Strategic Housing Market Assessment (SHMA), which included a range of household income data from the consultancy CACI. This shows that for 2007 the mean household income in Ribble Valley was £35 874. The figure for Littlemoor was £26 854 which demonstrates that it is not as economically prosperous in comparison with other parts of the Borough.

There are difficulties within the Borough relating to affordability. RVBC's 2011 states that the incomes of 60% of households in the Borough suggests that are unable to afford entry-level housing

After the Regional Spatial Strategy (RSS) was purportedly abolished by the Secretary of State for Communities and Local Government on 6 July 2010, the Council have formally resolved to adopt a policy to deliver 200 dwellings per annum on the basis of advice from the Chief Planner at CLG and subject to further definition through a study commissioned from NLP. This figure will supersede the RSS figure of 161 per annum

Separate to this study RVBC's ongoing monitoring as of 1 October 2011 suggests that the Council can demonstrate only a 3.3 year supply of housing which is significantly lower than the 5 years demanded by national planning policy.

Of the 1 229 dwellings gaining consent between 2006 and 2011, 937 were on the open market and the remaining 292 (24%) were for affordable residential development (see Table 12.9).

Table 12.9 Dwellings Gaining Consent 2006-2011

	2006	2007	2008	2009	2010	2011	TOTAL
Open Market	81	55	31	119	368	283	937 (76%)
Affordable	36	8	96	49	48	55	292 (24%)
Total	117	63	127	168	416	338	1,229

Source: RVBC Annual Monitoring Report 2011.

Of the affordable housing stock of 844 units in Clitheroe, 615 are owned by RVBC and 229 by a range of RSLs. As part of the Housing Needs Survey completed in 2008, 494 respondents (29% of responses indicated that they needed affordable housing.

The Submission Version of the Draft Core Strategy estimates that 4 000 dwellings or 200 per annum will be required over the 2008 to 2028 plan period. Within this, it requires a 30% affordable element to be provided within developments with some flexibility down to 20% where this can be justified.

Health

As at February 2011, 2 250²⁸ people in the Borough were claiming Disability Living Allowance which fell by 60 claimants over the previous year. Despite this level, the Borough has the lowest number of claims in Lancashire.

At present just over half the Borough's population is aged 50 or over which is the third highest level in the County. Higher than average life expectancy and growth in population means that it is predicted that by 2025 this population will be significantly higher than both neighbouring authorities and the national average and will create pressure on health services. Indeed a recent NHS profile stated that the level of support in the Borough for older people to remain in their homes is worse than the national average.

Crime

Between 2010 and 2011 there has been an overall increase in the number of notifiable offences in Ribblesdale for the first time in six years. The only area where there has been a decrease in crime is in the number of thefts from motor vehicles.

Education

Ribblesdale is the only nursery school within Clitheroe, accommodating 50 children. A further 26 places are available at Clitheroe Edisford school. There are five primary schools located within Clitheroe's main urban area. An assessment of their current capacity is at Table 12.10.

²⁸ Information from Your Lancashire website, 2011.

Table 12.10 School Capacity in Clitheroe

School	Govern- ance	Distance from Site	Pupils on Roll (Jan 11)	Annual Admissions	Capacity ¹	Spare Places (Jan 11)
Primary						
Clitheroe Brookside	LEA	1.1 km	197	30	210	13
Clitheroe Edisford	LEA	1.3 km	206	30	210	4
Clitheroe Pendle	LEA	1.7 km	312	50	350	38
St James' C of E	Voluntary aided	0.5 km	241	45	315	74
St Michael & St John's RC	Voluntary aided	0.8 km	204	30	210	6
Total Primary			1,160	185	1,295	135
Secondary						
Ribblesdale School	LEA	0.3 km	1,290	255	1275	-15
Clitheroe Royal Grammar ²	Academy	2.2 km	1278 ²	120	600	0 ²
Total Secondary			1890	375	1875	-15

Source: RVBC Annual Monitoring Report 2011.

¹ Calculated at 7 year groups for primary and 5 year groups for Ribblesdale School.

² Clitheroe Grammar serves the 6th form needs of the wider district and comparison with annual admissions at age 11 is not possible. It is assumed that there is no capacity in academic years 7 to 11.

