Environmental Impact Assessment

Volume 1

Anzio Camp, Leek, Staffordshire

On behalf of English Courtyard Developments Ltd

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1 Introduction

Preamble

1.1 This document forms the Environmental Statement (ES) prepared by RPS Health, Safety and Environment on behalf of English Courtyard Developments Ltd to accompany an outline planning application for the proposed redevelopment of the former Anzio Camp site near Leek, Staffordshire.

1.2 This document should be read in conjunction with other documentation submitted alongside the detailed planning application, in particular:

- Application Form prepared by RPS Ref: AC1/A;
- Supporting Planning Statement (including Buildings Re-Use Appraisal) prepared by RPS Ref: AC1/B;
- Design and Access Statement prepared by RPS Ref: AC1/C;
- Sustainability Appraisal prepared by RPS Ref: AC1/D;
- Transport Statement prepared by RPS Ref: AC2/E;
- Travel Plan prepared by RPS Ref: AC2/F;
- Geo-Environmental Assessment prepared by RPS Ref: AC2/G;
- Surface Water Flood Risk Assessment prepared by RPS Ref: AC2/H; and
- Site Services Assessment prepared by RPS Ref: RPS AC2/I.

1.3 The ES has been prepared in accordance with the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (S.I 1999 No. 293) (the '1999 EIA Regulations').

1.4 This chapter provides a brief introduction to the site and the proposals for its development, and subsequently provides an outline of the policy constraints and legislative framework within which the proposals need to proceed.

1.5 For the purpose of the EIA and ES, it is assumed that the redevelopment of the site would be complete by 2014.

Site Location and Description

1.6 The site is located some 3 km to the north-east of the centre of Leek, in a predominantly rural setting (**Figure 1.1**). The site is a roughly rectangular parcel of land, and occupies an area of

10.78 hectares. It was previously operational as an Army training camp, which ended operations in 2004.

1.7 The site is currently characterised by the former Army residential training base of Anzio Camp which ended operations in December 2004, and comprises a number of vacant single and two storey buildings constructed between 1980 and 1983 that were used for offices, training and accommodation purposes. The remaining areas of the site are characterised by a parade ground, car parking, assault course and small arms firing ranges, a secure ammunition store, together with areas of soft landscaping.

Development Overview

1.8 The development comprises the construction of a Continuing Care Retirement Community (CCRC) that includes the following elements:

- Self-contained dwellings (a mix of houses, cottages and apartments);
- Continuing care facilities;
- Communal facilities such as a restaurant, lounges, library and fitness rooms;
- Specialist facilities for frail and disabled residents;
- A range of social and leisure facilities (including shop, post office, hairdresser and cash point;
- Staff offices and facilities for domestic support; and
- Car parking.

1.9 The application is submitted in outline with all matters reserved. Means of access is proposed from the A53 Buxton to Leek road. A full description of the proposed development is given in Chapter 4.

1.10 The information supporting the application confirms the maximum floor area of development and the maximum height of the proposed units. It is anticipated that these issues would be controlled by appropriately worded planning conditions.

1.11 The application is supported by an illustrative site layout plan and Design and Access Statement, which set out the detail of the development proposals, including the proposed location of the self-contained dwellings and continuing care units, offices and car parking, together with means of access. Areas are also identified for allotments and on-site landscaping.

1.12 The application is supported by a full set of drawings as well as the documents listed at 1.2. These set out the detail of the development proposals. They illustrate the proposed location of the retail development within the site, car parking provision and all other relevant issues.

Policy Outline and Legal Framework

1.13 The site lies approximately 3 km to the north-east of the centre of Leek. The site therefore has to be considered against national planning policy guidance issued by national government including Planning Policy Guidance Notes (PPG) and / or Planning Policy Statements (PPS), together with the Regional Spatial Strategy for the West Midlands (RSS 11), the Adopted Staffordshire and Stoke-on-Trent Structure Plan 1996 - 2011 and Staffordshire Moorlands Local Plan 1998.

1.14 An assessment of the planning policy context is contained in Chapter 5 of this ES.

Outline of Environmental Statement

Structure

1.15 Following this introductory chapter, an outline of the EIA methodology is provided in Chapter 2. Factual background information relating to the development site and development proposed is set out in Chapter 3. Chapter 4 provides a summary of the development proposals and alternative options. Chapter 5 contains details of the relevant planning policy context. Chapters 6 – 12 assess the impacts of the proposals under the following topic headings: (6) Highways and Transportation, (7) Landscape and Visual Impact, (8) Ecology, (9) Archaeology and Cultural Heritage, (10) Flood Risk and Drainage, (11) Land Quality, (12) Air Quality and (13) Noise. Each of these chapters includes information on the baseline conditions at the site and in the surrounding areas as appropriate. Additional information is presented in the Appendices to each chapter. Based on this information, predicted impacts are identified and mitigation measures outlined where necessary. This allows for an assessment of any residual impacts remaining after mitigation.

1.16 The Environmental Statement comprises two volumes. Volume 1 contains the main text and a number of technical appendices, whilst Volume 2 contains the figures to accompany the text. In addition, a Non-Technical Summary (NTS), which provides an accurate and balanced statement of the key information presented in the Environmental Statement in a non-technical manner, has also been included as part of the planning submission (**Document Ref: AC3/J**).

The EIA Team

1.17 The EIA team comprises specialists from RPS Health, Safety & Environment and RPS Planning & Development, together with Andrew McCarthy Associates.

1.18 RPS is an independent environmental consultancy providing advice on planning and environmental matters with extensive experience in preparing and submitting Environmental Statements. The company is registered with the Institute of Environmental Management and Assessment (IEMA).

1.19 Andrew McCarthy Associates are a leading independent ecology consultancy, providing a full range of services on all aspects of ecology, from ecological scoping and protected species survey to environmental impact assessment and ground-works contracting.

1.20 The primary responsibility for the content and accuracy of each chapter is that of each contributing author as shown in **Table 1.1**. The overall responsibility for the preparation and production of the Environmental Statement rests with RPS Health, Safety & Environment.

Table 1.1: Responsibilities for Each Chapter

Chapter	Title	Responsibility
NTS	Non-Technical Summary	RPS
1	Introduction	RPS
2	EIA Methodology	RPS
3	Factual Background	RPS
4	Description of Proposed Development	RPS
5	Planning Policy Context	RPS
6	Highways and Transportation	RPS
7	Landscape and Visual Impact	RPS
8	Ecology	Andrew McCarthy Associates
9	Archaeology and Cultural Heritage	RPS
10	Flood Risk and Drainage	RPS
11	Land Quality	RPS
12	Air Quality	RPS

Further Information

1.21 Comments, queries or requests for information relating to this ES should be addressed to:

RPS Health, Safety & Environment
52 Princess Street
Manchester
M1 6JX
FAO Michael Gennaro

1.22 Further copies of this Environmental Statement are also available from the above address at a cost of £200 per copy. Electronic copies of the Environmental Statement are available at a cost of £20. Copies of the Non-Technical Summary are available at a cost of £2 per copy.

2 EIA Methodology

The EIA Process

2.1 Environmental Impact Assessment (EIA) is a process that is designed to ensure that a planning authority has the relevant information to enable it to determine a planning application in the full knowledge of the project's likely significant impact on the environment. The developer is required to submit information required to assess the environmental effects of the development in the form of an Environmental Statement. This forms the basis for consultation with statutory consultees and other bodies and members of the public and enables decision-makers to consider these effects when determining the related planning application. The EIA process has a number of characteristics:

- It is a systematic process and includes a sequence of tasks defined by regulation and practice;
- It is an analytical process and entails the development of specialist skills from the disciplines of environmental science;
- It is an impartial process whose purpose is to inform the decision-taker and not to promote the project;
- It is a consultative process with information being obtained from and fed back to interested parties including statutory and non-statutory agencies; and
- It is an interactive process, which enables environmental issues to be addressed during the planning and design of a project.

2.2 It is important to emphasise the interactive nature of the process in the context of the design of the redeveloped Anzio Camp site, since a number of design iterations have taken place in response to the environmental issues identified during the EIA process. These are summarised in Chapter 4, Section 4.2.

Introduction

2.3 The statutory framework for Environmental Impact Assessment (EIA) is provided by the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999, (hereafter referred to as the 1999 EIA Regulations). These regulations implement the European Directive 85/337/EEC, amended by Directive 97/11/EC, and require that certain types of development are subject to EIA.

2.4 This Environmental Statement (ES) sets out the findings of the EIA and, in conjunction with the Design and Access Statement, provides a description of the development, details of existing environmental conditions and an assessment of the likely environmental effects of the proposed scheme. The ES has been prepared in accordance with the 1999 EIA Regulations and Circular 02/99 'Environmental Impact Assessment'. Although there is no statutory provision as to the form of an ES, the 1999 EIA Regulations state that:

> *"..'environmental statement' means a statement :-*
>
> *a. that includes such of the information referred to in Part 1 of Schedule 4 as is reasonably required to assess the environmental effects of the development and which the applicant can, having regard in particular to current knowledge and methods of assessment, reasonably be required to compile but,*
>
> *b. that includes at least information referred to in Part II of schedule 4".*

2.5 The specified information within Schedule 4 Parts I and II is detailed in **Appendix 2.1.**

2.6 The information that the developer is required to submit in the EIA process is presented in this Environmental Statement. The scoping, preparation and production of this Environmental Statement has been conducted in accordance with the latest Government Regulations and advice on good practice comprising:

- Town and Country Planning (Environmental Impact Assessment) (England & Wales) Regulations 1999;
- Circular 02/99 Environmental Impact Assessment (England & Wales) 1999;
- Planning Policy Guidance (PPGs) 13, 15 and 16;
- Planning Policy Statement (PPSs) 1, 3, 7, 9, 23 and 25;
- Preparation of Environmental Statements for Planning Projects which require Environmental Assessment, A Good Practice Guide (Department of Environment 1995); and
- Guidelines for Environmental Impact Assessment (Institute of Environmental Management and Assessment 2004).

2.7 Good practice advises that EIA should be treated as an iterative process rather than a one-off, post-design environmental appraisal. In this way the findings of the EIA can be fed into the design process leading to the design of the project, which achieves a 'best-fit' within the environment. This approach was used for the Anzio Camp site, and where potentially adverse effects were identified the findings influenced the scheme design and appropriate mitigation measures were incorporated.

The Scoping Process

2.8 In order to decide which aspects of the scheme are likely to give rise to environmental effects and to determine the work required for preparation of the ES, Screening and Scoping Opinions were sought from Staffordshire Moorlands District Council by letter (Ref: MG/JA/RCM4846 004L, **Appendix 2.2**) on 6 December 2007.

2.9 The aim of requesting this scoping opinion was to identify key issues of concern at an early stage and permit these to be considered in the ES. Issues subsequently raised by consultees during the EIA have been addressed on an on-going basis.

2.10 Staffordshire Moorlands District Council confirmed by way of an email correspondence (**Appendix 2.3**) that the planning application should be accompanied by an EIA and that, in accordance with Regulation 10(5) of the Environmental Impact Assessment Regulations 1999, a Scoping Opinion was due within five weeks of the provision of this Screening Opinion.

2.11 This correspondence also confirmed that the EIA should include a Landscape and Visual Impact Assessment (LVIA) (see Chapter 7) due to the site's sensitive location, and requested confirmation of how such matters would be addressed in the EIA.

2.12 A response on this issue was provided to Staffordshire Moorlands District Council on 5 February 2008 (Ref: MG/JA/RCM4846 005L **Appendix 2.4**). The response also proposed that, in addition to the LVIA, the EIA should also address the following issues:

- Transport;
- Ecology;
- Archaeology and Cultural Heritage;
- Water Resources (Flood Risk and Drainage);
- Land Quality;
- Air Quality; and
- Noise & Vibration.

2.13 An email correspondence dated 24 April 2008 (**Appendix 2.5**) was received from Staffordshire Moorlands District Council, which confirmed that the Council were satisfied that the scope of the EIA, as recommended by RPS, was satisfactory.

Consultation

2.14 The above list was used to form the basis for the preparation of the ES and interested parties were contacted to ascertain their opinions on the scheme and their views on the proposed

assessment methodology.

2.15 Information on those parties consulted during the preparation of the ES, and key issues that they raised, can be found in the individual chapters.

Table 2.1: List of Consultees

Consultees	Planning Policy	Development Proposals	Highways and Transportation	Landscape and Visual Impact	Ecology	Archaeology and Cultural Heritage	Flood Risk and Drainage	Land Quality	Air Quality	Noise and Vibration
Staffordshire County Council	✓									
Staffordshire Moorlands District Council	✓	✓	✓	✓	✓	✓		✓	✓	✓
The Environment Agency							✓			
Advantage West Midlands	✓	✓								
Urban Vision North Staffordshire		✓								
Natural England					✓					
Staffordshire Historic Environment Record						✓				
Parish Council		✓	✓	✓				✓		
Leek Shooting Centre										✓

Public Consultation

2.16 As part of the wider consultation process particular attention was given to local concerns and interests. Public consultation is seen by the Developers as a key element, and members of Tittesworth Parish Council and their guests were contacted during the early scoping stage and invited to a Design Workshop meeting at the Three Horseshoes Inn held on 7 February 2008.

2.17 The Design Workshop comprised a site visit to give the opportunity for Blackshaw Moor residents and business to see first-hand the existing site, followed by a presentation using a series of mounted boards giving the background and rationale of the proposals and details of the design and layout of the redeveloped Anzio Camp site.

2.18 Representatives of the Developers and their consultants including RPS were on hand throughout to take comments, answer questions and provide additional information as required. Visitors were invited to comment on and discuss the proposals and to contact the Developers with any further comments or questions they might have had. Contact details were made available with email addresses, telephone number and addresses. A summary report of the main findings of the design workshop are presented in **Appendix 2.6**.

Likely Environmental Effects

2.19 The scoping opinion / on-going consultation described above identified the following particular environmental effects for detailed assessment in this Environmental Statement:

- Traffic and Transportation;
- Landscape and Visual Impact;
- Ecology;
- Archaeology and Cultural Heritage;
- Flood Risk and Drainage;
- Land Quality;
- Air Quality; and
- Noise & Vibration.

2.20 All elements of the project including the built form and all associated infrastructure have been addressed in the Environmental Statement.

Assessment and Reporting Methodology

2.21 Following scoping and the identification of potential environmental effects, technical assessments were carried out in order to predict potential effects associated with the development and to propose measures to mitigate these effects.

2.22 Each assessment chapter (Chapters 6 to 13) follows, wherever possible, a systematic approach, the principal steps (described in greater detail below) being:

- Introduction;
- Assessment Methodology;
- Policy Context;
- Existing (Baseline) Conditions;
- Identification and Assessment of Effects;
- Mitigation;
- Summary and Residual Effects; and
- References

Introduction

2.23 This provides background to the issue under consideration and briefly outlines the contents and purpose of the chapter.

Assessment Methodology

2.24 This describes how the significance of a potential environmental effect is assessed. It also provides a breakdown of the legislation and guidance reviewed to guide the assessment of the potential effects of the development and the assessment involved. This section also includes any concerns raised by consultees and the recommendations they suggest.

Policy Context

2.25 This outlines the appropriate background to the particular topic in terms of legislation, statutory and non-statutory guidance (including best practice) and planning policy requirements.

Existing (Baseline) Conditions

2.26 In order to evaluate environmental effects, information was collected relating to the existing environmental conditions (baseline) of the site and assessment area. For each separate technical assessment, methods of data collection were discussed with relevant consultees. Existing data were gathered from records and other archive sources. Where appropriate, and as agreed, field surveys and monitoring were carried out.

2.27 Within each technical chapter a description of the data sources consulted and fieldwork carried out to collect baseline data is presented. The timing of the work and area of study are also outlined.

2.28 A description of the baseline conditions (in terms of the particular assessment) is presented and its importance and sensitivity considered. Where appropriate, existing processes of change in the environment, which occur in the absence of the proposed development, are also identified.

Identification and Assessment of Effects

2.29 The re-development of the Anzio Camp site can be split into two distinct phases:

- Construction; and
- Operation.

2.30 During each phase of development different environmental effects are likely to arise. For example, during construction, effects associated with excavation and traffic movements would differ from those effects associated with the operation of the redeveloped site.

2.31 Each technical assessment covers:

- Direct and indirect effects;
- Short, medium and long term effects;
- Permanent and temporary effects; and
- Positive (beneficial) and negative (adverse) effects.

2.32 Following identification of potential environmental effects, baseline information was used to predict changes to existing conditions and permit an assessment of these changes.

2.33 The effect that the development may have on each environmental receptor would be influenced by a combination of the sensitivity of the environment and the predicted degree of alteration from the baseline state (both positive and negative). Environmental sensitivity may be categorised by a multitude of factors. The initial assessment, consultation and previous scoping exercises identified these factors along with the implications of the predicted changes.

2.34 In order to evaluate environmental effects, assessment criteria are identified within each chapter. Thresholds of significance are then used to make explicit the conclusion of the assessment process. Significance is based on the structured elevation of the three main criteria:

- Identifying the nature and form of any predicted environmental effects;
- Assessing whether identified effects are significant; and
- Assessing the likelihood of identified effects.

2.35 For the purposes of environmental effect assessments, 'effect' is generally considered in terms of:

- Major significance - effects of the development of greater than local scale;

- Moderate significance – effects of the development that may be judged to be important at a local scale;
- Minor significance – effects of low importance in the decision-making process, possibly due to their duration or very localised nature; and
- Negligible significance – effects that are of such low importance/magnitude that they are not considered material in the planning process.

2.36 This Environmental Statement generally follows this theoretical approach. Where specific topic areas follow a variant of this approach, this is identified within the particular assessment chapter.

2.37 Within each assessment chapter, the criteria for assessing significance of effects are made explicit. Each chapter also proposes measures to avoid, reduce or remedy significant adverse effects (mitigation measures).

2.38 The assessment process concludes with an examination of residual effects, that is those effects remaining after mitigation has been applied.

Mitigation

2.39 When the assessment process has identified any significant adverse effects, mitigation measures have been proposed during the design phase. Such measures included the consideration of alternatives, physical design, project management and operation to avoid, reduce or remedy any significant adverse effects on the environment.

2.40 This strategy of avoidance, reduction and remediation is a hierarchical one which seeks:

- First to avoid potential effects;
- Then to reduce those which remain; and
- Lastly, where no other measures are possible, to put forward remediation measures.

2.41 Each specialist consultant has identified mitigation measures. In order to ameliorate significant adverse effects, these measures have largely been integrated into the overall design strategy rather than treated as add-on measures. In developing the proposal, the technical design has been allowed to remain flexible with regard to the redevelopment proposals. This has allowed the design to respond to the findings of consultation and Environmental Impact Assessment. The design principles and criteria are described in greater detail in Chapter 4.

Summary and Residual Effects

2.42 This provides a detailed summary of the residual effects, should any be identified, of an area following mitigation.

2.43 These residual effects are shown for each of the following phases of development:

- Construction; and
- Operation.

References

2.44 This section lists all the relevant references used in preparing the technical assessment.

Glossary of Terms

2.45 A glossary of terms used in each of the technical assessments has been provided at the end of the Environmental Statement.

The Environmental Statement

2.46 The Environmental Statement has been prepared to accompany an application for planning permission to redevelop the former Anzio Camp site near Leek, Staffordshire. The application has been submitted to the planning authority (Staffordshire Moorlands District Council) under the terms of the Town and Country Planning Act 1990. The team of consultants and specialists involved in its preparation is detailed in **Table 1.1** in the previous chapter.

2.47 The provision of environmental information through an Environmental Statement involves the compilation, evaluation, and presentation of all of the potential environmental effects of a proposed development. This, together with post application consultation responses from statutory consultees and the public, assists the decision-maker (Staffordshire Moorlands District Council in this case) in considering and determining an application for that development.

2.48 The 1999 EIA Regulations require that an Environmental Statement should include at least the following information:

- A description of the development comprising information on the site, design and size of the development;

- A description of the measures envisaged in order to avoid, reduce and, if possible, remedy significant adverse effects;
- The data required to identify and assess the main effects which the development is likely to have on the environment;
- An outline of the main alternatives studied by the applicant and an indication of the main reasons for this choice taking into account the environmental effects; and
- A non-technical summary of the above.

2.49 This Environmental Statement has been prepared in accordance with the 1999 EIA Regulations to accompany the planning application submitted by English Courtyard Developments Ltd for the proposed redevelopment of the former Anzio Camp site near Leek, Staffordshire. Under Schedule 2 of the 1999 EIA Regulations, urban development projects on sites in excess of 0.5 hectares in area may constitute EIA development, that is an Environmental Impact Assessment is required on the basis of factors such as its nature, size or location. An assessment of the environmental effects of the proposed development at Anzio Camp has thus been carried out and the findings presented in this Environmental Statement.

2.50 In addition, a separate Planning Statement has been prepared. This Planning Statement does not form part of the Environmental Statement, rather its purpose is to examine the acceptability of the proposed development in planning terms.

2.51 Details of availability of the above documents are given in the preface to this document.

3 Factual Background

Introduction

3.1 The proposals for the former Army residential training base of Anzio Camp consist of the construction of a continuing care retirement community that includes a range of independent living and continuing care facilities, together with a range of social and leisure facilities, staff offices and car parking.

3.2 This chapter provides a description of the main features of the site, together with its planning history.

Site History

3.3 A review of historical Ordnance Survey maps dating from 1890 to present day (**Appendix 11.1**) indicates that until at least 1925-26 the site and its surroundings were used solely for agricultural purposes.

3.4 The first indication of development on the site was reported on the 1954-55 map, although it is known that the site had been developed prior to this time, namely for the construction of a military training base for US forces in 1941/2. The site, together with a number of adjacent parcels of land, was understood to form part of the 'Blackshaw Moor Camps'.

3.5 Much of the 'Blackshaw Moor Camps' site was sold during the 1960s, including the area of the site currently characterised by woodland (known as the 'Backdoor Training Area'), although this was subsequently re-acquired by the MOD in 1999. Re-development of much of the site in accordance with the current layout was first indicated on the 1999-2000 map however it is understood that these works were largely completed from 1980 to 1983.

3.6 Redevelopment of the site comprised the demolition of much of the exiting infrastructure and the construction of a number of single and two storey buildings for offices, training and accommodation purposes, together with a number of subsidiary buildings including a guard house and caretaker's bungalow. In the south west corner of the site a large portal frame building was constructed, and was used initially for vehicle maintenance and later as the camp's sports hall. Other areas of the site were characterised by a parade ground, assault course, small arms firing ranges, secure ammunition store, together with areas of car parking and soft landscaping.

3.7 Military operations ended in December 2004. The site was considered surplus to MOD requirements and was sold in 2006 by Defence Estates to John Monroe Hospital. The site was subsequently sold in July 2007 to a consortium of Courtyard Property Group (parent company of English Courtyard Developments Limited) and Smartwright Developments and, at present, remains vacant.

Planning Designations

3.8 The Development Plan for the application site consists of the Regional Spatial Strategy for the West Midlands (RSS11), the Adopted Staffordshire and Stoke on Trent Structure Plan 1996-2011 and the Staffordshire Moorlands Local Plan 1998. There are no site-specific designations within the adopted Local Plan since this pre-dates the end of military training operations on the site.

Planning History

3.9 In 2006 the site was the subject of a planning application for a 'care village' that was subsequently withdrawn following dialogue with Staffordshire Moorlands District Council and some of the main planning stakeholders. This application exposed and documented a number of key planning and environmental issues.

3.10 Prior to this, there have been no planning applications due to the site's use for military purposes, since the site was Crown property and as such planning applications per se did not apply.

4 Description of Proposed Development

Description

4.1 The proposal is of the generic type known as a Continuing Care Retirement Community (CCRC). Relatively new to the UK, such developments extend the established 'extra care' housing concept to accommodate both 'fit' and 'frail' older people. They provide socially supportive, stimulating living environments, with extensive care and lifestyle services available when required.

4.2 CCRC developments include self-contained dwellings being a mix of houses, cottages and apartments, and have well in excess of 100 units. Dwellings are designed and equipped to facilitate independence and provide a safe environment. Some CCRC developments include a subsidiary residential care home of not less than 40 bed spaces. A package of care and lifestyle services is available in the individual dwellings; and in extensive communal social facilities such as restaurants, lounges, consulting rooms, activity and fitness suites, libraries and computer rooms.

4.3 The proposed Anzio Camp CCRC comprises 250 residential units. All would be planned, designed, constructed, serviced and occupied in a fully integrated manner, with all properties leased and the overall freehold retained by a single owner and management company.

4.4 The 250 units comprise 75 self-contained dwellings houses to the established English Courtyard format; a further 125 apartments and cottages; a 50 bedroom residential care facility; and a single building housing the communal facilities and administrative offices. All the buildings would be sensitively designed relative to the fine setting, and none would exceed 2.5 storeys in height, broadly similar to the existing military buildings.

4.5 Some of the existing buildings would be retained and refurbished to provide facilities for both the new community and the wider existing community. The sports hall and adjacent grass football pitch would remain, as would the nearby stores building as a facilities management building; and the former administration building would be re-used in part as offices for estate management, in part as community rooms for hire.

4.6 The extensive grounds would be landscaped, and the woodland area made more accessible to the residents. An emphasis would be placed on low maintenance requirements and biodiversity. The small armoury building and adjacent wetland area would be retained for the translocation of protected ecological species.

4.7 Details of the proposed site layout, format and development mix are detailed by the accompanying Illustrative Masterplan and the Design & Access Statement (**Figure 4.1** and **Document Ref: AC1/C**).

Alternatives

4.8 The 1999 EIA Regulations require, at Schedule 4, Part 1, Paragraph 2:

> *"An outline of the main alternatives studied by the applicant or appellant and an indication of the main reasons for his choice, taking into account the environmental effects".*

4.9 With respect to the current proposals, alternatives can refer to either alternative locations within the general areas, or to alternative layouts to the proposed development site.

Alternative Locations

4.10 A review of potential alternative sites within and surrounding Leek, Cheadle and Biddulph has been carried out. The search was based upon finding a site with sufficient space for the satisfactory development of a Continuing Care Retirement Community in a sensible location not adjoining industrial or other similar or conflicting uses.

4.11 No other sites were considered suitable other than open sites bordering towns which could be classed as open countryside located within Green Belt areas.

Alternative Designs

4.12 Design is an iterative process and outlined below are some of the stages that the proposed development has been through to achieve its current form.

4.13 The Masterplan is an indicative proposal that has been carefully considered due to its importance for the revitalisation and consolidation of the area. It is important to emphasise the thinking process behind the Masterplan and the continuing development of the proposal to achieve an innovative and well thought out design.

4.14 The Masterplan has been designed in response to the existing constraints and opportunities of the site, with the clear objective to enhance and improve the existing built environment and to incorporate the new development within the surrounding area. The conception and creation of specific key elements within the Masterplan is intended to achieve a genuine sense of

place-making, improve the connectivity through the site and generate character responding to local distinctiveness.

4.15 The Masterplan responds positively to the existing natural features of the site. Also, it creates a new fresh and forward thinking concept to the area in terms of urban design and architectural style, where buildings, residential dwellings, central space and internal squares would be designed to achieve a high quality environment.

4.16 The design process for the development of the Anzio Camp can be divided into four main stages as follows:

1. Understanding of the site and initial conceptual ideas for development;
2. Understanding of the Continuous Care Retirement Concept and the development implications within the site;
3. Local Issues, local consultation and Urban Vision Panel Review;
4. Design and Conception of the Indicative Masterplan.

4.17 The proposed development concepts for the final stage have been developed in response to the existing site constraints, opportunities and understanding of local issues and utilise the design methodology set out in the DETR / CABE report 'By Design' (2000) as a basis for providing key guiding principles in achieving high quality development.

4.18 After a careful analysis of the site, a series of key principles for the development of the conceptual Masterplan have been devised, as follows:

- Creation of a Continuing Care Retirement Community comprising Independent Living Units (75 Units -55 years +), Serviced Apartments and Cottages (125 Units), Care Home (50 Beds) and facilities for the residents and the broader community;
- Creation of a concentrated development through the reutilisation of existing development platforms;
- Integration of the development within the existing established landscape framework;
- Creation of a public open square at the entrance of the development to allow a better integration between proposed development and existing retained buildings;
- Proposed pubic square to act as part of the gateway feature into the Anzio Camp Redevelopment;
- Retention and improvement of existing ecological features including unimproved grasslands and protected species;
- Maximisation of existing views over The Roaches and the Tittesworth Reservoir in the valley towards Leek;
- Reutilisation and improvement of existing road infrastructure;

- Retention and improvement of existing buildings where possible;
- Ensuring local community access to facilities within the site;
- Acknowledgement of existing natural features (stream) and reutilisation of it to create a sustainable drainage system;
- Creation of new serpentine pedestrian link (green boulevard) across the site responding to existing topography that easy pedestrian access throughout the site;
- Creation of a gateway into the site;
- Use of focal buildings to create legibility;
- Creation of strong built frontages throughout the development to create a high sense of enclosure in order to define new street patterns; and
- Establishment of well designed public open spaces within the site.

Urban Design Principles

4.19 The following section sets out the Urban Design Principles applied to the site and explains how these principles meet the criteria for the concept to the existing constraints and opportunities for the site.

Character

4.20 The proposed development establishes its character through the creation of attractive and identifiable spaces around key particular areas such as the public square between the new Care Home Building and the retain buildings. The public square would be at the heart of the development and would be the communal area of interaction between residents and the local community. The combination of traditional and contemporary architecture would define the character of the space.

4.21 A secondary public square defines the character towards the centre of the development. Apartments and terrace units define the edges of the square creating unique sense of enclosure.

Continuity and Enclosure

4.22 Development platforms and existing road infrastructure define where buildings are located within the Anzio Camp proposal. Perimeter blocks are used towards the centre of the development. The use of this pattern responds to existing constraints of the site such as topography and road structure. The character of these blocks are defined by strong and active frontages around the block allowing the creation of internal courtyards with a unique opportunity to create internal communal shared surfaces.

4.23 The location of the buildings (Care Home, Apartments) respond to the topography of the site and generate enclosure around key character areas within the development.

Quality of the Public Realm

4.24 Overlooked spaces and overlooked streets are developed within the site connecting key spaces through the site. Special care has been taken when designing pedestrian and vehicular routes due to established connections already in the site.

Legibility

4.25 Legibility through the site would be achieved with the creation of landmark buildings and key buildings in key specific points of the development. These spaces have been identified as the gateway in to site (Care Home Building and Urban Square), the secondary public square and buildings overlooking into it and buildings facing the Serpentine Boulevard.

4.26 Topography plays an important role within the legibility of the site. Key views across the site and potential desire lines views have been conceived within the development defining position of the blocks (Care Home Building and Serviced Apartments).

Adaptability

4.27 Form and style of the proposed Care Home Building and Serviced Apartments would lend itself to a variety of configurations. The re-use of existing buildings on site for community purposes demonstrates adaptability.

Diversity

4.28 The proposed development would provide a mixture of care facilities that would respond to current Continuing Care Home demands and needs. A variety of uses are encouraged within the proposed Masterplan, comprising a Care Home and Facilities, Serviced Apartments and Cottages and communal facilities for residents and the local community.

Biodiversity

4.29 Existing ecological features on the site, including unimproved grasslands and protected species, have been considered in the design of the proposed development. Where possible, existing ecological features have been retained and / or enhanced.

Sustainability

4.30 The proposed Masterplan has been designed to reuse some of the existing buildings within the site. It also re-directs the existing stream to be incorporated within S.U.D.S. Much of the extensive existing landscaping has been retained and enhanced. Also the provision of allotments are a sustainable source of food that would add to the variety of vegetation on site. The redevelopment of the Anzio Camp site would also generate employment opportunities for the local community. All dwellings within the site would achieve Code 4 of the Code for Sustainable Homes.

Proposed Masterplan

4.31 General features of the Masterplan include:

- Redevelopment of a brownfield site;
- Concentrating development around the existing road infrastructure;
- Provision of attractive and well designed public realm spaces such as public squares and serpentine green boulevard;
- Reutilisation of existing buildings for community purposes,
- Maximisation of views over existing surrounding areas;
- Topography of the site has defined the block structure and key areas within the development;
- Creation of an attractive roofscape and skyline;
- Strategic new planting has been introduced to particular areas of the site;
- Incorporation of existing landscape into development where possible;
- Heights, massing, scale and materials have been taken into account and proposed development would be a contemporary approach;
- Implementation and creation of a key into the site;
- Key entrance to the site to be framed by Care Home Building and Public Square;
- Layout maximises permeability across the site, creation of a serpentine green boulevard that respond to existing topography;
- Creation of balancing ponds;
- Use of focal buildings to create legibility,
- Provision of well designed and heavily landscaped internal courtyards; and
- Creation of a place easy to move around for pedestrians.

4.32 Specific features of the Masterplan include:

- Vehicular access to the site from the A53;

- Main Public Square to define gateway into site and transition between existing buildings and proposed buildings;
- Conversion of existing buildings into community facilities such as sports hall and meeting/activity rooms;
- Incorporation of new parking areas for visitors around the community facilities (short stay and long stay);
- Active frontages onto public realm;
- Retention of trees and landscape areas where possible;
- Creation of pocket squares to provide a more intimate character for the independent living accommodation. Pocket square to work as shared surfaces allowing turning areas for vehicles and parking areas;
- Retention of the as a ecological area;
- Creation of new footpaths to connect to the existing woodlands to the north-west of the site;
- Creation of allotments around the Care Home Building for vegetable and fruit harvesting.

5 Planning Policy Context

Introduction

5.1 This chapter sets out the planning context applicable to the redevelopment of the Anzio Camp site. Specifically, it considers relevant National Government guidance / legislation contained in Planning Policy Guidance / Statements (PPG's / PPS's), Regional Planning Guidance within the Regional Spatial Strategy for the West Midlands (RSS 11), County and Local planning policies contained in the Adopted Staffordshire and Stoke-on-Trent Structure Plan 1996 – 2011 and the Staffordshire Moorlands Local Plan 1998.

5.2 Section 38(6) of the Planning and Compulsory Purchase Act 2004 states that applications for planning permission should be determined in accordance with the Development Plan unless material considerations indicate otherwise. Any issue relating to the use and development of land is capable of being a planning consideration. This includes government statements of policy and supplementary planning documents.

Planning Policy Guidance

5.3 The national planning policy framework for determining this planning application is set out in Planning Policy Guidance and Planning Policy Statements.

Government Guidance

5.4 Planning Policy Guidance notes (PPGs) and their replacement Planning Policy Statements (PPSs) are prepared by the Government to explain statutory provisions and provide guidance to local authorities and others on planning policy and the operation of the planning system. They also explain the relationship between planning policies and other policies, which have an important bearing on issues of development and land use. Local authorities must take their contents into account in preparing their development plans. The guidance may also be relevant to decisions on individual planning applications. The following documents are considered relevant to the proposal:

- PPS1 Delivering Sustainable Development
- PPS3 Housing
- PPS7 Sustainable Development in Rural Areas
- PPS9 Biodiversity and Geological Conservation
- PPG13 Transport
- PPG15 Planning and the Historic Environment

- PPG16 Archaeology and Planning
- PPS23 Planning and Pollution Control
- PPG24 Planning and Noise
- PPS25 Flood Risk

PPS1 – Delivering Sustainable Development (February 2005)

5.5 PPS1 sets out the key principles that should be applied to ensure that development plans and decisions taken on planning applications contribute to the delivery of sustainable development. These include ensuring that a spatial planning approach is at the heart of planning for sustainable development; ensuring that development plans promote outcomes in which environmental, economic, and social objectives are achieved together over time; and the promotion of high quality design in the layout of new developments and individual buildings in terms of function and impact over the lifetime of the development.

5.6 PPS1 promotes development that creates socially inclusive communities, and encourages opportunities to enhance the environment as part of development proposals. Local Planning Authorities are directed to ensure the provision of sufficient good quality new homes in suitable locations, with the aim of meeting the diverse needs of people, ensuring that everyone has the opportunity of a decent home, in locations that reduce the need to travel, and to ensure that infrastructure and services are provided to support new and existing economic development and housing.

5.7 PPS1 explains that (according to Section 38(3) of the Act) the 'development plan' now comprises both the Regional Spatial Strategy and the development plan documents (taken as a whole), which have been adopted or approved in relation to that area. The supplementary document to PPS1 ('The Planning System: General Principles') states at paragraph 10 that:

> *"Local planning authorities must determine planning applications in accordance with the statutory Development Plan, unless material considerations indicate otherwise. If the Development Plan contains material policies or proposals and there are not other material considerations, the application should be determined in accordance with the Development Plan. Where there are other material considerations, the Development Plan should be the starting point and other material considerations should be taken into account in reaching a decision."*

5.8 PPS1 also introduces the 'four aims' to sustainable development. These are: (i) social progress, which recognises the needs of everyone; (ii) effective protection of the environment; (iii) the prudent use of natural resources; and (iv) the maintenance of high and stable levels of economic growth and employment.

5.9 It aims to ensure the provision of sufficient, good quality, new homes in suitable locations, whether through new development or the conversion of existing buildings to ensure that

everyone has the opportunity of a decent home, in locations that reduce the need to travel (Paragraphs 23(vii)). PPS1 goes on to state that the planning process should seek actively to bring vacant and underused previously developed land and buildings back into beneficial use to achieve the targets the Government has set for development on previously developed land.

PPS3 – Housing (November 2006)

5.10 Central Government policy on Housing is set out in PPS3 published in November 2006, and complements other relevant statements of national planning and housing policy, in particular PPS1.

5.11 PPS3 states that the Government's key housing policy goal is to ensure that everyone has the opportunity of living in a decent home, which they can afford, in a community where they want to live, and outlines a number of principle objectives in order to achieve this. These are as follows:

- *"To achieve a wide choice of high quality homes, both affordable and market housing, to address the requirements of the community;*
- *To widen opportunities for home ownership and ensure high quality housing for those who cannot afford market housing, in particular those who are vulnerable or in need;*
- *To improve affordability across the housing market, including by increasing the supply of housing; and*
- *To create sustainable, inclusive, mixed communities in all areas, both urban and rural."*

5.12 To meet these objectives, PPS3 highlights the fundamental requirement for good design in the development of high quality new housing, and states that local planning authorities should encourage sustainable and environmentally friendly new housing developments. Proposed developments should, inter alia, be easily accessible, well connected to public transport and community facilities, facilitate the efficient use of resources and create a distinctive character that relates well to the surroundings.

5.13 Paragraph 36 of PPS3 states that, in support of its objective of creating mixed and sustainable communities, housing should be developed in suitable locations offering a range of community facilities. The priority for development should be previously developed land, particularly vacant and derelict sites and buildings. This is reiterated by the statement that a key objective in the effective use of land is that local planning authorities should make effective use of land by re-using previously developed land, particularly in regard to the national annual target of at least 60% of new housing to be provided on such land. Such re-use should include consideration of innovative housing schemes on previously developed land (Paragraph 44).

5.14 In terms of the efficient use of land for housing, PPS3 acknowledges that, with proper attention paid to the design process, new development opportunities can be taken without adverse impact on the character and appearance of local areas of special character.

5.15 In delivering a flexible supply of land for housing, local planning authorities should identify sufficient specific deliverable sites. To be considered deliverable, such sites should be: (i) available now; (ii) offer a suitable location for development now and would contribute to the creation of sustainable mixed communities; (iii) be achievable, that is there is reasonable prospect that housing would be delivered on the site within five years (Paragraph 54).

5.16 In determining planning applications, local planning authorities should have regard to the following:

- *"Achieving high quality housing;*
- *Ensuring developments achieve a good mix of housing reflecting the accommodation requirements of specific groups, in particular, families and older people;*
- *The suitability of a site for housing, including its environmental sustainability;*
- *Using land effectively and efficiently; and*
- *Ensuring the proposed development is in line with planning for housing objectives, reflecting the need and demand for housing in, and the spatial vision for, the area and does not undermine wider policy objectives e.g. addressing housing market renewal issues."*

PPS7 – Sustainable Development in Rural Areas (August 2004)

5.17 PPS7 sets out the Government's policies on land use in relation to rural areas, including country towns and villages and the undeveloped countryside up to the fringes of larger urban areas.

5.18 PPS7 outlines a number of principle objectives for rural areas, which are as follows:

- *"To raise the quality of life and the environment in rural areas;*
- *To promote more sustainable patterns of development;*
- *Promoting the development of the English regions by improving their economic performance so that all are able to each their full potential; and*
- *To promote sustainable, diverse and adaptable agricultural sectors."*

5.19 PPS7 cross references to PPS1 with respect to sustainable development considerations, emphasising that:

> *"priority should be given to re-use of previously developed (brownfield) sites in preference to the development of greenfield sites".*

5.20 With regards to the location of development, Paragraph 3 specifies that away from larger urban areas, most new development should be focussed in or near to local service centres

where employment housing and other services and facilities are provide in close proximity. A key objective for development in or near to service centres is to ensure facilities are served by public transport, and to provide opportunities for access by walking and cycling.

5.21 Local planning authorities are directed to ensure awareness of the circumstances, needs and priorities of rural communities, to include the commissioning of surveys and assessments of rural economic and social needs, including local housing needs where necessary. PPS7 also states that planning authorities should set out policies in their Local Development Documents policies for limited development in or next to rural settlements that are no designated as rural services centres.

5.22 PPS7 also specifies that planning authorities should support a wide range of economic activity in rural areas and that they should identify in Development Plans suitable sites for future economic development, particularly in those rural areas where there is a need for employment creation and economic regeneration.

5.23 PPS7 seeks to ensure that people living or working in rural areas should have reasonable access to a range of services and facilities and, in this regard, local planning authorities should identify suitable buildings and development sites for community services and facilities to meet the needs of the whole community.

5.24 Local planning authorities should be supportive of schemes incorporating the re-use of existing buildings that are adjacent to or closely related to country towns and villages, for economic or community uses, or to provide housing in accordance with the policies of PPS3. At the same time, PPS7 goes on to state that the replacement of buildings should be favoured where this would result in a more acceptable and sustainable development than might be achieved through conversion.

PPS9 – Biodiversity and Geological Conservation (August 2005)

5.25 PPS9 and its accompanying document ODPM 06/2005 sets out government policy on biodiversity and nature conservation and places a duty on planners to make material consideration to the effect of a development on legally protected species when considering planning applications.

5.26 PPS9 also promotes sustainable development by ensuring that developments take account of the role and value of biodiversity and that it is conserved and enhanced within the development.

5.27 PPS9 outlines a number of principle objectives for rural areas, which are as follows:

- *To promote sustainable development by ensuring that biological and geological diversity are conserved;*
- *To conserve, enhance and restore the diversity of England's wildlife and geology; and*
- *To contribute to rural renewal and urban renaissance by enhancing biodiversity in green spaces and amongst developments".*

5.28 PPS9 outlines a number of key principles that should be adhered to by regional planning bodies and local planning authorities to ensure that the potential impacts of planning decisions on biodiversity and geological conservation are fully considered. These include:

- *Development plan policies and planning decisions should be based upon up-to-date information about the environmental characteristics of their areas;*
- *Plan policies and planning decisions should aim to maintain, and enhance, restore or add to biodiversity and geological conservation interests;*
- *Plan policies on the form and location of development should take a strategic approach to the conservation, enhancement and restoration of biodiversity and geology, and recognise the contributions that sites, areas and features, both individually and in combination, make to conserving these resources;*
- *Plan policies should promote opportunities for the incorporation of beneficial biodiversity and geological features within the design of development;*
- *Development proposals where the principal objective is to conserve or enhance biodiversity and geological conservation interests should be permitted; and*
- *The aim of planning decisions should be to prevent harm to biodiversity and geological conservation interests.*

PPG13 – Transport (March 2001)

5.29 Government guidance within PPG13 explains that, in considering proposed new developments, account should be taken of the need for accessibility by a choice of means of transport and the impact on car use, traffic and congestion. Developments should be accessible by a choice of means of transport, including public transport, walking, cycling, and the car. Assessments should be made in respect of the distance of a proposed development from existing or proposed public transport facilities and the frequency and capacity of services, and whether access is easy, safe and convenient for pedestrians, cyclists and disabled people. Assessments should also take account of the impact on the overall distance travelled by car and the effect of local levels of traffic and congestion.

5.30 PPG13 seeks an integrated approach to planning and transport, and establishes three principle objectives in order to achieve this. These are as follows:

- *"Promote more sustainable transport choices for both people and for moving freight;*
- *Promote accessibility to jobs, shopping, leisure facilities and services by public transport, walking and cycling; and*
- *Reduce the need to travel, especially by car."*

5.31 PPG13 seeks to influence the location of new development through encouraging all land uses to locate where they are accessible by public transport, walking and cycling. PPG13 also seeks to manage traffic demands.

PPG15 – Planning and the Historic Environment (September 1994)

5.32 Central Government policy on Planning and the Historic Environment is set out in PPG15 published in September 1994. The guidance provides advice to Local Authorities and others on how the primary legislation contained in the Planning (Listed Buildings and Conservation Areas) Act 1990 should be interpreted, and how development affecting the historic environment should be handled. PPG15 contains specific advice on how developments within Conservation Areas and developments affecting the setting of Conservation Areas should be approached.

5.33 Key principles contained within PPG15 include a recognition of the value of the historic environment for its own sake and for its contribution to quality of life. Additionally, PPG15 states that the objective of the planning process should be to reconcile the need for economic growth with the need to protect the natural and historic environment. In Paragraph 1.4, it states that economic prosperity can secure the vitality of Conservation Areas. In highlighting the need to protect the historic environment PPG15 also recognises that the historic environment is all-pervasive and it cannot, in practice, remain unchanged (Paragraph 1.3)

5.34 PPG15 gives specific advice on the design of new buildings intended to stand alongside historic buildings. Paragraph 2.14 states that the old and new can be woven into the fabric of the living and working community provided that new buildings are carefully designed to respect the setting of historic buildings and follow fundamental architectural principles of scale, height, massing and alignment whilst using appropriate materials.

5.35 Paragraph 2.16 highlights the special responsibilities of Local Authorities when considering proposals that would affect the setting of a listed building. Paragraph 2.17 points out that the setting of individual listed buildings very often depends on the harmony between produced by a particular grouping of buildings and the quality of the spaces created around them. It states that such areas require careful appraisal when proposals for development are under consideration. Crucially PPG15 states that where a listed building forms an important visual element in a street, it would probably be right to regard any development in the street as being within the setting of the building.

5.36 Paragraph 2.26 states that Local Authorities should encourage development that is consistent with maintaining the overall character of historic environments. This goes further within Paragraph 4.2 which states that our appreciation of a historic area depends on much more

than the quality of individual buildings, rather it encompasses the layout of properties and boundaries and thoroughfares; on a particular mix of uses; on characteristic materials; on appropriate scaling and detailing of contemporary buildings; on the quality of advertisements; shop fronts, street furniture and hard and soft surfaces; on vistas along streets and between buildings; and on the extent to which traffic intrudes and limits pedestrian use of spaces between buildings.

PPG16 – Archaeology and Planning (November 1990)

5.37 Planning Policy Guidance 16 (PPG16) published in 1990 sets out the Secretary of State's policy on archaeological remains on land, and how they should be preserved or recorded both in an urban setting and in the countryside.

5.38 PPG16 describes archaeological remains as being:

> *"…irreplaceable. They are evidence - for prehistoric periods, the only evidence - of the past development of our civilisation."*

5.39 PPG16 continues to describe archaeology as a fragile and finite resource that is vulnerable to damage or destruction. Additionally it is said that archaeological remains contain irreplaceable information about the past, that form part of a national identity. To ensure archaeology survives in good condition it is advised that appropriate management is required to ensure remains are not needlessly or thoughtlessly destroyed.

5.40 When considering submitting a planning application for a site, PPG16 recommends that developers and Local Authorities should take archaeological considerations into account from the beginning of the development control process, and advises that:

> *"the needs of archaeology and development can be reconciled, and potential conflict very much reduced, if developers discuss their preliminary plans for development with the planning authority at an early stage."*

5.41 Consultation between developers and Local Authorities is said to allow early identification of archaeological sensitive sites. PPG16 says this early identification may result in the developer commissioning an archaeological assessment which normally involves desk-based evaluation of existing information gathered from various sources.

5.42 PPG16 recognises that with the demands of modern society it is not always feasible to save all archaeological remains and instead poses the question of where and how to strike the right balance.

5.43 If nationally important remains are at stake PPG16 recommends physical preservation but states that with remains of lower importance things would not be as clear cut. It requires Planning Authorities to weigh up the relative importance of the archaeology against other factors including the need for the development.

5.44 PPG16 states:

> *"Positive planning and management can help to bring about sensible solutions to the treatment of sites with archaeological remains…"*

5.45 Where early discussions and research indicate that remains may exist on the development site PPG16 advises that the Planning Authority can reasonably request the developer to conduct an archaeological field evaluation before considering the planning application. PPG16 indicates that this request for ground survey work and small scale trenching is normally rapid and inexpensive but needs to be conducted by a professional. The results of such surveys are expected to be provided for the Local Planning Authorities to view in the planning application submission.

PPS23 – Planning and Pollution Control (November 2004)

5.46 Central Government policy on Planning and Pollution Control is set out in PPS23, and states that the quality of land, air or water, and potential impacts arising from development that have the potential to impact on health are material planning considerations, and that the planning system plays a key role in ensuring that other uses and developments are not, as far as possible, affected by sources of pollution.

5.47 PPS23 acknowledges that whilst the redevelopment of previously developed sites is central to achieving the Government's objective of ensuring sustainable development, the presence of contamination can affect or restrict the beneficial use of land. Development is regarded as an opportunity to deal with it.

5.48 In determining planning applications, local planning authority should consider the potential for contamination to be present, and satisfy itself that this potential, and any risks arising from it, are properly assessed and that the development incorporates any necessary remediation and risk management measures. Planning authorities should pay particular attention to development proposals for sites where there is a reason to suspect contamination and to require, as a minimum, a desk study of available information assessing the previous use of the site and their potential for contamination.

5.49 PPS23 states that:

> *"The remediation of land affected by contamination through the granting of planning permission (with the attachment of the necessary conditions) should secure the removal of unacceptable risk and make the site suitable for its new use. As a minimum, after carrying out the development and commencement of its use, the land should not be capable of being determined as contaminated land under Part IIA of the EPA 1990".*

5.50 The overall aim of planning and pollution control policy is to ensure the sustainable and beneficial use of land, in particular by encouraging the re-use of previously developed land in preference to greenfield sites. Opportunities should be taken wherever possible to use the development process to assist and encourage the remediation of land already affected by contamination.

PPS24 – Planning and Noise (October 1994)

5.51 With regard to noise issues within the planning system the current government guidance is contained within the Department of the Environment document Planning Policy Guidance 24 (PPG24): 1994, Planning and Noise. The document sets out the considerations that should be taken into account when determining planning applications for both noise sensitive developments and those, which would ultimately generate noise.

5.52 The document PPG24 sets out to:

- outline the considerations to be taken into account in determining planning applications both for noise-sensitive developments and for those activities which would generate noise;
- introduce the concept of noise exposure categories for residential development, encourages their use and recommends appropriate levels for exposure to different sources of noise; and
- advise on the use of conditions to minimise the impact of noise.

5.53 The document PPG24 states the following with respect to assessing the impact of noise on proposed residential developments;

> '*When assessing a proposal for residential development near a source of noise, local planning authorities should determine into which of the four noise exposure categories (NECs) the proposed site falls, taking into account both the day and night-time noise levels.'*

5.54 With regard to the noise generated during the relatively short term construction phase of the development PPG24 states within Paragraph 21 of Annex 3 that:

"Detailed guidance on assessing noise from construction sites can be found in BS 5228, parts 1-4. In particular, Part 1: 1984, "Code of practice for basic information and procedures for noise control" will be useful because as well as giving general advice it describes a method of predicting noise from construction sites".

PPS25 – Flood Risk (December 2006)

5.55 According to PPS25, all forms of flooding and their impact on the natural and built environment are material planning considerations. It also states that positive planning has an important role in helping to deliver sustainable development and applying Government policy on flood risk management. Positive planning avoids, reduces and manages flood risk by taking full account in decisions of plans and applications of:

- *"Present and future flood risk, involving both the statistical probability of a flood occurring and the scale of its potential consequences, whether inland or on the coast: and,*
- *The wider implications for flood risk of development located outside flood risk areas".*

5.56 PS25 also states that:

"The aims of planning policy on development and flood risk are to ensure that flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas at highest risk".

5.57 Local Planning Authorities should in determining planning applications:

- *"have regard to the policies in this PPS and, as relevant, in the RSS for their region, as material considerations which may supersede the policies in their existing development plan, when considering planning applications for developments in flood risk areas before that plan can be reviewed to reflect this PPS;*
- *ensure that planning applications are supported by site-specific flood risk assessments (FRAs) as appropriate;*
- *apply the sequential approach at a site level to minimise risk by directing the most vulnerable development to areas of lowest flood risk, matching vulnerability of land use to flood risk;*
- *give priority to the use of SUDS; and*
- *ensure that all new development in flood risk areas is appropriately flood resilient and resistant, including safe access."*

5.58 PPS25 requires that flood risk assessments be carried out to an appropriate degree at all levels of the planning process to assess the risk of all formal loading to and from the development taking climate change into account.

5.59 PPS25 also atones landowners with the primary responsibility for safeguarding their land and other properties against natural hazards, such as flooding. Landowners are also required to manage the drainage of their land in such a way as to prevent, as it is reasonably practicable, adverse impacts on neighbouring land.

Development Plan

5.60 The Town and Country Planning (Initial Regional Spatial Strategy) (England) Regulations 2004 came into force on 28 September 2004 and in effect converted Regional Planning Guidance to Regional Spatial Strategies (RSS). Section 38(3) of the Planning and Compulsory Purchase Act 2004 stipulates that the RSS now comprises part of the development plan for any area. As such, its policies must be afforded the additional weight this designation implies.

5.61 Draft RPG11 for the West Midlands was prepared in November 2001, and was subsequently approved in June 2004, becoming converted to RSS11 upon enactment of the aforementioned Regulations. The Adopted Staffordshire and Stoke-on-Trent Structure Plan 1996 – 2011 and the Staffordshire Moorlands Local Plan 1998 form the other documents in the development plan.

RSS11 for the West Midlands, January 2008

5.62 **Policy UR2** directs that local planning authorities and other agencies should improve prospects in regeneration areas by bringing forward local regeneration policies and programmes. Leek is identified within the Policy as one of the 'local regeneration areas'.

5.63 **Policy UR4** requires service providers to work with local authorities and service providers and community organisations, in particular to:

- ensure new social infrastructure is developed in or on the edge of an appropriate level of an existing centre;
- provide a range of educational facilities and services;
- facilitate the modernisation of local health services, informed by partnership working with the Primary Care Trust;
- provide support for a range of business development and education and training services, targeted at linking local people and businesses to economic opportunity; and
- support the creation of new quality residential environments in areas of opportunity.

5.64 **Policy RR1** promotes the regeneration of rural areas through the improvement of choice in housing; the diversification of the rural economy and better transport links within rural areas and between rural and urban areas. Policy priorities across rural areas are acknowledged to

vary according to factors including need for new employment, additional housing requirements and access to services and facilities.

5.65 **Policy RR3** relates to market towns, and promotes their role in helping to regenerate rural areas. The policy notes the close interdependent relationship with the population and economy of a rural hinterland.

5.66 **Policy RR4** seeks to improve the range and quality of services available to rural communities. The need to facilitate and provide for appropriate new and innovative forms of service delivery is emphasised.

5.67 **Policies CF2 and CF3** seek, in rural areas, to generally restrict new housing to meeting local housing needs and/or to support local services, with priority to the re-use of previously developed land and buildings within existing villages.

5.68 **Policy CF4** is explicit in stating that *"local planning authorities should optimise opportunities for recycling land and buildings for new housing development"*. In implementing this particular policy, CF4 specifies that regard is to be had to policies in the Quality of the Environment Chapter of the RSS, in particular policy QE2.

5.69 **Policy CF5** requires local planning authorities to work with developers and social housing providers to create more balanced and mixed communities through the provision of a range of housing types and tenures within new housing developments.

5.70 **Policy PA14** supports the sustainable diversification and development of the rural economy, in particular where this meets local employment needs and maintains viable and sustainable local communities, conserves and enhances environmental assets and respects local character. Whilst the focus for new economic development is intended to be upon market towns and other large settlements (accessible to their rural hinterlands), priority should be given to economic activity with strong links to the rural economy and the promotion of sustainable new economic activity.

5.71 Chapter 8 relates to quality of the environment. **Policy QE1** indicates that local planning authorities should support regeneration in a number of ways, including restoring degraded areas. **Policy QE2** promotes the restoration and remediation of derelict and contaminated sites. **Policy QE3** promotes the creation of high quality built environments for all. **Policy QE6** relates to the conservation, enhancement and restoration of the Region's landscape, and states that local planning authorities should identify the opportunities for the restoration of degraded landscapes. **Policy QE7** relates to the protection, management and enhancement of the Region's biodiversity and nature conservation resources.

RSS11 – Partial Review

5.72 The West Midlands RSS is currently subject to a Partial Review which is being carried out over three phases. Phase 2 of the Partial Review is well advanced, with the Preferred Option being published for consultation in December 2007. However, progress towards submission of this Phase of the Partial Review has been somewhat delayed by the intervention of the Government which has directed that further research is required into the provision of housing numbers to 2026 in order to meet forecast household growth projections.

5.73 The emerging polices of the Phase 2 Partial Review have been considered by the applicant, in particular in the context of changes from those relevant polices of the adopted RSS 11 identified above. It is considered that in the main, polices of the emerging RSS would not materially alter the determination of Regional Planning Policy impact upon the application proposals. That said, at Paragraph 6.56 of the 'Delivering Mixed Communities' section states:

> *"Demographic trends will result in a considerable increase in the proportion of older people by 2026. Along with changing lifestyle and housing aspirations, an ageing population also gives rise to specific housing requirements, including flexible accommodation that meets lifestyle changes such as lifetime homes and specialist provision such as 'extra care' housing".*

5.74 Emerging **Policy CF8** directs that local authorities, developers and social housing providers should co-operate to create more balanced and mixed communities through a range of housing types and tenures within new housing developments and sites.

Staffordshire and Stoke-on-Trent Structure Plan 1996 – 2011

5.75 The Adopted Staffordshire and Stoke-on-Trent Structure Plan forms part of the development plan, and sets out the broad planning framework for Staffordshire for the period 1996 to 2011. There are a number of 'strategic' policies in the Staffordshire Structure Plan that are specific to Staffordshire Moorlands, which have been 'saved' beyond 2007, and which, therefore, remain valid.

5.76 **Policy D1** is a general policy, and dictates that sustainable forms of new development should be sought which, inter alia, consider all possibilities for reuse of land and buildings, including the reclamation of contaminated and derelict land.

5.77 **Policy D2** states that developments should be sympathetic to their surroundings.

5.78 **Policy D3** states that local authorities should bring forward schemes that reclaim and reuse derelict, contaminated, degraded or underused land for a number of end uses including housing.

5.79 **Policy D8** requires that, where appropriate, development schemes should be accompanied by the provision of necessary on- and off-site infrastructure, community services and/or mitigating measures, including the replacement of significant natural habitats or introduction of other appropriate mitigation measures.

5.80 **Policy NC2** states that development should be informed by and be sympathetic to landscape character and quality and should contribute, as appropriate, to the regeneration, restoration, enhancement, maintenance or active conservation of the landscape likely to be affected.

5.81 **Policy NC6** requires planning authorities to ensure, wherever possible, that damage to important semi-natural habitats or other features or sites of significant nature conservation or geological value is avoided and, where damage is unavoidable, measures to mitigate or compensate through establishment of replacement habitat or features should be taken, wherever possible.

Staffordshire Moorlands Local Plan 1998

5.82 Development Plan Policy for Staffordshire Moorlands District is currently guided by the Staffordshire Moorlands District Plan as adopted 1998. This Local Plan is now dated, and although a review was commenced in 2001 in order to extend the Plan to 2011, it was suspended in 2003 in the light of the introduction of the new LDF.

5.83 All polices of the Local Plan had 'saved' status until 27 September 2007. On 28 March 2007, the District Council applied for a direction under paragraph 1(3) of Schedule 8 to the Planning & Compulsory Purchase Act 2004 to extend the timescale of a number of 'saved' polices. Having considered the list of saved polices within the Secretary of States direction letter of 7 September 2007, it is considered that there are only a small number of polices which directly impact upon the determination of this application for a Continuing Care Retirement Community (CCRC) at Anzio Camp.

5.84 Indeed, it is noted that **Policy N28** 'Contaminated/Derelict Land' of the Local Plan, which has not had its 'saved' status extended, stated that the District Council would:

> *"encourage and where possible assist proposals which will result in the reclamation and appropriate redevelopment of contaminated and / or derelict land."*

The 'disused military camp' at Blackshaw Moor (Anzio Camp) was identified in the Local Plan as being a derelict site and a priority for reclamation.

5.85 It is acknowledged that **Policy N28** no longer has any status within the Development Plan, though needless to say it identifies the District Council's clear intent for the redevelopment of this priority regeneration site.

5.86 Key 'saved' polices which the District Council would no doubt consider for the CCRC proposal at Anzio Camp include:

- **Policy H17 Nursing & Care Homes** – though it is noted that this policy primarily addresses extensions/additions to existing residential care or nursing homes or in the countryside;
- **Policy E6 Employment in the Countryside** – supports the redevelopment of existing sites and the conversion of buildings for employment use;
- **Policy N8 Special Landscape Area** – which seeks to restrict development in the Special Landscape Area which would detract from the high quality of the landscape because of siting, scale, design materials and associated traffic generation issues;
- **Policy N9 Special Landscape Area** – specifies that within the Special Landscape Area high standards of design would be required for new development;
- **Policy N11 Peak National Park** – where development is conspicuous from the Peak National Park the Council will have regard to the need to ensure that the visual amenities of the land are not adversely affected to the detriment of the National Park;
- **Policy B21 Conversion of Rural Buildings** – permits the conversion of rural buildings to other uses subject to satisfying criteria relating in particular to matters of use, design and transport; and
- **Policy A1 Developer Contributions** – seeks contributions from developers towards the provision of community facilities and environmental and infrastructure improvements where these are directly related to the development.

5.87 In consideration of the above, the Use Class C2 (Residential Institutions) nature of the application, and the fact that Local Plan **Policy N28**, which was specific to the Anzio camp site, has not had it's 'saved' status extended, it is reasonably suggested that the application does not neatly align with the vast majority of those Local Plan polices which have had their 'saved 'status extended.

Staffordshire Moorlands Local Development Framework

5.88 The planning application would need to be determined by the District Council in accordance with adopted Development Plan policy and material considerations. No doubt a key

consideration would be the emerging Staffordshire Moorlands Local Development Framework (LDF), and in particular the emerging Core Strategy. Unfortunately, progress on the production of Development Plan Documents of the LDF has slipped considerably, including progression towards an adopted Core Strategy.

5.89 Consultation on the Issues and Options of the emerging Core Strategy took place from 10 September to 22 October 2007. A Draft Preferred Option Report has subsequently been prepared, summarising the responses to the Issues and Options consultation and outlining Officer proposals for the preferred option. The Draft Preferred Option Report was placed before Members of the Local Development Framework Working party on 10 January 2008, who determined that further work was required prior to formal public consultation. It is the understanding of the applicant that the further areas of work include the need to introduce more local distinction, and to identify of broad areas for future development.

5.90 The above said, it is notable that the **Policy SS6d** 'Major Developed Areas in the Countryside' of the Draft Preferred Options stated that *"major regeneration opportunities will be identified for the following major developed areas in the countryside through the Site Allocations DPD at.....Anzio Camp, Blackshaw Moor".* The 'reasons and justification' for this policy specifies that Anzio Camp is a brownfield site where it is necessary to consider appropriate alternative uses. The text goes on to state that *"complete or partial redevelopment……may offer the opportunity for environmental improvement without adding to their impact as well as helping to meet the needs of the rural areas and improve the rural economy".*

Other Relevant Documents

5.91 The UK Biodiversity Action Plan (UKBAP) organised to fulfil the Convention on Biological Diversity in 1992, to which the UK is a signatory, has produced a national priority list of habitats and species for which Habitat and Species Action Plans have been prepared. Regional and local BAPs, in this case the Staffordshire Biodiversity Action Plan have also been organised to develop plans for species of nature conservation importance at regional and local levels.

Policy Assessment

5.92 The proposed development would make use of brownfield land close to the conurbation of Leek. The site is readily accessible by a bus service which provides a direct connection between the site and the town centres of Leek and Buxton. This enables connections with the local bus services and rail services in these centres. Therefore the proposed development can be said to be in accordance with both PPS1 and PPG13.

5.93 PPS3 promotes the development of housing in suitable locations which offer a range of community facilities, good access to jobs, key services and infrastructure. This opportunity is

clearly presented by the proposals for a CCRC at Anzio Camp. The application proposals include provision of on-site facilities including Sports Hall & outdoor playing field, a crèche/nursery and meeting rooms which would be made available for use by the local community, as well as the proximity of a wide range of services and facilities within Leek, which would be accessible via public transport routes, the provision of a dedicated 'hopper' bus service operational from the site, and the potential for a car share club/lift scheme.

5.94 PPS7 cross references to PPS1 with respect to sustainable development considerations, emphasising that the priority that should be given to re-use of previously developed (brownfield) sites in preference to the development of greenfield sites, and that most new development should be focussed in or near to local service centres where employment housing and other services and facilities are provide in close proximity. The proposed development is thus considered to accord with PPS7.

5.95 An archaeology and cultural heritage assessment has been carried out which concluded that the proposed development area does not lie within or adjacent to a Conservation Area and does not contain any Listed Buildings or Scheduled Ancient Monuments, nor would the development have any effect on any features of such designation. No registered parks and gardens, historic battlefields or Conservation Areas, or their settings, be affected by the proposed development. Similarly, no statutorily protected or registered feature or setting would be affected by the proposed development. Such an assessment indicates that the proposed development is in accordance with both PPG15 and PPG16.

5.96 The proposed redevelopment would be accompanied by an appropriate remediation strategy to satisfactorily address all potential risk to human health or controlled waters, thus according with PPS23.

5.97 The proposed development exceeds a total area of 1 hectare and, consequently, a Surface Water Flood Risk Assessment (**Document Ref: AC3/J**) has been prepared. This demonstrates that the proposed development site is not at risk of flooding from any main river and there is no history of flooding on the site. It also recommends the implementation of Sustainable Urban Drainage Systems (SUDS) on the site to ensure that the impact of the development upon flood risk can be mitigated. This illustrates that flood risk has been taken into consideration prior to submission ensuring that the proposed development is in accordance with PPS25.

5.98 The principles that ensure that the proposed development is in accordance with government planning guidance contained within PPGs and PPSs also ensures that it is in accordance with the development plan, because the principles contained within government guidance is carried through to a local level. For example, **Policy D3** of the Staffordshire and Stoke-on-Trent

Structure Plan promotes the restoration and remediation of derelict and contaminated land, in accordance with **Policy QE2** of the RSS for the West Midlands.

6 Highways & Transportation

Introduction

6.1 A Transport Assessment has been undertaken to consider the accessibility of the site by all modes of transport and the residual highway impacts associated with the development proposals. This is reported in a separate document (**Document Ref: AC2/E**) and summarised in this section.

6.2 This report presents a summary of the existing transport characteristics of the site and a review of the traffic and transport implications of the site redevelopment proposals. Highway improvement proposals have been developed where appropriate.

6.3 The assessments include analysis of the accessibility of the site for pedestrians, cyclists and public transport users. Further analysis is undertaken to establish the residual change in vehicular traffic resulting from the redevelopment and the effects of this on the operation of the highway network in the vicinity of the site.

Assessment Methodology

Definition of Study Area

6.4 In terms of traffic impact, the site access and the surrounding stretch of the A53 Buxton Road has been analysed. In relation to sustainable access (e.g. local bus services), a much larger area has been looked at. This includes the local village of Blackshaw Moor to the north of the site, and the key local centres such as Leek and Buxton that are relatively close to the site.

Baseline Methodology

6.5 The baseline data that has been gathered to assess the traffic impact include traffic flows along the A53 Buxton Road was obtained from an Automatic Traffic Count (ATC) that RPS commissioned; and the ATC also recorded the speeds that vehicles were travelling along the road.

6.6 To gain an idea of the sustainability of the site, information has been gathered on the public transport options in the local area; the pedestrian infrastructure has been analysed, and facilities for cyclists in the vicinity of the site have been looked at.

Impact Methodology

6.7 The number of trips that the site is expected to generate has been based on observations at a similar development. The Reeve Court Retirement Village in St. Helens is of a similar size and has many of the facilities that would be on offer at the proposed site. Another key similarity between the two sites is that they are opening their facilities to the local residents. It was important to find a development that has this feature as it would produce more vehicle trips than at those which only offers the facilities to the residents of the site.

6.8 The use of other modes of travel other than the car for journeys to/ from the site would be promoted by means of a Travel Plan. This outlines the opportunities for using sustainable methods to travel to the site, and includes initiatives to make sustainable travel more available and attractive.

6.9 The site access would be improved to the current design standard appropriate for the anticipated volumes of traffic at the site. This includes a ghost island to create a separate turning lane for right-turners into the site, and putting a similar one in for the right turners into the caravan park opposite. It was necessary to do this as the scale of the improvement for the proposed site made the access to the caravan park dangerous. Therefore the improvement incorporates a change in their access arrangement to ensure safety for vehicles entering their site also.

Policy Context

6.10 The main source of national policy on land use and transport planning for development can be found within the DfT's Planning Policy Guidance Note PPG13 'Transport'. The Staffordshire Local Transport Plan reinforces the policies set out in PPG13 and provides further guidance as to the direction of local transport and land use planning policy.

PPG13 'Transport'

6.11 PPG13 'Transport', published in March 2001, provides advice on how local authorities should integrate transport and land use planning for all types of development. The key objectives of the guidance are to integrate planning and transport at the national, regional, strategic and local level to:

- "*Promote more sustainable transport choices;*
- *Promote accessibility to jobs, shopping, leisure facilities and services by public transport, walking and cycling; and*

- *Reduce the need to travel, especially by the private car.*"

6.12 A key planning objective set out in PPG13 is to ensure that jobs, shopping, leisure and tourism facilities and services are accessible by public transport, walking and cycling. This is important for all, but especially for those who do not have access to a car, and to promote social inclusion.

6.13 One of the key features of the proposed development would be that many key facilities would be provided on-site. This would in itself reduce dramatically the requirement for car travel.

Staffordshire Local Transport Plan

6.14 The Staffordshire Local Transport Plan (LTP) represents the adopted transport programme for the period 2006 to 2011. Its overall aim is to provide increased accessibility, greater safety and a more integrated system of travel.

6.15 The Transport Plan has a number of overarching aims and objectives, with the relevant key objectives of the Plan as follows:

- Influencing 'hearts and minds' by encouraging individuals to use alternatives to the car, particularly for shorter journeys.
- To improve accessibility especially to health facilities and key services.
- To minimise the impact of traffic on historic settlements and sensitive areas.

6.16 With respect to pedestrians and cyclists, the LTP seeks to increase the number of journeys made by these modes through the improvement and development of walking and cycling facilities across the county.

6.17 With respect to the integration of public transport, the LTP specifically seeks the improvement of public transport, with an emphasis on wider availability and provision of information, ease of use of route planning, improved vehicle standards and safety.

Green Travel Plan

6.18 A Green Travel Plan (**Document Ref: AC2/F**) would be implemented to reduce the need for car travel associated with the development. The Travel Plan would feature measures to minimise car use by staff and residents, and to encourage the use of sustainable travel modes by visitors.

Existing (Baseline) Conditions

6.19 The development site is located in Blackshaw Moor to the north of Leek along the A53 Leek to Buxton main road. The site is currently directly accessed from the A53 approximately three kilometres from Leek. The location of the site is shown in **Figure 1.1**.

6.20 The site is located just outside the boundary of the Peak District National Park; bounded to the west by the A53 and by an unclassified public highway to the north east.

6.21 The site was formerly used as an Army residential training base that held up to 600 people until 2005. The proposed re-use of the land would have much less impact on the surrounding community and land, and the communal facilities that are proposed would be of benefit to the local community also.

6.22 The A53 is a principal route which connects Buxton to the north east of the site with destinations such as Leek, Stoke-on-Trent to the South West and continuing as far as Shrewsbury. In the vicinity of the site the A53 is a single carriageway with one lane in each direction.

6.23 The peak hourly traffic flows on the A53 occur in the morning between 0800 – 0900, and the evening between 1600 – 1700. The peak hour for development generated traffic is forecast to be between 0900 – 1000. The observed traffic flows on the A53 in the AM, PM and 'Development' peak hour flows are shown in **Figures 6.1, 6.2** and **6.3** respectively. The observed speeds on the A53 are shown in **Appendix 6.1**.

Local Roads and Site Access

6.24 The access road into the site connects directly onto the A53 via a priority junction arrangement.

6.25 In the vicinity of the site there are a few local unclassified roads which branch off from the A53 in both western and eastern directions, providing linkages to destinations such as Meerbrook and Heaton to the west and Thorncliff and Onecote to the east.

Accessibility for Pedestrians and Cyclists

6.26 There is a footway that runs along the stretch of the A53 in the vicinity of the site. To the south of the site access (coming from the direction of Leek) it is situated on the opposite side of the carriageway to the site. However just to the north of the site access, the footway terminates

and continues on the opposite side of the carriageway. The footways connect the site with the bus stops on the A53.

6.27 The nature of the development and the communal facilities and amenities that are to be provided on site, would greatly minimise the need to travel beyond the extent of the development. The site would contain a comprehensive network of safe pedestrian facilities.

6.28 Planning Policy Guidance 13: Transport states that:

> *"Walking is the most important mode of travel at the local level and offers the greatest potential to replace short car trips, particularly under 2 kilometres. Walking also forms an often forgotten part of all longer journeys by public transport and car."*

6.29 A 2km walk distance is shown on **Figure 6.4**. This includes small local settlements such as Upper Hulme to the north, Thorncliff to the east and the northern most part of Ball Haye Green.

6.30 As the development would cater for the elderly/retired community we would anticipate that walking to the site would not be the preferred option for all trips to and from the site, in particular for those people with mobility impairments. As a result it is proposed that the developer provide an alternative for those people unable to access the site by any other mode, for example a shuttle bus system operating between the site and local areas such as Leek and the village of Blackshaw Moor.

6.31 Planning Policy Guidance 13: Transport identifies the need to encourage cycling and states:

> *"Cycling also has the potential to substitute for short car trips, particularly those under 5km, and to form part of a longer journey by public transport… Local authorities are required to produce a local cycling strategy as part of their Local Transport Plan".*

6.32 A 5km cycle distance from the site is shown in **Figure 6.5**. The catchment area covers the settlement of Leek to the south of the site, Meerbrook to the west and stretches within the boundary of the Peak District National Park to the north and east.

Accessibility by Public Transport

6.33 The principal access route for journeys by public transport is along the A53 to the west of the site. The bus services available at these locations are detailed in **Table 6.1**.

Table 6.1: Bus Services and Frequency

Service No. 118 Buxton – Leek - Hanley	**Frequency**		
	Mon-Fri Every 3 hours from 0900-1800	Sat Every 3 hours from 0900 -1800	Sun Every 3 hours from 1100-1700

6.34 The bus service provided allows a direct connection between the site and the town centres of Leek and Buxton. This enables connections with the local bus services and rail services in these centres.

Identification and Assessment of Effects

6.35 As mentioned previously, the trip generation for the site is based on a similar site – Reeve Court. The observed weekday trip rates for this development are detailed below in **Table 6.2**. Trip rates are expressed as a number of vehicles generated per development unit. In this case the development unit is one residential house, flat or bedroom.

Table 6.2: Reeve Court Daily Trip Generation (pcu per residential unit)

Time Beginning Period	**Hourly Trip Rate (PCU per unit)**		
	Arrivals	Departures	Two-Way
08:00:00	0.097	0.063	0.16
09:00:00	0.257	0.165	0.422
10:00:00	0.175	0.141	0.316
11:00:00	0.141	0.184	0.325
12:00:00	0.17	0.131	0.301
13:00:00	0.15	0.233	0.383
14:00:00	0.165	0.189	0.354
15:00:00	0.126	0.155	0.281
16:00:00	0.102	0.121	0.223
17:00:00	0.097	0.112	0.209

6.36 On the basis of the above, the peak hour trip generation at the proposed development would be as shown in **Table 6.3**.

Table 6.3: Proposed Development Daily Trip Generation (pcu's)

Time Period Beginning	Arrivals	Departures	Two-Way
08:00:00	24	16	40
09:00:00	64	41	106
10:00:00	44	35	79
11:00:00	35	46	81
12:00:00	43	33	75
13:00:00	38	58	96
14:00:00	41	47	89
15:00:00	32	39	70
16:00:00	26	30	56
17:00:00	24	28	52

6.37 Traffic flows for the year of opening of the development (2009) and five years after (2014) have been forecast using the Department for Transport's National Road Traffic Forecasts (NRTF) central growth factors, adjusted to a local forecast using the Trip End Model Presentation pROgram (TEMPRO). This program has been designed for fast and efficient access to the national Trip End Model projections of growth in travel demand, and the underlying car ownership and planning data projections.

6.38 The resulting traffic flows at the site access, including development traffic, in 2009 for the AM, PM and 'Development' peak hours are shown in **Figures 6.6, 6.7,** and **6.8** respectively. The resulting traffic flows at the site access, including development traffic, in 2014 for the AM, PM and 'Development' peak hours are shown in **Figures 6.9, 6.10,** and **6.11** respectively.

Mitigation

6.39 As mentioned previously in this chapter, it is proposed that an improvement be made to the existing site access. This improvement would involve ghost islands being created for the right turners in the proposed site and another one for those entering the caravan park across the road. The design is appropriate for the measured traffic speeds on the A53.

6.40 The proposed access junction has been assessed using the UK Department for Transport's, PICADY (Priority Intersection And Delay) program to ensure it would have sufficient capacity to accommodate the forecast development traffic. The key junction performance indicators presented in subsequent sections are 'Ratio of Flow to Capacity' (RFC) or 'Degree of Saturation' values and queue lengths. The RFC (or degree of saturation) value determines the extent to which the level of traffic at a junction arm approaches capacity. An RFC value of 1.0 (or degree of saturation of 100%) indicates that the arm of the junction is operating at capacity.

6.41 The assessments have been undertaken for the year of opening (2009) and a future year (2014) as specified by the current guidance on Transport Assessments. The results are summarised below in **Table 6.4**.

Table 6.4: Site Access Junction Assessments Summary Table

Approach Arm	2009					
	AM Peak		PM Peak		Development Peak	
	Max RFC	Max Queue	Max RFC	Max Queue	Max RFC	Max Queue
Site Access	0.02	0	0.04	0	0.05	0
Buxton Road (South)	0.02	0	0.02	0	0.06	0

Approach Arm	2014					
	AM Peak		PM Peak		Development Peak	
	Max RFC	Max Queue	Max RFC	Max Queue	Max RFC	Max Queue
Site Access	0.02	0	0.04	0	0.05	0
Buxton Road (South)	0.02	0	0.02	0	0.06	0

6.42 It is also proposed that a pedestrian refuge would be installed to the north of the site access. This is to assist pedestrians who need to cross the road to continue their journey on foot, as the footway changes sides of the carriageway at this point.

Summary & Residual Effects

6.43 A Transport Assessment has been undertaken to provide an assessment of the traffic impacts associated with the redevelopment of the Anzio Camp site for a Continuing Care Retirement Community. This is reported in a separate document and summarised in this section.

6.44 The context of the site has been examined with regard to local and national planning and transport policies. The proposals would comply with these standards aided by a Green Travel Plan that would be implemented across the site.

6.45 The impact of the development proposals on the local highway network has been considered at the times of peak traffic flow. An improved access junction arrangement is proposed that is appropriate for the standard of the A53 and the anticipated volume of development traffic.

6.46 A new pedestrian refuge is proposed on the A53 to improve the pedestrian connection between the site and the adjacent bus stops.

6.47 It is concluded that the proposed development would be acceptable in transportation terms.

7 Landscape and Visual Impact Assessment

Introduction

7.1 This report assesses the landscape and visual effects associated with the proposed development of the Anzio Camp. The assessment has been undertaken on behalf of English Courtyard Developments in support of an application for a proposed Continuing Care Retirement Community. The site has been the subject of a previous application and the Landscape and Visual Impact Assessment carried out as part of that application has therefore been updated and used to inform the baseline for this report.

7.2 The site falls within the area covered by the Staffordshire Moorlands Local Plan but the Peak District National Park lies within 1km of the site to the north and therefore forms part of the study area. The site itself is situated to the south east of the A53 Leek to Buxton Road and is located mid way between Leek and the settlement of Blackshaw Moor.

7.3 The proposed development covers an area of 10.78ha and would comprise a purpose built 'care village' incorporating residential properties and shared amenities. Existing facilities on the periphery of the site would be considered for re-use including the sports hall.

7.4 The assessment identifies the sensitivity of the landscape resource and visual amenity of the study area, determines the magnitude of the effects that the proposals would have on landscape features, landscape character, visual amenity and on the people who view the landscape. This allows an assessment of the significance of the likely landscape and visual impacts of the scheme to be made.

7.5 In accordance with published guidance, landscape and visual impacts have been assessed separately although the methodology for assessing each of these is closely linked. Landscape impacts relate to the effects of the proposals on the physical and other characteristics of the landscape and its resulting character and quality. Visual impacts relate to the effects on views experienced by human receptors (e.g. residents, footpath users, tourists, etc) and on the visual amenity experienced by those people.

Assessment Methodology

Definition of Study Area

7.6 For the purposes of this assessment a study area of 5km radius has been considered although reference will be made to long distance views where appropriate, particularly from areas such as the Peak District National Park.

Relevant Guidance

7.7 As a matter of best practice, this assessment has been undertaken based on the relevant guidance on landscape and visual assessment. This includes:

- Landscape Institute and Institute of Environmental Management and Assessment (2002) *'Guidelines for Landscape and Visual Impact Assessment'* 2nd Edition.
- The Countryside Agency and Scottish Natural Heritage (2002) *'Landscape Character and Assessment – Guidance for England and Scotland'.*

Consultations

7.8 Consultation has been carried out with Staffordshire Moorlands to agree a series of nine key viewpoints which have been considered as part of the visual assessment. Photomontages have also been prepared for an agreed selection of five viewpoints in order to illustrate the impact of the development in Year 1 and Year 15.

Methodology

Landscape Assessment

7.9 The following publications have been used to develop an appreciation of the wider landscape character of the Staffordshire area:

- *Countryside Character Volume 5: 'West Midlands,'* (The Countryside Agency, 1999)
- *Staffordshire and Stoke on Trent Structure Plan 1996-2011* (Adopted May 2001), *– Planning for Landscape Change (SPG)*

7.10 The landscape assessment combines both objective and subjective appraisal of the landscape. The appraisal consists of three stages, which include a desk study, a field survey and an analysis of the results.

Objective Appraisal

7.11 This appraisal records dominant landscape elements, which, depending on their prominence and importance, contribute to the overall landscape character of the area. Typical elements

include topography, land use, watercourses, vegetation, built development, and public rights of way. Special values attributed by others, such as landscape designations, are also recorded.

7.12 This information, collected during the desk and field survey stages, comprises existing information from statutory agencies and local planning authorities, Ordnance Survey maps, aerial photographs and other relevant data to enable a comprehensive understanding of the site and its surroundings to be formulated.

7.13 The information has been verified during the field survey stage when additional data on land cover, built development, pattern and scale of landform has been gathered. The main landscape elements are described in the text, and illustrated by figures, for example in respect of topography, vegetation, public rights of way and landscape designations.

Subjective Appraisal

7.14 This appraisal considers aesthetic factors, which collectively describe the impression of the landscape gathered during the field survey stage. These include a record of the degree of balance, enclosure, texture, colour, diversity, movement, form and unity of the landscape. The application of a subjective appraisal is based on professional judgement and experience.

Analysis

7.15 The results of the objective and subjective field and desk study appraisals were analysed alongside photographic records to identify the characteristic qualities of the landscape and to identify those areas of land with broadly similar landscape characteristics.