The closest primaries are the two denominational schools located within 1 km. The closest, St. James Church presently has available capacity. Three other primary schools are located within 1.7 km of which limited capacity exists at Pendle.

There are two secondary schools serving Clitheroe. Ribblesdale School is located 300 m from the site and has nearly 1 300 pupils. It is currently full. Clitheroe Royal Grammar is an academy that meets all the 6th form needs of the town and its hinterland. Due to its popularity it is assumed that the school is presently effectively at capacity and further demand will need to be provided either by the LEA or by academies responding to the demands of the market.

Recreation (inc. Footpaths and Cycleways)

There are two existing footpaths which cross the site. Footpath 11 in its northern area, runs to the south east off Pendle Road to the rear of Brett Close. Footpath 14 runs across the southern corner of the site from Lingfield Avenue. These footpaths link with existing Footpaths 5, 12 and 13 which pass off-site to the south along Worston Old Road.

Regional cycle route 91 runs south off Pendle Road and links with the A59 and passes through Pendleton. There is also a local cycle route which runs to the south of the site through Higher Standen along Worston Old Road.

There are a number of recreational facilities in the immediate and wider area. The playing fields located directly to the north and west of the site are used by the nearby Ribblesdale High School.

12.5 Proposed Mitigation

12.5.1 Measures Incorporated to Mitigate Potential Significant Effects

Generally, the effects of the proposed mixed use development can be viewed as positive. It will provide a wider range of housing tenure, new employment opportunities and additional educational and community facilities for the local residents; therefore, against the majority of the identified receptors no mitigation is required.

There will however be potential mitigation measures required to address the potential disruption to two existing PRoW (Footpaths 11 and 14) which cross the site as part of the construction phase of the scheme. Further to this regional cycle route 91 and a local cycling route pass to the south of the site and could also be affected within the construction phase of the scheme i.e. the proposed roundabout on the A59.

Throughout the construction phase diversions may be required for both of the footpaths. During the construction of the new roundabout access to the A59, it is aimed to ensure that the cycle routes will be kept open throughout by agreeing a traffic management plan as part of its implementation. Once the roundabout is operational, cycle route 91 will be incorporated into its design.

When operational, it is expected that the broad linkages provided by both footpath 11 and 14 will be maintained as part of the green routes proposed any that any diversion will be minor and not affect their functionality, connections to other footpaths or the urban area of the town.

12.5.2 Summary of Mitigation Measures

Table 12.11 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 12.11 Summary of Proposed Mitigation Measures

Receptor	Change(s) and Potential Effects	Incorporated Mitigation	Likely Effectiveness
Construction			
Footpaths	Footpaths 11 and 14 will require to be diverted while construction work is ongoing.	Temporary diversion will be agreed with the Council	High
Cycleways	Cycle route 91 will be temporarily diverted to be kept open throughout by agreeing a traffic management	Temporary diversion will be agreed with the Council.	High
Community Perception	<p>A proposal which has come from the Council's plan (the Core Strategy)</p> <p>Development of a large housing site plus a school site and local facilities on farm land; the use of the Higher Standen Farm complex as a location for a bespoke business centre</p> <p>The construction of a new roundabout on the A59-replacing the existing off set (and unpopular) cross roads.</p> <p>Singularly owned and being promoted not by a developer but by the Standen Estate, long established landowners in Standen and beyond.</p>	Continued public consultation during the planning and development process	Medium
Operational			
Footpaths	The broad linkages provided by footpaths 11 and 14 will require retention as part of the green route network proposed. Any minor diversions will be minor and not affect their functionality, connections to other footpaths or the urban area of the town	To be agreed with the Council as part of detailed layout proposals	High
Cycleways	New A59/Pendle Road roundabout will incorporate cycle route 91 into its design.	The existing National and Local Cycle route will be incorporated into the proposals	High

12.5.3 Additional Measures Incorporated to Mitigate Possible Other Effects

It is important that the local community continue to be involved in discussion relating the proposals. This will be achieved through the Council's actions on the Core Strategy and by the landowner undertaking a community consultation exercises and the production of a Statement of

Community Involvement. This will help inform the local residents about the proposals and increase local awareness.

12.6 Assessment of Effects

12.6.1 Predicted Effects and their Significance: Construction Phase

Direct Employment

As the site is currently greenfield land it provides minimal employment. Throughout the construction phases there will be a need to employ a large number of people to undertake the development over many years. Depending upon the availability of local skills, this may be important and significant at ward and local level.