7.16 Photographs have been taken with a 56mm lens, in landscape format, using a digital camera (Canon EOS 20D). Photographs were taken at eye level from public viewpoints. No access to private properties was obtained, and where impact to residential and commercial occupiers is given, this has necessarily been estimated. The photographs illustrating the site are reproduced in the assessment, together with a photoviewpoint location plan, and a description of the views reproduced.

7.17 The analysis sets out the character of the landscape and identifies distinctive elements, the pattern of their arrangement and dominant features and, where applicable, identifies the results of any existing landscape assessments of the site and surrounding landscape. The analysis process provides a comparative value of the quality of the affected landscape.

7.18 The condition of the landscape and its overall sensitivity, in terms of constraints upon development and the degree of tolerance to change of the receptors is identified at this stage.

Criteria and Thresholds

7.19 The need to establish thresholds of significance is fundamental in order to standardise the subjective input to the assessment.

7.20 Impacts on the landscape can be defined as the relationship between the sensitivity of the landscape receptor and magnitude of the change which the proposals would create. Impact may be positive or negative.

7.21 Tables 7.1 and 7.2 set out a scale of landscape classification alongside a scale of the extent of influence of change. This allows a relative value to be attributed to both the landscape sensitivity and to the magnitude of change. **Table 7.3** describes the significance thresholds derived from the combination of these two factors. As sensitivity and magnitude of change can vary between the categories of high, medium and low, so the degree of impact can vary between substantial, moderate and slight. Impacts may also be adverse or beneficial in nature.

Table 7.1: Examples of Landscape Receptors

Landscape Receptor Type	**Landscape Sensitivity**
Landscape of national or regional importance, or important components of the landscape.	Usually high
Landscape of moderately valued characteristics, or moderately valued components.	Usually medium
Landscape which may include damaged or derelict landscape, or poor components.	Usually low

Table 7.2: Examples of Magnitude of Effect

Extent of Influence (Magnitude of Change)	**Magnitude of Change**
Changes in landscape character may be significant.	Usually high
Changes in landscape character may range from significant to moderate.	Medium to high sensitivity, depending on local characteristics
Changes in landscape character may range from moderate to slight.	Usually medium
Changes in landscape character may range from slight to virtually imperceptible change.	Medium to low
Changes in landscape character and quality may be virtually imperceptible.	Usually low

Table 7.3: Significance Thresholds – Landscape Receptors

	Landscape Sensitivity			
Magnitude of Change		**Low**	**Medium**	**High**
	High	Moderate impact	Substantial impact	Substantial impact
	Medium	Slight to moderate impact	Moderate impact	Moderate to substantial impact
	Low	Slight impact	Slight impact	Slight to moderate impact
	Negligible	No effect	No effect	No effect

Visual Assessment

7.22 A baseline visual assessment has been undertaken to determine the degree of visibility the proposed development site has upon the surrounding landscape.

7.23 Views into the site have been photographed and categorised into three ranges depending on proximity of the viewpoint:

- Close less than 500m
- Medium between 500m and 2km
- Long more than 2km

7.24 In order to establish a visual envelope i.e. the area within which any development may be visible, a preliminary scheme layout was assessed in relation to 1:50,000 scale and 1:25,000 Ordnance Survey Maps. This provisional visual envelope was then refined by subsequent fieldwork, at which stage visual receptors identified that may experience an impact were also confirmed from the desk study. These include highways, public footpaths, and bridleways as well as residential properties, work places and publicly accessible locations.

7.25 Existing views from these locations were compared with those that would result if the scheme were to be constructed. The comparative changes in the views have been recorded in the winter and summer of the first year and in the summer of the fifteenth year following the development, taking into account mitigation that would be provided as part of the scheme. Changes in views are recorded as adverse or beneficial impacts, representing either deterioration or improvement in visual amenity terms.

7.26 The assessment also considers a number of factors, including:

- Location of the viewpoint
- Nature of existing view
- Distance between the observer and the scheme
- The context within which the development is observed
- Sensitivity of the observer

7.27 Impacts can be defined as the relationship between the sensitivity of the visual receptors, and the degree of the magnitude of the change in the view.

7.28 For each viewpoint, the sensitivity and magnitude factors have been determined according to the classification scales set out in Tables 7.4 and 7.5 below.

Table 7.4: Examples of Visual Receptor Sensitivity

Visual Receptor Type	**Visual Sensitivity**
For example, public rights of way with open views of the development site and residential properties with full views of the development.	High
For example, public rights of way and residential properties with limited views of the development site. Also outdoor recreational facilities, main roads and local roads with open views of the development.	Medium
For example, industrial and commercial premises with open views of the development. Also main roads and local roads with restricted views of the development.	Low

Table 7.5: Examples of Magnitude of Change on Visual Receptors

Extent of Influence on Visual Receptor	Magnitude of Change
For example, majority of viewers affected or major change in the view.	High
For example, many viewers affected, or moderate change in the view.	Medium
For example, few viewers affected, or minor change in the view.	Low

7.29 **Table 7.6** describes the significance thresholds derived from the combination of these two factors which has been used to complete the visual assessment. Impacts may be positive or negative, expressed as adverse or beneficial.

Table 7.6: Significance Thresholds – Visual Receptors

	Visual Sensitivity			
Magnitude of Change		**Low**	**Medium**	**High**
	High	Moderate impact	Substantial impact	Substantial impact
	Medium	Slight to moderate impact	Moderate impact	Moderate to substantial impact
	Low	Slight impact	Slight impact	Slight to moderate impact
	Negligible	No effect	No effect	No effect

Policy Context

Landscape Planning Policy

7.30 A detailed summary of planning policy is located in Chapter 5 of this Environmental Statement. The following text describes policy at a national, regional and local scale relevant to the potential landscape and visual effects of the 'Anzio Camp' proposed development. Local planning designations are also illustrated on **Figure 7.1**.

National Policy

Planning Policy Statement 1 (PPS1) – Delivering Sustainable Development

7.31 With respect to the consideration of design by all those in the development process, paragraph 35 states: -

> *"High quality and inclusive design should be the aim of all those involved in the development process. It means ensuring a place will function well and add to the overall character and quality of the area, not just for the short term but over the lifetime*

of the development. This requires carefully planned, high quality buildings and spaces that support the efficient use of resources."

7.32 And at paragraph 38 states;

"Design policies should avoid unnecessary prescription or detail and should concentrate on guiding the overall scale, density, massing, height, landscape, layout and access of new development in relation to neighbouring buildings and the local area more generally."

7.33 Planning Policy Statement 7 (PPS7) – Sustainable Development in Rural Areas.
The location of new development/employment locations, near to local service centres should be selected *"to ensure these facilities are served by public transport and provide improved opportunities for access by walking and cycling."*

7.34 In addition, general policies in "The Countryside" section apply to the largely undeveloped countryside that separates cities, towns and villages.

7.35 Paragraph 16(ii) states that any new development should *"support other countryside-based enterprises and activities which contribute to rural economies."*

Regional Policy

7.36 The RSS (Regional Spatial Strategy – West Midlands) provides the regional policy context for the Anzio Camp proposed development.

Landscape Character

7.37 The RSS supports the use of landscape characterisation as the basis for landscape policy in the region. This principle is enforced by guidance within **Policy QE1** of the RSS that states that planning policies must,

"*protect and enhance the distinctive character of different parts of the Region as recognised by the natural and character areas and associated local landscape character assessments".*

7.38 The policy also suggests enhancement and restoration measures for degraded landscapes including planting new woodlands and areas of heathland, restoration of field boundaries and reclamation / re-use of derelict and under-used buildings.

7.39 **Policy QE2** further supports the re-use of derelict sites. It states that development plans and strategies must aim to;

> *"promote the restoration and remediation of derelict and contaminated sites and reuse of buildings, having regard to the Region's biodiversity and historic assets".*

7.40 It also goes on to state that within all new developments and in the re-use of land and buildings, the aim should be to create distinctive built environments that provide a sense of identity and place to which local communities can relate and in which they can have pride.

Local Policy

7.41 The Staffordshire Moorlands Local Plan provides the local policy context for the Anzio Camp proposed development (adopted Sept 1998).

Protected Landscapes and Designated Areas

7.42 Staffordshire Moorlands Council seeks to restrict any unnecessary visual intrusion in the open countryside areas outside settlements. **Policy N1** states that:

> *"the open countryside in the plan area and its cultural heritage will be rigorously protected. Only development which is essential to agriculture or forestry or uses which can be demonstrated as appropriate to a rural setting will be granted planning consent".*

7.43 The Anzio Camp site falls into what is classed as a 'Special Landscape Area (SLA)' and is thus governed by Stafford Moorlands Councils policies. These relate to any development within the boundaries of an SLA, and include the following policies:

- **Policy N8** In the special landscape area permission will not be given for development which would materially detract from the high quality of the landscape because of its siting, scale, design and materials, and associated traffic generation. In areas where the special landscape overlaps the green belt there will be a presumption against most development in accordance with Policy N2.
- **Policy N28** The district council will encourage and where possible assist proposals which will result in the reclamation and appropriate redevelopment of contaminated and/or derelict land.

7.44 Within the 5km study area, a further designation affecting local development is the Peak District National Park. Although the site does not directly fall inside the Park boundaries (2kms to the east and 0.8kms to the north), consideration must be given to any development which could impact on the setting of the Park. The Local Planning Authority are also mindful of the impact of any development that will visually infringe on the sensitive landscape of the park, and this is highlighted by the **N11 Policy**:

> *"In considering proposals for development on land conspicuous from the peak national park, the council will have regard to the need to ensure that the visual amenities of that land are not adversely affected to the detriment of the national park".* (Staff Moorlands Local Plan- adopted Sept 1998).

7.45 To summarise, the policies that have been described in this section recommend that any new development must reach a comprise between not infringing visually on the Staffordshire landscape while also effectively and efficiently remediating the existing site context and achieving a high level of design.

Existing (Baseline) Conditions

Landform and Drainage

7.46 The former Anzio Camp is located to the south east of the A53 Leek to Buxton Road some 3km from Leek. The site comprises a north west facing slope although mounding has been constructed on the boundaries which interrupts the natural flow of the land form. The slope continues to fall until it opens out into a valley containing the Tittesworth Reservoir. The site elevation ranges from 245 to 265m AOD. Following previous development on the site, the slope is terraced into a series of development platforms with the existing structures 'tucked' into the slope. The topography of the site and its surroundings is illustrated in **Figure 7.2**.

7.47 The site contains several small water sources and courses. To the north of the site a narrow straight sided water course, lined by trees, supports a steady trickle of water throughout the year. To the east of the site and further up the slope there are scattered springs causing waterlogged areas throughout the site.

Landcover, Vegetation and Land Use

7.48 The landscape features and vegetation are illustrated on **Figure 7.3** and described below. The site was, until recently, a military training base including exercises on the adjacent moorland to the north east. The site area is 10.78 hectares and currently has seventeen buildings which formerly provided residential accommodation and training facilities for army personnel. The upper end of the site has four two-storey blocks while a larger central building is single storey. The lower end of the site comprises training buildings, a sports hall, offices, a bungalow and the main entrance and guard house.

7.49 The section of the site adjacent to the A53 contains a series of grass covered earth bunds backed up by a thick belt of reasonably mature trees. There are a number of other uses within the open and woodland areas of the site including a fitness trail, small arms firing range and a blast proofed ammunition store. There is an element of woodland on the western and north eastern site boundaries but the development site does not include any Moorland.

7.50 The western tree belt is in keeping with the character of the roadside planting to the north and south. The area surrounding the site comprises a mix of small to medium field sizes, many with hedgerows containing intermittent trees. Further from the site, the vegetation pattern incorporates larger groups of trees in the form of woodland at Thorncliffe and Blackshaw as well as woodland belts associated with the reservoir.

7.51 Land use around the site is primarily agricultural with arable land and sheep grazing. Opposite the site, to the west, there is a caravan park and holiday cottage which benefit from the location close to the Roaches and the Peak District National Park. Other land uses to the north and east include a local gun club and other scattered farm buildings and private properties.

Settlement Pattern, Townscape and Cultural Associations

7.52 The town of Leek is some 3km to the south west and, due to its size, forms the main retail / commercial focus for the surrounding rural community. It is the principal town of Staffordshire Moorlands and is located on a hill overlooking the River Churnet. An ancient market town and later centre for silk weaving (18th and 19thC), the town contains a number of fine mill buildings including the Brindley Mill (water mill) dating back to 1750. Some of these mill buildings have been converted to provide residential dwellings. The town still hosts a Wednesday market.

7.53 The area is covered by a network of Public Rights of Way (PRoW). The most important footpath is the Moorlands Way which is located to the west of the site on the edge of the study area. The network of PRoW within the study area is shown on **Figure 7.3**.

Landscape Character

National

7.54 The broader landscape character of the study area has initially been assessed with reference to the Countryside Commission (now Natural England) 'The Countryside Character Volume 5, West Midlands' which places the site itself in Joint Character Area (JCA) 53 'South West Peak' but with influences from the adjacent character areas of JCA 64 'Potteries and the Churnet Valley' and, to a lesser extent, JCA 52 'White Peak'.

7.55 The Key Characteristics of the South West Peak JCA are:

- Integrated mosaic of landform and vegetation patterns comprising tracts of wild expansive moorland with heather on hill tops and ridges and small-scale enclosed farmland, with herb-rich hay meadows and rushy pastures, in valleys.

7.56 The Key Characteristics are:

- Area of upland flanked by lower hills to the south and west and indented by valleys which broaden to the west into gently undulating lowland as the rivers drain to the Shropshire, Cheshire and Staffordshire Plain.
- Isolated 'gritstone' edges at Ramshaw Rocks and the Roaches providing a dramatic contrast to rolling uplands.
- Long, uninterrupted views, from margins to upland areas and vice versa. Contained and intimate views around the foothills.
- Fringes to the upland dissected by river valleys with fast-flowing streams which create an intricate ridge and valley landscape of distinctive pattern and character.
- Main rivers of the Goyt, Dove, Dane, Manifold, Churnet and Hamps all with their sources in the upland area.
- Economy of the area based on stock rearing (sheep and beef) with some dairy farming and grouse shooting on the moorland.
- Intricate and distinctive field patterns often with historic associations. Gritstone walls at higher elevations and hedgerows at lower elevations, with holly prevalent in the lower valleys.
- Farm buildings and villages built predominantly of local stone reflecting local geology and history.
- Small nucleated settlements with extensive dispersed farm landscape, commonly with distinctive and recognisable area of intake.
- Remains of former coal mining activity particularly in the area around Flash.

7.57 In addition, the Key Characteristics of the adjacent JCA 64 'Potteries and the Churnet Valley', which are relevant to this area include:

- Strongly dissected hills and small plateaux, rising up to the Pennines and cut by major river valleys.
- Strong contrast between remote uplands, urban areas, sheltered wooded valleys and hillside pastures.
- Prominent Millstone Grit and Coal Measures ridges.
- Extensive former industrial and extractive sites, many now reclaimed, intermixed with settlements and open land.
- Open moorland and rough grazing on higher ground.

- Rural settlement pattern of sheltered villages on low ground with hamlets, scattered farmsteads and cottages elsewhere.
- Brick and sandstone older buildings with tile and slate roofs.

Regional

7.58 The Staffordshire and Stoke on Trent Structure Plan 1996-2011 follows the principles laid out in the Countryside Agency assessments in its Supplementary Planning Guidance 'Planning for Landscape Change'. The Guidance goes on to identify 'Landscape Types' that fall within the character areas including the two landscape types that are relevant to the area immediately surrounding the site. The character areas are shown on **Figure 7.4**.

Ancient Slope and Valley Farmlands

7.59 The site falls within this landscape type which occupies the slopes and valleys running down from the plateau top. It is a strongly undulating landscape interrupted by stream valleys. This provides a range of landscape scales from intimate valley bottoms to extensive, open higher ground. Vegetation takes the form of hedgerow trees and strips of broadleaved woodland including species such as Ash, Oak and Sycamore. Field sizes range from small to medium scale with low intensity pastoral sheep and cattle farming predominating.

7.60 Settlement is linked by narrow, winding lanes, often sunken, linking small farms. Close to the Moorland edge, field boundaries are of drystone walls and buildings are generally constructed in local stone. The characteristic features of the area are:

- Strong ridge and valley landform;
- Small dissected stream valleys;
- Small sunken lanes;
- Low intensity pasture farming;
- Intact hedgerow pattern;
- Drystone walls and stone buildings;
- Hedgerow trees;
- Broadleaved valley woodlands;
- Conifer plantations;
- Many isolated properties.

Gritstone Highland Fringe

7.61 Although the area to the south east of the A53, including the site, falls within the 'Ancient slope and valley farmlands' character type, the north western site boundary also abuts the 'Gritstone Highland Fringe'.

7.62 This is primarily a landscape type of the Dark Peak and reflects the underlying geology and elevation. The predominant land use is grazing within medium to large, walled fields laid out in a regular pattern. The pattern of gritstone walls is important in defining the strong upland character. Generally there are few woodlands other than on the steep side of cloughs. Settlement comprises mainly scattered farmsteads and expanded hamlets. The landscape is characterised by long distance views across an open, steeply sloping landform and out to adjacent upland areas. Hedgerows, generally comprising Beech, Mountain Ash and Thorn, tend to be sparse and have limited impact on views. The characteristic features of the area are:

- Prominent upland ridge landform;
- Gritstone walls;
- Small ancient lanes; pastoral farming;
- Extensive views;
- Conifer plantations;
- Wooded valleys;
- Heathland.

Local

Characterisation of Study Area

7.63 As part of the site survey work and baseline review, the immediate site area was assessed to identify the individual characteristics of the landscape within the study area. The characterisation is directly related to the local land use and is described below:

- Land associated with the former Anzio Camp:

7.64 This is a contained character area, with clearly defined boundaries, at odds with its surroundings. The site contains a series of two storey blocks and simple site infrastructure terraced up the slope with a car parking area at the centre. Materials comprise brown brick buildings with tiled roofs which are at odds with the local vernacular. The area immediately surrounding the buildings comprises a series of hard standings and landscaped area which are primarily made up of trees and grass. There is a subtle transition in the area immediately adjoining the site boundary with a progression from farmland to land which is more of an upland character.

- A53 Buxton Road corridor:

7.65 The A53 is a busy vehicular route linking Leek and Buxton. The road comprises a number of relatively straight sections however this is relieved by the undulating landscape giving elevated

views of the surrounding area. The route contrasts with other local roads due to its well developed roadside tree cover which is relatively mature and provides a degree of screening in places even in winter. The removal of intermittent mature trees along the road length, particularly Beech trees in the area of the site, has resulted in new views being opened up for road users.

- Undulating farmland and scattered dwellings:

7.66 The area surrounding the site comprises predominantly farmland with occasional scattered farms. In contrast, the land immediately opposite the site comprises a traditional building fronting a holiday caravan and camping park in seasonal use.

- Settlements:

7.67 The settlement of Blackshaw Moor lies to the north east of Anzio Camp and contains restricted local amenities with the town of Leek being close by. A large part of the settlement comprises a relocation site for the polish immigrants who occupied the site of Anzio Camp after the war and prior to the 1980's.

Baseline Visual Amenity and Views

7.68 The site is remarkably well integrated into the local landscape and is difficult to identify from many of the viewpoints selected as part of the study, particularly in summer. The most open views of the site are from the Buxton Road from where the upper sections of buildings and rooftops are visible. These views are softened by a length of grassed embankment located along the southern boundary and a tree belt along the northern boundary. In distant views, the site appears well wooded and sits comfortably within the rolling landscape with its scattered trees and woodlands. The only existing structure which can be clearly identified in distant views is the sports hall located close to the main highway. The building is constructed in a reflective metal finish which catches the sun and becomes prominent in views. In this situation, the scale of the building is such that it can be identified in views from the edge of the study area.

7.69 As part of a Planning Application for the site submitted in 2006, a series of consultee meetings resulted in the identification of 10 representative viewpoints. These were of particular relevance to Staffordshire Moorlands District Council and also the Peak District National Park. For the purposes of this new application, the same viewpoint locations were reviewed and photographed in Winter. Further consultation was then carried out with Staffordshire Moorlands District Council to review the viewpoint selection. As a result of this consultation the viewpoints were refined to ensure that they represented the type of key views available throughout the study area and beyond. Earlier viewpoints which were considered to be of little

benefit to the assessment were disregarded at this stage and agreement was also reached regarding a series of photomontages to accurately reflect the impact of the proposed scheme.

7.70 The viewpoints agreed with SMDC are as follows:

Local to site

- A53 opposite the existing main site entrance
- A53 footpath from Troutsdale Farm (Viewpoint number 6 in previous application)
- A53 at Birch Tree Farm (Viewpoint number 4 in previous application)

Wider area

- Thorncliffe Bank (above Thorncliffe Village and replacing previous Viewpoint 5)
- Ramshaw Rocks
- Hen Cloud (Viewpoint number 8 in previous application)
- Gun Hill (replacing former Viewpoint 9)
- Staffordshire Moorlands Walk (above Abbey Wood / Hillswood)
- New Leek Cemetery (Viewpoint number 1 in previous application)

7.71 The following viewpoints were considered but disregarded

- Meerbrook Village (Viewpoint number 2 in previous application)
- A53 above Upper Hulme (Viewpoint number 3 in previous application)
- Road junction, entrance to Franklin's, Park House and Gunside (Viewpoint number 9 in previous application)
- Minor road junction along Morridge (Viewpoint number 10 in previous application)

Photomontages

7.72 The photomontage locations have been agreed through consultation with Staffordshire Moorlands District Council and the methodology for the preparation of these Photomontages is included at **Appendix 7.2**. The views selected are intended to illustrate the impact of the scheme at both a local level and from the wider area as follows:

- Viewpoint 2 Staffordshire Moorlands Walk (Figures 7.7a and b)
- Viewpoint 4 Birch Tree Farm (Figures 7.9a and b)
- Viewpoint 5 Thorncliffe Bank (Figures 7.10a and b)
- Viewpoint 6 Troutsdale Farm (Figures 7.11a and b)
- Viewpoint 8 Hen Cloud (Figures 7.13a and b)

Visual Context

Schedule of Receptors

7.73 Although the visual assessment has primarily been based on an assessment of the nine representative viewpoints, ZVI information supplemented by site survey work has been used to identify the main specific visual receptors within the vicinity of the development. These receptors are scheduled in **Appendix 7.1** of the assessment.

Identification and Assessment of Effects

Description of the Proposals

7.74 The following text provides a brief summary of the main components of the proposed development which have been used as the basis for assessing the landscape and visual effects. Additional detail regarding the description of the proposed development is provided in Chapter 4 of this Environmental Statement.

The Development Components

7.75 The application site is roughly rectangular and currently comprises a disused army training camp with associated infrastructure, accommodation and other structures. The proposals are for a 'continuing care / retirement village' to be built on the site providing permanent accommodation at different levels of dependency. It is anticipated than the new buildings would be no higher than the existing and are likely to comprise either 2 or 2.5 storeys. The main development site is subject to the following proposals:

- Residential development blocks to the east of the site comprising independent living accommodation for retired persons
- Continuing Care Development and central community facilities
- Open space areas including green frontage, meadows and woodland blocks
- Water features, diverted stream, balancing pond and entrance features

7.76 The development would also include a vehicular route based on the existing situation but with an independent pedestrian footpath network providing links throughout at low gradients. Several existing features of the site are to be retained and these include:

- The road network;
- The boundary planting where this is shown to be in good condition;
- The Sports Hall to be upgraded for more diverse community uses;

- Two other existing buildings close to the sports hall, and
- The existing site trees following appropriate management of the resource.

Lighting

7.77 Lighting has been identified as an important factor due to the rural context of the site. The existing MOD camp was not considered to be overly intrusive in lighting terms by local residents. However, any lighting proposals for the new layout would be low level where possible and lighting design would be used to ensure minimum spillage. Suggested measures from the Environment Agency, and other organisations, include:

- Light fittings to reduce light emitted upwards
- Positioning lighting properly and directing it downwards
- Using only the necessary amount of lighting
- Switching off unnecessary lighting late at night and in the early morning and using dimmers and PIR to reduce or increase levels of light in response to need
- Considering the use of clear, white light in preference to yellow

External Areas

7.78 Green buffers have been considered as an essential part of the design and would build upon the existing landscape structure as well as introducing new planting areas where considered essential in terms of landscape and visual issues. In addition, open areas of meadow / grassland would be incorporated into the layout for increased biodiversity.

7.79 Issues of sustainability, raised during the feasibility study and stakeholder consultation exercises, have resulted in the following options being considered as part of the design:

- A Sustainable Urban Drainage System (SUDS) utilising the existing water courses on the site and introducing rainwater harvesting
- A Biogas plant in the woodlands (outside the application boundary but owned by the client) subject to a feasibility study.

Site Security

7.80 It is anticipated that the site would be secured by fencing for the benefit of the residents but would not be gated. Concerns regarding the risk of sheep worrying from pet dogs have reinforced the need for secure areas of the site to be established and managed. Access arrangements would be required for the use of some facilities by residents from the local area and this is particularly relevant to the sports hall.

Site Sensitivity

7.81 The site is considered to be sensitive in terms of landscape and visual interest due to its geographical context and relationship to the local character area as well as the nearby Peak District National Park.

Mitigation

Mitigation Objectives

7.82 A number of general mitigation measures are recommended as part of this LVIA and these can be summarised as follows:

1) The use of combined landscape elements including fencing, hedging and tree planting on the main highway boundary.
2) The reinforcement of existing hedgerows and tree planting associated with the site boundaries.
3) The planting of new woodland blocks to replace trees lost due to condition and/or redevelopment proposals.
4) The retention of key vegetation in views across the site, particularly from the Peak District National Park.
5) The replacement of tree planting and new grassland mix to compensate for the surface vegetation lost during the construction phase.
6) The improved management of the site vegetation (both existing and proposed).
7) The creation of a sustainable urban drainage system (SUDS) as part of the site layout allowing marginal aquatics to be introduced. The aim of this vegetation being to enhance both the visual and wildlife benefit of the area.
8) The existing ditch and stream habitats to be enhanced and managed to improve the ecological potential.

7.83 The detailed masterplan for the site would set out specific landscape treatment zones and the proposed mitigation for individual areas based on the outline urban design proposals.

Opportunities and Constraints

7.84 As part of an iterative design process, a series of site specific opportunities and constraints have been identified as the basis for any future detailed design.

7.85 The constraints comprise:

- The potential for increased views of the site

- The wildlife value of the site and areas of habitat to be retained and enhanced or replaced
- The dominant tree cover to be retained/enhanced where possible due to its value in the wider landscape
- The importance of the roadside vegetation in terms of character and views
- The site levels
- Site drainage

7.86 The opportunities for the site are described below:

A53 Road Frontage

This is the primary vehicular and pedestrian entrance to the development area. An existing woodland strip characterises the road frontage but native tree and shrub planting is proposed to enhance the approach and provide a buffer between the footpath and the bypass. The proposed planting would also ensure continuity in the existing landscape character and the replacement of trees which have already been lost from the surrounding area, predominantly mature Beech trees along the main road.

Lower Site Open Space

The area formerly occupied by buildings would be largely cleared and provides opportunities for the creation of new woodland belts, an area of open water and species rich grassland. The area would provide a dual function as an attractive ornamental route into the site and also a green space enhancing the road frontage and reinforcing the buffer between the site and the highway.

Southern Boundary

An area comprising long mounds which effectively screen much of the site from the road. The existing hedge would be enhanced to reinforce the boundary planting and help with integration into the surrounding area. Planting would not be introduced onto the mounds themselves to avoid disturbance but new screen/woodland planting would be incorporated into the development layout to the north of the existing mounds.

Proposed Development Area

The primary focus of the built development the area can be sub-divided in landscape terms and considered as:

4a – the central spine: a pedestrian route linking a series of public spaces and relating closely to the diverted stream and ornamental features associated with the sustainable urban drainage system (SUDS). Planting would include both ornamental species relating to the sensory experience (colour, perfume, texture) and a mix of native and ornamental aquatic species. There would also be opportunities to include tree species along the path for height interest and shelter.

4b – public space: these spaces provide focal points for the development and act both as meeting spaces and passive recreation locations. The proposed landscaping would be designed at a small scale and intended to appeal to the senses. These spaces are an important focus for the setting of the community buildings and Continuing Care area of the proposed development

4c – private space: enclosed spaces away from the main pedestrian thoroughfares, these spaces provide an opportunity for developing 'gardens' with an individual character giving each its own 'sense of place'.

Eastern site Boundary

The eastern site boundary supported a belt of trees, of indifferent quality, which would be partly lost due to the proposed development. New planting is proposed to replace the existing vegetation and provide a buffer to the open countryside to the east. A combination of native tree and shrub planting is envisaged to provide screening and potential wildlife habitat

Northern Boundary Open Space

The open areas to the north would provide foraging areas for both bats and barn owls which are known to use the existing site. A combination of species rich grassland, tree belts and native shrub mixes would provide a substantial buffer to views from key viewpoints.

Woodland

The areas of existing trees / woodland, within the site, would be managed according to arboricultural best practice guidance. Existing footpath links to the adjoining off-site woodland would be extended to provide recreational links to the surrounding area

Assessment of Effects

Construction Impacts

Landscape Impacts During Construction

7.87 During the construction period there would be a number of impacts both temporary and permanent. These impacts would include some or all of the following

- Temporary loss of vegetation and landscape structure due to removal for new structures or in accordance with the recommendations of the tree survey report,
- Demolition of existing buildings, the storage and removal of materials;
- Construction operations within a rural location which may include special vehicular access arrangements, security measures, temporary lighting, signage, storage and welfare facilities.
- Spatial arrangement of site altered from MOD layout to domestic scale resulting in a change in land use
- Site clearance and excavation of a new development platform further up the valley side.

Visual Impacts During Construction

7.88 Construction impacts would be most visible from the area immediately surrounding the site. From the wider area the construction effects would be mainly limited to the operations of cranes and demolition of structures at the lower levels. It is assumed that the site would follow normal working hours and local impacts are likely to include temporary features such as vehicle movements, security lighting, storage of materials and screen fencing / hoardings. Local views would result from construction activity being visible through temporary loss of vegetation.

Operational Impacts

7.89 Following completion of the construction phase, the site would become operational resulting in a number of changes to the way in which it interacts with the surrounding area. The main changes would result from:

- A permanent population resident on the site, with associated vehicles and pedestrian activity.
- The use of the more open areas would change to one of passive recreation and activities such as dog walking.

- The availability of community facilities would lead to interaction between the development and the nearby settlements which would take the form of both pedestrian and vehicular movements
- The replanting of large areas of vegetation for the purposes of screening, shelter, integration with the surroundings and the creation of attractive public and private spaces.

Landscape Impacts

Identification of Landscape Receptors

7.90 In order to be able to assess the impacts resulting from the proposed development on the landscape, the key landscape receptors have been identified as follows:

- *Landscape features* both within and adjacent to the proposed development site including land form and land use; vegetation patterns including plantations, hedgerows and occasional trees; footpaths and bridleways; and,
- Landscape character, being described at regional and local level and with reference to the adjacent Peak District National Park; and,

7.91 The above receptors form the basis of the landscape assessment and potential impacts on these have been assessed for the proposed development. The findings of the assessment are presented in **Appendix 7.1** and summarised below.

Year 1

Landscape Features

7.92 The anticipated impacts range from ***Moderate Adverse*** to ***No Effect*** and can be summarised as follows:

- Impacts of ***Moderate Adverse*** are anticipated on landscape features associated with vegetation including hedgerows associated with site boundaries and areas of trees within the site and on the A53 frontage.
- An impact of ***Moderate Adverse*** is also anticipated on land use which would change from an MOD training camp facility to a residential development.
- An impact of ***Slight Adverse*** is anticipated on landform due to the extension of the built form toward the eastern boundary of the site and the necessity to create an additional building platform for the private residential area of the site. The majority of the new development utilises the existing development platforms and 'steps up' the side of the valley. The new development platform would be in keeping with the

existing but, in the short term, is likely to be more visible until mitigation measures become established.

- No direct impacts are anticipated on the local footpath network and the impact is therefore assessed as ***No Effect*** in Year 1.

Landscape Character

7.93 The anticipated impacts range from ***Moderate Adverse*** to ***Slight Adverse*** and can be summarised as follows:

- An impact of ***Moderate Adverse*** is anticipated on the local character area of 'Ancient Slope and Valley Farmlands' which is characterised by a locally valued landscape of woodland and hedgerows. There would be a temporary loss of vegetation from the development site due to changes to the site layout and management measures which would result in the removal of poor quality trees.
- An impact of ***Slight Adverse*** is anticipated on the character of the Peak District National Park and the Regional Character Area of the South West Peak which forms its setting.
- An impact of ***Slight Adverse*** is anticipated on the local character area of 'Gritstone Highland Ridge' due to the loss of roadside vegetation which would open up the boundary abutting the Ancient Slope and Valley Farmlands.

Year 15

Landscape Features

7.94 The anticipated impacts range from ***Slight Adverse*** to ***Slight Beneficial*** and can be summarised as follows:

- An impact of ***Slight Adverse*** is expected on land use due to the integration of the new 'settlement' into the surrounding area by means of landscape mitigation in the form of hedgerows and woodland which are compatible with the surrounding land use. This would offset the introduction of a residential development into a rural location and help to assimilate the site into the surrounding land use.
- ***No Effect*** is anticipated on landform after 15 years due to the integration of the new development platform into the site by means of appropriate landscape mitigation in the form of tree planting.
- ***No Effect*** is anticipated on the local footpath network although the potential for new footpath links to the surrounding area and connecting the on-site facilities with off-site users could potentially result in a ***Slight Benefit*** to the local area in terms of connectivity and accessibility.

- An impact of ***Slight Beneficial*** has been identified on the hedgerow and woodland pattern of the area due to the enhanced landscaping of the site and the ongoing management of the on-site trees.

Landscape Character

7.95 The anticipated impacts range from ***No Effect*** to ***Slight Beneficial*** and can be summarised as follows:

- Following the establishment of the site landscaping into the local vegetation pattern it is anticipated that there would be ***No Effect*** on the Landscape Character of the Peak District National Park and the local landscape types of Ancient Slope and Valley Farmlands and Gritstone Highland Ridge;
- There would be an impact of ***Slight Beneficial*** on JCA 53 South West Peak due to the development of mitigation measures which are in keeping with the key characteristics of the character area.

Visual Impacts

Extents of Visual Impact

7.96 The visual impact of the proposed development would be limited by topography and, to a lesser extent, vegetation due to its location. The surrounding landscape is undulating and ranges from the exposed upland of the Roaches down to the valley floor containing Tittesworth Reservoir.

7.97 The most open views of the site are from the edge of the Peak District National Park and the main A53 as it approaches the site following the varying landform. There is potential for rooftop views of a similar nature to those presently experienced and the careful choice of materials, colour, shape and form has been explored as part of the design process and mitigation proposals. Sections of the A53 close to the site experience views from below the existing site structures and scale is a major consideration in these locations. Generally the most visible structures are those lower down the slope and close to the main road. The remaining buildings step up the slope on a series of development platforms.

7.98 Views are also important from surrounding ridges where the viewer looks down onto the vegetation surrounding the site.

Identification of Visual Receptors

7.99 In order to assess the visual impact of the scheme, this chapter assesses the impact on the representative viewpoints agreed with Staffordshire Moorlands District Council and also on the sensitive receptor groups listed below.

- Individual or isolated farms/properties;
- Villages/settlements;
- Facilities used by the public (Cemetery, holiday park);
- Main roads;
- Minor roads;
- Public Rights of Way; and,
- Other publicly accessible areas.

7.100 The representative viewpoints and the visual receptors are assessed separately in the form of visual impact tables. The findings of the assessment are presented in **Appendix 7.1** and summarised below.

Year 1

7.101 In Year 1 all of the representative viewpoints are anticipated to have an impact of ***Slight Adverse***. The scale and massing of the development is such that it compares favourably with the existing Camp but the loss of some vegetation and the management of the remaining trees would result in the opening up of views. Trees within the site would be lost due to the new layout.

7.102 Of the sensitive receptors it is anticipated that two properties, Birchtree Farm and Ley Fields, would experience ***Moderate*** to ***Slight Adverse*** impacts due to loss of vegetation opening up views to the new development. In addition Ley Fields would have glimpsed views of the new buildings higher up the valley side on the eastern site boundary. Birchtree Farm would experience views of a new building which has greater height and massing than the structure previously located in that position on the site. Consequently the new building would become more intrusive in the view.

7.103 The remaining receptors are anticipated to experience impacts of ***Slight Adverse*** or ***No Effect*** due to glimpsed views of the new development being enhanced by loss of vegetation.

Year 15

7.104 In Year 15 the majority of representative viewpoints are expected to have an impact of either ***No Effect*** or ***Slight Beneficial*** with the exception of Viewpoints 5 and 8.

7.105 Thorncliffe Bank (V5) is anticipated to experience an impact of ***Slight Adverse*** due to the increased impact of the new roofline on the eastern boundary of the site. The landscape mitigation is expected to be semi-mature and would largely screen the new structures but would still reflect an adverse impact on the baseline situation until the planting is mature.

7.106 The view from Hen Cloud (V8) is the most elevated of the agreed viewpoints and is anticipated to have a slightly enhanced view of the new roofscape until the site planting is fully mature. The use of local roofing materials combined with the small scale of the development within the panoramic view from this location has resulted in a ***Slight Adverse*** impact.

7.107 It is anticipated that the remaining receptors would experience impacts ranging from ***No Effect*** to ***Slight Beneficial***.

Night Time Visual Impact

7.108 Existing lighting on site comprises lighting columns on the road and car park areas with additional lighting in the form of security floodlights fixed at first floor level on the majority of buildings. Lighting is also located at the entrance to the site. None of the existing lanterns are cut-off lanterns and it has been assumed that the site would have been visible at some distance when it was in use as a training camp. The site is also adjacent to Blackshaw Grange Caravan Site which would produce additional light during the season.

7.109 Distance between settlements/receptors and the scheme lighting would be an important element in assessing the overall intrusiveness of the scheme. Over a long distance, lighting columns would become an insignificant feature in the landscape during the day due to the extensive woodland planting proposed as part of the scheme. At night however, while cut-off lanterns restrict lightspill to a limited area, the light source would be visible over a greater distance. The likely intrusiveness of the lighting is dependent upon existing conditions. The lighting is, in effect, an extension of that already existing and it is therefore considered that the impact would be less than where there is currently or has been no lighting at all.

7.110 Screening of lighting by vegetation that exists, and is also proposed, would also help to reduce the overall visual impact. The effectiveness of vegetation would depend upon its height and density, and also whether or not shrubs and trees are deciduous, which would clearly affect the intrusiveness on a seasonal basis. Generally it is proposed to use native trees and shrubs

wherever possible but ornamental evergreen elements would also form part of the site landscaping around the new buildings. It is assumed that the detailed design of lighting and associated mitigation would be dealt with as part of a detailed planning application but general guidance has been incorporated into Section 4: Potential Effects and Mitigation, of this Chapter.

Summary and Residual Effects

7.111 It is considered likely that the scheme would contribute positive long-term landscape benefits to the surrounding area both in terms of landscape features and landscape character. The main landscape features to be affected by the proposals include the vegetation associated with the site itself and its boundaries. The boundary hedges would be significantly improved through replacement and enhancement of the existing degraded hedgerows and the introduction of individual trees to integrate with the surrounding vegetation pattern. The existing site also contains a high number of semi-mature and mature trees which would be managed in accordance with the tree survey completed in 2006. Tree removal and replacement would be carried out in order to facilitate the new site layout and increase the longevity of the tree stock on the site. Ultimately it is anticipated that there would be a long term benefit to these site features.

7.112 The long term impact on landscape character is expected to reflect either no change to the existing situation or a slight benefit resulting from the strengthened landscape components which go to make up the local character areas. The main features of the local character area 'Ancient Slope and Valley Farmlands' which would be enhanced by the scheme include the hedgerow pattern, stone buildings, hedgerow trees and broadleaved valley woodlands.

Residual Visual Effects

7.113 It is considered likely that the scheme would contribute positive long term benefits to views into and across the development site. A comprehensive landscape infrastructure would provided benefits to the surrounding area as it reaches maturity and offers screening of the site and visual integration with its surroundings. Where site structures would be glimpsed in views, it is considered that they would be more sympathetic to the local vernacular and provide a more harmonious roofscape in views from elevated positions such as The Roaches. Consequently the residual visual impacts are expected to range from ***No Effect*** to ***Slight Beneficial*** overall.

Summary

7.114 The character of the area around Anzio Camp is distinctive and contains prominent natural features, most notably the Roaches. Any proposals for a residential development are at odds with the rural character of the immediate area but the application seeks to replace an existing brownfield development with an improved site layout and mitigation measures to ensure improved integration into the surrounding landscape.

7.115 In policy terms the principal landscape effects would be the impact of the proposed development on the landscape character of the Special Landscape Area and the setting of the National Park. The development would take place in an area which presently contains limited built development and which is important in terms of landscape character and views. There is currently a strong contrast between the character and land use of the site and its immediate surroundings although other development in the form of a camping/caravan site is located nearby. The redevelopment of the site gives opportunities, in planning terms, to enhance the landscape, visual characteristics and biodiversity of the site in accordance with both national policy (PPS1 and PPS7) and the Local Plan.

7.116 Visibility of the site is largely governed by topography but also by the pattern of existing vegetation. Apart from the A53 itself which gives relatively open views of the existing site buildings, the majority of views are of the site as seen against the backdrop of the valley side. Elevated views can be obtained which allow the identification of the existing roofscape and emphasising the importance of the selection of local materials in any construction on the site. The scale and massing of the development proposals cover a slightly reduced area when compared with the existing land use and it is not thought that the development would be an overly dominant feature of the local landscape once the mitigation measures have become established.

7.117 The scale, form and massing of the proposed development is such that the scheme would not break the skyline in any of the key views. The views of the site from agreed viewpoints and sensitive receptors have been assessed resulting in a range of impacts from Moderate ***Adverse*** to ***No Effect*** in Year 1. By Year 15, allowing for the landscape proposals to become semi-mature, the impacts will be reduced to a range from ***Slight Adverse*** to ***Slight Beneficial***. In those locations where a ***Slight Adverse*** impact has been predicted it is considered that this would be reduced to ***No Effect*** over time as the new site vegetation matures resulting in a situation which closely reflects the present.