Indirect Employment

Existing local businesses will also benefit indirectly from the need to supply materials and equipment for construction and also to serve those directly employed by the development. It is however, difficult to quantify these temporary benefits for between 15 to 20 years and it is also assumed that these benefits will not be significant.

Footpaths

In the construction phases there will be some increases to vehicle movement on the local road networks and diversions are likely to be required for the existing PRow on the site which may cause some inconvenience. The effects will be temporary and can be mitigated through implementation of a construction traffic management plan and through agreed diversions. Hence it is not considered to be significant.

Cycleways

Accessibility to the existing regional cycle route 91 and local route will be maintained throughout the construction phases, therefore attaching a low magnitude of change and significance.

Community Perception

Considering the proposed development would be on urban fringe farm land, the public perception of the magnitude of change will be high and therefore is attached a high level of significance.

At the local level the existing community, particularly in the immediate vicinity of the site and within the ward of Littlemoor may have mixed views about the proposals. It is important to ensure that the local communities continue to be involved in the planning and development process. This will be undertaken and recorded as part of the Statement of Community Involvement to be produced at an appropriate time.

12.6.2 Predicted Effects and Their Significance: Occupation Phase

Direct Employment

Estimates of employment density ratios are commonly used for planning purposes. There is no one correct figure and ratios vary due to a number of factors such as employment sector,

function, location, use class, building and point in the economic cycle. There are a limited number of large-scale surveys that have been undertaken. The study carried out for SERPLAN by Roger Tym & Partners (1997) remains one of the most comprehensive data sources for London and the South East. This surveyed over 1 200 firms. More recent work done only in the South East (DIZ, 2004) surveyed over 1 000 firms. They both provide average floorspace per worker ratios expressed as sq metres per worker.

Taking an average of the Roger Tym (17.9) and DIZ (18.2) rates of 18 sq m per employee (based on B1 office spaces) it is estimated that the 5 575 m² of employment space proposed as part of the scheme will create approximately 310 jobs.

In addition, there is likely to be jobs created within the primary school and as part of the local ancillary retail/local amenities provided. Depending upon school intake and the number of part-time staff, primary schools can provide up to 50 jobs.

Other jobs would be provided through the provision of the community and local retail facilities. Whilst it is difficult to predict the precise nature of these uses and the jobs that could potentially be created, it is assumed that approximately a further 50 jobs would be created.

Using the figures calculated above it can be concluded that potentially 410 jobs will directly be created from the proposed business centre, primary school and ancillary retail/community uses. These are likely to be significant at ward and town levels.

Indirect Jobs

Using the multiplier of 1.29 for B1 business to calculate indirect and induced employment, as outlined in Section 12.3.1, it is possible that up to an additional 90 indirect/induced jobs may be supported by the employment allocation, taking the total of direct and indirect jobs to 500. (NB: As outlined above this figure is based on the potential of the employment allocation only, other jobs are likely to be created on the site).

The basis of these calculations is outlined in Box 12.1 as follows:

Box 12.1 Indirect and Induced Job Preservation Calculations
<p>Calculation of Indirect and Induced Jobs</p> <p>Total number of direct jobs generated by the employment allocation (310) x 1.29 = 400, minus the total number of direct jobs generated (310) = Total number of indirect and induced jobs supported (90)</p> <p>Total of number of indirect and induced jobs supported by the proposed B1 allocation: 90</p> <p>Total Direct Indirect and Induced Jobs (including those associated with the primary school, community and local retail facilities) = 500</p>

Similarly, and at a Borough, town and ward level, these jobs are considered significant.

Inward Investment

The proposed masterplan includes 5 575 sq m for B1 uses which have some potential to attract existing or new businesses looking to occupy in a business centre in an attractive location. The vision is for a bespoke development based on the existing court yard within Higher Standen

Farm with sensitively designed new 'vernacular' buildings along side. Commercial agents are confident that such floor space would be taken.

Housing

The masterplan proposes a total of 1 040 units comprising a mix of housing (including market and affordable, including retirement living). This figure represents approximately 25% of the 4 000 dwelling requirement in the Submission Version of the Draft Core Strategy over the period 2008-2018. This effect is considered certain, important for the needs of the Borough's population and, in view of the scale of this need, represents a high magnitude of change.