7.118 The proposed mitigation of the development includes new native tree planting on the site to integrate the development within its landscape context and strengthen screening of ground

level activity and the proposed buildings. The principal focus of the mitigation of the development has been to ensure that the more widely visible roofscape presents a positive and appropriate image within the landscape and visual context. The detailed design of both the structures and surrounding landscape framework would therefore present a unique opportunity to integrate this site into its surroundings in both landscape and visual terms.

Chapter 8 Ecology

Introduction

8.1 The purpose of this chapter is to assess the effects of the proposed development of a Continuing Care Retirement Community at the former Anzio Camp, for which an outline planning application has been made, upon designated nature conservation sites, habitats and protected and other important species.

8.2 The assessment of impacts on ecology has been carried out in line with current best practice for ecological impact assessment set out in the Institute for Environmental and Ecological Management guidelines [1]. The assessment is based upon baseline field survey undertaken by Apex Ecology during 2005 [2] and updated with field survey, desk study and consultation with relevant bodies undertaken by Andrew McCarthy Associates Ltd. in 2007 and 2008.

Assumptions and Limitations

8.3 This assessment is based upon the proposed redvelopment scheme layout as presented in **Figure 4.1**. For the purposes of the assessment it is assumed that all existing buildings, with the exception of the former Armoury building in the south east corner of the site, are to be demolished and that the footprint of the new development would largely be contained within the existing building footprint.

Assessment Methodology

8.4 The impact assessment for ecology follows the 'Guidelines for Ecological Impact Assessment in the UK' prepared by the Institute of Ecology and Environmental Management [1].

Definition of Study Area

8.5 The study area for ecology has been defined as all land owned by the applicant. This includes the area of land within the 'red-line' boundary for which planning permission is being sought. For more mobile species which may use habitats extending beyond the ownership boundary, consideration has also been given to potential indirect, off-site impacts, for example severance or isolation of off-site habitats.

Baseline Methodology

8.6 Baseline data has been gathered through a combination of field survey and desk based study. Preliminary field work comprising an 'Ecological Scoping Assessment and Bat Survey' was carried out by Apex Ecology during July, August and September 2005 [2]. A copy of this report is attached in **Appendix 8.1**. This preliminary survey work was updated with 'ground-truthing' of the extended Phase I Habitat survey, a repeat external inspection of buildings for evidence of bats and barn owl *Tyto alba*, and a detailed survey for badger *Meles meles* on 4 and 5 December 2007. Methods for the surveys undertaken to date are provided below:

(H4) Scoping Assessment/Extended Phase 1 Habitat Survey

8.7 The preliminary scoping assessment and extended Phase 1 Habitat Survey were carried out by Apex Ecology on 25 July and 3 August 2005 and followed the methodology as recommended in the Institute for Environmental Assessment publication 'Guidelines for Baseline Ecological Assessment' [3].

8.8 The site was walked over and habitats mapped and described with target notes made for important or pertinent ecological features (see **Figure 8.1**). A botanical species list was compiled using the DAFOR scale and a record made of evidence for, or potential for, protected or other important faunal species.

8.9 A 'ground-truthing' survey to validate the results of the initial Phase 1 Habitat Survey was undertaken by Andrew McCarthy Associates on 4 and 5 December 2007. The survey involved slowly walking over the study area to confirm that the preliminary habitat mapping provides an accurate account of current habitat quality and distribution and to identify any additional habitats or features of ecological interest which may have changed or been omitted during the previous survey.

8.10 Building B18, reported as being a barn owl roost by Apex Ecology, was inspected in detail on 4 December 2007 and a number of barn owl pellets collected for analysis. Other buildings were also searched for evidence of use by barn owl and an assessment was made of the suitability of habitats within and adjacent to the study area for barn owl foraging.

(H4) Building Inspections for Bats

8.11 A detailed internal and external inspection of buildings to search for evidence of use by bats and to assess their potential for bats was carried out by Apex Ecology during daylight hours on 6, 7, 24, 25 and 31 July 2005. All buildings were inspected both internally and externally, with

the exception of Building B15 (the former Armoury) which could not be accessed for internal survey and was only viewed from a distance for external inspection (see **Figure 8.1** for building numbers).

8.12 The building inspections followed the approach set out in the 'Bat Mitigation Guidelines' [4] and Bat Workers' Manual [5]. Inspections were made from the ground and aided with the use of close-focussing binoculars, ladders, an endoscope and high-powered torches where necessary. Particular attention was paid to searching roof voids, gaps under felting and other areas deemed as providing potential for bat use. A detailed description of each building was made.

8.13 All buildings were subject to a repeat external inspection to validate the results of previous work and to search for any recent evidence of use by bats by Tim Palmer (Natural England Survey licence no. 20061648) and Anita Glover (Natural England Survey licence no. 20070729) on 4 and 5 December 2007. None of the internal loft spaces could be accessed as all loft hatches had been locked and no keys were available. External searches for evidence of bat use were made from the ground aided with the use of close-focussing binoculars and ladders where appropriate. Characteristic field signs of bats such as accumulations of droppings or obvious scratch/wear marks were searched for.

(H4) Evening Emergence and Dawn Swarming Surveys

8.14 Two dawn swarming surveys and an activity survey were carried out by Apex Ecology on 7 July and 1 August 2005 to assess levels of bat activity generally within the site and to locate any roost sites. Ultrasonic bat detectors were used with MP3 players recording sound for later analysis. Dawn swarming surveys commenced approximately 100 minutes before sunrise on both occasions and finished at dawn (03.15 to 04.50 on 7 July and 03.55 to 05.20 on 1 August). The surveys were carried out by two surveyors walking slowly around the buildings.

8.15 A single evening emergence survey was undertaken focussing on Building B12 (identified as an important roost site during the building inspections) on 14 September 2005. This survey aimed to count bats emerging from the roost site. Ultrasonic bat detectors with MP3 players were employed to record bat echolocation; the survey was undertaken by two surveyors walking slowly around the building commencing approximately 30 minutes before sunset at 18.50 until 21.15. Weather conditions during the surveys were recorded as being suitable for bat survey (see **Appendix 8.1**, paragraph 2.13).

8.16 Further emergence and dawn surveys are proposed during June and July 2008 to identify current levels of use of the buildings and to count numbers of individual bats using roost sites as far as possible. Bat activity surveys within the wider site are also proposed to inform the

detailed design of bat mitigation including appropriate locations for replacement bat roost sites and associated landscaping to provide bat foraging and commuting corridors.

(H4) Badger Survey

8.17 A detailed badger survey was undertaken by Andrew McCarthy Associates on 4 and 5 December 2007 to search for evidence of badger activity. This included searching for signs of badger setts, foraging signs, dung pits/latrines, snuffle marks and 'runs' and followed the methods set out in 'Harris et al' [6].

(H4) Survey Constraints and Limitations

8.18 A number of survey constraints were identified by Apex Ecology during the extended Phase 1 Habitat Survey and subsequent bat surveys in July, August and September 2005 and are summarised here as follows:

1. Grassland in the central area of the site had been mown to a short, cropped sward prior to the survey visit which made identification of botanical species and interest difficult; it is therefore possible that the extent of areas of species-rich grassland may be have been under-estimated and mapped, in error, as amenity grassland;

2. The survey in July/August was noted as missing the key period for survey of woodland spring ground flora; the botanical interest of the woodland may therefore have been under-estimated;

3. The complexity and number of buildings to be surveyed for bats using dawn and emergence survey methods made it difficult to identify all possible roost sites with confidence, for example, it was unclear in some cases whether bats which flew out of view had entered a roost on-site or left the survey area. Building B15, the Armoury, could not be accessed for a detailed internal or external inspection due to a lack of close access and therefore received only limited survey effort. It is not clear from the Apex Ecology report whether this building received any attention during the dawn and emergence surveys, but it is assumed that it did not; and

4. The focus of effort for dawn swarming and activity surveys was around the buildings to attempt to identify roost sites; the adjacent areas of woodland and grassland habitats which are likely to be used by bats for foraging and potentially roosting, therefore, received limited survey effort.

8.19 The validity of survey results provided in the Apex Ecology report has been confirmed through repeat survey visits by Andrew McCarthy Associates in December 2007. There are clearly some areas where further ecological survey is required, namely botanical work and detailed bat survey work at an appropriate time of year to inform the design of appropriate mitigation and management.

8.20 It should also be noted that areas of un-improved grassland identified by Apex Ecology have been assessed by Andrew McCarthy Associates as having potential to support reptile species, particularly slow worm, grass snake and common lizard, and a range of terrestrial invertebrates. No detailed surveys have been undertaken for these species groups to date on the basis that the areas of grassland are to be retained and that impacts upon these species groups are unlikely to be significant. The need for detailed reptile and terrestrial invertebrate survey is to be advised by Staffordshire Moorlands District Council Ecologist.

8.21 The Apex Ecology surveys, updated with 'ground truthing' and detailed badger survey by Andrew McCarthy Associates in December 2007 are, therefore, in general, considered to provide an accurate and sufficiently detailed account of baseline site conditions upon which to base this ecological impact assessment.

8.22 All ecologists employed by Andrew McCarthy Associated Limited are members of, or are under application for membership of the Institute of Ecology and Environmental Management (IEEM) and follow the Institute's Code of Professional Conduct when undertaking ecological work.

(H4) Desk Study

8.23 A desk study was undertaken by Apex Ecology in 2005. This comprised a request to the Staffordshire Ecological Records Centre (SER) for existing records of protected species and statutory and non-statutory designated sites within a 1km radius of the study area. The original data is not available for this report and the results are summarised in the Apex Ecology report (**Appendix 8.1**, paragraphs 3.1 to 3.5).

8.24 The desk study was updated and expanded by Andrew McCarthy Associates in April 2008. Staffordshire Ecological Records Centre was contacted again for updated archive data on legally protected sites and notable species (e.g. Biodiversity Action Plan priority species, Red Data Book species, Red or Amber listed bird species, nationally rare or scarce species), sites of local wildlife conservation importance and RIGS, within a 2 km radius of the study area. Additional species-specific information was also requested from the local bat, badger and bird groups, including the Barn Owl Action Group affiliated to the Staffordshire Wildlife Trust.

8.25 The Multi-Agency Geographic Information for the Countryside (MAGIC) website was used to locate details of statutory sites for nature conservation in addition to the 'Nature on the Map' website, maintained by Natural England, which was searched for details of Local and National Nature reserves and areas of priority habitats listed in the UK Biodiversity Action Plan within 1km of the study area.

8.26 The UK [9] and Staffordshire Biodiversity Action Plans [10] were reviewed to identify the status of and targets for habitats and species present, or for which there is potential, within the study area.

Impact Methodology

8.27 The 'Guidelines for Ecological Impact Assessment' [6] (hereafter referred to as 'the IEEM Guidelines') provide guidance on the process of identifying the value of ecological receptors, characterising impacts upon them and determining an overall assessment of significance of impact. Significance in the IEEM Guidelines is defined as 'an impact (negative or positive) on the integrity of a defined site or ecosystem and/or the conservation status of habitats or species within a given geographical area'. Further, the IEEM Guidelines suggest that confidence in prediction of assessment of the impact on ecological structure and function be categorised as follows:

- Certain/near-certain: probability estimated at 95% chance or higher;
- Probable: probability estimated above 50% but below 95%;
- Unlikely: probability estimated above 5% but less than 50%;
- Extremely unlikely: probability estimated at less than 5%.

8.28 For the purposes of this ES, the final assessment of significance has been further translated into a common framework of definitions of significance provided by RPS to enable a consistent approach across different topic areas.

8.29 The key stages for ecological impact assessment (EcIA) set out in the IEEM Guidelines are summarised as follows:

- Scoping, involving consultation to ensure the widest possible input to the definition of the scope of the EcIA (in practice, scoping is iterative throughout the EcIA process);
- Identification of the likely zone of influence arising from the whole lifespan of the project;
- Identification and evaluation of ecological resources and features likely to be affected;
- Identification of the biophysical changes likely to affect valued ecological resources and features;

- Assessment of whether these biophysical changes are likely to give rise to a significant ecological impact, defined as an impact on the integrity of a defined site or ecosystem and/or the conservation status of habitats or species within a given geographical area, including cumulative impacts;
- Refinement of the project to include ecological enhancement measures, mitigation measures to avoid or reduce negative impacts, and compensation measures for any residential significant negative impact;
- Assessment of the ecological impacts of the refined project and definition of the significance of these impacts;
- Provision of advice on the consequences for decision making of the significant ecological impacts, based on the value of the affected resource or feature; and
- Provision for monitoring and following up the implementations and success of mitigation measures and ecological outcomes, including feedback in relation to predicted outcomes.

8.30 Recommendations for mitigation and enhancement identified in this impact assessment have been and would be taken into consideration in the continuing Masterplan design; this assessment is, therefore, an iterative process to be concluded upon completion of survey work and subsequent design freeze.

Policy Context

National Planning Policy

8.31 Planning Policy Statement 9 [7] and its accompanying document ODPM 06/2005 [8] sets out government policy on biodiversity and nature conservation and places a duty on planners to make material consideration to the effect of a development on legally protected species when considering planning applications. PPS9 also promotes sustainable development by ensuring that developments take account of the role and value of biodiversity and that it is conserved and enhanced within the development.

8.32 The UK Biodiversity Action Plan (UKBAP) [9] organised to fulfil the Convention on Biological Diversity in 1992, to which the UK is a signatory, has produced a national priority list of habitats and species for which Habitat and Species Action Plans have been prepared. Regional and local BAPs, in this case the Staffordshire Biodiversity Action Plan [10], have also been organised to develop plans for species of nature conservation importance at regional and local levels.

Regional Planning Policy

8.33 The West Midlands Region Spatial Strategy 'Towards a More Sustainable Region' [11] has been prepared to provide strategic guidance on planning issues, including biodiversity. Policy QE7: 'Protecting, managing and enhancing the Region's Biodiversity and Nature Conservation Resources' requires that the plans and programmes of local authorities and other relevant agencies should (in summary):

1. encourage the maintenance and enhancement of the Region's wider biodiversity resources;

2. include policies and proposals which enable the West Midlands to achieve its minimum share of the UKBAP targets and the targets of local partnerships and other BAPs;

3. take a common approach to biodiversity and nature conservation issues which cross local planning authority and Regional boundaries.

Local Planning Policy

8.34 Anzio Camp falls within the area covered by the Adopted Staffordshire and Stoke-on-Trent Structure Plan 1996 -2011 [12]. In general development terms, **Policy D8** of this Plan requires that where appropriate, development schemes should be accompanied by the provision of necessary on- and off-site infrastructure, community services and/or mitigating measures. The provisions to be negotiated to make the impact of development acceptable may include 'where damage to protected habitats or those frequented by protected species is unavoidable, the replacement of significant natural habitats or introduction of other appropriate mitigation measures'.

8.35 With regard to nature conservation specifically, **Policy NC5** deals with biodiversity issues requiring that 'Planning authorities will seek to further the objectives of the UK and Staffordshire Biodiversity Action Plans through appropriate policies and proposals for safeguarding and increasing key habitats and species. Opportunities will be sought to achieve UK and Staffordshire Biodiversity Action Plan targets for key habitats and species'.

8.36 Other relevant policies are **Policy NC6** – Important Semi-Natural Habitats, **Policy NC7C** – Sites of Local Nature Conservation Importance, **Policy NC8** – Habitats of Protected Species and **Policy NC13** – Protection of Trees, Hedgerows and Woodlands. In summary, these policies seek to avoid adverse effects on ecologically important features and to ensure that

suitable mitigation is provided where it can be demonstrated that the needs of the proposed development outweigh those of nature conservation.

Existing (Baseline) Conditions

8.37 An account of baseline information obtained through field survey and desk based study carried out by Apex Ecology and by Andrew McCarthy Associates is presented below. A copy of the full Apex Ecology report is presented in **Appendix 8.1** and a summary of the results, updated with additional comments from recent field survey carried out by Andrew McCarthy Associates, is presented below. **Appendix 8.1** - Figure 1 shows the distribution of habitats within the study area. A botanical species list compiled in July and early August 2005 is provided in **Appendix 8.1** – Table 2. Desk study material is presented in **Appendix 8.2**.

Statutory Designated Sites

8.38 There are a number of statutory designated sites within approximately 2km of the study area. These comprise Thorncliffe Moor Site of Special Scientific Interest (SSSI), Leek Moors SSSI which is a component part of the extensive South Pennine Moors Special Protection Area (SPA) and the Peak District National Park. The National Park lies approximately 1km to the north and east of the study area and is an extensive area supporting a diverse range of habitats related to the underlying geology of limestone. This results in a landscape of dales, lead rakes and hay meadows and gritstone and shale comprising moorland and blanket bog all interspersed by areas of woodland, rivers and streams.

8.39 Thorncliffe Moor SSSI is located approximately 1.2km east of the study area. The moor comprises an isolated section of dry heath, unimproved acid grassland and spring-fed fens. It is floristically diverse containing many plants which are rare or uncommon in the county. Leek Moors SSSI lies approximately 1.5km to the north and east and comprises a number of fragmented areas of upland and upland fringe habitats. The SPA is designated for its upland habitats including heathland and blanket bog as well as bird species merlin *Falco columbarius* and golden plover *Pluvialis apricaria*.

Non-Statutory Designated Sites

8.40 There are extensive areas of priority UK Biodiversity Action Plan (BAP) habitats in the vicinity of the study area, the majority being associated with the nearby SSSIs, the SPA and National Park. These habitats include areas of lowland dry acid heathland, upland heathland and upland oak woods associated with the Leek Moors SSSI and upland heathland associated the Thorncliffe Moor SSSI. There are also several areas of ancient semi-natural woodland within the wider area, the closest being some 200m east and 265m west of the study area.

8.41 There are seventeen non-statutory designated sites for nature conservation within the 2km search area including fifteen Sites of Biological Importance (SBI's), one Biodiversity Alert Site (BAS) and one Natural England Grassland Inventory Site (NEGIS). These are listed in **Appendix 8.2** with a summary table to show distance of the SBI's from the study area. With the exception of the Anzio Training Camp SBI which falls entirely within the study area, all other non-statutory sites are at least 1km from the study area. The Anzio Training Camp SBI is designated for its unimproved neutral and marshy grassland habitats.

Desk Study Records for Protected Species

8.42 Recent data provided by the Staffordshire Ecological Records Centre (SER) includes five records of common pipistrelle *Pipistrellus pipistrellus* within 2km of the study area with the closest being approximately 350m north associated with Birchtree Farm. The other records were from locations approximately 1.9km south west, 1.9km north west, and associated with the northern section of Tittesworth Reservoir 1km to the north west. A single soprano pipistrelle *Pipistrellus pygmaeus* record was provided for the southern end of Tittesworth Reservoir. These records are all relatively recent dating from 1992 to 2003.

8.43 Four records of Daubenton's Bat *Myotis daubentonii* were provided, also associated with the northern section of Tittesworth Reservoir approximately 1.2km west and 1.9km north west of the study area. Three records of noctule *Nyctalus noctula* in the area were identified in the area surrounding the Tittesworth Reservoir and approximately 1.2km west of the study area.

8.44 A number of unidentified bats were also noted within the study area with the nearest two records being approximately 700m east associated with the southern section of the Tittesworth Reservoir and a further two records being found approximately 1.7km north. The large amount of data focussed on Tittesworth Reservoir suggests that it is either a key area of bat activity and/or visited by data recorders more frequently than other sites in the area.

8.45 Otter *Lutra lutra* have been identified associated with both Tittesworth Reservoir and the River Churnet situated to the west of the study area. The closest record to the proposed development is approximately 760m west and very recent, dating from 2007. Water vole *Arvicola terrestris* colonies are also noted as being present in the River Churnet and in the Tittesworth reservoir as recently as 2002.

8.46 Breeding badger *Meles meles* have been recorded in the 1980's and early 1990's within the area surrounding Tittesworth Reservoir, the closest record being approximately 1km west of the study area. Sightings of badger in this area have been recorded as recently as 2006. A record of breeding badgers from 1993 is also found within the 2km search area approximately

1.7km east within the Thorncliffe Moor SSSI. Other records are related to the A53 road corridor with the closest record being a sighting approximately 200m north of the study area.

8.47 SER holds records of grass snake *Natrix natrix* and common toad *Bufo bufo* approximately 1km west of the study associated with the Tittesworth Reservoir.

8.48 Over 164 different species of birds of nature conservation interest were recorded in the last ten years by SER and the local bird recorder. The records are presented in **Appendix 8.2** with a summary table to indicate which of the birds recorded are listed as UK or Staffordshire Biodiversity Action Plan species, Red Listed species of high conservation concern [13] and/or listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) [14].

Grasslands

8.49 There are three main areas of botanically diverse grassland within the study area identified as G1, G2 and G3 in **Appendix 8.1** - Figure 1. Grassland G1 lies outside of the application site boundary to the north east. Grasslands G2 and G3 fall within the application site boundary.

8.50 G1 is designated as the Anzio Camp Site of Biological Importance (SBI). It comprises unimproved, neutral grassland (a Staffordshire BAP habitat) with some marshy areas, particularly along its northern edge. Part of G1 was previously used as an assault course and it appears to have been unmanaged in recent years. It has developed a long sward with dominant species including Yorkshire fog *Holcus lanatus*, sweet vernal grass *Anthoxanthum odoratum*, red fescue *Festuca rubra* and creeping bent *Agrostis stolonifera*. Rushes and sedges are dominant in places and herbaceous species include greater bird's foot trefoil *Lotus corniculatus*, common knapweed *Centurea nigra*, sneezewort *Achillea ptarmica* and occasional common spotted orchid *Dactylorhiza fuchsii*.

8.51 Grassland G2 is located to the north of the building complex and comprises unimproved marshy grassland which also appears to have been unmanaged in recent years. The range of species present indicates that it is likely to be damp throughout much of the year. Large patches of sedge species dominate with glaucous *Carex flacca*, common *Carex nigra* and oval sedge *Carex ovalis* present. Grass and herbaceous species include a fine mix of red fescue, sweet vernal grass, tufted hair grass *Deschampsia flexuosa*, fen bedstraw *Galium uliginosum* and creeping buttercup *Ranunculus repens*.

8.52 Grassland G3 is located along the eastern site boundary on sloping ground and supports a similar range of species as for G1 and G2. A small patch of grassland to the south of G3 supports a number of semi-mature alder *Alnus glutinosa* and grey willow *Salix cinerea*, including a group of grey willow (see TN6).

8.53 Areas of grassland associated with the buildings are generally species poor amenity grassland, previously mown on a regular basis and dominated by Yorkshire fog, red fescue, rough meadow grass *Poa trivialis* and perennial rye grass *Lolium perenne*. However, it was noted that areas of grassland near the buildings had been cut prior to survey in June/July 2005 and that this may have resulted in an underestimate of the extent of more botanically diverse grasslands. For example, it was noted that the grass verges to the east of buildings B9 and B10 (TN8) contained a diverse mix of fine leaved grass species and herbs, probably of a similar character and possibly formerly part of grassland G1.

8.54 Many of the grassland areas near buildings have been planted with ornamental trees and shrubs including grey alder *Alnus incana*, poplar *Populus* spp., beech *Fagus sylvatica* and ash *Fraxinus excelsior* with the shrubs located against building edges and genera very dense, unmanaged and overgrown. A patch of Japanese knotweed *Fallopia japonica* was noted near building B7 (TN 7).

Woodland

8.55 An area of woodland located in the north east of the study area comprises secondary woodland of relatively recent origin with areas of plantation and semi natural vegetation. This area of woodland falls outside of the application site boundary. The eastern part of the woodland supports Scot's pine *Pinus sylvestris,* ash, sycamore *Acer pseudoplatanus* and alder *Alnus glutinosa* with a sparse shrub layer and ground flora. The western part of the woodland has much damper ground conditions with dense growth of osier *Salix X*, grey willow and alder, including occasional mature alder. A relict hedge bank is present along the southern woodland edge supporting mature beech and alder. Two open glades in the centre of the woodland support species typical of damp ground conditions including fen bedstraw, greater bird's foot trefoil, angelica *Angelica sylvestris* and common spotted orchid.

Mature Trees and Hedgerows

8.56 There are a number of hedgerows within the study area, the most botanically and structurally diverse being H4 and H5 located in the central part of the site adjacent to buildings 6 and 7. Hedgerow H4 is a tall, unmanaged relict hedge with mature alder, holly *Ilex aquifolium* and hawthorn *Crataegus monogyna*. Hedgerow H5 has a similar composition. Hedgerows H1, H2 and H3 are less diverse although H1 and H2 in particular support a number of tall trees and form an effective screen along the north and west site boundaries (see **Appendix 8.1** – Table 1 for a full species list).

8.57 A group of mature trees (TN10) located in the central part of the site, and some of the mature trees in hedgerows H1 and H2, were noted as having crevices suitable to support roosting by bats in the form of woodpecker holes and splits.

Bats

8.58 A detailed description of buildings and a summary of evidence of roosting by bats are provided in **Appendix 8.1** – Table 3.

8.59 The buildings date from the early 1980s and are all of a similar design being brick built with loft voids and slate tiled roofs. Many have a large, wooden soffit box fitted along the eaves. The number and orientation of buildings and associated lofts and soffits provide a range of roosting opportunities for bats. The Apex Ecology report notes that the former accommodation blocks (buildings B5 to B10) appear to offer the greatest opportunities for roosting, with a sheltered central courtyard and multiple pitched, asymmetric roofs.

8.60 Evidence of bats was found in six of the buildings (B5, B6, B7, B8, B10 and B12) with the most significant roost, thought to be a maternity roost for common pipistrelle *Pipistrellus pipistrellus*, having been recorded in the soffit box at the rear of B12. Around 300 droppings were recorded on the floor and wall beneath a long gap between the soffit box and rear wall; a smaller roost site was recorded associated with a soffit box at the front of B12 and further droppings were found below the gable apex at the western elevation of the building.

8.61 Significant numbers of droppings of common pipistrelle were recorded in buildings B5 and B6, and small numbers of droppings in B7, B8 and B10. Those in B7 were thought to be of brown long-eared bat *Plecotus auritus*, although the small number and location of droppings, along with presence of feeding remains suggested use as a feeding perch rather than a roost site.

8.62 In addition to extensive use of the buildings by bats, evidence of use of the wider site for foraging was also recorded with high levels of common pipistrelle activity and a *Myotis* bat species (possibly Daubenton's, Brandts or Whiskered bat) recorded during emergence and dawn swarming surveys (see **Appendix 8.1** – Figure 2 for main areas of bat foraging activity).

Barn Owl

8.63 A pair of barn owl has been confirmed roosting in the former firing range (B18) located to the east of the main building complex. No evidence of a nest or eggs has been recorded to date, however, it is possible that the site is also used for breeding. Large numbers of pellets were found during both 2005 and 2007 surveys (c.200 pellets recorded in 2007), and a pair of barn owls were in residence in December 2007. Other buildings and associated features also show

evidence of less frequent use as feeding perches and occasional roost sites for barn owl including the security light attached to building B5 and the porch area of building B9. Building B9 is also thought to have been used as a roost site for kestrel *Falco tinnunculus* in 2005.

8.64 Areas of unimproved grassland G1, G2 and G3 and associated hedgerow features are considered to provide high value barn owl foraging habitat; it is suspected that barn owl would probably also use a stables complex located to the north of the study area as a roost site.

Badger

8.65 The detailed badger survey in December 2007 revealed no setts within the study area, or within approximately 50m of the study area (as viewed through binoculars). However, two 'push throughs' beneath the fence along the southern site boundary were noted indicating that badger occasionally use habitats within the study area, most probably the site's south west corner and areas of unimproved grasslands G1, G2 and G3, for foraging.

Other Species

8.66 No detailed bird survey has been undertaken, however, from an assessment of the suitability of habitats within and adjacent to the study area, it is considered that it is likely to support a range of bird species typical of farmland and woodland edge habitats, potentially including red and amber-listed species [13] and UK and Staffordshire BAP [9, 10] species (the Staffordshire BAP includes a number of farmland and moorland bird species). Habitats of particular value for breeding birds within the study area are the mature hedgerows and secondary woodland, however, it is the overall mosaic of open grassland areas and the shelter and cover provided by buildings, hedgerows and woodland which combine to provide a range of nesting and feeding opportunities.

8.67 Incidental sightings recorded during the extended Phase 1 Habitat Survey in July/August 2005 include (in addition to barn owl described above) bullfinch *Pyrrhula pyrrhula*, dunnock *Prunella modularis*, green woodpecker *Picus viridis* and willow warbler *Phylloscopus trochilous* (see **Appendix 8.1** – Table 4). Further detailed survey is not proposed on the basis that the combination of open and more sheltered habitats supporting these species would largely be retained and that no significant adverse impacts upon breeding birds are anticipated (appropriate protocols to avoid disturbance to nesting birds during site clearance and construction would be applied).

8.68 Areas of unimproved grassland have potential to support a diverse assemblage of terrestrial invertebrates and reptile species, most probably grass snake (a Staffordshire BAP species), slow worm and common lizard. No detailed survey has been undertaken to date on the basis

that the grasslands would not be affected by the proposed development and no significant adverse impacts upon these species groups are considered likely (appropriate protocols to minimise risk of injury/killing of individual reptiles during site clearance and construction would be applied). However, the need for detailed survey for species groups which may be present associated with the unimproved grasslands is under discussion with Staffordshire Moorlands District Council Ecologist at the time of writing.

8.69 No desk study records have been provided for pink meadow cap *Hydrocybe calyptriformis*, a Staffordshire BAP species associated with unimproved grasslands and known from only nine sites in the County. It is, therefore, assumed that this species is not present within or adjacent to the study area.

8.70 Based on a review of OS Explorer Series No. OL24 (The Peak District White Peak Area) 1:25 000 scale map, there are no ponds to provide potential breeding habitat for great crested newt *Triturus cristatus* within 500m of the study area; the study area does not contain habitats suitable for otter or water vole. The areas of grassland within the study area are not considered sufficiently extensive to be used frequently by brown hare, although it is very likely that this species is present within farmland adjacent to the study area. All four are Staffordshire BAP species; however, on the basis of a lack of suitable habitats within the study area, no further survey for these species is considered necessary.

Identification and Assessment of Effects

Scope of Ecological Impact Assessment

8.71 The ecological impact assessment focuses on those ecological features identified within the study area which, without appropriate mitigation, are likely to experience significant effects as a result of the proposed development. These are:

- Unimproved neutral grasslands (core areas of grassland G1, G2 and G3, and smaller patches of grassland TN6 and TN8);
- Botanically/structurally diverse hedgerows (H4 and H5);
- A breeding population of common pipistrelle; and
- A pair of barn owl.

8.72 There are a number of other ecological features within the study area (or for which the study area has potential) which are considered very unlikely to be significantly, adversely affected by the development proposals. These have not been subject to detailed ecological impact

assessment but would be dealt with through appropriate best practice protocols during site clearance and construction. These are:

- Breeding birds (other than barn owl) which may nest in trees/scrub and buildings;
- Badger (using study area for occasional foraging only);
- Reptiles (for which areas of unimproved grassland have potential);
- Terrestrial invertebrates (for which areas of unimproved grassland have potential);
- Secondary woodland located to north east of study area and which would not be affected by the proposals; and
- Brown long-eared and *Myotis* bat species, which use the buildings and study area for foraging and feeding but do not appear to have any roost site(s).

8.73 The scope of the ecological impact assessment has been discussed with the Staffordshire Moorlands District Council Ecologist (with regard to all habitats and species) and local Natural England team (regarding bats and unimproved grassland in particular). Further consideration is required regarding the extent to which reptiles and terrestrial invertebrate species which may be associated with areas of unimproved grassland should be subject to detailed survey and assessment. However, the scope of survey, assessment and proposed mitigation for other ecological features appears to be largely in line with the requirements of both organisations.

8.74 The detailed ecological impact assessments for unimproved grasslands and hedgerows, common pipistrelle and barn owl set out in the format prescribed by the IEEM Guidelines can be found in Tables 8.1, 8.2 and 8.3 referred to as 'Characterisation of Impact' tables. An overview of the likely effects on these features during construction and operational phases of the development are provided below.

8.75 For the purposes of this impact assessment, the 'construction' phase of development is taken to include all those activities associated with site clearance, demolition and construction of the new development, including any off-site compounds. It may include pre-site clearance, ground and building investigations and any necessary remediation works. It also includes construction of drainage and highways infrastructure and all associated landscaping works. It is anticipated that the demolition phase would span 6 – 12 months and full build out would be over 5 years with the care home and communal facilities built over the initial 18 – 24 months.

8.76 The 'operational' phase of development is taken to be the period following completion of construction and landscaping and includes activities associated with the day to day management of the site, including building maintenance and habitat and landscape management. It is also considered to encompass impacts associated with the existence of the development when compared with the current baseline, for example, changes in site layout

and orientation of features such as buildings and vegetation, position and strength of lighting and changes in frequency/type of human and vehicle movements.

Construction Effects

8.77 The likely effects on key ecological features during construction would be:

- Potential for loss of, damage to and fragmentation of areas of unimproved grassland (G1, G2, G3, TN6 and TN8) through site clearance, inappropriate location of site compounds, accidental damage by vehicles and storage of materials, tree and shrub planting, construction of ponds/ informal footpaths and other amenity infrastructure;
- Loss of and increased fragmentation of hedgerows H4 and H5 through direct removal;
- Loss of breeding and non-breeding roost sites for common pipistrelle through demolition of buildings containing roosts, and disturbance to remaining common pipistrelle roosts during the site clearance and demolition process (primarily from strong lighting and alteration of flight lines, but also noise and vibration);
- Loss of a permanent roost site for barn owl through demolition of the former firing range and loss of other, infrequently used, roost sites through demolition of other buildings and disturbance to the former firing range nest site during general site clearance, demolition and construction works.

8.78 Construction works, without appropriate measures in place could also result in disturbance to, or accidental killing or injury of, individual animals, particularly breeding birds (other than barn owl), reptiles (if present) and badger. Such effects, whilst unlikely to affect the integrity of the local populations of these species, would be in breach of legal protection afforded by the Wildlife and Countryside Act 1981 (as amended) and the Badger Protection Act (1992).

Operational Effects

8.79 The likely effects on key ecological features during the operational phase would be:

- Reduced extent and quality of unimproved grasslands through changes in site layout, land use and management (including neglect of grasslands);
- Reduced extent and quality of ecologically valuable hedgerows, as above;
- Reduced ability of site to support a breeding colony of common pipistrelle through changes in site layout and levels of disturbance affecting the quality and extent of foraging habitats, commuting and dispersal corridors and habitat connectivity between key roost sites and foraging areas; reduction in breeding success, increased mortality and/or possible abandonment of site by common pipistrelle; and

- Reduced ability of site to support a pair of barn owl for same reasons as above; possible reduction in breeding success; increased morality and/or abandonment of site by barn owl.

Mitigation

8.80 Tables 8.1, 8.2 and 8.3 provide details of the proposed mitigation for unimproved grasslands and hedgerows, common pipistrelle bat and barn owl. It is understood that outline planning permission only is being sought at this stage and it is therefore not appropriate to provide a detailed level of design for proposed ecological mitigation. For this reason, the detail of mitigation features, for example, the exact location and specification for replacement bat roosts, has not been agreed. However, the general location and requirements of key mitigation features has been taken into account in Masterplan design and it is anticipated that full, detailed design would be developed as a condition of outline planning permission.

8.81 Mitigation would be designed, implemented and monitored in consultation with Staffordshire Moorlands District Council Ecologist and the local Natural England Team as appropriate. For bats, the mitigation proposals are line with best practice guidelines [4] and detailed mitigation requirements would be delivered under a European Protected Species Licence.

8.82 The proposed new development would contain extensive areas of open space comprising existing unimproved grasslands, but also large areas of existing amenity grassland, particularly adjacent to the site entrance, where there is significant scope for new habitat creation including wetlands, woodland, scrub, hedgerows and grassland. Overall, the retained and new habitats would provide a significant level of green infrastructure throughout the site.

8.83 A Habitat and Landscape Management Plan is proposed which would integrate the requirements of the key habitats and species present within the study area, including habitats which fall outside the red line boundary, and to ensure that the proposed mitigation and new habitat creation is delivered and secured in the long term. It is anticipated that the Management Plan would be delivered as a condition of planning permission.

8.84 Whilst it is not required as part of the proposed mitigation, it is proposed that the Habitat and Landscape Management Plan would also address management of the block of secondary woodland located in the north east of the study area. Objectives for management of the woodland area include maintaining open glades for invertebrate and reptile species and selective thinning of non-native species to encourage natural regeneration of native, broadleaved species.

8.85 The proposed new development would contain extensive areas of open space comprising existing unimproved grasslands, but also large areas of existing amenity grassland, particularly adjacent to the site entrance, where there is significant scope for new habitat creation including ponds and watercourses, woodland, scrub, hedgerows and grassland. Overall, the retained and new habitats would provide a significant level of green infrastructure throughout the site.

Unimproved Grassland and Hedgerows

8.86 Core areas of unimproved grassland (G1 and G2) and the smaller patch of grassland TN6 are to be retained and an appropriate management regime instigated to maintain their floristic diversity and to prevent scrub encroachment. The areas of grassland are too small to consider grazing as a viable management technique; it is therefore proposed that they are cut by hand or strimmer on a twice yearly basis in spring and autumn. Arisings would be removed to minimise nutrient input. A 3-4m wide uncut margin would be retained around each side of the grasslands, on rotation each year to provide a refuge for small mammals, reptiles and invertebrates.

8.87 Areas of existing scrub encroachment would be managed through selective felling.

8.88 Protective fencing would be employed to protect these safeguarded grasslands during the construction phase. No landscaping works would be carried out in these areas and no vehicle access would be permitted, except for agreed management tasks. Any pedestrian access through these areas of grassland would be provided for through informal, mown paths only.

8.89 Areas of unimproved grassland which would be lost within the development footprint, namely G3 and TN8 and any other verges which are identified as being species rich during repeat botanical survey in 2008 would be identified and marked prior to site clearance and lifted as turfs for re-use in landscaping to connect, extend and buffer existing unimproved grasslands.

8.90 Hedgerows H4 and H5 would be coppiced and transplanted to provide corridors along the eastern site boundary for bat dispersal and commuting, particularly linking the proposed replacement bat roost in the former armoury building to grassland G1 and woodland in the north east of the study area. The hedgerows would be ‘gapped up’ with suitable native species to provide a dense, continuous corridor.

8.91 All areas of retained and translocated unimproved grassland and hedgerows would be managed under a Habitat and Landscape Management Plan to ensure that the requirements of the habitats and relevant protected and local BAP species are fully integrated and delivered, particularly farmland birds, barn owl and common pipistrelle. Management objectives would

also take into consideration the potential for the unimproved grasslands to support reptile species and terrestrial invertebrates.

8.92 Monitoring of the condition of the grasslands would be carried out on an annual basis through botanical survey and visual assessment and the Management Plan prescriptions modified accordingly.

Common Pipistrelle

8.93 It is proposed that a significant number of replacement roost sites be provided ahead of any building demolition to provide a range of conditions for breeding, hibernation and other non-breeding phases of the lifecycle. The key maternity roost site would be provided in the former Armoury building located in the south east corner of the site which currently has limited potential for bat use and which would be converted to provide suitable features and access points for breeding. Additional roost features would be provided within the proposed new development.

8.94 Appropriate timing, phasing and methods of working would be adopted during building demolition to minimise the impact of demolition upon individual bats at sensitive times of year.

8.95 All new roost sites would be linked to suitable foraging areas by structure landscaping, mimicking the existing site layout as closely as possible; the use of strong lighting would be minimised in key areas of bat activity including along the eastern site boundary which is proposed for the key bat commuting corridor associated with the replacement maternity roost.

8. 96 Monitoring of use of the new roost sites and of bat activity generally within the study area would be undertaken during and after construction to determine the success of uptake of bat mitigation. If necessary roost location and design and habitat management would be modified under the Habitat and Landscape Management Plan, in consultation with Staffordshire Moorlands District Council Ecologist and the local Natural England team.

Barn Owl

8.97 Replacement roost sites would be provided ahead of demolition of the firing range. It is proposed that four pole-mounted barn owl boxes be provided within grassland G1, as close as possible to the firing range. The exact location and installation methods would need to minimise damage to the existing unimproved grassland G1. Consideration would also be given to incorporation of a permanent barn owl roost within the Armoury building.

8.98 Appropriate timing and methods of working would be adopted during demolition of the firing range to minimise direct impacts and disturbance to barn owl; barn owl may need to be excluded from the range prior by an appropriate licensed ecologist prior to demolition if they have not moved of their own accord.

8.99 Monitoring of barn owl use of the new boxes would be undertaken during and after construction and habitats used by barn owl for foraging would be managed under a Habitat and Landscape Management Plan; particular emphasis would be given to encouraging high levels of small mammal activity in grassland areas.

Other Species

8.100 Appropriate protocols would be adhered to during the construction phase to avoid or minimise impacts upon protected species which might otherwise result in a breach of the legal protection afforded to these species under the Wildlife and Countryside Act 1981 (as amended) and Badgers Act, 1992, namely breeding birds, reptiles and badger. The following measures are suggested to avoid disturbance and/or direct killing or injury of individuals and would be secured by working method statements to be adhered to by site contractors, under the supervision of appropriately qualified ecologists as necessary.

8.101 Clearance of trees and shrubs and building demolition would take place outside of the bird breeding season (taken to be March to August inclusive); if it is not possible to avoid this period, a check should be made prior to felling/demolition for evidence of nesting birds and a suitable undisturbed buffer zone established around any active nests until the young have fledged.

8.102 Areas of suitable vegetation for reptiles would be cleared by hand immediately prior to site clearance to minimise risk of killing/injury of individual reptiles. A watching brief would be maintained during initial site clearance/construction and removal of any reptiles encountered (it is considered likely that noise and visual disturbance during site clearance/demolition and construction works would be likely to deter reptiles from the main construction area).

8.103 Open trenches would be covered at night to minimise the risk of badger becoming trapped in them.

Summary and Residual Effects

8.104 The proposed development would not affect any statutory designated sites for nature conservation. One non-statutory Site of Biological Importance (Anzio Training Camp SBI)

which is afforded policy protection falls within the study area but outside of the red line boundary, and would not be directly affected by the proposed development. All other designated sites are considered too distant from the study area to be likely to be affected, either directly or indirectly (this includes the nearby South Pennine Moors Special Protection Area (SPA).

8.105 The key ecological features within the study area which are considered likely to be affected by the proposed development (potentially significantly affected if no mitigation were provided) are areas of unimproved grassland (G2, G3, TN6 and TN8), two sections of hedgerow (H4 and H5), a breeding population of common pipistrelle bat and a pair of barn owl.

8.106 The process of ecological impact assessment has 'ruled out' a number of other ecological features associated with the study area from the need for detailed assessment on the basis that it is highly unlikely that their integrity would be significantly and/or adversely affected. Those features which have been 'ruled out' are species poor amenity grasslands, additional hedgerows and ornamental planting, breeding birds (other than barn owl), badger and bat species other than common pipistrelle which use the study area for foraging and feeding only and not for roosting.

8.107 The potential use of the study area by reptiles and terrestrial invertebrates has not been determined through detailed survey, however, on the basis that the unimproved grasslands which they may be associated with would not be affected and that suitable measures can be adopted during construction to minimise risk of accidental killing or injury of individuals (in the case of reptiles), no detailed survey is proposed.

8.108 Mitigation measures have been developed with the following objectives: no net loss of biodiversity from the study area; no significant adverse impact on the integrity of key habitats and species and, as far as possible, contribution toward Staffordshire BAP targets. Mitigation would include retention and suitable management of core areas of unimproved grasslands, translocation of patches of unimproved grassland and hedgerows which would be lost within the development footprint, appropriate timing and working methods during demolition, provision of replacement roosts sites for bats and barn owl and integration of landscaping and roost sites to ensure suitable corridors of habitat linking roosts to foraging areas. Ecological enhancements over and above those required to mitigate for adverse impacts are also proposed, namely introduction of management to the area of secondary woodland to the north east of the study area and creation of extensive areas of new habitats.

8.109 Mitigation would be delivered through a number of mechanisms including a European Protected Species Licence for bats and a Habitat and Landscape Management Plan and it is anticipated that these would be secured through conditions attached to outline planning

permission. A key component of mitigation would be monitoring to assess the effectiveness of mitigation measures and to allow management objectives to be modified in response to the outcome of this monitoring.

8.110 In conclusion, with mitigation in place, and based on the approach set out for ecological impact assessment in the IEEM Guidelines, it is considered *probable that there would be no significant effects* on unimproved grassland or hedgerows, common pipistrelle and barn owl at a local level.

8.111 Translating the results of this assessment into the generic framework for assessment of significance adopted by this Environmental Impact Assessment, the overall assessment for ecology is that, with appropriate mitigation in place, the effects are likely to be *'Minor Significant'* at worst.

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9 Archaeology and Cultural Heritage

Introduction

9.1 The purpose of this chapter is to assess the effects of developing a Continuing Care Retirement Community at the former Anzio Camp, for which an outline planning application has been made, on archaeology and cultural heritage. The likely impacts are assessed during both the construction and operational phases of the proposed development.

9.2 Archaeology is defined as the study of past societies through the medium of material culture. Built heritage is defined as those buildings and structures of heritage interest.

9.3 The aims of this study are to assess the likelihood of the proposed development site and study area to contain remains of cultural heritage significance and to provide an indication of what, if any, further work may be required with regard to mitigation.

9.4 The objectives of the project have been:

- To identify and assess the relative importance of cultural heritage features likely to be affected by the proposed development;
- To protect those features through the avoidance of direct impacts where possible and to design mitigation measures to preserve those features by record where avoidance is not possible; and
- To protect the setting of cultural heritage features though both the design of the layout of the scheme and through measures such as planting.

Assessment Methodology

9.5 The assessment has conformed to the relevant legislation and guidance, including:

- *Planning Policy Guidance: Planning And The Historic Environment* (PPG 15) Department of the Environment, DNH September 1994;
- *Planning Policy Guidance: Archaeology And Planning* (PPG 16) Department of the Environment November 1990;
- *Code of Conduct* Institute of Field Archaeologists 2006 and
- *Standard And Guidance for Archaeological Desk based Assessment* Institute of Field Archaeologists 2001.

Definition of Study Area

9.6 The primary study area comprises some 1000 metres around the proposed development area, although third party data was also requested on any significant sites outside this area that it would be appropriate to include.

9.7 Consideration was given to information on Scheduled Ancient Monuments (SAM), Registered Parks and Gardens and Registered Battlefields, Conservation Areas and Listed Buildings from a wider area so that the effect, if any, of the proposed development on their setting could be considered. An iterative approach has been taken, based on any likely impact on the setting of these cultural heritage features.

Baseline Methodology

9.8 Baseline studies comprised the production of a desk-based assessment. This considered both below ground archaeology and above ground cultural heritage receptors. The desk assessment considered also in detail the area of open ground and woodland to the northeast of the proposed development area.

9.9 The desk assessment comprised:

- Consultation with the Staffordshire Historic Environment Record (HER).
- An examination of information on Scheduled Ancient Monuments, Registered Parks and Gardens and Registered Battlefields obtained from English Heritage.
- A review of relevant documentary and archival material held in The Staffordshire County Record Office and the William Salt Library.
- A site visit, undertaken to establish the presence of above ground archaeology, whether or not previously recorded. The site visit has also provided an indication of the suitability of any further survey technique.

9.10 Within this document, archaeological periods are defined as follows:

- Prehistoric [comprising Lower Palaeolithic (pre 30,000 BC), Upper Palaeolithic (30,000 - 10,000BC), Mesolithic (10,000 - 3,500BC), Neolithic (3,500 - 2,000BC), Bronze Age (2,000 - 700BC) and Iron Age (700BC - AD43)].
- Roman (AD43 - AD450).
- Medieval (AD450 - AD1540).
- Post Medieval (AD1540 onwards).

Impact Methodology

9.11 Planning Policy Guidance 16 (PPG 16) provides guidance on the distinction between remains of national importance and those of lesser importance, at paragraphs 8 and 27. A basis for establishing the relative order of importance of archaeological sites is given in Annexe 4 of PPG 16. In addition, the Design *Manual for Road and Bridges (Vol 11, Section 3 Part 2 HA208/07)* Highways Agency August 2007 details categories of relative importance:

- Sites of Very High Value – usually world Heritage sites or sites of acknowledged **International Importance**
- Sites of High Value or **National Importance** – usually Scheduled Ancient Monuments, or monuments in the process of being scheduled.
- Sites of Medium Value, these being of **Regional** or **County importance**;
- Sites of Low Value, these being of district or **Local importance**;
- Sites of **Negligible** Value - with very little of no surviving archaeological interest.
- Sites of **Unknown** Value

9.12 Designations of relative importance in this report are based on the above categories.

9.13 The significance of effect is assessed through a consideration of the importance of the receptor and the magnitude of impact.

9.14 In this chapter definitions of significance are as follows:

- **Major (or substantial) significance -** Effects of the development of greater than local scale
- **Moderate significance -** Effects of the development that may be judged to be important at a local scale
- **Minor (or slight) significance -** Effects of low importance in the decision-making process
- **Negligible (or not significant) -** Effects that are of such low importance that they are not considered material in the planning process.

9.15 Transport Analysis Guidance (DoT June 2003) Unit 3.3.9 The Heritage of Historic Resources Sub Objective Table 1: Heritage of Historic Resources Table of Overall Assessment Scores (**Table 9.1**) provides an indication of how significance of impact may be measured.

Table 9.1 Heritage of Historic Resources Table of Overall Assessment Scores

Score	Comment
Large (Major) Beneficial (positive)	**The proposals would:** ▪ provide potential, through removal, relocation or substantial mitigation of very damaging or discordant existing impacts (direct or indirect) on the heritage, for very significant or extensive restoration or enhancement of characteristic features or their setting ▪ make a major contribution to government policies for the protection or

Score	Comment
effect	enhancement of the heritage ▪ remove or successfully mitigate existing visual intrusion, such that the integrity, understanding and sense of place of a highly valued area, a group of sites or features of national or regional significance is re-established
Moderate beneficial (positive) effect	**The proposals would:** ▪ provide potential, through removal, relocation or mitigation of damaging or discordant existing impacts on the heritage, for significant restoration of characteristic features or their setting ▪ contribute to Regional or Local policies for the protection or enhancement of the heritage ▪ enhance existing historic landscape/townscape character through beneficial landscaping/mitigation and good design
Slight (Minor) Beneficial (positive) effect	**The proposals:** ▪ are not in conflict with national, regional or local policies for the protection of the heritage. ▪ restore or enhance the form, scale, pattern or sense of place of the heritage resource through good design and mitigation ▪ remove or mitigate visual intrusion (or other indirect impacts) into the context of locally or regionally significant heritage features, such that appreciation and understanding of them is improved
Neutral (negligible) effect	**The proposals:** ▪ are not in conflict with, and do not contribute to policies for the protection or enhancement of the heritage ▪ maintain existing historic character in a landscape/townscape ▪ have no appreciable impacts, either positive or negative, on any known or potential heritage assets ▪ are a combination of slight positive and negative impacts, on locally significant aspects of the heritage do not result in severance or loss of integrity, context or understanding within a Historic landscape
Slight (Minor) Adverse (negative) effect	**The proposals would**: ▪ be in conflict with local policies for the protection of the local character of the heritage ▪ have a detrimental impact on the context of regionally or locally significant assets, such that their integrity is compromised and appreciation and understanding of them is diminished ▪ damage locally significant heritage features for which adequate mitigation can be specified ▪ not fit well with the form, scale, pattern and character of a historic landscape/townscape/area
Moderate Adverse (negative) effect	**The proposals would:** ▪ be out of scale with, or at odds with the scale, pattern or form of the heritage resource ▪ be intrusive in the setting (context), and will adversely affect the appreciation and understanding of the characteristic heritage resource ▪ be in conflict with local or regional policies for the protection of the heritage ▪ be damaging to nationally significant heritage assets, resulting in loss of features such that their integrity is compromised, but not destroyed, and adequate mitigation has been specified ▪ be a major direct impact on regionally or locally significant heritage, resulting in loss of features such that their integrity is substantially compromised, but adequate mitigation can be specified
Large (Major) adverse (negative)	**The proposals would**: ▪ have a major direct impact on nationally significant heritage assets such that they are lost or their integrity is severely damaged ▪ have a moderate direct impact on or compromise the wider setting of multiple nationally or regionally significant heritage assets, such that the cumulative

Score	Comment
effect	impact would seriously compromise the integrity of a related group or historic landscape/townscape ▪ have a major direct impact on regional heritage assets, such that their integrity is lost and no adequate mitigation can be specified ▪ be highly intrusive and would seriously damage the setting of the heritage resource, such that its context is seriously compromised and can no longer be appreciated or understood ▪ be in serious conflict with government policy for the protection of the heritage, as set out in PPG 15 and PPG 16 ▪ be strongly at variance with the form, scale and pattern of a historic landscape/townscape

Policy Context

9.16 *PPG 16 Planning Policy Guidance: Archaeology and Planning* (1990), provides advice to planning authorities regarding the protection of archaeology within the planning process. The guidance makes clear that prospective developers should make provision for the archaeological appraisal of a site when assessing a site's development potential (Section 2B, paragraph 18a, 1990).

9.17 *PPG15 Planning and the Historic Environment* (1994) deals with Conservation Areas, Listed Buildings, World Heritage Sites, Historic Parks and Gardens, Historic Battlefields and the wider historic landscape.

9.18 Listed buildings are protected under the provisions of Section 54(i) of the *Town and Country Planning Act* (1971), as amended by the *Planning (Listed Buildings and Conservation Areas) Act* (1990) which empowers the Secretary of State for the Department of Culture, Media and Sport (DCMS) to maintain a list of built structures of historic or architectural significance. In addition, Section 69 of this Act imposes a duty on local planning authorities to designate as Conservation Areas any 'areas of special architectural or historic interest the character or appearance of which it is desirable to preserve or enhance'.

9.19 Scheduled Ancient Monuments are protected through the *Ancient Monuments and Archaeological Areas Act* (1979), which had been updated in the *National Heritage Act* (1983). Scheduled Monuments are maintained on a list held by the Secretary of State for DCMS. Any alterations or works to a Scheduled Monument (including archaeological investigation) requires Scheduled Monument Consent (SMC).

9.20 The development plan for the application site comprises the Regional Spatial Strategy (formerly RPG11) published by ODPM in June 2004, the Staffordshire and Stoke-on-Trent Structure Plan (1996 - 2011) adopted in May 2001 and saved policies from the Staffordshire

Moorlands local Plan adopted in September 1998 and saved after the remaining policies expired in September 2007. None of the saved policies relate to cultural heritage.

9.21 Plan policies are as follows:

Regional Spatial Strategy

9.22 **Policy QE5: Protection and enhancement of the Historic Environment**

A. Development plans and other strategies should identify, protect, conserve and enhance the Region's diverse historic environment and manage change in such a way that respects local character and distinctiveness.

B. Of particular historic significance to the West Midlands are:
i) the historic rural landscapes and their settlement patterns;
ii) historic urban settlements, including market towns and cathedral cities;
iii) listed buildings, scheduled and unscheduled ancient monuments, conservation areas, historic parks and gardens, all in their settings, and battlefields;
iv) areas of industrial heritage such as the Birmingham Jewellery Quarter;
v) the historic transport network;
vi) strategic river corridors (Severn, Wye, Trent, and Avon); and
vii) Ironbridge Gorge World Heritage Site.

C. Development plans and other strategies should recognise the value of conservation led regeneration in contributing to the social, spiritual and economic vitality of communities and the positive role that buildings of historic and architectural value can play as a focus in an area's regeneration.

D. In particular, strategies should explore the regeneration potential of:
i) redundant or under-used industrial and commercial buildings;
ii) rural settlements and market towns outside the MUAs;
iii) Victorian and Edwardian commercial centres particularly in the MUAs;
iv) traditional buildings of the countryside;
v) existing church buildings and their potential community uses;
vi) 19th and early 20th century urban housing; and
vii) the canal network.

9.23 Sites of Archaeological Importance

NC14 Proposals for development or land use change affecting sites of known or potential archaeological importance, and their settings, will be considered in the light of information held by the County or City Councils. Where necessary, developers will be required to supplement this information with the results of desk-based assessments and field evaluations before any decision on the planning application is taken. Where the planning authority decides on the basis of professional advice that archaeological remains are not sufficiently important to warrant physical preservation in situ, developers will be required to make appropriate and satisfactory provision for the excavation and recording of the remains prior to development, and for the publication of the results.

9.24 Sites of National Archaeological Importance

NC15 Development which would adversely affect Scheduled Ancient Monuments or archaeological sites of national importance or, in either case, their settings, will only be allowed in the most exceptional circumstances.

9.25 Registered Historic Battlefields

NC16 Development proposals within registered Historic Battlefields shall be accompanied by an assessment of the possible adverse impacts upon them. Development or change of use likely to have a detrimental impact upon their integrity and amenity will normally not be permitted.

9.26 Historic Parks and Gardens: Protection

NC17A Historic parks and gardens and their settings will be protected from development which would cause harm to their character or appearance. In order to assist in the protection of the character and appearance of recorded sites:

(a) an historic landscape appraisal report may be required where development affecting an historic park or garden or its setting is proposed;

(b) historic parks and gardens of particular historic design or aesthetic significance may be designated as Conservation Areas to help protect their character and appearance.

9.27 **Historic Parks and Gardens: Management and Regeneration**

NC17B Proposals for the positive management and regeneration of historic parks and gardens will be encouraged where they are sympathetic to the special character and interest of the site, and comply with an appropriately formulated assessment and management plan.

9.28 **Listed Buildings**

NC18 There will be a presumption in favour of preserving Listed Buildings and protecting their settings and historic context. In exceptional circumstances, other planning policies may be relaxed to enable the retention or sympathetic reuse of Listed Buildings, or to maintain the integrity of their settings. An historical and architectural evaluation of Listed Buildings may be required as part of the planning process to ensure decision-making is based on a proper understanding of their fabric and structure.

9.29 **Conservation Areas**

NC19 Areas of architectural or historic interest will be designated as Conservation Areas. There will be a presumption in favour of retaining and enhancing buildings, groups of buildings, or other features, including open spaces and views through, into or out of the areas which contribute to their special character, appearance or interest. New development within or adjacent to Conservation Areas should respect, protect and enhance their character and appearance with respect to its height, scale, intensity and materials, and only generate levels of activity which will support their preservation and economic viability. Proposals which would result in over-development, undue disturbance and traffic movement detrimental to the character of the Conservation Area will not be permitted.

Existing (Baseline) Conditions

Prehistoric and Roman

9.30 There is considerable recorded evidence for prehistoric activity in the wider area, primarily in the form of burial mounds.

9.31 A polished stone axe of prehistoric date was found in a field behind Grove Farm, located some 700 metres south east of the proposed development area, during the 1970s (HER number 01842). This is likely to be a stray find.

9.32 There are Roman forts at Chesterton and Trent Vale to the south, with a road running from Derby, via Rocester to Northwich. To the north of the proposed development area, Buxton had been established as a spa town during the Roman period (and was re-established as such later). The settlement was located on a road running from the direction of Manchester towards Derby.

9.33 The HER records a section of Roman road running from Buxton towards Leek and following the line of the current A53 Road (HER number 04390). The road is also marked as such on some Ordnance Survey maps. The HER interprets the alignment as being part of the road running from Buxton to Penkridge.

9.34 The Victoria County History (VCH) notes that the Leek-Buxton road was turnpiked in 1765 and that previously the route from Leek to Buxton ran further west through Leekfrith. In addition, the VCH notes that it *appears that all or most of the route through Tittesworth was a new road laid out by the turnpike trustees in 1765 and 1766* (VCH: 235). It seems likely that the road has relatively modern origins.

9.35 There is no evidence for prehistoric or Roman activity within or adjacent to the proposed development area.

Medieval

9.36 There is little physical evidence for Anglo Saxon activity in the area.

9.37 Very few local settlements are mentioned in the Domesday Book of 1086, most first appearing rather later. This does not rule out the possibility of activity in the wider area during the early part of the medieval period, although there is no evidence of earlier medieval activity within or adjacent to the proposed development area.

9.38 The place-name 'Tittesworth' is derived from an Old English compound of a personal name, thought to be Tet, and the word for an enclosed settlement (VCH: 233).

9.39 The Cistercian Abbey of Dieu La Cres was established in 1214 (VCH: 1970: 230). The site of the abbey is located at NGR SJ 9830 5790, located some 3250 metres southwest of the proposed development area. The site is a Scheduled Ancient Monument (SAM County number ST83).

9.40 Thorncliffe was occupied by the second quarter of the 13th century (VCH: 233). Blackshaw Moor was mentioned by the 1250s (VCH: 235).

9.41 By the later 13th century there were two settlements in the township, Upper and Lower Tittesworth, Upper Tiittesworth, where the proposed development area is located, was located to the north of the Tittesworth Brook. The site of a possible deserted medieval settlement is recorded at Upper Tittesworth, approximately 450 metres southwest of the proposed development area (HER number 02631). There is no evidence for remains of this date to exist within the proposed development area.

9.42 During the medieval period and beyond the proposed development area itself was located on Blackshaw Moor, an area of relatively high, poorly drained land. In the wider area would have been scattered farms or hamlets.

Post-medieval

9.43 The position during the early part of the post medieval period was probably almost identical to that of the late medieval period, with isolated farms set in fields adjacent to the moor. There appear to be several early buildings surviving in the surrounding area, with two such buildings known within a kilometre radius of the proposed development area.

9.44 Upper Tittesworth Farmhouse is located approximately 450 metres southwest of the proposed development area (HER number 06598). The building comprises single-storey and attic farmhouse of coursed smooth dressed sandstone, with a blue machine tile roof; verge parapets and a small brick stack. There is a blocked C17 door, now a window to the left of the centre of the front elevation. The extant building is of 17th century date, although settlement at this site may be considerably older (see paragraph 9.44, above).

9.45 Ley Fields Farmhouse, located approximately a kilometre just south of west of the proposed development area, is a two-storey 17th century house, with 19th and 20th century alterations, of rough faced coursed stonework, with 5 windows, these with sashes with glazing bars. It has a four-window front in two parts, with two windows to each, with entrances between the end bays. The building is listed at Grade II and is not visible from the proposed development area.

9.46 There is recorded occupation at Blackshaw Moorside by 1640 (VCH: 235). William Yates Map of Staffordshire of 1798 shows the proposed development area as being within Blackshaw Moor at that time. No buildings are marked on this relatively small-scale map.

9.47 The proposed development area was enclosed, along with much of the parish of Leek, in 1811. The enclosure map shows the Buxton turnpike road, with Thorncliffe Road (the minor road leading from the main A53 Buxton road to the village of Thorncliffe from north of the proposed development area) in roughly their current positions. To the north of the proposed

development area a large area of new enclosure is shown. There is a large area marked '*Old Inclosures*' to the south of the proposed development area, probably extending as far as Upper Tittesworth. The proposed development area lies within five parcels of land. Within the proposed development area itself a small area, the south easternmost parcel, is marked '*Old Inclosures*'. A building is shown within this area.

9.48 A milepost, marked '*Leek 2 miles - Buxton 10 miles*', of painted cast iron, measuring approximately 700mm high, with a circular shaft and an enlarged head with raised lettering is dated to 1833. The milepost is located outside the proposed development area, to the north of the main entrance on the eastern side of the A53 Buxton Road immediately adjacent to Anzio Camp. The milepost is listed at Grade II. (Photograph 1 in **Appendix 9.1**, Appendix 3 shows it's location).

9.49 The first edition six inch to the mile Ordnance Survey map of 1891 shows the proposed development area being located in several relatively small fields. These have been subdivided from those shown on the enclosure map of 80 years earlier. There is no trace of the building shown within the proposed development area on the enclosure map. Subsequent pre-Second World War editions of the OS show an identical disposition.

9.50 A transit camp for anti-aircraft battalions from the United States of America was opened on the east side of the Buxton road in 1943. (VCH: 235). It was apparently known as Blackshaw Moor Camp (Beds Record Office JN501, Longley 2005). Aerial photographs taken by the RAF in August 1945 show that the proposed development area had been developed for military use by this date. The aerial photographs indicate that the proposed development area comprised a number of huts, with hard standing, roads and paths between them. Parts of the pre-existing field boundaries survived at this date. The camp extended beyond the proposed development area and part of it was located to the north of Thorncliffe Road, clustered around Blackshawmoor Farm.

9.51 The London Gazette (dated June 1st 2005, notice number 2301) notes that the proposed development area was acquired under a conveyance dated 15 December 1945 made between Ronald Davys Argles, of Sharp Cliffe Hall, Ipstones, Stoke-on-Trent (1) as Vendor, Hubert Davys Argles, of White Lodge, Thoresby Park, Ollerton, Newark, Nottingham, Ethel Margaret Macloed, of Hawbarrow, Milnthorpe, Westmoreland and William Francis Challinor, of Leek, Stafford as Trustees (2) and the Secretary of State for the War Department (3); a conveyance dated 30 June 1945 made between Elsie Jane Hine, of Blackshaw Grange Farm, Blackshaw Moor near Leek (1) and the Secretary of State for the War Department (2).

9.52 The VCH notes that in 1946 the camp was taken over by Polish troops who had arrived from Italy, and other Polish troops arrived later (VCH: 235). Longley notes that *from 1944 to 1950*

the camp was used to house German and Italian prisoners of war followed by displaced persons from eastern Europe. English Heritage have not recorded the camp as being one of the numbered sequence of prisoner of war camps in official records of the 1939 to 1948 period (Thomas 2003). Given that the camps occupy a larger area than the proposed development area and that parts of it were physically removed from others, it may be that it saw various uses in the post war period.

9.53 Longley goes on to note that *the camp was handed over to the War Office in 1950 and designated Weekend Training Centre Number 7 for use by Regular, TA and Cadet Forces*.

9.54 Within the proposed development area, the Ordnance Survey edition of 1955 shows an almost identical disposition to that of the aerial photographs of 10 years earlier, with the exception that the entrance opposite Blackshaw Grange is not shown at that time.

9.55 The camp continued as a Polish civilian settlement until 1964 when the remaining residents were re-housed on a new estate some 600 metres to the north of the proposed development area (VCH: 235). The new estate, the Tittesworth Estate, was built on the site of part of the northern half of the camp.

9.56 The Ordnance Survey 1:2500 edition of 1969 shows that two of the huts in the south easternmost part of the proposed development area have been replaced by the ammunition store, shown in **Appendix 9.1**, (Appendix 3 Photo 4).

9.57 A vegetation survey plan dated May 1980 shows the camp and marks it as 'Leek T/C'. Many of the buildings shown in 1945 survive, a few have been demolished and a few have been added. The rifle range and respirator Test building (**Appendix 9.1** Appendix 3 Photos 2 & 3) are shown. These are not shown on the Ordnance Survey 1:2500 edition of 1974. The ammunition store (**Appendix 9.1**, Appendix 3 Photo 4) is also shown. The key carries a symbol for buildings and notes: *many in poor state of repair, some unused/ dilapidated. Principally conc., corrugated steel, brick & asbestos structures with timber also*. The key describes the fencing around the site (and within it as: *remains of dilapidated timber/ conc. Post & strained/ barbed & plain 6-line wire fencing. Odd stretches within site of similar nature & state of disrepair.* The overall picture in 1980 is of a camp that would have been recognisable to its Second World War occupants.

9.58 The Blackshawmoor Camp site was cleared during the early 1980s, and in 1983 Anzio Camp was opened there as a training camp for use by the regular army, territorials, and scouts. (VCH:235). The Ordnance Survey 1:2500 edition of 1985 shows the camp as having been redeveloped.

9.59 The site visit has indicated that the vast majority of the buildings within the proposed development area appear to date from the reconstruction of the site during the early 1980s. One structure differs from the rest and the site visit and documentary review has indicated that it is earlier. This is the Ammunition Store in the southeastern corner of the proposed development area.

9.60 None of the above structures are shown on the aerial photographs of 1945, or on the Ordnance Survey edition of 1955. The ammunition store, is, however, shown on the OS edition of 1969. Presumably this structure was built at some time between 1964, when the camp reverted to military use and 1969. The firing range was presumably built at some time between 1974 and 1985, according to the OS; to judge from its appearance and condition, it is more likely that it was built close to 1974. Presumably therefore, the proposed development area and surroundings have seen change between the end of the Second World War and the sites subsequent redevelopment during the early 1980s.

Identification and Assessment of Effects

9.61 Effects likely to be caused by construction are particularly likely to arise from operations including:

- Ground remediation;
- Excavation for foundations, drainage and other services, roads and car parking;
- Piling; and
- Landscaping operations including planting.

9.62 There may also be effects on the setting of cultural heritage features caused by the execution of the development proposal

9.63 The above effects tend to be permanent and non-reversible. In addition, further immediate impacts may arise from the above operations, and others, causing cause effects that are normally temporary and reversible. These include:

- Noise; and
- Dust

9.64 Operational impacts, remaining when the proposed development is, may include:

- Views;
- Noise;
- Air quality; and
- Lighting.

Construction Effects

9.65 It is considered that the construction and subsequent redevelopment of the existing Anzio Camp will have removed any previously existing archaeological remains from within its built footprint. The camp itself contains no surviving wartime buildings or other structures. The earliest structure on site dates from the 1960s.

9.66 The northwesternmost part of the proposed development area, adjacent to the A53 and north of the resident caretakers bungalow, may not have been disturbed in its entirety in the recent past. There is no development proposed for this area, however, and there would be ***No Effect*** on buried archaeological remains in these areas.

9.67 There is some evidence that the wider area has seen limited activity from the prehistoric period onwards. However, there is no evidence for prehistoric, Roman or medieval activity within the proposed development area itself.

9.68 There is low potential for the proposed development area to contain archaeological remains and it is anticipated that there would be ***No Effect*** on archaeological remains caused by the proposed development.

9.69 There would be ***No Effects*** on the settings of above ground cultural heritage features caused by the construction phase of the proposed development

Operational Effects

9.70 The nearest listed building is the cast iron milestone marked 'Leek 2 miles, Buxton 10 miles, located on the A53 road immediately adjacent to the proposed development area. The listed building is just visible from the southernmost part of the proposed development area.

9.71 The existing trees and the bank between them and the camp provide a degree of visual screening from the proposed development area. Given the nature of the listed building, by far the most significant element of its setting is its relationship with the road it was designed to serve. This would remain unaffected by the proposed development. In addition, the built element of the proposed development would have ***No Effect*** on the setting of the listed building. No other listed buildings or their settings would be affected by the proposed development.

9.72 The nearest Conservation Area is the Leek Conservation Area, located in the centre of Leek, some over 2 kilometres southwest of the proposed development area. This is not visible from the proposed development area. No Conservation Area or setting would be affected by the proposed development.

9.73 The nearest Scheduled Ancient Monument is Dieu La Cres Abbey (SAM County number ST83), located at NGR SJ 9830 5790, located some 3250 metres southwest of the proposed development area. The Scheduled Ancient Monument is not visible from the proposed development area. The proposed development would have ***No Effect*** on the Scheduled Ancient Monument or its setting. No Scheduled Ancient Monument or setting would be affected by the proposed development.

9.74 The nearest Registered Park and Garden is nearest Registered Park and Garden is Biddulph Grange, registered at Grade II* and located approximately 10 kilometres west of the proposed development area. This is not visible from the proposed development area. No Registered Park and Garden or setting would be affected by the proposed development.

9.75 There are no registered battlefields within at least a 15-kilometre radius of the proposed development area. No Registered Battlefield or setting would be affected by the proposed development.

Mitigation

9.76 Given that there is very little potential for the proposed development area to contain below ground archaeology and therefore for the proposed development have any effect on below ground archaeology, no specific mitigation for this aspect of the development is proposed.

9.77 With regard to the settings of cultural heritage features, the only such feature that might be affected by the proposed development is the listed milepost on the A53 road outside the camp. The existing hedgerow and bank would be retained as part of the proposed development. In addition, a scheme of structural landscaping is proposed between the listed building and the new buildings proposed as part of the development. This would further reduce any visibility between the listed building and the proposed development.

Summary and Residual Effects

9.78 An assessment of the archaeology and cultural heritage effects associated with the proposed development of a Continuing Care Retirement Community at the former Anzio Camp, Blackshaw, Staffordshire, on cultural heritage in terms of archaeology and built heritage has been made as part of the development proposal. The likely effects have been assessed during both the construction and operational phases of the proposed development.

9.79 The aims of this study were to assess the likelihood of the proposed development site and study area to contain remains of cultural heritage significance and to provide an indication of what, if any, further work may be required with regard to mitigation.

9.80 The objectives of the project have been:

- To identify and assess the relative importance of cultural heritage features likely to be affected by the proposed development;
- To protect those features through the avoidance of direct impacts where possible and to design mitigation measures to preserve those features by record where avoidance is not possible; and
- To protect the setting of cultural heritage features though both the design of the layout of the scheme and through measures such as planting

9.81 The proposed development area lies within the existing Anzio Camp, and is bounded to the west by the A53 Buxton Road. Land to the North, East and South predominantly comprises farmland and woodland with further buildings relating to the former camp to the east of the woodland at the eastern extent of the proposed development area. The existing Anzio Camp currently covers an area of 10.78 hectares.

9.82 The proposed development area does not lie within or adjacent to a Conservation Area and does not contain any Listed Buildings or Scheduled Ancient Monuments. The closest statutorily protected feature is the cast iron milestone marked 'Leek 2 miles, Buxton 10 miles, located on the A53 road immediately adjacent to the proposed development area. The proposed development would have little or ***No Effect*** on the listed building or it's setting.

9.83 There would be ***No Effect*** on any Scheduled Ancient Monument, or setting. No registered parks and gardens, historic battlefields or Conservation Areas, or their settings, would be affected by the proposed development. No statutorily protected or registered feature, or setting, would be affected by the proposed development.

9.84 There are no known remains of national importance within the proposed development area and no known constraints on development. It is concluded that the proposed development area has a low potential for the survival of below ground archaeological remains.

9.85 On the basis of the above, it is recommended that no further action be taken with regard to below ground archaeology in respect of this application. Mitigation measures are proposed with regard to the setting of the listed milepost. On this basis, there would be no residual impacts with regard to cultural heritage.

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- Other Ordnance survey mapping supplied by Landmark.
- Historical Map and Guide Roman Britain 1994

Aerial Photographs

- RAF 106G/UK645 flown 11-08-1945 Photo numbers 3321, 3322, 3323 and 3402

10 Flood Risk and Drainage

Introduction

10.1 The purpose of this chapter is to assess the effects of developing a Continuing Care Retirement Community at the former Anzio Camp, for which an outline planning application has been made, on the hydrological regime of the site and its surroundings, in particular the effects on the surface water quality, drainage patterns and flooding risk. This chapter will also propose mitigation strategies or measures for any identified impacts, review the efficiency of these measures and identify the significance of any residual risks.

10.2 The current proposals for the site comprise the re-use and redevelopment of the site as a 'continuing care residential community'. This is likely to comprise a number of elements as part of the redevelopment including self-contained dwellings, a residential care home, serviced apartments/cottages, communal facilities, and staff facilities.

Assessment Methodology

Definition of Study Area

10.3 The area of study comprises the planning application boundary, however the wider hydrological setting of the site is also considered within the assessment. In the following chapter, the term 'site' shall refer to the area encompassed within the red line boundary.

Baseline Methodology

10.4 The baseline site condition has been established through a review of available historical information relating to the site, and an assessment of its environmental sensitivity. The following sources of data have been referenced:

- Environmental data provider (historical maps, flooding maps, records of abstractions, discharges and pollution incidents);
- Planning Policy Statement: 25 Development and Flood Risk;
- Ordnance Survey Map, Sheet 118, Stoke-on-Trent and Macclesfield (1:50,000) and Ordnance Survey Map, Sheet 119, Buxton and Matlock (1:50,000);
- Topographic Survey of the site;
- Geo-Environmental Assessment, RPS (**Document Ref: AC2/G**);
- Flood Risk Assessment, RPS (**Document Ref: AC2/H**);

- Local sewer plans provided by Severn Trent Water; and
- Site drainage plans (drawing number: LD/25.AL/2L/8 Rev C, December 1982).

Impact Methodology

10.5 The assessment of impacts (beneficial and/or detrimental) to the hydrological setting of the site and its environs resulting from the proposed site redevelopment assumes that any such impacts can be apportioned to one of two clearly defined scenarios:

1. Short-term impacts occurring *during* the redevelopment operations (construction effects); and

2. Longer-term impacts occurring *after* redevelopment of the site has occurred that result either from changes to the nature of the site use or from its ongoing operation (operational effects).

10.6 The methodology involves an initial review of the site's baseline characteristics, followed by an assessment of the impact potential of the proposed development, together with the significance of such impacts for benefit and/or detriment to the water environment.

10.7 Mitigation measures have been identified to ameliorate any potential impacts and, where appropriate, seek to enhance the environment wherever possible. The assessment subsequently evaluates any residual impacts that remain following the implementation of the mitigation proposals.

10.8 The significance of the impacts identified can be assessed via a number of distinct stages, as outlined below. These are qualitative assessments based upon the data available as a result of establishing the baseline site condition, an appraisal of the development proposals and the application of professional judgment.

Stage 1: Sensitivity of the Receptor

10.9 The sensitivity of all potential receptors are determined using the following terminology:

- **High** sensitivity/importance (e.g. watercourse providing suitable water for all abstractions (including potable), very good salmonid fisheries, cyprinid fisheries and ecosystem at or close to natural);
- **Medium** sensitivity/importance (e.g. watercourse suitable for potable supply after advanced treatment, 'other' abstractions, good cyprinid fisheries and natural ecosystems, or those corresponding to good cyprinid ecosystems);

- **Low** sensitivity/importance (e.g. watercourse suitable for potable supply after advanced treatment, 'other' abstractions, fair cyprinid fisheries and impacted ecosystems); and
- **Negligible** sensitivity/importance (e.g. low grade abstraction for industry or polluted rivers, fish absent or sporadically present and impoverished/severely restricted ecosystems).

Stage 2: Magnitude / Nature of Effects

10.10 The magnitude of the identified potential impacts is expressed in a qualitative manner as follows:

Table 10.1: Description of Effects

Adverse	detrimental or negative impacts to an environmental resource or receptor;
Beneficial	advantageous or positive impact to an environmental resource or receptor; or
Negligible	an impact on a resource/receptor of insufficient magnitude to affect the use/integrity.

10.11 For the purposes of this assessment, where adverse impacts have been identified, these have been assessed against the following scale:

Table 10.2: Magnitude of Effects

Major	considerable impact (by extent, duration or magnitude) of more than local significance or in breach of recognised acceptability, legislation, policy or standards e.g: ▪ loss of Salmonid fishery; ▪ change of GQA of river reach; ▪ chemical and/or organic contamination of potable water supply; ▪ increase in flood risk in the vicinty of the site.
Moderate	limited impact (by extent, duration or magnitude) which may nonetheless be considered significant in the context of the site and/or surrounding areas e.g: ▪ limited release of physical contaminants (sediment); ▪ loss in production of fishery; ▪ contribution of significant proportion of effluent in receiving river but insufficient to change its GQA grade
Minor	slight, very short term or highly localised impact of no significant consequence e.g: ▪ measurable changes in attribute but of limited size/proportion.
Negligible	impact of insufficient magnitude to affect use/integrity e.g: ▪ discharge to groundwater but no significant decrease in quality

Stage 3: Significance of Potential Impacts

10.12 The assessment of significance is based on the characteristics of the impact and the sensitivity of the receptor. By establishing the sensitivity/value of the resource/receptor in Stage 1, and the magnitude/nature of the impact in Stage 2, the following matrix will determine the significance level:

Table 10.3: Significance of Impact

		Importance of the Resource/Receptor			
		High	**Medium**	**Low**	**Negligible**
Magnitude of Impact	**Major adverse**	Major significant effect	Major significant effect	Minor significant effect	Minor significant effect
	Moderate adverse	Major significant effect	Major significant effect	Minor significant effect	No significant effect
	Minor adverse	Minor significant effect	Minor significant effect	No significant effect	No significant effect
	Negligible	Minor significant effect	No significant effect	No significant effect	No significant effect
	Minor beneficial	Minor significant effect	Minor significant effect	No significant effect	No significant effect
	Moderate beneficial	Major significant effect	Major significant effect	Minor significant effect	No significant effect
	Major beneficial	Major significant effect	Major significant effect	Minor significant effect	Minor significant effect

Policy Context

Regional Spatial Strategy for the West Midlands – January 2008

10.13 RSS11 includes a consideration of development in terms of the multifunctional nature of rivers, lakes and canals. RSS11 also relates to the PPG25 Development and Flood Risk (superseded by PPS25) and sets out detailed guidance on how flood risk should be considered at all stages of the planning and development process.

Water Resources Act 1991

10.14 The Water Resources Act (1991) principally relates to the protection of controlled water (i.e. rivers, lakes, canals and groundwater) from pollution.

Drainage and Flood Risk Assessment

10.15 Planning Policy Statement 25: Development and Flood Risk and associated Environment Agency Guidance identifies that planning applications submitted for developments within a floodplain, in Zones 2 and 3 (Medium and High Probability of flooding), require a Flood Risk Assessment (FRA) to be undertaken. In addition a Surface Water Flood Risk Assessment (SWFRA) is also required for sites greater than 1 hectare (ha) in size, including those located within Zone 1 (Low Probability of flooding). Therefore, in this instance a SWFRA will be required to assess the potential impacts of flooding from surface water at the site. This report is submitted as a separate supporting document (**Document Ref: AC2/H**). The SWFRA assesses the potential increase to flood risk off-site through the addition of hard surfaces, and proposes a number of mitigation measures.

Pollution Prevention Guidance

10.16 Pollution Prevention Guidelines (PPG) are available for construction processes and site activities. Information contained within relevant PPGs can be referenced in the development of mitigation measures to counteract identified impacts from construction processes and post development activities.

Existing (Baseline) Conditions

Site Setting

10.17 The site is a roughly rectangular parcel of land, and occupies an area of 10.78 hectares. It was previously operational as an Army training camp, which ended operations in 2004. The topography of the site generally mirrors the westerly fall of the surrounding land, which is characterised by agricultural usage (rough pasture).

Watercourses and Land Drainage

10.18 The principal watercourse within the vicinity of the site is the River Churnet, which is located approximately 1 km north of the site at its nearest point. The River Churnet flows from east to west and discharges to Tittesworth Reservoir, approximately 1.2 km northwest of the site.

10.19 Reference to current and historical Ordnance Survey maps indicates that two streams are located within close proximity to the site. These are located along the western and southern boundaries, and reference to site plans indicates that surface water from the site drains to these streams. Under the previous use of the site, the disposal of surface water to these streams would have been Crown exempt, and as such would not have required a discharge licence. These unnamed streams subsequently discharge to Tittesworth Reservoir located

approximately 1 km to the west of the site. Tittesworth Reservoir discharges into a continuation of the River Churnet, which runs in a southwesterly direction around the northern margin of the Leek conurbation. Tittesworth Reservoir is a public water supply.

10.20 A small drainage channel is also located crossing the northern part of the main site, between the smaller and larger parcels of land. This is indicated to sink approximately 20 m outside of the site boundary.

10.21 A further small drainage channel issues along the northern boundary, to the centre of the site, and subsequently drains to the west.

10.22 A further stream/brook is located approximately 400 m south of the site. It flows from the east, through the village of Thorncliffe and subsequently discharges towards the southern end of Tittesworth Reservoir.

10.23 There are two further reservoirs located approximately 600 m northwest of the site; these are known as Blackshawmoor Reservoirs.

Floodplain Areas

10.24 Reference to the Environment Agency indicative floodplain maps indicates that the site is located within Zone 1 and is as such is unlikely to be at risk of direct fluvial flooding at the site.

10.25 The site is larger than 1 hectare in size, and as such, under the guidance in PPS25 a SWFRA is necessary due to the potential to increase the risk of flooding off-site through the addition of hard surfacing. A Surface Water Flood Risk Assessment has been produced as a separate supporting document to the outline planning application (**Document Ref: AC2/H**).