Education

As outlined within the baseline section (12.3.2) there are five existing primary schools located within Clitheroe's main urban area. The nearest being located approximately 0.5 km from the site. Depending upon the housing mix, population structure and birth rate, an additional 1 040 housing could create a demand for about an additional 210 to 280 primary school places. Whilst under current baseline conditions these could not be accommodated in total, in reality this demand will accrue gradually and in the context of an ageing population may not have the effects that might be implied.

It is therefore concluded that given the existence of five primary schools within the town the potential demand would create only a medium magnitude of change at Borough and town settlement and therefore the effects would not be significant. At a ward level however, the magnitude of effect would be higher as the nearest schools would be a considerable distance away from much of the site. Hence new provision would provide significant beneficial effects at the local ward level but not at settlement level.

There will be a demand for additional secondary school capacity of around 200 places. As both secondary schools are currently operating at capacity the effects are likely to be significant. At this stage however, and because of the present uncertainty surrounding the roles of the LEA and academies in implementing national schools policy. Responses from these bodies would mitigate the significance of effects.

Footpaths

The proposed development has the potential to make the site more accessible for pedestrians with the inclusion of new green routes, with a design objective being to create better linkages to the existing urban area including the town centre and with countryside beyond the site. This will lead to significant beneficial effects; therefore the effect is viewed as significant in EIA terms.

Cycleways

Once operational the development should enhance access to the existing cycleways and from them into Clitheroe. Cycle Route 91 will require some minor reconfiguration as part of the new A59/Pendle Roundabout. The local route along Worston Old Road could be enhanced as there are plans to restrict Worston Old Road to cyclists, pedestrians and horses – other than for local access purposes. Therefore the magnitude of change is likely to be low and therefore not significant.

Community Perception

When operational the potential cumulative benefits of the scheme for surrounding the neighbouring benefits need to be strongly demonstrated through public consultation. These would include:

- New homes in a sustainable location, including 312 affordable ones;
- About 410 jobs for local area;
- Facilitating sustainable travel by bus, cycle and foot;
- New green networks, including improved recreational facilities and enhanced access to the countryside.

As these benefits will partly be based on perception they can be hard to quantify. However due to the scale of changes proposed as part of the development the magnitude of change can be given a high value and significance.

12.6.3 Possible Other Mitigation

In view of the mainly positive social and economic effects that are expected to accrue from the proposed development, any additional enhancement measures should be regarded as desirable, rather than essential. Such measures could include:

- Additional emphasis on the use of local labour;
- The exploration of means of educating the local community about sustainable living and the emphasising the potential wider community benefits generated by the scheme.

12.6.4 Conclusions

Excluding the jobs that will be provided over the duration of the construction period construction it is predicted that the redevelopment would lead to the creation of a minimum of 400 to 500 permanent jobs (temporary construction jobs numbers are not known at this stage), through a combination of direct and indirect employment, together with induced employment from sustaining local economic activity. The creation of these jobs should be welcomed in Clitheroe and within the immediate site area which has slightly higher unemployment rates and a lower level of economically active population compared to the rest of RVBC. Additionally, although the area does perform relatively well in relation to deprivation it does fall within the bottom third of LSOAs in terms of employment provision. The proposed development will provide 1 040 new dwellings, which makes a significant contribution to the housing requirement of the Submission Version of the Draft Core Strategy (a quarter of the allocation proposed for the next 20 years). Therefore the overall effects are considered to be significant.

The scheme will provide land for a new primary school (if required) to serve new residents and also, to some extent, the wider town. The effects are considered to be significant at a local ward level but not at a town or Borough level.

Local diversions will be required to the two existing PRow crossing the site and the nearby cycle route over the construction period. Once built, the development will accommodate footpaths that may be diverted in the detailed design stage but without any detriment to the

functionality of the current network. Therefore the effects are considered of low significance in the long term

Additionally, it is essential that the local community are integrated into the consultation process and the potential cumulative benefits are emphasised to ensure public perception remains positive from the outset of the scheme.

12.7 Cumulative Effects

There is potential for the local communities surrounding the site to benefit considerably from the scheme. As outlined above this would include, a good mix of housing tenure, new jobs and local amenities, educational facilities and enhanced sustainable travel options.