Water Quality

10.26 Water quality data for watercourses within the vicinity of the site have been acquired via reference to the Environment Agency's website. Under the River Ecosystem Classification (REC), the Agency divide watercourses into distinct stretches, each of which has been assigned a River Quality Objective (RQO) based on routine monitoring of nutrients, chemistry and biology.

10.27 The closest surface watercourse to the site with river quality targets is the River Churnet, located approximately 1 km northwest of the site. This stretch has been assigned a RQO of 1 (Very Good), and this stretch of the river has been compliant for the period for which the most recent monitoring data is available (2004-2006).

10.28 Under the Agency's chemistry classification, this stretch has also been given a General Quality Assessment (GQA) of Grade A, which indicates 'Very Good' quality water suitable for all abstractions, very good salmonid fisheries, cyprinid fisheries, and natural ecosystems, for the period of 2004-2006, which is the most recent monitoring data.

10.29 This section of the River Churnet is topographically up gradient of the site, and the surface water from the site enters streams on its western and southern boundaries, which subsequently discharge to Tittesworth Reservoir. As such, it is more likely that the Environment Agency sampling point on the River Churnet, downstream of Tittesworth Reservoir is more relevant. To the south of Tittesworth Reservoir the continuation of the River Churnet is assigned a Grade B (Good) for the 2004-2006 period.

10.30 There are no authorised surface water abstractions located within a 1 km radius of the site. The nearest surface water abstraction is located approximately 1.1 km west of the site, and is from Tittesworth Reservoir, operated by Severn Trent Water Limited for public water supply. Reference to information provided by Staffordshire Moorlands District Council indicates that seven private water abstractions are located within a 1 km radius of the site. Five are located approximately 800 m east-south-east and southeast of the site, one approximately 900 m to the north-west and one 350 m west. It is understood these are served by both boreholes and springs.

10.31 There are 12 authorised discharge consents to groundwater within 1 km of the site, the nearest of which is located approximately 144 m northwest of the site and is operated by F Robinson of Birch Tree Farm for the discharge of sewage effluent to groundwater. A number of further abstractions are located approximately 1 km southeast of the site around the village of Thorncliffe.

10.32 The only authorised discharge to surface water within 1 km of the site is located approximately 600 m north of the site and is operated by Staffordshire Moorlands District Council for the discharge of treated sewage effluent to the River Churnet.

10.33 There have been four reported incidents to controlled waters within 1 km of the site. However, none of these were attributable to the site and are not considered to have had a direct impact on the site itself.

Receptor Sensitivity Assessment Criteria

10.34 Downstream of the site the River Churnet is given an Environment Agency GQA rating of Grade B (Good), and is likely to receive surface run-off from the site via the streams located adjacent to its western and southern boundaries. These have been assigned a ***Medium*** sensitivity rating, on the basis that surface run-off from the site would only form small component of the reservoir's total catchment.

10.35 As previously identified the site is not located within the Environment Agency indicative floodplain and as such is not considered to be at risk from fluvial flooding events. Consequently, it has been assigned a ***Low*** sensitivity rating. The site is larger than 1 hectare and as such influences of surface water flooding are required to be taken into account under PPS 25. A separate SWFRA has been undertaken (**Document Ref: AC2/H**) and submitted as part of the outline planning application.

Identification and Assessment of Effects

Construction Effects

10.36 These are considered to be short term impacts occurring during the redevelopment operations (including demolition of existing buildings and construction of new ones), and are primarily associated with detrimental impacts upon the quality of nearby surface watercourses. Such potential impacts include:

1. De-watering of near surface geology as part of construction activities, affecting the contribution shallow groundwater plays in supplying surface watercourses;

2. Piling works associated with new areas of construction introducing vertical migration pathways through the superficial geology for surface contamination to impact upon shallow groundwater in continuity with surface water features;

3. The entry of silt laden run-off into the surface water drainage system, during earthworks operations as a result of the demolition of existing buildings and removal of surfacing, or the tracking of mud onto the public highway by site plant. When such run-off subsequently enters the receiving watercourses, the elevated levels of suspended solids may cause blinding and/or erosion of aquatic ecosystems;

4. The spillage of potentially pollution substances during demolition and construction operations, such as hydrocarbons fuels and oils remaining in the services of buildings

used during the maintenance and operations of site plant which can contaminate receiving watercourses, detrimentally impacting upon aquatic ecosystems;

5. A Geo-Environmental Assessment for the site submitted as a separate supporting document (**Document Ref: AC2/G)** has highlighted the potential for contamination of near-surface soils due to the site's former use. It is therefore anticipated that there is potential for the disturbance of ground during construction and demolition operations to lead to mobilisation of such contamination, either by being adsorbed to particulates that are washed into watercourses or leaching of soluble contaminants into groundwater;

6. The removal of any significant contamination encountered from the site as part of its redevelopment, thus preventing future mobilisation into the aquatic environment.

Operational Effects

10.37 These are longer term impacts occurring after redevelopment of the site has taken place resulting from a change in its character and/or its ongoing operation. The most significant of these are:

1. Leakage of services such as sewer connections, resulting in adverse impacts on nearby surface water features;

2. Run-off from access roads and parking areas potentially containing levels of spilled hydrocarbons and heavy metals;

3. Although the site is not located within an Environment Agency indicative floodplain, and therefore will not be impacted by floodwater, the development is likely to have a slight increase in hard surfaced areas and, as such, would be likely to cause an increase in surface water run-off from the site; and

4. More effective control of surface water run-off than occurred on the site prior to its redevelopment.

Magnitude of Effects

10.38 The construction techniques to be utilised during the redevelopment of the site have yet to be finalised. Should these require the dewatering, this is only likely to cause a minor and localised disturbance of superficial deposits, and would therefore have a limited if not negligible and short term impact on the contribution of shallow groundwater in supplying base

flow to surface watercourses. The other potential construction impacts identified either in isolation or as a combination of effects could be sufficient to change the chemical quality of a surface water receptor, these are unlikely to occur for more that a relatively short duration. Therefore such impacts are assigned a ***Minor Adverse*** magnitude.

10.39 The remediation of areas of existing on-site contamination as a component of the redevelopment will prevent its potential future mobilisation into the aquatic environment. This is likely to be highly localised in nature, and as such is assigned as a ***Minor Beneficial*** magnitude.

10.40 The non-mitigated operational impacts identified as a consequence of the proposal have been identified as having the potential to negatively impact on nearby surface water receptors on a long-term basis, although are likely to have a highly localised impact. Therefore these are assigned a ***Minor Adverse*** magnitude.

10.41 The redeveloped site would be provided with a better surface water management system than existed previously. The increased control of surface water run-off can be assigned a ***Minor Beneficial*** magnitude.

Mitigation

10.42 Many of the short-term impacts arising from the development of the site can be effectively mitigated by the utilisation of good construction techniques and practices implemented by a Construction Environment Management Plan. These include, though are by no means limited to, the following measures:

1. The adoption of foundation designs that preclude the need to carry out de-watering of the superficial geology and/or made ground on the site;

2. Where feasible, site-specific construction techniques would be adopted to ensure that no migration pathways are create to jeopardise groundwater quality;

3. The prevention of silt-laden run-off and mud entering the surrounding surface water channels/drains by:
   - Timely phasing and engineering, thus minimising un-surfaced and un-vegetated areas of the site to as small as practicably possibly;
   - The provision of measures to intercept and treat such run-off prior to it leaving the site, including the use of peripheral cut-off ditches, settlement facilities,

filtration and/or use of flocculants to effect the removal of water borne particulates; and

- The provision of wheel cleaning equipment for site plant to prevent the tracking of mud onto the public highway and therefore into the off-site surface water drainage systems.

4. The use of appropriate measures to prevent spillage of potentially polluting substances, including:
   - Appropriate storage and handling measures for all hydrocarbons fuels and lubricating oils, including the use of bunded storage areas or the use of double skinned storage tanks;
   - The use of drip trays for static plant and designated refuelling areas for mobile plant;
   - The implementation of appropriate spillage contingency measures to mitigate the impact of such spillages on nearby surface watercourses; and
   - Appropriate personnel awareness training of the potential environmental implications of all construction work on site.

10.43 The longer-term effects occur after the redevelopment of the site is completed and result from a change in the site character and/or its ongoing operation:

1. Leakage of drainage infrastructure would be prevented via the use of suitable materials designed to ensure their long-term fitness for the purpose and suitable testing of on-site service prior to commission to demonstrate their integrity;

2. The site is not located within an Environment Agency indicative floodplain, therefore the site is unlikely to be impacted by fluvial flooding;

3. The potential run-off from access roads and parking areas potentially containing levels of hydrocarbons from vehicles is likely to be slight, given the nature of the proposed development, and highly localised impact of limited significant consequence;

4. It is proposed to implement a system of storm water run-off attenuation via the use of SUDS techniques, outlined in the separate SWFRA, RPS, May 2008. This may include the use of porous/permeable paving, and/or the use of attenuation ponds, which is likely to provide a beneficial impact by providing more effective management of surface water than currently exists on the site and have the potential to incorporate treatment of runoff by vegetative filtering, along with the promotion of particulate settlement.

Summary and Residual Effects

Summary

10.44 The study has presented the baseline condition of the site and assessed the proposed development with particular reference to its potential impact upon the surrounding hydrological environment.

10.45 The study has incorporated a review of available historical information and an assessment of the environmental sensitivity of the site and immediate surrounding area, with reference to the hydrological regime.

10.46 The principal watercourse within the vicinity of the site is the River Churnet, which discharges to Tittesworth Reservoir approximately 1 km west of the site. Tittesworth reservoir subsequently discharges to a continuation of the River Churnet to the south. There are also a number of further watercourses within the vicinity of the site.

Residual Effects

10.47 It is considered that the majority of the detrimental impacts identified as a result of the construction of the proposed development can be successfully mitigated against at the planning/design phase.

10.48 Given the nature of the proposed development, there is limited potential for detrimental impacts on nearby surface watercourses during the operational phase. A range of mitigation measures would nevertheless be implemented to ensure their ongoing environmental protection.

10.49 It is anticipated that the surface water run-off from impermeably surfaced areas would be subject to more limited control than occurs on the site in its current state by the incorporation of SUDS techniques. Consequently the redevelopment of the site would not lead to increased flooding within its vicinity.

10.50 On the basis of the various mitigation measures outlined above, the magnitude of the mitigated effects on the hydrological regimes can be reassigned as ***Negligible***.

Significance of Residual Impacts

10.51 The surface water receptors of Tittesworth Reservoir and the River Churnet have been assigned a *Medium* sensitivity status. Given the ***Negligible*** impacts being realised upon these receptors, the overall significance of such impacts has been rated as ***No Significant Effect***.

10.52 The site is not at risk of fluvial flooding events, and has been assigned a *Low* sensitivity rating, that would be unchanged following the proposed redevelopment. Remediation of any on-site contamination and better control of surface water run-off have both been assigned as *Minor Beneficial Effect*. Their overall significance on a *Low* sensitivity site would be ***No Significant Effect***.

References

- Envirocheck Order No. 24259955_1_1 (historical maps, geological/hydrogeological information, records of abstractions, discharges and pollution incidents);
- British Geological Survey (BGS) Map Sheet 111, Buxton (1;50,000), Solid and Drift Editions;
- Environment Agency Groundwater Vulnerability Map, Sheet 17, Derbyshire and North Staffordshire (1:100,000);
- Surface Water Flood Risk Assessment (**Document Ref: AC2/H**);
- Geo-Environmental Assessment (**Document Ref: AC2/G**);
- Ordnance Survey Landranger Map, Sheet 118, Stoke-on-Trent and Macclesfield (1:50,000);
- Ordnance Survey Landranger Map, Sheet 119, Buxton and Matlock (1:50,000); and
- Environment Agency website (Flood Risk Zone and Source Protection Zone data).

11 Land Quality

Introduction

11.1 The purpose of this chapter is to assess the effects of land quality on the proposed development of a Continuing Care Retirement Community at the former Anzio Camp, for which an outline planning application has been made. The assessment identifies the environmental setting of the site with regard to the sensitivity of a number of identifiable receptors including site users, associated ecosystems and hydrological and hydrogeological receptors. The potential impact of contamination from either site-derived or off-site sources on these receptors is considered.

11.2 A separate geo-environmental assessment has been prepared for the site (presented as part of the planning application as **Document Ref: AC2/G**). This chapter supplements this assessment and considers the development proposals in terms of their potential to mobilise contaminants already present on the site as well as to cause new (incremental) contamination.

Assessment Methodology

Definition of Study Area

11.3 The area of study comprises the planning application boundary, however the wider hydrogeological/hydrological setting of the site is also considered within the assessment. In the following chapter, the term 'site' shall refer to the area encompassed within the planning application boundary and distinct areas within this boundary will be referred to individually, where appropriate.

Baseline Methodology

11.4 The information reviewed during the study has been used to identify potential pollutant linkages. A potential pollutant linkage is one that includes a potential contaminant *Source*, an environmental *Receptor* and one or more exposure *Pathways*. For a risk to be present, and hence some form of mitigation to be required, albeit potentially minor measures which may be considered standard construction practice, a complete Source - Pathway - Receptor linkage must be present. If one or more of the components are missing then the linkage is not complete and there is no associated risk. The effect is therefore neutral.

11.5 The impact assessment refers to the Source - Pathway - Receptor conceptual model discussed above and takes account of any mitigating circumstances that relate to the site and the proposed development. The significance of any potential risk is therefore evaluated, and described in relation to its potential effect and the magnitude of the impact.

11.6 With respect to contamination/ground conditions, a significant impact is considered to occur where the development has the potential to cause significant pollution/contamination or to mobilise existing contamination such that the development or other identified receptors are adversely impacted. Where the development is proposed to remove an existing source of contamination this would be regarded as a positive effect.

11.7 In accordance with good practice a staged approach has been adopted for this assessment. The first phase is a desk based study of relevant information including:

- A review of historical information available for the site and surrounding area to assess the likelihood of contamination to be present;
- An assessment of the environmental sensitivity of the site and immediate area with reference to the geology, hydrology, hydrogeology and nature conservation of the general area. This enables an assessment of the likely impacts of the site and neighbouring activities; and
- Consultations with local regulatory authorities to identify any known concerns regarding the site and review publicly available information.

11.8 The following information has also been obtained through reference to records held by an environmental data provider (this data is provided as **Appendix 11.1**). Additional information has also been sought directly from the appropriate regulatory authority (Environment Agency/Local Authority) as considered appropriate:

- *Historical Development* – historical maps;
- *Ground Contamination* – registers of contaminated sites; databases of storage facilities; former and current landfill and waste disposal sites;
- *Geology* – geological maps; borehole records;
- *Groundwater* – hydrogeological maps; abstraction wells and boreholes nature and quality; pollution incidents; and
- *Surface water* – nature and quality; abstractions and discharges; pollution incidents.

11.9 Should a significant potential for contamination be identified then a second phase of works comprising intrusive site investigation would be required to further clarify the significance of any pollutant linkages. This approach is as per the details provided in the aforementioned geo-environmental assessment.

Limitations of the Assessment

11.10 The assessment does not consider contamination associated with proposed formal site drainage, which is considered elsewhere in this application (Chapter 10: Flood Risk and Drainage).

11.11 The ground gas issues discussed in this report are not intended to provide a formal gas risk assessment as may be required either by the local authority's Environmental Health/Contaminated Land Team or Building Control. The assessment instead highlights any potentially significant effects from the presence of known gas-generating materials on the site.

Impact Methodology

11.12 The assessment of impacts (beneficial and/or detrimental) to the setting of the site and a number of identified environmental receptors resulting from the proposed site redevelopment assumes that any such impacts can be apportioned to one of two clearly defined scenarios:

- Short-term impacts occurring during the redevelopment operations (construction effects); and
- Longer-term impacts occurring after redevelopment of the site has occurred that result either from changes to the nature of the site use or from its ongoing operation (operational effects).

11.13 The significance of the impacts identified can be assessed via a number of distinct stages, as outlined below. These are qualitative assessments based upon the data available as a result of establishing the baseline site condition, an appraisal of the development proposals and the application of professional judgment.

Stage 1: Sensitivity of the Receptor

11.14 The sensitivity of all potential receptors are determined using the following terminology:

- **High** sensitivity/importance (e.g. site users, aquifer or surface watercourse providing potable water abstraction);
- **Medium** sensitivity/importance (e.g. aquifer or surface watercourse with abstraction for non-potable purposes);
- **Low** sensitivity/importance (e.g. non-aquifer, geological formations with no conservation importance); and

- **Negligible** sensitivity/importance.

Stage 2: Magnitude / Nature of Effects

11.15 The magnitude of the identified potential effects is expressed in a qualitative manner as follows:

Table 11.1: Description of Effects

Magnitude	Description
Adverse	detrimental or negative impacts to an environmental resource or receptor;
Beneficial	advantageous or positive impact to an environmental resource or receptor; or
Negligible	an impact on a resource/receptor of insufficient magnitude to affect the use/integrity.

11.16 For the purposes of this assessment, where adverse impacts have been identified, these have been assessed against the following scale:

Table 11.2: Magnitude of Effects

Magnitude	Description
Major	considerable impact (by extent, duration or magnitude) of more than local significance or in breach of recognised acceptability, legislation, policy or standards e.g: widespread contamination of aquifer
Moderate	limited impact (by extent, duration or magnitude) which may nonetheless be considered significant in the context of the site and/or surrounding areas e.g: localised contamination of aquifer
Minor	slight, very short term or highly localised though measurable impact but of limited size/proportion and of no significant consequence e.g: localised remediation of soil contamination
Negligible	impact of insufficient magnitude to affect use/integrity e.g. discharge to groundwater but no significant decrease in quality

Stage 3: Significance of Potential Impacts

11.17 The assessment of significance is based on the characteristics of the impact and the sensitivity of the receptor. By establishing the sensitivity/value of the resource/receptor in Stage 1, and the magnitude/nature of the impact in Stage 2, the following matrix will determine the significance level:

Table 11.3: Significance of Impact

Magnitude of Impact		Importance of the Resource/Receptor			
		High	**Medium**	**Low**	**Negligible**
	Major adverse	Major significant effect	Major significant effect	Minor significant effect	Minor significant effect
	Moderate adverse	Major significant effect	Major significant effect	Minor significant effect	No significant effect
	Minor adverse	Minor significant effect	Minor significant effect	No significant effect	No significant effect
	Negligible	Minor significant effect	No significant effect	No significant effect	No significant effect
	Minor beneficial	Minor significant effect	Minor significant effect	No significant effect	No significant effect
	Moderate beneficial	Major significant effect	Major significant effect	Minor significant effect	No significant effect
	Major beneficial	Major significant effect	Major significant effect	Minor significant effect	Minor significant effect

Policy Context

11.18 This assessment has been conducted in accordance with best practice relating to the investigation of potentially contaminated land including:

1. Environment Agency/Department for Environment, Food and Rural Affairs 2002, CLR 7 – Assessment of Human Health Risks From Land Contamination; and
2. Office of the Deputy Prime Minister, 2005, Planning Policy Statement 23: Planning and Pollution Control – Annex 2: Development on Land Affected by Contamination.

11.19 These documents identify the Source - Pathway - Receptor methodology identified below.

11.20 Planning policies at both regional and national level, including both the Regional Spatial Strategy (RSS11) and Planning Policy Statement 23 (PPS23) respectively, include a consideration of development in terms of potential or actual land contamination. The quality of land, in so far as it affects land use and development, is a material planning consideration in the preparation of regional planning policies such as the Regional Spatial Strategy for the West Midlands (RSS11), which seeks to promote the restoration and remediation of derelict land and contaminated sites (Policy QE2).

11.21 Whilst directed mainly towards industrial development that pose a pollution potential, PPS23 also controls other types of development, such as commercial or residential, either on or close to sources of pollution to ensure the protection of future occupants of such development against exposure to unacceptable levels of pollution.

Existing (Baseline) Conditions

Site Setting

11.22 The site is located some 3 km to the north-east of the centre of Leek, in a predominantly rural setting at National Grid Reference (NGR) 400800, 359050.

11.23 The site is a roughly rectangular parcel of land, and occupies an area of 10.78 hectares. It was previously operational as an Army training camp, which ended operations in 2004. The topography of the site generally mirrors the westerly fall of the surrounding land, which is characterised by agricultural usage (rough pasture).

11.24 The site is currently characterised by the former Army residential training base of Anzio Camp which ended operations in December 2004. It comprises a number of vacant single and two storey buildings constructed between 1980 and 1983 that were used for offices, training and accommodation purposes, together with a number of subsidiary buildings including a guard house and caretaker's bungalow. In the south west corner of the site is the camp's sports hall. The other areas of the site are characterised by a parade ground, car parking, assault course and small arms firing ranges, and a secure ammunition store, together with areas of soft landscaping.

Geology

11.25 British Geological Survey Map, Sheet 111, Buxton (1:50,000) Solid and Drift Edition indicates that the site is underlain by Namurian (Upper Carboniferous) Millstone Grit strata. Superficial deposits, likely to be up to a few metres in thickness, are indicated as overlying the solid geology in the form of glacial tills (Boulder Clay). This is shown to be present beneath the entire site and its immediate environs, although it is likely that much if not all of these superficial deposits will have been removed within areas of the site currently occupied by buildings.

11.26 Made ground is likely to be present across at least part of the site as a consequence of its previous use and the presence of buildings and hardstanding. It is known that demolition

materials arising from the site's redevelopment during the early 1980s have been deposited within a distinct area of the south-west and south of the site.

Hydrogeology

11.27 Environment Agency Groundwater Vulnerability Map, Sheet 17 (Derbyshire and North Staffordshire) indicates that the site is situated on a Minor Aquifer, which relates to the underlying Millstone Grit strata. Minor Aquifers seldom produce large quantities of water for abstraction but are important for both local supplies and in providing base flow to rivers. The site is not located within a Source Protection Zone (SPZ), but does lie within an area classified as a Nitrate Vulnerable Zone.

11.28 There are no licensed water abstractions on the site. Seven private groundwater abstractions lie within a 1 km radius of the site, five approximately 800 m to the east-south-east and south east of the site, one approximately 900 m to the north-west and one approximately 350 m to the west. It is understood that these are served both by boreholes and springs.

Hydrology

11.29 Two streams have been noted adjacent to the site's western and southern boundaries which discharge to the public water supply of Tittesworth Reservoir some 750 m to the west of the site. The reservoir discharges in turn into a continuation of the River Churnet, which runs in a south westerly direction around the northern margin of the Leek conurbation. A small drainage channel has been observed crossing the northern part of the main site and, during the site visit, a further surface watercourse was noted crossing its southern boundary. The site is not within an Environment Agency designated floodplain. The nearest surface water abstraction is located approximately 1.1 km west of the site, and is from Tittesworth Reservoir,

11.30 The chemical quality of the River Churnet to its north under the Environment Agency's General Quality Assessment (GQA) was Grade A (Very Good) from 2004 to 2006. Its quality south of the Reservoir was assigned as Grade B (Good), also from data obtained from 2004 to 2006. The hydrological regime of the site and its surroundings is considered in greater detail in Chapter 10.

Ecosystems

11.31 The site and its immediate surroundings are not designated as a statutory protected nature site. The nearest site with such status is the Site of Special Scientific Interest (SSSI) of

Thorncliffe Moor 750 m to the east of the site. There are a number of known ecological receptors on the site, including bats and barn owl. The ecology of the site and its surroundings is considered in greater detail in Chapter 8.

Historical Land Use

11.32 Historical Ordnance Survey maps dating from 1890 to present day have been obtained for the site. These indicate that to at least 1925-26 the site and its surroundings were used solely for agricultural purposes. Although the first indication of development on the site was reported on the 1954-55 map, it is known that the site had been developed prior to this time, namely the construction of a military training base for US forces in 1941/2. Development of the site in accordance with the current layout was first indicated on the 1999-2000 map, however it is understood that redevelopment of the site from its former layout occurred in the early 1980s as outlined previously. Chapter 9 considers the historical development of the site in greater detail.

Pollution Incidents

11.33 The Environment Agency has records of four pollution incidents occurring within a 1 km radius of the site since 1996. None of these are understood to have been attributable to, or which have potentially impacted, the site. Consultation with the Pollution Officer at Staffordshire Moorlands District Council has revealed that there is no history of pollution incidents at the site, nor has the Council made any determinations under Part IIa of the Environmental Protection Act 1990 in respect of the site or any adjacent land.

Potential Contamination Sources

11.34 Based on the history of the site, there is the potential for contamination to be present on the site as a consequence of its former use for military purposes. This has been subject to a separate detailed assessment, which has highlighted the potential for contamination to be present from the following sources:

- Above-ground oil tank and associated underground pipework;
- Demolition materials resulting from the re-development of the site;
- Minor localised contamination hotspots associated with underground fuel storage tanks and storage / use of other hydrocarbon fuels and lubricating oils;
- On-site transformer;
- Small arms range and ammunition store;
- Former CS gas test chamber; and
- Localised areas of made ground associated with redevelopment works.

Receptor Sensitivity Assessment Criteria

11.35 The underlying geology of the site and surrounding area is dominated by glacial tills which are extensive in both lateral and vertical extent in the United Kingdom, and are not perceived to be important from either a geological conservation or economic viewpoint. Applying the receptor sensitivity assessment criteria outlined above, the superficial geology has therefore been assigned a ***Low*** sensitivity rating.

11.36 Groundwater within the underlying Millstone Grit strata has been designated Minor Aquifer status and the site is not located within a Source Protection Zone, however there are a number of abstractions both from springs and boreholes within 1 km of the site. The groundwater has thus been assigned a ***High*** sensitivity rating. Should the low permeability glacial till beneath the site be proven to be of sufficient thickness as to afford a high level of protection to the groundwater beneath, the sensitivity of the aquifer would be revised to a ***Medium*** rating.

11.37 Surface watercourses adjacent to the site's western and southern boundaries discharge to the River Churnet and eventually the public water supply of Tittesworth Reservoir. These have thus been assigned a ***High*** sensitivity rating, although it should be noted that the site is likely to form only a small component of the reservoir's total catchment.

11.38 Redevelopment of the site to residential end-use introduces receptors in the form of site users and buildings. These have been assigned ***High*** and ***Medium*** sensitivity ratings respectively to on-site contamination .

11.39 The nearest statutory protected nature site is some 750 m from the site, and is upgradient of the site in terms of surface water run-off and anticipated groundwater flow. It has thus been assigned a ***Low*** sensitivity rating in terms on on-site contamination. The on-site ecological receptors, outlined in greater detail in Chapter 8, have been assigned a ***Medium*** sensitivity rating.

Identification and Assessment of Effects

11.40 The assessment of land quality in the context of the Anzio Camp site considers the following:

1. The presence of pre-existing contamination arising from the site's former use; and
2. The potential for the development to cause further additional contamination.

11.41 This chapter therefore considers the development proposals both in terms of their potential to mobilise contaminants already present on the site as well as to cause additional incremental contamination during or following its redvelopment.

Construction Effects

11.42 These are considered to occur as a consequence of the actual redevelopment (preliminary earthworks and construction operations) itself. With one exception, these are all considered to be potentially adverse in nature. Such potential impacts include:

1. Disturbance and mobilisation of potentially contaminated near-surface materials during construction of foundations and other earthworks operations arising from redevelopment of the site, impacting both human health, ecological and controlled water receptors;
2. The use of construction plant on the site with the potential for leaks and spills during operation, refuelling and maintenance;
3. The storage of potentially polluting substances such as hydrocarbon fuels and oils that have the potential to cause adverse impacts in the event of their spillage; and
4. A reduction in the pollution potential of the site due to remediation of contaminated areas to address human health risks.

Operational Effects

11.43 Potential longer term impacts of the redevelopment are considered to occur both as a consequence of changes to the site's character and also future operation of the redevelopment. The most significant of these are:

1. Introduction of environmental receptors (future site users) considered to be highly sensitive to any contamination present;
2. Potential damage to building structures, including aggressive soil conditions and penetration of plastic water pipes, from high contaminant concentrations or build up of ground gases.
3. Foundation construction potentially introducing vertical migration pathways through the superficial geology for surface contamination to impact upon the groundwater and surface water regime, which can be considered to be both a construction and operational effect;
4. The leakage of services such as sewer connections, resulting in adverse impacts on the underlying strata and surface and groundwater regime; and
5. Spillage of potentially polluting substances such as hydrocarbon fuels and oils stored on site as part of routine operation of the developed site.

Magnitude of Effects

11.44 The mobilisation of near-surface contamination during construction works has the potential to detrimentally impact upon both human health (construction site workers and off-site receptors), ecological receptors and controlled waters (shallow groundwater and surface watercourses). Such impacts, whilst significant, are unlikely to be more than localised in extent and of short duration. They have therefore been assigned a ***Moderate Adverse*** magnitude.

11.45 The use of construction plant and storage and use of associated hydrocarbon fuels and lubricants have the potential to cause detrimental impact on a highly localised scale, and have therefore been assigned a ***Minor Adverse*** magnitude.

11.46 The introduction of sensitive human health receptors from redevelopment of the site has the potential to cause detrimental health impacts should significant on-site contamination be present, albeit only of local significance. This has therefore been assigned a ***Moderate Adverse*** magnitude.

11.47 Creation of migration pathways by way of foundation construction through the glacial till deposits is likely to cause only a minor and highly localised impact upon the underlying Minor Aquifer, and has been assigned a ***Minor Adverse*** magnitude.

11.48 Leaks and spillages of potentially polluting substances during operation of the redeveloped site (sewage and liquid hydrocarbons) may detrimentally impact upon near-surface soils, surface waters and shallow groundwater, however such impacts are unlikely to be more than highly localised in extent. They have therefore been assigned a ***Minor Adverse*** magnitude.

11.49 Remediation of areas of existing on-site contamination as a component of the redevelopment works has a beneficial effect, although of a highly localised nature, and may be considered as ***Minor Beneficial*** in nature.

Mitigation

11.50 Many of the short-term adverse construction effects arising from the redevelopment of the site can be effectively mitigated by the utilisation of good construction techniques and practices implemented by a Construction Environment Management Plan. These include, though are by no means limited to, the following measures:

1. The use of appropriate measures to prevent spillage of potentially polluting substances, including:
   - Storage and handling measures for all hydrocarbon fuels and lubricating oils, including the use of bunded storage areas, double-skinned storage tanks and/or impermeable surfacing;
   - The use of drip trays for static plant and designated refuelling areas for mobile plant;
   - The implementation of appropriate spillage contingency measures, including the use of spillage kits, to mitigate the impact of such spillages on the surface and groundwater regimes; and
   - Appropriate personnel awareness training of the potential environmental implications of all construction and demolition work on the site.

2. Where feasible, site-specific construction techniques would be adopted to prevent mobilisation of existing on-site contamination. These are likely to include:
   - Timely and staged removal of areas of existing hardstanding to minimise the likelihood of generating contaminated dust or silt-laden surface run-off from areas of bare ground;
   - The avoidance of vehicle movements on bare soils, where possible;
   - The use of silt traps to remove suspended solids from otherwise uncontaminated surface run-off;
   - The use of water bowsers to minimise fugitive dust emissions during periods of dry weather; and
   - Appropriate stockpiling and, where necessary, off-site removal of potentially contaminated soils during redevelopment works to prevent dust or run-off from detrimentally impacting upon the site's surroundings.

3. All construction works should be supplied with appropriate Personal Protective Equipment (including gloves, overalls and, where necessary, dust masks) to ensure their safety during construction operations.

11.51 Detrimental longer term impacts arising as a consequence of the operation of the proposed development can be mitigated via the application of a number of techniques outlined below:

1. Should any contaminated material be encountered during redevelopment works as a legacy of the site's former use, a suitable remediation scheme would be implemented during the redevelopment works to mitigate against the risks posed to a number of environmental receptors including human health and controlled waters. Such a scheme is likely to include the following measures:

- Intrusive investigation of areas of the site anticipated to be potentially contaminated due to their former use, together with a programme of soil and groundwater analyses;
- Monitoring of groundwater quality and ground gas concentrations and flows;
- Excavation of contaminated materials for relocation to less sensitive areas of the site (such as under surfaced roads or parking areas) or off-site disposal depending upon the nature and degree of contamination; and
- The use of clean cover systems to break exposure pathways between contaminated materials and any identified receptors to reduce risks to negligible levels.

2. Remediation of the site would also incorporate measures to address the risks posed to buildings on the redeveloped site, such as from aggressive soil conditions, the penetration of plastic water pipes from organic contaminants and the risks posed to buildings and their occupants from elevated concentrations of ground gases. In particular, the potential risks posed by soil contamination or ground gases are common issues on redevelopment of brownfield sites, and can be overcome by means of an effective site remediation strategy and the use of standard design and construction techniques;

3. Where feasible, in areas where the potential for localised contamination exists, site-specific construction techniques would be adopted to ensure that no migration pathways are created to jeopardise the quality of the underlying Minor Aquifer. All foundation design in such areas would have due regard for the total thickness of the glacial till that overlies the Minor Aquifer, thus ensuring that the protection the glacial till affords to groundwater quality is not compromised;

4. All services associated with the development would be designed to ensure their long-term fitness for purpose, and would be appropriately tested prior to commission to demonstrate their integrity; and

5. The site would be used for a continuing care retirement community end-use and, as such, is unlikely to pose a significant risk to its surroundings from the use of potentially polluting substances. Nevertheless, the storage of such materials, particularly liquids, would incorporate appropriate measures considered to be current best practice, including bunded storage areas, double-skinned storage tanks and/or impermeable surfacing. Spillage contingency measures would be maintained to mitigate the impact of spillages on the surrounding environment.

Summary and Residual Effects

Summary

11.52 The land quality chapter identifies the potential impact of any contamination sources on a number of environmental receptors, including humans (construction workers and future site users), ecological receptors, buildings on the redeveloped site and controlled waters such as groundwater and surface watercourses.

11.53 The study has presented the baseline condition of the site, and assessed the proposed development with particular reference to its potential to impact upon the surrounding environment, both as a consequence of mobilising pre-existing contamination and from introducing further additional contamination during its construction or operation.

11.54 The study incorporates a review of available historical information and an assessment of the environmental sensitivity of the site and immediate surrounding area, with reference to the geological and hydrogeological regimes. An assessment of the potential impact upon the hydrology of the site and its surroundings is presented elsewhere in this Environmental Statement.

11.55 The site lies above Namurian (Upper Carboniferous) Millstone Grit strata that has been designated as a Minor Aquifer. Surface watercourses in the vicinity of the site discharge to the public water supply of Tittesworth Reservoir to the west. It is proposed to redevelop the site to an institutional residential end-use. A number of on-site ecological receptors have also been identified. There are thus are a number of identifiable environmental receptors to potential contamination arising from the site's former use or from its redevelopment.

Residual Effects

11.56 It is considered that the majority of detrimental impacts identified as a result of the construction of the proposed development can be successfully mitigated against during the planning/design phase.

11.57 Given the nature of the proposed development, there is limited potential for detrimental impact on the underlying geology or groundwater during the operational phase from potentially polluting substances. The proposals are therefore not considered to result in a cumulative increase in contamination of the site or its immediate surroundings. A range of mitigation measures would nevertheless be implemented to ensure ongoing environmental protection.

11.58 Careful foundation design would ensure that the aquifer protection afforded by the overlying low permeability glacial till is not negated through pile-induced migration pathways.

11.59 Potential contamination associated with drainage on the redeveloped site has been considered in Chapter 10 (Flood Risk and Drainage), which concluded that, given the utilisation of suitable mitigation measures, any residual impacts would be ***Minor Adverse*** in nature and therefore of little significance.

11.60 Gas generated by the demolition materials deposited on the site has the potential to pose a significant risk to future residences without the benefit of suitable gas protection measures. In the first instance, the potential risk posed by these materials would be quantified via an intrusive investigation and programme of ground gas monitoring. This would allow a suitable ground gas strategy, including the incorporation of gas protection measures into new buildings should these be required, to be designed for the site. It should be noted that the potential impact from ground gases is a common issue with modern development sites and can be overcome by means of standard design/construction techniques in accordance with the recommendations of CIRIA Guidance Document C665 '*Assessing risks posed by hazardous ground gases to buildings*', if necessary.

11.61 On the basis of the various mitigation measures, the magnitude of the mitigated effects can be re-assessed as of ***Negligible*** magnitude except the remediation of existing on-site contamination, which may be considered as ***Minor Beneficial*** in nature.

Significance of Residual Effects

11.62 The near surface geology has been assigned a *Low* sensitivity status. Given *Negligible* impacts being realised upon this receptor, the overall significance of such impacts has been rated as ***No Significant Effect.***

11.63 The Minor Aquifer receptor was assigned *a High* sensitivity status due to the site being located outside of a source protection zone. Given *Negligible* impacts being realised upon the groundwater beneath the site, the overall significance of such impacts has been rated as ***Minor Significant Effect***.

11.64 Surface watercourses adjacent to the site eventually feed into the public water supply of Tittesworth Reservoir and, on this basis, have been assigned a *High* sensitivity rating. Through the implementation of adequate mitigation measures and *Negligible* impacts being realised, the overall significance of such impacts has been rated as ***Minor Significant Effect***.

11.65 Site users and buildings on the redeveloped site have been assigned *High* and *Medium* sensitivity ratings respectively. The implementation of a comprehensive site remediation strategy that reduces the effects of on-site contamination to *Negligible* results in an overall significance of ***Minor Significant Effect*** and ***No Significant Effect*** respectively.

11.66 The nearest statutory protected nature site has been assigned a *Low* sensitivity rating, with on-site ecological receptors assigned a *Medium* sensitivity rating. Mitigation measures appropriate to the potential contamination issues on the site are deemed to be effective in the context of a range of environmental receptors to reduce all impacts to *Negligible* magnitude. The overall significance of such impacts on ecological receptors has thus been rated as ***No Significant Effect***.

11.67 Remediation of areas of existing on-site contamination during redevelopment works has a ***Minor Beneficial*** effect. In terms of the effect on the *High* sensitivity hydrological and hydrogeological regimes, this results in a ***Minor Significant Effect***.

References

- Envirocheck Order No. 24259955_1_1 (historical maps, geological/hydrogeological information, records of abstractions, discharges and pollution incidents);
- British Geological Survey (BGS) Digital Geological Map of Great Britain (1:50,000 scale);
- British Geological Survey (BGS) Map Sheet 111, Buxton (1:50,000 scale), Solid and Drift Editions;
- Environment Agency Groundwater Vulnerability Map, Sheet 17, Derbyshire and North Staffordshire (1:100 000)
- Environment Agency website (Source Protection Zone data);
- CLR 7 – Assessment of Human Health Risks From Land Contamination;
- CLR 11 – Model Procedures for the Management of Land Contamination;
- CIRIA C665 'Assessing risks posed by hazardous ground gases to buildings';
- Planning Policy Statement 23: Planning and Pollution Control – Annex 2: Development on Land Affected by Contamination;
- Regional Spatial Strategy for the West Midlands (RSS11).

Air Quality

Introduction

12.1 The purpose of this chapter is to assess the the air quality effects on the proposed development of a Continuing Care Retirement Community at the former Anzio Camp, for which an outline planning application has been made. The site is located within Staffordshire Moorlands District, approximately 3 km north-east of Leek on the A53 Leek to Buxton road, on the southern edge of the Peak District. Access is provided directly of the A53.

12.2 Consultation with Staffordshire Moorlands District Council (SMDC) has not declared any Air Quality Management Areas (AQMA) in the site's vicinity.

12.3 The key aspects, with regard to air quality and dust, are considered to be:

- **Construction Effects:** dust and air quality impacts from plant and activities associated with the construction of the proposed development; and
- **Operational Effects:** air quality impacts from changes in traffic flow characteristics on the local road network associated with the proposed development.

12.4 Vehicle movement associated with the construction phase would be temporary and significantly less than the quantity of vehicles associated with the operational phase and therefore, it is deemed to be insignificant.

12.5 The methods and criteria used to assess potential effects on air quality are described in the following sections. Where potentially adverse environmental effects have been identified, measures to eliminate, reduce or mitigate the effects are proposed.

Assessment Methodology

Definition of Study Area

12.6 The proposed development of a CCRC includes self-contained dwellings being a mix of houses, cottages and apartments together with ancillary buildings with the total build area of approximately 1.2 hectares.

Baseline Methodology

12.7 The approach to this air quality assessment includes the key elements listed below, and follows UK Government guidance (LAQM.TG03) on the assessment of local air quality [9]:

- Consideration of Staffordshire Moorlands District Council's Air Quality Review and Assessment (R&A) documents;
- Assessment of existing local air quality conditions through a review of available air quality monitoring data for the area;

Impact Methodology

12.8 The key emissions associated with road traffic and the diesel generators in the context of local air quality and health impacts are nitrogen dioxide (NO_2) and particles (as PM_{10}). Emissions of total nitrogen oxide (NO_x) from motor vehicle exhausts comprise nitric oxide (NO) and NO_2. NO oxidises in the atmosphere to form NO_2. NO_x can affect sensitive vegetation directly and contribute to regional acid deposition.

12.9 In addition to these pollutants, motor vehicles also emit carbon monoxide, unburned hydrocarbons and various greenhouse gases including CO_2. However, this air quality assessment is limited to the key traffic-related pollutants, NO_2 and PM_{10}. Additionally to the traffic related pollutants, dust and air quality impacts from plant and activities associated with the construction of the proposed development are considered as a potential source of nuisance. Therefore, the approach to this air quality impact assessment includes the key elements listed below:

- Qualitative assessment of the effect of the construction phase on local air quality;
- Quantitative assessment of the effect on local air quality from changes in traffic flows from the proposed development in the first fully operational year, 2014, utilising the Design Manual for Roads and Bridges (DMRB) Screening Method; and
- Qualitative risk assessment of the likely dust nuisance effects during the operational phase of the project, using best practice guidance.

Construction Effects

Dust from Construction Activity

12.10 Nuisance caused by the deposition of construction dust is likely to be the most significant issue in relation to local air quality effects during the construction phase. No statutory or

official air quality criterion for dust annoyance has been set at a UK, European or World Health Organisation (WHO) level.

12.11 By convention, the assessment of construction dust is normally confined to an evaluation of the likelihood that emissions may give rise to some perceptible nuisance. This is defined on the basis of the distance from construction works of sensitive receptors such as residential properties. It is common practice to use a distance of 100m as the radius within which significant effects may occur. Existing residential properties potentially at risk from dust emissions during the construction phase within 100m of the proposed construction area are identified within the assessment.