12.8 Summary of Predicted Effects

In accordance with the methodology outlined in Section 12.2.4, Table 12.12 summarises the potential effects on community issues from the proposed development and assesses their significance.

Table 12.12 Summary of Effects and Evaluation of Significance

Receptor	Probability	Value	Magnitude	Significance	
				Level	Rationale
Construction Phase					
Employment Base (Borough settlement ward level)	Certain	High	Medium	Not Sig	Jobs created by construction phase may be important at ward level but will be temporary and less significant for the wider Borough
PRoW	certain	Medium	Medium	Not Sig	Temporary diversions will be required.
Cycle Ways	Likely	Medium	Low	Not Sig	Existing cycle ways should remain open within minimal disruption
Community Perception	Likely	Medium	High	Sig	Local community needs to continue to be engaged. Some disruption likely at construction stages.
Occupation Phase					
Employment Base (Borough settlement ward level)	Certain	Medium	High	Sig	The numbers of direct, indirect and induced jobs created will be important at a local level
Employment Base (County and Regional Level)	Possible	Medium	Low	Not Sig	Number of jobs created is less significant in terms of Lancashire and the North West
Inward Investment (Borough, settlement ward level)	Possible	Medium	Medium	Sig	Not a strategic opportunity. Significance limited to ward and settlement level
Inward Investment (County and Regional Level)	Unlikely	Low	Low	Not Sig	The development is small scale in the wider context and unlikely to constitute a strong attraction.

Table 12.12 Summary of Effects and Evaluation of Significance

Receptor	Probability	Value	Magnitude	Significance	
				Level	Rationale
Occupation Phase (continued)					
Housing	Certain	High	High	Sig	New housing will provide approximately ¼ of Boroughs housing supply for next 20 years
Education (local ward level)	Likely	High	High	Sig	Land for a potential new primary school to benefit the south east area of Clitheroe
Education (settlement, Borough level)	Possible	Medium	Medium	Sig	More than 5 primary schools already located in Clitheroe and impact not significant. Impact on secondary provision likely to be significant subject to response from LEA and existing new academy schools
PRoW	Likely	High	Low	Sig	PRoW enhanced as part of the proposals New green routes proposed Better integration with urban area and countryside beyond
Cycle Ways	Possible	Medium	Low	Not Sig	Access to and from existing Cycle ways will be maintained.
Community Perception	Likely	Medium	High	Sig	Significant benefits to local community emphasised as part of consultation process
Key:	Probability	Value	Magnitude	Significance	
	Certain	High	High	Significant	
	Likely	Medium	Medium	Not Significant	
	Possible	Low	Low		
	Unlikely		None		

12.9 Implementation of Mitigation Measures

Table 12.13 sets out the mitigation measures and proposals for compliance monitoring that have been incorporated into the scheme to mitigate any potential effects on the local community. It also includes details of who will be responsible for the implementation of the measures, and the suggested mechanism of compliance to ensure that the proposals will be carried out as envisaged.

Table 12.13 Implementation of Incorporated Mitigation and Monitoring Proposals

Mitigation Measure/Monitoring Proposal	Actioned By	Compliance Mechanism
Diversion of PRoW (construction phase)	Developer	Through agreement with RVBC PRoW officer
Public Consultation to improve community perception	Landowner/ developer(s) and RVBC	Continue engagement with local communities through planning and development process Demonstrated through production of Statement of Community Involvement.

12.10 Technical References

1. Clitheroe Housing Needs Survey 2008
2. English Partnerships: Additionally Guide, 2008.
3. Employment Land Reviews Guidance Note, 2004
4. Indices of Multiple Deprivation, 2010.
5. Labour Market Profile Ribble Valley, April 2012.
6. National Planning Policy Framework, April 2012.
7. National Statistics Neighbourhood Profile, Ribble Valley, April 2012.
8. Ribble Valley Annual Monitoring Report 2011.
9. Ribble Valley Submission Version of the Draft Core Strategy (August 2012).
10. Ribble Valley Employment Land and Retail Study (October 2008).
11. Ribble Valley Local Plan (1998).
12. Strategic Housing Land Availability Assessment, 2009.
13. Strategic Housing Market Assessment, 2008.
14. Ward Labour Market Profile Littlemoor; April 2012