12.12 A Best Practice Guide (BPG) on the control of dust and emissions from construction and demolition has been produced by the Mayor of London, in association with the Air Pollution Planning and the Local Environment (APPLE) working group, comprising participants from the Greater London Authority and the Association of London [8]. The BPG is designed to inform the planning process and assist developers in understanding the methods to control dust and emissions from construction and demolition activities.

12.13 Although the proposed development is located outside London, the BPG provides a useful framework for assessing effects due to construction activities. In accordance with the BPG, the proposed development has been evaluated to determine whether the construction phase is likely to cause significant air quality effects.

12.14 Construction activities have been assessed against the overarching criteria provided in **Table 12.1**. Where risks have been identified, mitigation measures are provided which are consistent with the level of risk assessed.

Table 12.1: London Best Practice Guide Site Evaluation Guidelines

Low Risk
Development of up to 1,000 square metres of land
Development of one property and up to a maximum of ten
Potential for emissions and dust to have an infrequent impact on sensitive receptors
Medium risk sites
Development of between 1,000 and 15,000 square metres of land
Development of between ten to 150 properties
Potential for emissions and dust to have an intermittent or likely impact on sensitive receptors
High risk sites
Development of over 15,000 square metres of land
Development of over 150 properties
Potential for emissions and dust to have significant impact on sensitive receptors

Construction Traffic Effects

12.15 The major influence on air quality throughout the construction of the development is likely to be dust-generating activities such as movement of plant vehicles both on and around the site.

12.16 Construction of the proposed development would have associated construction traffic, comprising contractors' vehicles and Heavy Goods Vehicles (HGVs), diggers and other diesel-powered vehicles. This would result in emissions of NO_x, fine particles and other combustion related pollutants which are covered by the AQS objectives.

12.17 The operation of these vehicles would be localised and temporary. In any case, the quantity of vehicles associated with the construction phase would be significantly less than the quantity of vehicles associated with the operational phase. Therefore, it is reasonable to assume that air quality effects associated with construction traffic would be less pronounced than the effects associated with the operational phase, which are addressed within this assessment.

12.18 Therefore, emissions of combustion related pollutants from the construction phase are not considered further and are expected to be lower than emissions associated with the operational phase.

Significance Criteria for Assessment of Construction Phase

12.19 There is no official criterion for dust annoyance available. Therefore, the BPG qualitative approach for the assessment of construction as set out in **Table 12.2** has been adopted. Effects of dust nuisance are usually adequately mitigated through the implementation of dust management and mitigation measures during the construction phase. In recognition of this, identification of significance criteria is not relevant.

Operational Effects

12.20 The proposed development is expected to be completed in 2014. The impacts of the proposed development would be quantitatively assessed in the first fully operational year (2014) of the proposed development.

Model Selection

12.21 The DMRB Screening Method [9] has been used to estimate concentrations of the road traffic related pollutants NO_2 and PM_{10} at sensitive receptor locations.

12.22 The assessment utilises DMRB Version 1.03c (July 2007), which calculates pollutant concentrations using baseline pollutant concentrations and traffic flow data.

12.23 Recent studies into the relationship between roadside NO_x and NO_2 concentrations have resulted in emergence of new guidance for estimating NO_2 from NOx [10]. Therefore, NO_2 results reported in this assessment have been estimated in accordance with this new relationship described in **Appendix 12.1**.

12.24 The model has been designed as a conservative screening method and tends to over estimate traffic pollution; it can therefore be considered a worst-case assessment approach.

12.25 The DMRB model was used to first predict the pollutant concentrations at existing roadside monitoring locations in 2008, in order to compare with monitoring results. Future concentrations have then been predicted at the facade of the proposed residential development for the opening year 2014.

DMRB Receptors and Scenarios Assessed

12.26 The influence of traffic on air quality is greatest close to roads. Effects decrease with distance such that the influence of a particular road is generally not detectable above background concentrations beyond about 200 m.

12.27 Air Quality was predicted along transects, at 20 to 200 meters from the center of the main roadside, assuming the most conservative scenario of 10 m distance to the road inside the development to deliver concentrations of NO_2 and PM_{10} across the bands where residential receptors may exist. Although the residential receptors are located further than 20 m from the the main road centre, this assessment will assume 20 m distance from that road and 10 m form the access road inside the development area as a worst case scenario for all links included in the assessment.

12.28 Traffic data, including Annual Average Daily Traffic (AADT) flows, percent of Heavy Duty Vehicles (HDVs) and speed information has been provided for the local road network by RPS traffic consultants.

12.29 NO_2 and PM_{10} concentrations have been predicted for the following scenarios:
Current Baseline (2008);
Assumed opening year 'Without Development' (2014 without the development proposal); and
Assumed opening year 'With Development' (2014 with the development proposal).

Traffic Flow Data

12.30 Traffic data for this project were provided by RPS.

Table 12.2: Traffic Data Used in Assessment

Road Link	Speed (kph)	2008		2014			
				Without Development		With Development	
		AADT	%HDV	AADT	%HDV	AADT	%HDV
1	70	5835	4	6296	4	6715	4
2	16	-	-	-	-	838	0.2

Notes: AADT = Annual Average Daily Traffic.
%HDV = Percentage of AADT made up of Heavy Duty Vehicles.
kph = kilometres per hour

Assessment Significance Criteria

12.31 A number of approaches can be used to determine whether the potential air quality impacts of a development are significant; however, there remains no universally recognised definition of what constitutes 'significance'.

12.32 Guidance is available from a range of regulatory authorities and advisory bodies on how best to determine and present the significance of impacts within an air quality assessment. It is generally considered good practice that, where possible, an assessment should communicate impacts both numerically and descriptively.

12.33 Presentation of numerical effects allows comparison with relevant UK AQS objectives and/or EU Limit Values. Within this assessment, the following information will be presented for each receptor where pollutant concentrations have been determined:

1. Absolute pollutant concentrations without the proposed development (at existing receptors)
2. Absolute pollutant concentrations with the proposed development (at existing and proposed receptors)
3. Percentage change in concentrations as a result of the proposed development (at existing receptors)

12.34 Where appropriate, the above information will also be provided in relation to the number of days or hours when concentrations are above or below the relevant AQS objective and/or limit value.

12.35 Any description of the effects of a development is informed by numerical results; however, an element of professional judgement must also be involved.

12.36 In order to ensure that the descriptions of effects used within this report are clear, consistent and in accordance with recent guidance, definitions have been adopted from the National Society for Clean Air's (NSCA) Development Control: Planning for Air Quality document [11]. **Table 12.3** provides descriptors used for changes in NO_2 and PM_{10} concentrations as a result of the proposed development.

Table 12.3: Descriptors for Changes in Absolute Concentrations of NO_2 and PM_{10}

Descriptor	Predicted Contribution
Very large	Increase/decrease >25%
Large	Increase/decrease 15-25%
Medium	Increase/decrease 10-15%
Small	Increase/decrease 5-10%
Very Small	Increase/decrease 1-5%
Extremely Small	Increase/decrease <1%

12.37 The magnitude of the change identified must be considered in the context of existing air quality conditions within the study area in order for the significance of that magnitude to be determined. The most important aspects to consider are whether existing concentrations are above or below the relevant AQS objective/Limit Value and whether existing receptors are within an Air Quality Management Area.

12.38 **Table 12.4** provides descriptors for the significance of air quality effects based on the magnitude of increase in concentrations, in the context of existing conditions.

Table 12.4: Descriptors for Effects Significance for NO_2 and PM_{10} when Concentrations Increase with Proposed Development

Absolute Concentrations in Relation to Standard	Magnitude of Change in Concentrations due to the Proposed Development					
	Extremely Small	**Very Small**	**Small**	**Medium**	**Large**	**Very Large**
Above standard without scheme	Slight adverse	Slight adverse	Substantial adverse	Substantial adverse	Very substantial adverse	Very substantial adverse
Below standard without scheme, above with scheme	Slight adverse	Moderate adverse	Substantial adverse	Substantial adverse	Very substantial adverse	Very substantial adverse
Below standard with scheme, but not well below	Negligible	Slight adverse	Slight adverse	Moderate adverse	Moderate adverse	Substantial adverse
Well below standard with scheme	Negligible	Negligible	Slight adverse	Slight adverse	Slight adverse	Moderate adverse

Notes: 'Well below standard' = <75% of the standard level
'Standard' = AQS objective or limit value
Adapted from NSCA guidance [Ref 11]

Policy Context

European Legislation

12.39 The European Union Framework Directive 1996/62/EC on ambient air quality assessment and management came into force in November 1996 and had to be implemented by Member States, including the UK, by May 1998. The Directive aims to protect human health and the environment by avoiding, reducing or preventing harmful concentrations of air pollutants. As a Framework Directive it requires the Commission to propose and set "Daughter" Directives prescribing air quality limit values, alert thresholds, guidance on monitoring and measurement of individual pollutants.

12.40 In the late 1990s, the Clean Air for Europe (CAFE) programme was established with a view to drawing together the air quality directives into a new single directive. On 21 September 2005, the European Commission adopted the Thematic Strategy on Air Quality proposed under the CAFE programme.

12.41 The main aims of the Strategy were to address the following:

- The need for an holistic approach to preventing air pollution;
- The evidence that particles with a mean aerodynamic diameter of less than 2.5µm, $PM_{2.5}$, are potentially more hazardous than larger particles. The current limit values for particulate matter relate to PM_{10}; and

- The current limit value based system requires Member States to reduce levels of pollutants in a relatively small number of highly localised 'hot-spots' rather than a general reduction in exposure. Effort and investment may be misplaced if pollutant levels are reduced in locations where the sources of pollution do not give rise to significant health or environmental concerns.

12.42 A new EU Air Quality Directive, replacing all previous Directives, is proposed to deliver the aims of the strategy. Proposals within the new Directive include:

- Withdrawal of the provisional 2010 PM_{10} limit values and, an extension to the existing target dates for achievement of the limit values;
- Introduction of an annual mean cap of 25 $\mu g.m^{-3}$ on urban background $PM_{2.5}$ to be met by 2010; and
- Adoption of a target requirement to reduce $PM_{2.5}$ concentrations by 20% at urban background locations by 2020 from levels measured between 2008 and 2010.

12.43 A target date for the completion of negotiations of the proposed Directive has not been issued. Consequently, the first Daughter Directive 1999/30/EC sets out the current limit values relevant to this assessment for pollutant concentrations in ambient air.

12.44 No target date for the completion of negotiations of the proposed Directive have been issued.

National Legislation

12.45 The Air Quality Standards Regulations 2007 implement limit values prescribed by relevant EU Directives and Daughter Directives within England.

12.46 The UK Air Quality Strategy (AQS) [1] was published in January 2000 and described the Government's strategy for improving air quality in the UK. One of the key aspects of the strategy was the setting of air quality objectives for eight pollutants, namely benzene, 1,3-butadiene, ozone, carbon monoxide, lead, nitrogen dioxide, particulates and sulphur dioxide. The Government announced tighter objectives for particulates, benzene and carbon monoxide and a new objective for polycyclic aromatic hydrocarbons in an Addendum to the AQS (Defra, 2003), published in February 2003 [2]. The Addendum included new provisional objectives for particulates in addition to existing objectives within the 2000 Strategy.

12.47 The current UK AQS [3] was published in July 2007 and sets out new objectives for local authorities in undertaking their local air quality management duties. The provisional objectives for PM_{10} are removed from the current AQS. However objectives in the current AQS are in some cases more onerous than the limit values set out within the relevant EU Directives, Daughter Directives and the Air Quality Standards Regulations 2007. In addition,

objectives have been established for a wider range of pollutants. This discrepancy between the limit values and objectives may be resolved when negotiations for the proposed Directive are complete.

12.48 It is expected that local air quality management in the UK would be assessed and controlled under the AQS for the foreseeable future. For this reason it is appropriate to use the objective levels specified under the current UK AQS for the purposes of an air quality assessment of this type. The objectives set out in the current UK AQS, values for the key pollutants NO_2, PM_{10} and $PM_{2.5}$ relevant to this assessment are summarised in 12.1.

12.49 The objectives and limit values for the key pollutants NO_2 and PM_{10}, relevant to this assessment are summarised in **Table 12.5**.

Table 12.5: Summary of Relevant Air Quality Criteria

Pollutant	Averaging Period	Objectives	Not to be exceeded more than	Target Date
Nitrogen Dioxide (NO_2)	1 hour	200 µg.m^{-3}	18 times pcy	31.12.2005
	Annual	40 µg.m^{-3}	-	31.12.2005
Particulate Matter (PM_{10})	24 hour	50 µg.m^{-3}	35 times pcy	31.12.2004
	Annual	40 µg.m^{-3}	-	31.12.2004
Particulate Matter ($PM_{2.5}$)	Annual	Target reduction of 15% at urban locations	-	Between 2010 and 2020
	Annual	25 µg.m^{-3}	-	2020

Notes: pcy - per calendar year

National Planning Policy

12.50 Policy Guidance Local Air Quality Management LAQM.PG(03) [4], issued under Part IV of the Environmental Act 1995, is designed to help local authorities with their local air quality management duties. The guidance requires that local authorities integrate air quality considerations into the planning process at the earliest possible stage. As a result, the land use planning system is integral to improving air quality.

12.51 Policy Guidance: Addendum LAQM.PGA(05) [5] which supplements LAQM.PG(03) has been issued to assist local authorities with the integration of air quality action plans into local transport plans. The guidance applies to all English local authorities, (with the exception of

London authorities that have different arrangements for transport planning – see below) both with and without AQMAs. This common approach to air quality will provide benefits such as raising the profile of air quality in transport planning, and increasing communication across local authority departments.

12.52 Planning Policy Statement 23 - Planning and Pollution Control (PPS23) [6] offers guidance to local authorities on the relationship between controls over development under planning law, and under pollution control legislation. PPS23 states that there are UK air quality standards for certain air pollutants that have been initiated by European Directives.

12.53 PPS23 replaces Planning Policy Guidance 23 (PPG23) and is intended to complement the new pollution control framework under the Pollution Prevention and Control Act 1999 and the Pollution Prevention and Control Regulations 2000. It updates the existing guidance and takes into account the AQS, the system of LAQM under Part IV of the Environment Act 1995 and climate change. PPS23 sets out those circumstances where air quality may be a material issue for planning applications and provides guidance to planning authorities on making these decisions. It states that air quality is likely to be particularly important:

- Where the development is proposed inside, or adjacent to, an AQMA as designated under part IV of the Environment Act 1995;
- Where the development could in itself result in the designation of an AQMA; and
- Where to grant planning permission would conflict with, or render unworkable, elements of a local authority's Air Quality Action Plan.

12.54 However, not all planning applications for developments inside or adjacent to AQMAs should be refused if developments would result in a deterioration of local air quality. Local Planning Authorities (LPAs), transport authorities and pollution control authorities should explore the possibility of securing mitigation measures that would allow the proposal to proceed. Road transport is recognised as a significant contributor to poor local air quality, particularly in urban areas. LPAs can limit this source by ensuring that developments encourage more sustainable travel choices. All applications should be supported by such information as is necessary to allow a full consideration of the impact of the proposal on the air quality of the area.

12.55 When considering planning applications, which may raise issues concerning ambient air quality, planning authorities should bear in mind the following:

- Air quality within AQMAs is subject to local variation, e.g. increases are likely along heavily trafficked roads. Air quality assessment at the proposed development site can

clarify its position within the AQMA and where possible may result in less onerous mitigation than the AQMA average might otherwise suggest;

- Where developments include housing, hospitals, schools, nurseries or elderly persons homes within or close to an AQMA the LPA needs to consider the location of windows and doors in relation to the local exposure source;
- Emissions from point sources may be more easily controlled and mitigated than an increase in diffuse pollution from vehicles associated with the new development. However, changing travel patterns may alter overall emissions;
- Any air quality assessment for a particular development should as far as possible take account of congestion predictions, particularly at exits and entrances; and,
- Air quality deterioration may be cumulative, therefore, LPAs will need to consider the effects of multiple developments, and effects of additional load from further development proposals.

12.56 In the context of the proposed development, air quality may be a material consideration if the proposed site is likely to extend the AQMA, therefore introducing sensitive receptors into an area of poor air quality.

Local Policy Planning

12.57 Staffordshire Moorlands Local Plan [7] was adopted in September 1998, and sets out the statutory framework within which the Council makes decisions in relation to planning applications.

12.58 In the September 2004, Part 8 of the Planning and Compulsory Purchase Act 2004 was enacted and brings into place a new style development plan system. It provided for the saving of adopted Local Plans for a period of 3 years only from the commencement date of that Act. After 28th September 2007, among the saved policies there is no direct reference to air quality. The Council now is preparing a new style Local Development Framework, which will consist of a number of documents including policies and proposals for the whole District and for individual areas, and will guide planning decisions in Staffordshire Moorlands in the future.

Existing Air Quality Conditions

Overview

12.59 Information on background air quality in the UK is usually available from two public sources:

1. Each local authority has published the results of its R&A of air quality, with reference to local monitoring and modelling studies, providing a description of air quality at both kerbside and non-kerbside locations.
2. The National Air Quality Information Archive [12] includes projections of background (non-kerbside) concentrations for years up to 2010 for each 1 km grid square in the UK.

12.60 This information can be supplemented with reference to historical monitoring campaigns undertaken in the study area or by undertaking a study specific monitoring campaign. In the case of this assessment, there is sufficient information available from the NAQIA and the results of R&A undertaken by SMDC.

Existing (Baseline) Conditions

Monitoring Data and Ambient Air Quality Projections

Local Authority Review and Assessment

12.61 In 2000 Staffordshire Moorlands District Council had completed two stages of the review of air quality. The first stage was concluded with the assumption that the second stage is needed in relation to the levels of NO_x and PM_{10} concentrations around the A50 bypass at Blythe Bridge and with regard to releases from the Blue Circle cement plant.

12.62 The second stage review concluded that for all of the pollutants the objectives were unlikely to be threatened.

12.63 The most recent air quality document is a 2007 Updating and Screening Assessment (USA), which uses as a baseline the 2003 USA. It has concluded that there are no significant changes in factors that might affect air quality and further assessment for all of the pollutants is not required.

Monitoring Data and Ambient Air Quality Projections

Background Monitoring

12.64 DC does not have continuous monitoring in background locations for NO_2 and PM_{10}.

12.65 However, diffusion tube (DT) monitoring is undertaken at three background locations. Summary data for these sites are presented in **Table 12.6**.

Table 12.6: Urban Background, Annual Mean NO_2, DT

Location	Class	Grid Reference	Approximate Distance to Site (km)	Concentrations ($\mu g.m^{-3}$)		
				2004	2005	2006
Leek, Moorland Road	DT	399600, 356200	3.1	21.59	16.29	15.27
Leek Bath Street	DT	398637, 356615	3.3	25.06	25.95	27.52
Leek, Southlands Close	DT	397600, 356500	4.1	14.44	16.51	13.80

Note: values are bias adjusted in accordance with LAQM.TG(03)
DT – diffusion tube

12.66 Urban background concentrations monitored by SMDC are well below the annual mean NO_2 AQS objective of 40 $\mu g.m^{-3}$.

National Air Quality Information Archive (NAQIA) Background Data

12.67 Information on air quality in the UK is available from a variety of sources including local authorities, national network monitoring sites and other published sources. The NAQIA provides estimates of pollution concentrations across the UK at a resolution of 1 km grid square for the AQS objective year of the specified pollutant.

12.68 Data form this source for the key traffic related pollutants: NO_x, NO_2 and PM_{10} for the nearest grid square to the proposed development (NGR = 400500, 339500), and estimated values for the site are provided in **Table 12.7**.

Table 12.7: NAQIA Mapped Background Concentrations

Year	Estimated Annual Mean Concentration ($\mu g.m^{-3}$)		
	NO_x	NO_2	PM_{10}
2005	18.6	14.8	18.8
2010	14.6	11.3	17.3

Discussion of Background Concentrations

12.69 A comparison of data from **Table 12.6** and **Table 12.7** data shows that the Council's surveys provide higher estimates background concentrations of NO_2. However, both SMDC monitoring surveys and NAQIA data sources indicate that air quality in the vicinity of the

proposed development is good and concentrations are well below the AQS annual mean objectives. The values for NO_2 range form 11.3 to 27.52.

12.70 For conservatism, the highest monitored value of 27.52 $\mu g.m^{-3}$ has been assumed form Leek Bath Street for the assessment. NO_x has been calculated form NO_2 using LAQM TG(3) NO_x from NO_2 calculator.

12.71 SMDC does not monitor background concentrations of $PM_{10,}$ hence only the NAQIA mapped background concentrations of PM_{10} are available for this site.

12.72 Pollutant concentrations have been projected to the baseline year and first fully operated year using LAQM TG(03) year adjustment factors. The relevant pollutant concentrations assumed in the assessment are provided in **Table 12.8**.

Table 12.8: Summarised Concentrations Assumed within the Assessment ($\mu g.m^{-3}$)

Pollutant	Source	2008	2014
NO_x	Leek Bath Street	44.3	37.4
NO_2		26.1	23.3
PM_{10}	NAQIA	17.2	15.4

Note: 2008 and 2014 data have been estimated using LAQM TG(03) year adjustment factors

Identification and Assessment of Effects

Construction Effects

12.73 The major influence on air quality throughout the construction phase of the proposed development is likely to be dust-generating activities such as movement of plant vehicles both on and around the site of the proposed development.

12.74 Whilst no detailed construction phase information is currently available, activities that may cause fugitive dust emissions are as follows:

- Earthworks;
- Handling and disposal of spoil;
- Wind-blow from stockpiles of particulate material;
- Concrete batching;
- Movement of vehicles, both on and off site; and
- Handling of loose construction materials.

12.75 The level and distribution of construction dust emissions would vary according to factors such as the type of dust, duration and location of dust-generating activity, weather conditions and the effectiveness of suppression measures.

12.76 The main effect of any dust emissions, if not mitigated, would be nuisance due to soiling of surfaces, particularly windows, cars and laundry. The effect of the construction phase, if un-mitigated would be ***Minor*** to ***Moderate Adverse*** in magnitude, short-lived and local in scale. Generally, site practices based on 'good housekeeping' would ensure that emissions of nuisance dusts would be minimised.

12.77 Construction of the proposed development would have associated construction traffic, comprising contractors' vehicles and HGVs, diggers, and other diesel-powered vehicles. This would result in emissions of nitrogen oxides, fine particles and other combustion related pollutants. The operation of these vehicles would be localised. Emissions of combustion related pollutants from the construction phase are expected to be negligible in terms of the effect on local air quality. The major influence on air quality throughout the construction phase of the development is likely to be dust-generating activities such as movement of plant vehicles both on and around the site.

Operational Effects

12.78 Concentrations of NO_2 and PM_{10} have been determined along transects, at 20 to 200 metres from the roadside where residential receptors may exist, as outlined in Section 3.

12.79 Annual-mean NO_2 and PM_{10} concentrations as predicted by the DMRB model for each modelled scenario at relevant receptors in 2008 and 2014 respectively are presented in **Table 12.9** and **Table 12.10**. The difference in pollutant predictions in 2014 expressed as a percentage of the relevant AQS objective with and without the development is also provided for existing receptors.

12.80 Annual-mean predicted NO_2 and PM_{10} concentrations at all the receptors are less than 75% of annual-mean AQS objective. Using the criteria in **Table 12.4**, the significance of predicted NO_2 and PM_{10} concentrations at the modelled distances from the road are deemed negligible.

Nitrogen Dioxide (NO_2)

12.81 **Table 12.9** presents the DMRB predictions obtained at proposed onsite receptor locations in the opening year. Model results have been corrected using the 'updated approach' for obtaining road NO_2 from modelled NO_x [13] as explained in **Appendix 12.1**.

Table 12.9: Annual Mean NO_2 Concentrations at Modelled Receptor Locations (µg.m^{-3})

Receptor	2008	2014		% Difference	Magnitude Descriptor (a)	Annual Mean AQS Objective	Significance Descriptor (b)
	WO	WO	W				
20m	27.8	24.6	24.8	0.5	Extremely Small	40	Negligible
50m	26.9	23.9	24.1	0.5	Extremely Small	40	Negligible
100m	26.3	23.5	23.7	0.5	Extremely Small	40	Negligible
150m	26.2	23.4	23.5	0.3	Extremely Small	40	Negligible
200m	26.1	23.3	23.5	0.5	Extremely Small	40	Negligible

Notes: W = With development scenario; WO = Without development scenario;
AQS Annual Mean Objective of 40 µg.m^{-3} to be achieved by 2007
(a) = As defined in **Table 12.3**
(b) = As defined in **Table 12.4**

12.82 The predicted annual mean NO_2 concentrations are well below the AQS objective for NO_2 of 40 µg.m^{-3} at all predicted receptor locations. The annual-mean NO_2 concentrations for 2014 are predicted to increase as a result of the proposed development traffic by no more than 0.5%, therefore there would be no significant effect on air quality and the significance of change is deemed to be ***Negligible***.

12.83 A second AQS objective for NO_2 exists, which is a 1-hour mean threshold of 200 µg.m^{3} not to be exceeded more than 18 times a year. Government guidance states that it is unlikely this short-term objective will be exceeded if the annual mean is less than 60 µg.m^{3} [14]. As annual mean concentrations at the site are predicted to be well below 60 µg.m^{3} it is concluded that this objective would also be achieved at each of the receptors.

Particulate Matter (PM_{10})

12.84 The predicted annual mean PM_{10} concentrations are below the annual mean AQS objective for this pollutant of 40 µg.m^{-3} and all predicted annual mean concentrations are 'well below the standard' at all receptors. Using the criteria set out in **Table 12.4**, the significance of effects based on the magnitude of increase in concentrations is negligible. Therefore, the PM_{10} effects at onsite existing receptors are deemed to be ***Negligible***.

Table 12.10: Annual Mean PM_{10} Concentrations at Modelled Receptor Locations ($\mu g.m^{-3}$)

Receptor	2008	2014		% Difference	Magnitude Descriptor (a)	Annual Mean AQS Objective	Significance Descriptor (b)
	WO	WO	W				
20m	17.7	15.8	15.9	0.3	Extremely Small	40	Negligible
50m	17.4	15.6	15.7	0.2	Extremely Small	40	Negligible
100m	17.3	15.5	15.5	0.2	Extremely Small	40	Negligible
150m	17.2	15.4	15.5	0.2	Extremely Small	40	Negligible
200m	17.2	15.4	15.5	0.2	Extremely Small	40	Negligible

Notes: W = With development scenario; WO = Without development scenario;
AQS Annual Mean Objective of 40 $\mu g.m^{-3}$ to be achieved by 2007
(a) = As defined in **Table 12.3**
(b) = As defined in **Table 12.4**

12.85 The predicted annual-mean PM_{10} concentrations are well below the annual-mean AQS objective for this pollutant of 40 $\mu g.m^{-3}$ at all modelled locations where sensitive receptors may exist. The proposed development and its associated traffic does not increase significantly the annual-mean PM_{10} concentrations; therefore there would be no significant effect on air quality.

12.86 A second short-term AQS objective for PM_{10} based on a 24-hour mean threshold of 50 $\mu g.m^{3}$ not to be exceeded more than 35 times a year is easily met and can be considered 'well below the standard' at all modelled receptors. **Table 12.11** summarises predicted number of days with a 24-hour mean AQS exceedence.

Table 12.11: Predicted Numbers of Daily Mean PM_{10} Concentrations above 50 $\mu g.m^{-3}$ (a)

Receptor	2008	2014	
	WO	WO	W
20m	1.2	0.2	0.3
50m	1.0	0.2	0.2
100m	0.9	0.2	0.2
150m	0.9	0.2	0.2
200m	0.9	0.2	0.2

12.87 Results of the modelling presented in **Table 12.11** indicate that this objective is also predicted to be achieved at all sensitive receptors.

Particulates ($PM_{2.5}$)

12.88 Emission datasets for $PM_{2.5}$ are not readily available as part of the toolkit provides to Local Planning Authorities for R&A purposes. Therefore, it is not possible to predict $PM_{2.5}$ concentrations to allow a direct comparison with the latest objectives for this pollutant.

12.89 The reduction target of 15% applies at urban background locations away from the local influence of emission sources and applies to ambient concentrations only. The purpose of this assessment is to determine the effects of the proposed development on road related contributions to pollutant concentrations. Air quality effects associated with the proposed development would have a negligible effect on ambient concentrations and the local authority's ability to meet this objective.

12.90 Predicted annual mean PM_{10} concentrations in the opening of the proposed development are well below 25 $\mu g.m^{-3}$. Therefore, predicted $PM_{2.5}$ concentrations in the opening and design years of the proposed junctions are also below 25 $\mu g.m^{-3}$ suggesting that the objective is likely to be met.

Mitigation

Construction Phase

12.91 The London BPG provides best practice mitigation measures based on the level of risk identified at construction sites. The mitigation measure provided below are applicable for consideration to the proposed development site which has been identified as being of 'medium risk' of causing air quality effects during the construction phase:

Site Planning

- No bonfires;
- Plan site layout – machinery and dust causing activities should be located away from sensitive receptors;
- Identify responsible person in charge;
- Hard surface site haul roads where practicable.
- *Construction Traffic*
- All vehicles to switch off engines – no idling vehicles;
- Effective vehicle cleaning and specific fixed wheel washing on leaving site;
- All loads entering and leaving site to be covered;
- No site runoff of water or mud;
- Hard surfacing and effective cleaning of haul routes, where practicable, and appropriate speed limit around site.

Site Activities

- Minimise dust generating activities;
- Use water as dust suppressant where applicable;
- Enclose stockpiles or keep them securely sheeted;
- Re-vegetate earthworks and exposed areas;
- If applicable, ensure concrete crusher or concrete batcher has a permit to operate.

12.92 The BPG advises that implementation of the measures above would help to reduce the effect of construction activities to low risk.

Operational Phase

12.93 Mitigation measures are not required for the operational phase, as air quality effects are predicted to be of negligible significance according to the criteria adapted for this assessment.

Summary and Residual Effects

12.94 This assessment has been undertaken to support the planning application for 'care village', mixed residential and care development.

12.95 SMDC has not declared any AQMA and concluded that the AQS objectives were unlikely to be threatened for all the pollutants.

12.96 Concentrations of NO_2 and PM_{10} have been determined along transects, at 20 to 200 metres form the roadside, where residential receptors may exists. The most conservative scenario for the first operational year (2014) assumes that the maximum predicted annual-mean NO_2 and PM_{10} concentrations are 24.8 µg m^{-3} and 15.9 µg m^{-3} respectively. The predicted annual-mean NO_2 and PM_{10} concentration are well below the AQS objectives.

12.97 The predicted increase in annual-mean NO_2 is 0.5% and 0.3% for $PM_{10.}$ The increase of annual-mean concentrations in 2014 due to the proposed development traffic for the sensitive receptors is extremely small and consequently the effect on local air quality is deemed to be ***Negligible***.

2.98 The results of ambient air quality monitoring within SMDC suggest that the AQS objectives are likely to be met for all pollutants. The air quality effects during the construction and exploratory phases are deemed to be of negligible significance.

12.99 Effects during the construction phase such as dust generation are predicted to be localised and only relevant during the construction phase. Therefore, residual effects are not expected.

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13 Noise

Introduction

13.1 The purpose of this chapter is to identify the environmental setting of a Continuing Care Retirement Community at the former Anzio Camp, for which an outline planning application has been made. This will allow an assessment of the effects of the existing noise sources within the surrounding area on any future residents to be made, as well as presenting an assessment of the potential noise generated by the proposed outline development on the existing noise climate of the area.

13.2 The chapter assesses the impacts associated with the proposed development at the former MOD Anzio Camp site. Within the proposed outline layout of the development site provision is given for the construction of apartments and houses, residential homes, and community care and support facilities. Within the development proposals external living areas will be included in the form of garden areas associated with certain of the dwellings as detailed within Chapter 4.

13.3 The potential implications of noise associated with both the construction and operational phases of the proposed development have been assessed.

13.4 The noise assessment of the proposed development has involved the following:

- Identification of appropriate standards and guidance for use in the assessment of noise;
- Collection of daytime and nightime ambient noise level data in order to determine the existing baseline noise climate of the site;
- Qualitative assessment of noise levels at potentially sensitive receptors during the construction phase of the development;
- Quantitative assessment of the suitability of the site for residential end use, inclusive of external living areas;
- Proposed mitigation measures, where appropriate, in order to minimise any potential negative impacts of the existing noise climate of the area on any future residents of the site;
- Quantitative / qualitative prediction and assessment of road traffic noise impacts associated with the proposed development on existing and proposed residential properties; and
- Determination of the significance of the impacts associated with the construction and traffic generated noise associated with the development.

Policy Context

13.5 A detailed review of the development plan documents and planning context in relation to the development proposals is provided within Chapters 4 and 5. This section summarises the policies, guidance and legislation that are directly relevant to noise with regard to a scheme such as that proposed.

National Policy & Legislation

The Control of Pollution Act (CoPA)/Environmental Protection Act (EPA)

13.6 The CoPA provides legislation that Local Authorities can implement in order to control the noise from construction sites and prevent the occurrence of disturbance to surrounding residents (Section 60, Part III, Chapter 40 – Control of noise on construction sites).

13.7 Furthermore Section 61, Part III of Chapter 40 (prior consent for work on construction sites) provides a method by which a contractor can seek consent to undertake construction works. If consent is given, and the stated method and hours of work complied with, then the LA cannot take action under Section 60.

13.8 The Environmental Protection Act (Section 79, Part III of Chapter 43, Statutory Nuisances and Inspections) contains a definition of what constitutes a "statutory nuisance" with regard to noise, and places a duty on Local Authorities to detect any such nuisances within their area. This section further defines "Best Practicable Means" (BPM) as "*reasonably practical having regard, among other things, to local conditions and circumstances, to the current state of technical knowledge and to the financial implications*".

13.9 Local Authorities have the power under Section 80, Part III of Chapter 43 of the EPA (Summary proceedings for statutory nuisances) to serve an abatement notice requiring the abatement of a nuisance or requiring works to be executed to prevent their occurrence.

Planning Policy Guidance 24 (PPG24) - Planning and Noise

13.10 With regard to noise issues within the planning system the current government guidance is contained within the Department of the Environment document Planning Policy Guidance 24 (PPG24): 1994, Planning and Noise. The document sets out the considerations that should be taken into account when determining planning applications for both noise sensitive developments and those, which would ultimately generate noise.

13.11 The document PPG24 sets out to:

- outline the considerations to be taken into account in determining planning applications both for noise-sensitive developments and for those activities which will generate noise;
- introduce the concept of noise exposure categories for residential development, encourages their use and recommends appropriate levels for exposure to different sources of noise; and
- advise on the use of conditions to minimise the impact of noise.

13.12 The document PPG24 states the following with respect to assessing the impact of noise on proposed residential developments;

> "*When assessing a proposal for residential development near a source of noise, local planning authorities should determine into which of the four noise exposure categories (NECs) the proposed site falls, taking into account both the day and night-time noise levels."*

13.13 With regard to the noise generated during the relatively short term construction phase of the development PPG24 states within Paragraph 21 of Annex 3 that:

> *"Detailed guidance on assessing noise from construction sites can be found in BS 5228, parts 1-4. In particular, Part 1: 1984, "Code of practice for basic information and procedures for noise control" will be useful because as well as giving general advice it describes a method of predicting noise from construction sites".*

Clay Target Shooting: Guidance on the Control of Noise

13.14 In the absence of any standard which can be directly used to assessment noise from shooting ranges, "Clay Target Shooting: Guidance on the Control of Noise" produced by the Chartered Institute of Environmental Health, January 2003, has been deemed the most appropriate document with which to assess noise produced by the gun club to the north of the proposal site.

13.15 Within this guidance document it is noted that *"there is no fixed shooting noise level at which annoyance starts to occur."* The guide further states that "*Annoyance is less likely to occur at a mean shooting noise level (mean SNL) below 55dB(A), and highly likely to occur at a mean SNL above 65dB(A)."*

13.16 The document goes on to further state that *"measurements shall be made during a regular event or a major event"*, and that *"if there is weekend shooting it should be included in any assessments".*

13.17 The assessment is performed by establishing noise levels over a continuous 30 minute period during the shooting event at an external location adjacent to the most exposed aspect of the nearest residential dwelling. Measurements should further be in a "Freefield" locations at least 3.5m from any reflecting surface other than the ground. The measurement position(s) should be as near as reasonably practical within the curtilage of the residential premises and be representative of the shooting noise level near the premises.

13.18 Using this measurement data the SNL is defined as *"the logarithmic average of the 25 highest shot levels, from the shoot in question, over the 30 minute measurement period"*. The mean SNL is then determined by arithmetically averaging the individual SNL values.

Local Policy

13.19 It is considered important to identify any policies within the Local Authority's Local Plan, which may give rise to constraints upon noise regarding the proposed development. The proposed development site falls within the Staffordshire Moorlands Local Plan.

13.20 Following a review of the document it is apparent that the following policy is the only one to consider noise with respect to residential developments of this sort.

Policy B13 Design

13.21 Within the plan area development proposals would be expected to*:…..*
(D) Mitigate Adverse Environmental Effects, Including Noise, As Far As Possible Through The Location Of Noise Sensitive Developments Away From Existing Sources Of Significant Noise And Through The Location Of Noisy Developments Where Noise Is Less Important As A Consideration Or Where Its Impact Can Be Minimised Through Design Or Conditions.

Assessment Methodology

Noise Assessment

13.22 With regard to noise from construction activities, at the EIA stage of a project, there is often insufficient information to carry out a definitive assessment. However, impact can be minimised through environmental controls defined in an (Construction) Environmental Management Plan ((C)EMP) or Code of Construction Practice, either of which can contain specific plans or procedures to address aspects such as waste or traffic.

13.23 With regard to the proposed residential development on site indicative layout plans for the site are contained within the Urban Design layout drawing **Figure 4.1** ("Masterplan Rev B 30.04.2008"). The scope of the assessment is based upon the information contained therein.

Construction

13.24 Within the guidance of PPG24 the use of British Standard 5228 is recommended in order to assess noise issues arising from construction sites and operations. This British Standard provides guidance on the control of noise from construction and open sites.

13.25 Part 1 of BS5228 the "*Code of practice for basic information and procedures for noise and vibration control*" gives recommendations for basic methods of noise and vibration control relating to construction and open sites. Part 2 of this BS "*Guide to noise and vibration control legislation for construction and demolition including road construction and maintenance*" provides further detail on the legislation applicable to construction.

13.26 BS5228, however, does not provide any absolute significance criteria or absolute noise limits for construction operations but merely identifies the following key factors to consider:

- Existing ambient noise levels;
- Site location;
- Duration of site operations;
- Hours of work;
- Attitude to the site operator;
- Noise and vibration characteristics; and
- Effect of vibration on buildings.

13.27 Further to the provision of the noise assessment, efforts to minimise construction noise though environmental controls would be identified in the (Construction) Environmental Management Plan ((C)EMP) or a Code of Construction Practice. (CCP)

Operational

PPG24

13.28 With regard to noise issues within the planning system the current government guidance is contained within the Department of the Environment document *"Planning Policy Guidance 24 (PPG24):1994, Planning and Noise"*. This document sets out the considerations that should be taken into account when determining planning applications for both noise sensitive developments and those which will ultimately generate noise.

13.29 PPG24 determines the suitability of a site for residential development against the criteria of four noise exposure categories (NECs) taking into account both the daytime and night-time noise levels.

13.30 Within PPG24 these Noise Exposure Categories (NEC) are defined as follows:

Table 13.1: PPG24 Noise Exposure Category Definitions

Noise Exposure Category	Definition
A	Noise need not be considered as a determining factor in granting planning permission, although the noise level at the higher 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

13.31 L_{Aeq} is the equivalent sound pressure level – the steady sound level that, over a specified period of time, would produce the same energy equivalence as the fluctuating sound level actually occurring. The L_{Aeq} noise levels corresponding to the above noise exposure categories are as detailed within the table below:

Table 13.2: PPG24 Noise Exposure Bandings

NOISE LEVELS CORRESPONDING TO THE NOISE EXPOSURE CATEGORIES FOR NEW DWELLINGS $L_{aeq,T}$ Db, PPG24				
Noise Source	**Noise Exposure Category**			
	A	**B**	**C**	**D**
Road Traffic 07:00 – 23:00 23:00 – 07:00	 < 55 < 45	 55 – 63 45 – 57	 63 – 72 57 – 66	 >72 >66
Rail Traffic 07:00 – 23:00 23:00 – 07:00	 < 55 < 45	 55 – 66 45 – 59	 66 – 74 59 – 66	 >74 >66
Air Traffic 07:00 – 23:00 23:00 – 07:00	 < 57 < 48	 57 – 66 48 – 57	 66 – 72 57 – 66	 >72 >66
Mixed Sources 07:00 – 23:00 23:00 – 07:00	 < 55 < 45	 55 – 63 45 – 57	 63 – 72 57 – 66	 >72 >66

13.32 PPG24 defines NEC categories for both daytime and nightime noise. Daytime is defined within the document as being between the hours of 07:00 and 23:00, with nightime being defined as the period 23:00 to 07:00.

13.33 With regard to daytime and nightime periods in addition to the above within Annex 2 of PPG24 it is stated that:

> ***"Daytime** – There is no recent major, UK based research from which to take figures for road and rail traffic. The level at the boundary of NEC A and NEC B is therefore based on guidance provided by the World Health Organisation that 'general daytime outdoor noise levels of less than 55 dB(A) Leq are desirable to prevent any significant community annoyance.*
> ***Night-time** – As for daytime, there is no recent major, UK based research from which to take figures for road or rail traffic. There has been research on the effects of aircraft noise, most recently on sleep disturbance, which looks at noise levels at which people are awoken from sleep. The night time noise level at the boundary of NEC A and NEC B is based on the WHO guideline previously referred to which states that for night-time: 'a level of less than 35 dB(A) is recommended to preserve the restorative process of sleep' and this is considered more relevant when seeking to achieve the best practicable conditions for rest and sleep."*

13.34 Local planning authorities have the power under PPG24 to increase NEC limits by up to 3dB(A) above the recommended levels where, for example, there is a clear need for the development.

13.35 With regard to nightime noise levels where individual noise events regularly exceed 82dB L_{Amax} several times in any one hour, the site should be considered to be within NEC "C" regardless of the $L_{Aeq,8h}$ except when the site is already NEC "D".

BS8233

13.36 BS8233 defines a range of ambient noise levels for a number of design criteria for good or reasonable conditions in certain habitable rooms. **Table 13.3** shows a summary of the levels recommended in BS8233 for rooms used for resting and sleeping.

Table 13.3: Indoor Ambient Noise Levels as Recommended in BS8233

Criterion	Typical Situation	Designed Range, $L_{Aeq,T}$ (dB)	
		Good	Reasonable
Reasonable resting / sleeping conditions	Living Rooms	30	40
	Bedrooms	30	35

World Health Organisation

13.37 The World Health Organisation (WHO) recommends, within their publication "Guidelines for Community Noise", a noise level outside a bedroom window of no more than 45dB $L_{Aeq,\ 8hour}$ or 60dB $L_{Amax,\ fast}$ in order to minimise sleep disturbance with an open window (simplistically, a window partially open for ventilation provides between 10 and 15 dB(A) attenuation). The WHO considers that when referring to an internal noise level '*night time noise levels should not exceed 30 dB* $L_{Aeq,\ 8\ hour}$, *if negative effects on sleeping are to be avoided*.'

13.38 The WHO also considers that '*general daytime outdoor noise levels of less than 55 dB* $L_{Aeq,\ 16\ hour}$ *are desirable to prevent significant community annoyance*'.

Prediction Methodology

Construction Assessment

13.39 This chapter presents potential control measures that could be implemented to control noise should levels exceed those considered acceptable by the local planning authority.

13.40 Any calculations of construction based noise levels as presented within this chapter has been undertaken in line with the methodology and guidance of *"BS5228: Pt 1 1997 Noise and Vibration Control on Construction and Open Sites".*

13.41 The general noise effects associated with the typical construction plant that would be associated with a development such as this have been calculated as based upon source noise levels taken from either manufacturers data, operational data measured by RPS at other similar sites or BS 5228:Pt1:1997.

Residential Assessment

13.42 Predictions and calculation have been undertaken of both the influence of the existing roads on the proposed development and the influence of road traffic generated by the development on existing residential dwellings within the area. Further modelling has been undertaken associated with the noise generated by operations and activities within the shooting range to the north of the development site. This modelling has been undertaken using the Braunstein + Berndt GmbH computer modelling software package SoundPLAN 6.5 implementing the relevant British Standards and guidance documents for prediction methodologies and calculations.

13.43 Modelling has been undertaken of the proposed site area based on the proposed site layout drawing "Masterplan Rev B 30.04.2008" as presented within **Figure 4.1**. Ordnance Survey topographical data has been utilised for information relating to the area surrounding the proposed site.

13.44 Within the presented models, the calculation of noise attenuation due to distance, ground absorption and barriers has been based upon the prediction methodologies provided within ISO9613 and Calculation of Road Traffic Noise 1988.

13.45 All traffic flow figures, percentage HGV content and speed data utilised within the scope of this assessment have been provided by RPS Manchester, the traffic consultant on the project.

13.46 Noise associated with the gun club activities has been established by RPS on site during a busy organised event.

Scheme Impact Assessment

Assessment of Residential Suitability

13.47 The assessment of the suitability of the site for residential end use will be undertaken in line with the guidance of PPG24 and other appropriate standards and guidance documentation.

13.48 As a direct result of the noise climate of the area being that of a mixture of sources, including road traffic, agricultural and gun club noise the PPG24 noise exposure category assessment has been undertaken using the NEC bandings for "Mixed Sources".

13.49 With regard to noise associated with the gun club activities further assessment has been undertaken in line with the requirements of the document "*Clay Target Shooting: Guidance on the Control of Noise*" dated 2003.

13.50 The data used within the scope of the PPG24 assessment is from that as measured on site during March and April of 2008, as detailed in Section 13.4.

Assessment of Additional Traffic Related Noise

13.51 Assessment of the impact of the additional traffic generated by the development has been undertaken utilising the scheme as detailed below.

13.52 The Department of Transport document "Design Manual for Roads and Bridges" (DMRB), 1994 provides a method for the assessment of road traffic effects by predicting the change in

$L_{A10,18hr}$. A similar approach was set out in its precursor, the "Manual of Environmental Appraisal for Trunk Road Assessments" (MEA).

13.53 The approach has been used in the UK over the last 10 years in the assessment of road traffic schemes and is based on the premise that subjective response to noise from a new source is proportional to the change in overall noise level.

13.54 In the case of road traffic noise, the DMRB rates impacts through consideration of the change in $L_{A10,18hr}$ by noise change bands. These are similar to the original noise change bands presented in the MEA, with an additional band being included for an increase of 1-3 dB, which the DMRB states as giving rise to appreciable short term disbenefits. It does not, however, indicate whether the change is significant. Noise change bands comparable with those recommended in the MEA are therefore used for the rating of noise impact. The limits of the bands have also been altered slightly to avoid the ambiguity in the MEA bands at the 5 and 10 dB noise change levels, which overlap.

13.55 It is often considered useful to categorise the degree of impact according to the extent of the predicted noise change. This is frequently implemented by the use of semantic descriptors associated with noise change bands. A commonly adopted scale is shown in **Table 13.4** below.

Table 13.4: Noise Impact Magnitude

Impact Magnitude	Noise Level Change
Severe	Increase of more than 15 dB (A)
Substantial	Increase of 11 – 15 dB (A)
Moderate	Increase of 6 – 10 dB (A)
Slight	Increase of 3 - 5 dB (A)
No significant change	Increase of less than 3 dB (A)

13.56 It is important to note, therefore, that impact magnitude will vary according to the following factors as detailed below. The terms slight, moderate, substantial etc. will still be used, however, as part of the qualitative assessment.

Receptor Sensitivity

13.57 In order to determine the significance of an impact, not only must the magnitude of the impact be determined, but the sensitivity of the receptors to the impact must also be defined. This has been scaled based upon professional judgement, taking into account the nature of the receptor. For this assessment, the following categories have been adopted:

Table 13.5: Receptor Sensitivity

Receptor Sensitivity	Type of Receptor
High	Dwellings / residential properties including houses, flats, old peoples homes, hospitals, schools, churches, caravans and open spaces/conservation areas where the existing noise level is low.
Moderate	Commercial premises including retail and offices etc.
Low	Industrial premises, warehousing and distribution etc.

Assessment of Long Term Significance

13.58 Based upon the assessment of impact magnitude and the sensitivity of individual receptors, the following matrix has been developed in order to provide an indication of the possible significance of each predicted operational noise impact.

Table 13.6: Significance Matrix

Impact Magnitude	Receptor Sensitivity		
	High	**Moderate**	**Low**
Severe	Major	Major/Moderate	Moderate/Minor
Substantial	Major/Moderate	Moderate	Minor
Moderate	Moderate	Moderate/Minor	Minor/Neutral
Slight	Minor	Minor/Neutral	Neutral
No Significant Change	Neutral	Neutral	Neutral

13.59 The significance matrix presented in **Table 13.6** above relates only to long term operational phase impacts.

Assessment of Construction Noise Magnitude and Significance

13.60 Evaluative criteria for on-site construction noise have been derived for use on other similar construction projects within the UK and draws upon the guidance in BS5228. However, the guidance of BS5228 Part 1 does not extend to provide an absolute noise criteria but merely identifies key factors to consider.

13.61 The assessment of whether changes in noise levels due to construction operations constitute significant effects, would be dependent on the absolute levels of ambient and construction noise, as well as the magnitude, duration, time of occurrence and frequency of the noise change. For this assessment, in the absence of any detailed information regarding working methods, plant etc., construction noise levels have been considered qualitatively to establish the likelihood of potentially significant noise levels during this phase of the development.

13.62 It is generally accepted that in order for a property to be significantly affected by construction noise, a level of 75 dB L_{Aeq} or above must be experienced for a period of 12 weeks or more.

13.63 Where existing free field ambient noise levels are already elevated above or close to the proposed construction noise limit of 75 dB $L_{Aeq,\ 12hours}$ due to existing ambient noise sources the threshold level of 75dB $L_{Aeq,12hours}$ can be increased by a further 5dB(A), as this is considered to be a significant increase above the limit.

Existing (Baseline) Conditions

13.64 In order to undertake the PPG24 assessment and hence conclude the suitability of the site for residential end use an ambient noise monitoring exercise was undertaken at the site.

13.65 Monitoring was undertaken for a full 24-hour period commencing on the 02nd April 2008. The surveys comprised of monitoring rotationally at 5No. locations in total as detailed within **Table 13.7** below during the periods as presented within **Table 13.8**. The monitoring data is as presented summarised within **Table 13.9** and in full within **Appendix 13.1**.

Table 13.7: Noise Monitoring Locations

Loc. No.	Address and Description	Potential Receptors	Existing Key Noise Sources
1	To the western end of the site located adjacent to the A53. Approx. Grid ref: 400570, 359036	The former sports hall that is planned to be kept as part of the proposal (however, not for residential use).	**Daytime** – Road traffic noise from movements on busy A53, some environmental noises.
			Nightime – Occasional vehicle on A53.
2	To the north-western end of the site. Approx. Grid ref: 400704, 359154	The closest residential properties within the proposed development scheme.	**Daytime** - Road traffic noise from movements on busy A53, some environmental noises.
			Nightime – Occasional vehicle on A53.
3	To the south-western end of the site. Approx. Grid ref: 400723, 358931	The closest residential properties within the proposed development scheme.	**Daytime** - Road traffic noise in distance, some environmental noises.
			Nightime – Occasional vehicle on A53.
4	To the south-eastern end of the site. Approx. Grid ref: 400863, 358898	The closest residential properties within the proposed development scheme.	**Daytime** - Road traffic noise in distance, some environmental noises.
			Nightime – Occasional vehicle on A53.
5	To the eastern end of the site. Approx. Grid ref: 400958, 359069	The closest residential properties within the proposed development scheme.	**Daytime** - Road traffic noise in distance, some environmental noises.
			Nightime – Occasional vehicle on A53.

Survey Measurement Timings

13.66 **Table 13.8** below provides details of the timings and durations of the noise surveys undertaken at each location.

Table 13.8: Noise Monitoring Timings and Locations

Location	Date	Monitoring Period	Time
1	02/04/08	Daytime	10:11 – 11:11 15:38 – 16:38 20:43 – 21:43
	03/04/08	Nightime	02:19 – 03:19
2	02/04/08	Daytime	09:07 – 10:07 14:31 – 15:31 21:50 – 22:50
	03/04/08	Nightime	03:26 – 04:26
3	02/04/08	Daytime	11:15 – 12:15 16:45 – 17:45 18:30 – 19:30
	03/04/08	Nightime	00:03 – 01:03
4	02/04/08	Daytime	06:24 – 07:24 12:23 – 13:23
		Nightime	22:58 – 23:58 04:36 – 05:36
	03/04/08		
5	02/04/08	Daytime	07:27 – 08:57 13:26 – 14:26 19:35 – 20:35
	03/04/08	Nightime	01:11 - 02:08

Monitoring Protocol

13.67 Monitoring of noise was undertaken at the site in a rotational manner in order to acquire data throughout a full 24-hour period.

13.68 The instrumentation used during the noise survey was a 01dB Solo Real Time Analyser (serial number 60843) and a Rion NL31 Real Time Analyser (serial number 01141927). The instrumentation was calibrated before and after the survey and no significant deviations in calibration levels were noted. All calibration documentation is included in **Appendix 13.2**.

13.69 The microphones were mounted on a tripod at approximately 1.2m from the ground surface and a minimum of 3.5m from any reflecting surfaces at all times. The Sound Level Meters (SLM) were set to measure (fast) L_{Aeq}, L_{A90}, L_{A10} and L_{Amax} parameter values.

13.70 Weather conditions during the daytime noise monitoring undertaken on the 02nd April 2008 were noted to be dry (9°C) with 100% cloud cover. Wind speeds were measured to be below

5ms^{-1} at all times. Road conditions during the survey period were noted to be initially damp, but soon dried out as the day progressed.

13.71 During the night-time survey between the 02nd and 03rd April 2008, weather conditions were noted to be cool (10°C). Wind speeds were again measured to be of less than 5ms^{-1}. Occasional periods of light rain were noted in the early hours of the morning.

Measured Noise Level Data

13.72 A summary of the noise survey results is presented within **Table 13.9** below, with the entire data set being presented within **Appendix 13.1**.

Table 13.9: Summary of Measured Daytime Noise Levels

Location	Period	Date	Statistical Parameters in (dB(A))			
			L_{eq}	L_{max}	L_{10}	L_{90}
1	Daytime	02nd April 2008	63.5	79.4	67.0	40.6
	Nightime	03rd April 2006	41.1	72.3	29.9	23.9
2	Daytime	02nd April 2008	52.4	67.7	55.5	39.3
	Nightime	03rd April 2006	41.8	67.0	42.4	32.2
3	Daytime	02nd April 2008	51.5	74.6	54.1	45.4
	Nightime	03rd April 2006	33.8	68.8	33.9	20.0
4	Daytime	02nd April 2008	46.8	64.9	49.4	41.2
	Nightime	03rd April 2006	34.9	69.8	36.3	25.4
5	Daytime	02nd April 2008	48.4	65.3	50.9	41.7
	Nightime	03rd April 2006	32.3	65.2	28.2	18.8

Gun Club Measured Noise Level Data

13.73 Further to the baseline noise survey an additional monitoring exercise was performed to assess typical noise levels from the gun club that is situated to the north east of the proposal site.

13.74 This noise survey was arranged in liaison with the gun club and was performed on the morning of Saturday 1st March 2008 between the hours of 11:30 and 13:00, during which time the gun club were fully operational. Monitoring was performed both on the proposal site, at the 5No. locations as described above, and at the gun club itself so as to assess noise levels at source. Measurements on the development site were made for a duration of 15 minutes at each of the 5No. locations with gun club noise measurements being performed in and around

the shooting range at various positions at a distance of 1m away from the gun in question at all times.

13.75 It is suggested within "Clay Target Shooting: Guidance on the Control of Noise" that a 30-minute assessment period should be used at the nearest residential locations, however, due to time constraints, and several monitoring locations requiring to be assessed, a period length of 15 minutes was made use of.

13.76 The following table presents a summary of the gun club noise survey results measured at the proposal site monitoring locations.

Table 13.10: Summary of Gun Club Measured Noise Levels

Location	Period	Date	Statistical Parameters in (dB(A))			
			L_{eq}	L_{max}	L_{10}	L_{90}
1	Daytime	01st March 2008	66.3	78.7	70.7	55.6
2			60.7	72.1	63.0	56.1
3			58.9	73.7	60.6	53.9
4			55.2	71.4	56.9	51.2
5			58.2	74.2	59.1	53.3

13.77 Whilst on site the technician noted that during the gun club monitoring survey, shots could be heard at all locations apart from Location 3. Furthermore, although shots could be heard at Location 1 this was only when no traffic was in the vicinity.

13.78 On site noise levels, in the form of shooting noise levels (SNL), calculated as required by "Clay Target Shooting: Guidance on the Control of Noise", are presented in the table below, along with the calculated Mean SNL.

Table 13.11: Summary of On-Site Gun Club Measured Noise Levels

Measurement Number	Location	Date	Shooting Noise Level dB(A)
1	Range 1	01st March 2008	111.6
2	Range 1		109.0
3	Range 2		118.2
4	Range 2		113.9
5	Range 2		110.8
Mean SNL			**112.7**

13.79 During the survey it was noted by the technician on site that the guns being used within Range 1 were mainly black powder type weapons, with the guns at Range 2 being of a more modern type.

13.80 A further measurement was performed behind Range 2, at a distance of 2m from the rear wall, so as to assess the attenuation performance of the range construction itself. This measurement gave a SNL of 92.8dB.

Limitations to the Assessment

13.81 Within any assessment, there will be a degree of uncertainty regarding the results. In the case of this noise assessment, the uncertainties are as follows:

Construction Assessment

13.82 In the absence detailed information regarding the construction phase of the development a qualitative assessment of the noise from the construction operations required has been undertaken. The assessment presents options to control any noise generated by the proposed development to within acceptable criteria.

Incorporated Enhancement and Mitigation

13.83 The following mitigation measures have been assumed within the scope of the noise modelling exercise undertaken.

Mitigation for Construction Activities

13.84 It has been assumed that as a minimum the principal contractor would be required to submit a detailed method statement giving construction plant schedules, working hours, proposals to minimise noise emissions and predicted noise levels at houses, along with a programme of sample monitoring. Furthermore the principal contractor would be required to:

- Reduce noise to a minimum, as defined in section 72 of the Control of Pollution Act, 1974 using the best practical means at all times and in agreement with the Local Planning Authorities.
- Maintain/replace exhaust silencers to ensure they are effective.
- Use well silenced compressors in noise sensitive areas.
- Maintain plant regularly and ensure that noise abatement measures (e.g. covers) are fully operational and used correctly.
- Confine construction activity to within a time period agreed with the Local Authority.

- Work to keep local residents and SMDC informed of the proposed working schedule, where appropriate, including the times and duration of any abnormally noisy activity that may cause concern.
- Provide a helpline/contact number for any complaints or concerns from members of the public.
- Employ an Environmental Manager to ensure that all works are being carried out in accordance with BPM.

Mitigation for Operational Phase

13.85 No mitigation has been assumed as a baseline for the assessment of the residential development.

Identification and Assessment of Effects

During Construction

Identification of Potential Key Issues

13.86 Construction activities associated with developments of this type have the potential to result in significant noise impacts dependant upon the proximity of existing sensitive properties and the need for significant earth moving and use of 'heavy' plant and machinery.

13.87 The greatest impacts generally occur during the initial site establishment stage when the ground is being prepared and the main infrastructure is being put in place. Once this is complete, it is considered that general construction activities associated residential developments should give rise to lower noise emissions.

13.88 Increased noise may also result on the local road network due to an increased volume of HGV's travelling to and from the site during the construction programme. The potential effects of these construction noise sources on local receptors would be most significant within close proximity to specific works sites, which may change as the construction phases proceed.

13.89 Given that exact details regarding construction techniques and types of plant likely to be used are not available at present, it is difficult to predict accurately the potential impacts of construction noise on local receptors. Nevertheless, it is considered useful to present potential worst-case noise levels from a selection of typical construction plant, which may be used within a development of this type, and to calculate noise levels back to different distances which may reflect noise levels at local receptors. The noise levels calculated at distance from each item of plant do not take into account any attenuation due to screening and have been based upon hard reflective ground between source and receiver as a worst-

case scenario. Given the nature of the existing ground cover, in many cases noise levels should be lower than shown. The figures presented are also based upon a 100% on-time, which is unlikely to occur in practice.

13.90 **Table 13.12** below presents details for plant, which could reasonably be used during the construction programme, with corresponding worst-case sound power levels for each item of plant as taken from BS 5228.

Table 13.12: Potential Noise Levels of Typical Construction Plant

Plant	Power Level (dB L_{WA})	Sound pressure level (dB L_{Aeq})					
		10m	20m	50m	100m	200m	300m
Excavators	118	90	84	76	70	64	60
25tn Dump Trucks	110	82	76	68	62	56	52
Dozers	118	90	84	76	70	64	60
Delivery lorries	105	77	71	63	57	51	47
Concrete Delivery Lorry	109	81	75	67	61	55	51
Vibrating rollers	106	78	72	64	58	52	48
Road Roller (pass-by at 5km/hr)	101	73*	67*	59*	53*	47*	43*

*Drive by maximum sound pressure level, $L_{pA\ (max)}$, at speed in km/h as shown

13.91 It is considered that the potentially worst affected properties due to construction noise would be in the vicinity of Mile End Farm and Blackshaw Grange Caravan Park, which are located directly opposite the site entrance onto the A53.

13.92 However, it is considered that due to the scale of the proposed development it is unlikely that significant long-term noise impacts would arise during the construction phase at a large number of properties. The level of significance has been assigned qualitatively to the identified impacts in **Table 13.13** below.

Assessment of Impact Significance

13.93 It should be noted that impact magnitude i.e. potential noise level change, cannot be accurately predicted in the absence of detailed information regarding construction activities and techniques. The information contained within **Table 13.13** below is based upon the

indicative predicted noise levels within **Table 13.12** and the measured L_{Aeq} levels adjacent to A53.

13.94 Consequently, the terms 'no significant increase, slight, moderate, substantial and severe' as assigned to each development phase in **Table 13.13** below are based upon judgements regarding the nature, location and sensitivity of the receptor and the nature, location and duration of the activity being undertaken at the time.

Table 13.13: Potential Significance of Construction Noise Impacts

Potential Impact Identified	Receptors Considered	Predicted Impact Magnitude	Sensitivity of Receptor	Overall Impact Significance
Closest approach within the development opposite A53 site entrance.				
Initial Site infrastructure works.	Properties to the west of the A53 site entrance, in the vicinity of Mile End Farm.	Slight/ Substantial	High	Minor/ Major/Moderate
Construction of Residential Buildings		Slight/ Substantial	High	Minor/ Major/Moderate

13.95 With regard to the construction operations required within the scope of the redevelopment of the site the 'overall impact significance' as presented above is shown to be at levels of Minor to Major/Moderate. The Major / Moderate levels are due to the relatively short separation distances involved between the closest required construction works of the site and the sensitive receivers. When these construction operations move away from the properties the impact significance would reduce considerably as a result of the increased distance attenuation and screening effects.

13.96 All construction development or delivery of construction materials has been assumed to take place only between the hours of 07.00 to 19.00 Monday to Friday and 08:00 to 12:00 on Saturday. It is recommended that discussions are held with the local authority if construction works are required to be undertaken outside of these hours.

Operational Residential Phase

Identification of Potential Key Issues

13.97 It is proposed to construct approximately 20 buildings for a mixture of residential dwelling units, apartments and care and community homes on the Anzio Camp development site. The main noise issues relating to the site are as detailed below:

i) Suitability of the site for residential development;

13.98 The assessment of the suitability of the site for residential use will be undertaken in line with the assessment methodology of PPG24.

13.99 Assessment of noise associated with the gun club will be further undertaken in line with the methodology of Clay Target Shooting: Guidance on the Control of Noise (2003) as and where appropriate.

13.100 The Braunstein + Berndt GmbH computer modelling software package SoundPLAN 6.5 has been utilised in order to predict the resulting noise levels from the gun club activities using the methodology as defined within ISO9613.

ii) Impact of the generated traffic flows on existing properties within the area.

13.101 The magnitude of any impact of the development generated traffic flows within the area will be calculated using the traffic data supplied for this site.

13.102 The Braunstein + Berndt GmbH computer modelling software package SoundPLAN 6.5 has been utilised in order to predict the resulting noise levels from the increased traffic generated by the proposed development utilising the guidance methodology of CRTN 1988.

Suitability for Residential Development

PPG24 Assessment

13.103 The noise levels monitored on site have been assessed in line with the methodology of PPG24 showing that the proposed dwellings would fall into the following noise exposure categories (NEC).

13.104 Furthermore a detailed noise model has been constructed based upon these measured noise levels in order to present a visual representation of the day and night time PPG24 NEC categories across the site. This is shown in **Appendices 13.3 and 13.4**.

13.105 Due to the main noise sources affecting the environment of the site being that of road traffic noise from the A53 the PPG24 Road Traffic noise exposure category bandings have been utilised within this assessment as detailed below.

Table 13.14: PPG24 Noise Assessment

Location	Period	Measured $L_{Aeq.T}$	PPG24 Noise Exposure Category (NEC)
1	Daytime	63.5	**C**
	Night-time	41.1	**A**
2	Daytime	52.5	**A**
	Night-time	41.8	**A**
3	Daytime	51.5	**A**
	Night-time	33.8	**A**
4	Daytime	46.8	**A**
	Night-time	34.9	**A**
5	Daytime	48.4	**A**
	Night-time	32.3	**A**

13.106 The PPG24 assessment of the measured locations concludes that an area of the site that runs along the western boundary, adjacent to the A53, is within noise exposure category **NEC 'C'** during the daytime period as a result of the volume of traffic on the A53. During the night-time period, as the amount of road traffic movements reduce, the entire site drops to within **NEC 'A'**. PPG24 states the following with respect to these Noise Exposure Categories:

> *"**NEC A** – Noise need not be considered as a determining factor in granting planning permission, althought the noise level at the high end of the category should not be regarded as a desirable level.*
> ***NEC 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."*

13.107 However, regarding the above it should be noted that with reference to the proposed site layout for the development no housing is planned for the western side of the development within the area categorised as **NEC 'C'**. The closest three buildings to the A53 in this area are designated for sports hall, maintenance / storage / garage and site management office / community room use.

13.108 The first row of residential housing is actually situated some 95m away from the A53, as represented by the monitoring as performed at Location 2, which can be seen to be entirely within PPG24 **NEC A** for both the day and night-time periods. Furthermore it is concluded from the monitoring data that with regard to all areas of the site proposed for residential usage these are all categorised as being within PPG24 **NEC 'A'**

PPG24 Assessment - Gun Club Noise

13.109 To provide a fully robust assessment further work has been performed to analyse the data amassed during the noise survey when the gun club were operational. The monitored data during the Saturday morning gun club activities has been compared with the PPG24 NEC scheme with the results being presented within the table below.

13.110 The data presented assumes no remedial works to the gun club to attenuate noise and presents an 'as is' current scenario.

Table 13.15: PPG24 Noise Assessment during Gun Club Operations

Location	Period	Measured $L_{Aeq.T}$	PPG24 Noise Exposure Category (NEC)
1	Daytime	66.3	**C**
2	Daytime	60.7	**B**
3	Daytime	58.9	**B**
4	Daytime	55.2	**B**
5	Daytime	58.2	**B**

13.111 The assessment of noise levels during gun club operation shows that the area of the site designated for residential housing is wholly within **NEC B**. Location 1 was again found to be within **NEC C**, but as described above, this area of the site would not be used for residential purposes. PPG24 states the following with respect to this Noise Exposure Category:

> *"**NEC 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."*

Clay Target Shooting: Guidance on the Control of Noise Assessment

13.112 Further to the PPG24 assessment of gun club noise presented above it was deemed appropriate to also assess the impact of the gun club operations against a more appropriate guidance methodology. In the absence of anything specific to the operations undertaken by the gun club it was concluded that the problems and concerns associated with clay pigeon shooting would be entirely relevant to the activities undertaken within this gun club. Therefore assessment has also been undertaken in line with the guidance and methodology of the Chartered Institute of Environmental Health document "Clay Target Shooting: Guidance on the Control of Noise Assessment" dated January 2003.

13.113 The document methodology requires, and sets out a procedure for the calculation of, the Mean Shooting Noise Level. This is detailed within paragraphs 3.10 to 3.14 of this chapter.

As detailed within **Table 13.11** of Section 13.4 of this report the Mean Shooting Noise Level has been calculated to be 112.7dB as measured at source during the on site noise levels of the survey at the gun club.

13.114 To determine the SNL at the nearest sensitive receptor to the gun club, the Mean SNL is required to be reduced to allow for distance attenuation and also the attenuation that the gun range building would offer.

13.115 A distance, scaled of OS mapping data, of 250m is apparent from the gun range to the nearest sensitive receptor within the proposed development. This distance would provide in the region of 56dB attenuation (calculated using the methodology of BS5228, assuming 100% hard ground attenuation).

13.116 The attenuation offered by the range building has been derived from the data measured during the survey of the gun club operations. Measurements taken to the rear of the range building have been compared with the source measurements. Corrections have been made where appropriate for distance correction in order to conclude the attenuation value attributable to the range building. The calculations performed concluded that an attenuation figure of approximate 11dB is attributable to the range building structures.

13.117 Using the above information a Mean SNL at the worst effected façade of the nearest sensitive receptor within the development is calculated to be 45.7dB(A). Assuming a worst-case scenario of all three ranges being utilised at the same time this would increase to a Mean Shooting Noise Level of 50.5dB(A).

13.118 Evaluation of the guidance within "Clay Target Shooting: Guidance on the Control of Noise Assessment" concludes that *"annoyance is less likely to occur at a mean shooting noise level below 55dB(A)"*. The predicted SNL at the closest properties within the development is shown to be considerably lower than the 55dB(A) value stated.

Traffic Noise Assessment

13.119 The noise model was further utilised in order to assess the impact of the additional traffic movements associated with the proposed residential development.

13.120 The relevant traffic data for the A53 was supplied by RPS Manchester has been utilised in order to assess the noise impact of site generated traffic flows on the existing noise climate of the surrounding areas.

13.121 The Traffic Noise Assessment (TNA) undertaken has been based upon traffic figures supplied for two assessment years as detailed below. Each has been modelled as part of the assessment of the wider road network from vehicle movements associated with the proposed development.

- Base year; and
- 2014 - assessment year (with development).

13.122 When undertaking road traffic noise assessments, it is common practice to assess the potential increase in the L_{A10} noise level over an 18-hour period between 06:00–00:00hrs using annual average weekday traffic (AAWT) flow data.

13.123 For the purposes of this assessment, the impact of extra vehicles has been assessed looking at the general dispersion of vehicles from the development entrance onto the local road network.

13.124 The result of the traffic noise assessment is presented within **Appendix 13.1**.

13.125 The predicted increase in traffic noise levels at the closest residential dwellings as a result of the increased vehicular movements associated with the proposed development during the assessment year (2014) would be in the region of 0.9dB(A) above the levels during the base year without the development.

13.126 Based upon the assessment methodologies, as detailed in Section 13.3, it is concluded that the increase in noise associated with the additional traffic flows resulting from the proposed development would result in an impact significance of **Neutral** in the assessment year of 2014.

Mitigation

Construction

13.127 Impacts to specific identified receptors during the construction phase of the development of the Site are expected to be relatively short-term, although the exact duration over which any impacts might arise is not yet known. During the construction period, impacts of Major / Moderate to Minor significance might be anticipated at local receptors dependant upon the activities occurring at the time and the area of the site in which the work is being undertaken.

13.128 It is recommended that 'Best Practicable Means' be employed to minimise construction impacts, including, for example:-

- Reduce noise to a minimum, as defined in section 72 of the Control of Pollution Act, 1974 using the best practical means at all times and in agreement with the Local Planning Authorities;
- Maintain / replace exhaust silencers to ensure they are effective;
- Use well silenced compressors in noise-sensitive areas;
- Maintain plant regularly and ensure that noise abatement measures (e.g. covers) are fully operational and used correctly;
- Confine construction activity to within a time period agreed with the Local Authority;
- Work to keep local residents and local council informed of the proposed working schedule, where appropriate, including the times and duration of any abnormally noisy activity that may cause concern;
- Provide a helpline / contact number for any complaints or concerns from members of the public; and
- Employ an Environmental Manager to ensure that all works are being carried out in accordance with BPM.

13.129 Mitigation could also include an application for "Prior consent for work on construction sites" under Section 61 of the Control of Pollution Act (COPA) 1974. Staffordshire Moorlands District Council (SMDC) is provided with powers under COPA to control noise from construction sites where necessary, including serving notices under S.60 to abate noise nuisance. However, there is no specific requirement for a section 61 agreement to be put in place this is usually a decision made by the construction operator.

13.130 It would also be prudent to instigating a program of public awareness as to operations being undertaken on site including timings and durations of key noise generating operations as well as providing details of a dedicated site contact (public liaison officer) to all residents in the vicinity for contact regarding noise and vibration concerns.

13.131 Further to the above operational and management procedures should be put in place to reduce noise from the construction operations to the minimum level possible without unduly hampering works. In all reality this would be a changing brief throughout the duration of the construction works evolving as site conditions and issues dictate.

13.132 Examples of the control measures that could be implemented if required and appropriate are presented below; however, the list is not considered to be exhaustive but indicates the options available.

Plant and Equipment

- Modern, silenced and well-maintained plant should be used at all times, conforming to standards set out in EU Directives;
- Equipment including vehicles should be shut down when not in use;
- Engine compartments should be closed when equipment is in use and the resonance of body panels and cover plates should be reduced by the addition of suitable dampening materials. Any rattling noise should be addressed by the tightening of loose parts or the addition of resilient materials;
- Semi-static equipment is to be sited and orientated as far as is reasonably practicable away from noise-sensitive receptors and to have localised screening if deemed necessary;
- Generators and water pumps required for 24-hour operation should be super-silenced or screened as appropriate;
- Crane spindles, pulley wheels, telescopic sections and moving parts of working platforms should be adequately lubricated in order to prevent undue screeching and squealing;
- Where possible, mains electricity should be used rather than generators.

Methods of Working

- Where ground conditions permit, first preference should be given to reaction piling methods ('silent piling'). Otherwise, vibratory piling methods, together with pre-augering, should be used. Percussive piling should only be considered where ground condition precludes the use of other methods and prior agreement should be sought from the local authority;
- Where practicable, pile caps should be cut and then broken with hydraulic rams to minimise the use of heavy air-powered breakers;
- Burning equipment should be used in preference to cold cutting where possible;
- Large concrete pours (for which an extension of working hours may be necessary) should commence as early as possible within normal working hours so that the activities can be completed within normal working hours as far as possible;
- Positioning of equipment behind physical barriers, i.e. existing features, recently constructed structures, hoarding etc.

Demolition

- When breaking out concrete, an oversized breaker should be used to minimise the blow rate and hence the percussive nature of the noise produced. This should also minimise the time taken to complete the breaking out works. Where concrete obstructions arise, these should be removed and taken to a less sensitive location before being broken up;

- Where possible, hand breakout of structures should be encouraged and walls / structures should be dismantled or 'pushed over' rather than conventionally broken-out using pneumatic drills;
- Hydraulic 'munchers' should be used where reasonably practicable in preference to breakers;
- All materials should be handled, stored and used in a manner that minimises noise;
- Concrete bursting and cutting should be considered where practical.

Management of Works Program

- Wherever practicable, noisy works, which are audible at the site boundary, should be undertaken during normal daytime hours, e.g. between 08.00-18.00 Monday to Friday (operational hours 08:00-18:00 Monday to Friday permitted within planning permission) and between 08.00-14.00 on Saturdays (operational hours 08:00-18:00 Saturday permitted within planning permission);
- Routes and programming for the transportation of construction materials, fill, personnel etc. are to be carefully considered in order to minimise the overall noise impact generated by these movements;
- Personnel should be instructed on BPM measures to reduce noise and vibration as part of their site induction training;
- Shouting and raised voices should be kept to a minimum e.g. in cases where warnings of danger must be given. Use of radios should be prohibited except where two-way radios are required for reasons of safety and communication.

Residential Amenity

External Noise Levels

13.133 Reference to the proposed scheme drawings for the development concludes that certain dwellings within the proposed development would be afforded external living areas by way of gardens.

13.134 Analysis of the measured noise levels at the site concludes that the residential portions of the development are contained wholly within PPG24 Noise exposure Category (NEC) 'A'. It is therefore concluded that external noise levels within the external sensitive garden areas would be wholly acceptable.

13.135 Furthermore the measured noise levels are also shown to be below the 55dB(A) guidance value as detailed by the World Health Organisation (WHO).

Internal Noise Levels

13.136 In order to fully assess the noise impacts associated with the proposed development it is considered appropriate to also assess internal noise levels. Assessment of internal levels will be undertaken in accordance with the guidance of both PPG24 and BS8233.

13.137 As detailed above the measured noise levels across the residential portion of the site are shown to be wholly within PPG24 NEC 'A' and as such below a level of 55dB(A). It is therefore considered that standard 4/12/4 double glazing would be appropriate in order to ensure that acceptable internal noise levels are achieved from general ambient noise levels within the area.

13.138 Furthermore, PPG24 states that a value of approximately 15dB(A) attenuation is attributable to a partially open window for ventilation. As such it is concluded that acceptable internal noise levels would be achievable within the residential portion of the site without the provision of alternative ventilation.

Gun Club Noise

13.139 Assessment has been undertaken of noise associated with activities within the gun club based upon the prediction methodology contained within the Chartered Institute of Environmental Health "Clay Target Shooting: Guidance on the Control of Noise" document dated January 2003.

13.140 The results of this assessment concluded a Mean Shooting Noise Level (SNL) of 50.5dB(A) at the closest residential dwelling within the proposed development. This predicted Mean SNL is shown to be comfortably below the lower limit of 55dB(A) described by the guidance document as the level where "*annoyance is less likely to occur*" and considerably below the level of 65dB(A) stated to be the level where annoyance is "*highly likely to occur*".

13.141 Furthermore the measured noise levels are also shown to be below the 55dB(A) guidance value as detailed by the World Health Organisation (WHO).

13.142 However, our calculations assume that the shooting ranges on the gun club site are 3 sided with a roof, of a good construction quality (minimum mass 10kg/m^2), with well fitting sealed doors and no gaps within the construction. Remedial works may be required to the range buildings in order to ensure that this is the case.

Summary of Mitigation Measures

13.143 The mitigation measures (additional to those incorporated within the development proposals) recommended as a result of the impact assessment are summarised in **Table 13.16**.

Table 13.16: Summary of recommended Additional Mitigation Measures

Phase	Recommended Mitigation
Construction	▪ Best Practicable Means
Residential	▪ Suitable glazing specification to achieve adequate internal levels; ▪ No residential properties withint he area directly around the site entrance off the A53
Residential Traffic Assessment for existing properties	▪ No mitigation required

Summary and Residual Effects

Construction Operations

13.144 A detailed review of the development plan documents and planning context in relation to the development proposals is provided within Chapter 4. This section summarises the policies, guidance and legislation that are directly relevant to noise with regard to a scheme such as that proposed.

13.145 In the absence of any detailed construction phase information and plant data a qualitative assessment of any potential impact of typical construction plant and operations has been undertaken.

13.146 With the implementation of the "Best Practicable Means" methods of noise control from construction operations as detailed the potential short term impact significance of this phase of the development should be controllable to within acceptable levels.

Residential Development

13.147 With the inclusion of suitable glazing specifications as detailed within the mitigation measures proposed for the site and heed paid to the location of external living areas (relative to the gun club) there is no reason why any future residents of the proposed development would be unduly effected by noise.

13.148 With regard to noise generated by the operations of the adjacent gun club it is concluded that, based upon the assessment methodology used and the relatively infrequent nature of the gun

club activities acceptable noise criteria is met as stated within the Chartered Institute of Environmental Health document "Clay Target Shooting: Guidance on the Control of Noise" dated January 2003. However, in order to ensure the integrity of the range buildings on site at the gun club remedial works may be required to be undertaken.

13.149 With regard to the impact of the proposed scheme on the noise levels of the area it is considered that the level of additional road traffic associated with the proposed development results in a **Neutral** impact significance.

Conclusions

13.150 The short term effects of the construction operations detail an impact significance of Major / Moderate significance reducing the Minor as separation distances increase. With the investigation and implementation of the proposed temporary mitigation measures and careful consideration when planning the construction program, operational methodologies and plant compliment the resulting impact significance is likely to be adequately reduced to an acceptable level.

13.151 With the inclusion of the mitigation measures as proposed within this chapter it is not considered that future residents of the proposed dwellings on site would be unduly affected by noise generated by the existing sources within the area.

13.152 With regard to the noise impact on the existing residential properties within the area of the additional road traffic movements generated on the A53 by the proposed development concludes a **Neutral** impact significance.

References

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- British Standards Institution – BS 5228. Noise and Vibration Control on Construction and Open Sites. Part 1 – Code of practice for basic information and procedures for noise and vibration control, 1997.
- British Standards Institution. BS 5228. Noise and Vibration Control on Construction and Open Sites. Part 2 – Guide to Noise and Vibration Control Legislation for Construction and Demolition, including Road Construction and Maintenance, 1997.

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- HMSO. The Department of Transport/Welsh Office. Calculation of Road Traffic Noise. 1988.
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- HMSO. The Department of Transport. Design Manual of Environmental Appraisal for Trunk Road Assessments. 1983.

Glossary of Terms

Acronym / Term	Description
µg/m³	Microgrammes per cubic metre of air. A measure of concentration in terms of mass per unit volume. A concentration of 1 µg/m³ means that 1 cubic metre of air contains one microgram (millionth of a gram) of pollutant.
100 Year Flood	Describes the water level of a flood that has a 1 in a 100 (1%) probability of being exceeded at a given location in a given year.
AADT	Annual Average Daily Traffic (expressed in vehicles per day).
Acoustic barrier	Solid walls or partitions, solid fences, earth mounds, buildings, etc used to reduce noise, without eliminating it.
Air Quality Management Area (AQMA)	An area formally designated by a local authority where one or more of the air quality objectives are unlikely to be met.
Air quality objectives	Policy targets set by government for the air quality, generally expressed as a maximum ambient concentration to be achieved, either without exception or with a permitted number of exceedances within in a specified timescale. Targets are considered to be achievable in terms of cost, benefit and technical feasibility.
Air Quality Standards (AQSs)	The concentrations of pollutants in the atmosphere which can broadly be taken to achieve a certain level of environmental quality. The standards are bases on assessment of the effects of each pollutant on human health including the effects on sensitive sub groups.
Air-borne noise	This refers to noise which is fundamentally transmitted by way of the air and can be attenuated by the use of barriers and walls placed physically between the noise and receiver.
ALC	Agricultural Land Classification.
Alien species	A species that does not normally occur in an area but which has been deliberately or accidentally introduced by human activity.
Ambient Noise Level	The total encompassing sound in a given situation at a given time, usually composed of sound from all sources near and far.
Anglo-Saxon Period	Period between end of the Roman rule and the Norman Conquest, characterised in the North-West by Germanic and Scandinavian colonisation. Dating between AD410 – AD1066.
Annual mean	The average of the concentrations measured for each pollutant for one year. In the case of Air Quality Objectives this is for a calendar year.
AOD	Above Ordinance Datum

Acronym / Term	Description
AONB	Area of Outstanding Natural Beauty
AQMS	Air Quality Management Areas
AQS	Air Quality Strategy
Aquifer	A permeable horizon of water bearing rock sediment often used as a water source.
Archaeological Watching Brief	This describes where an archaeologist is present to monitor any ground disturbance and earthworks during the initial phases of construction so that any archaeological features that might be uncovered can be recorded. In areas of very low archaeological potential, watching briefs may be based on periodic inspection of construction works.
Assessment period	The period in a day over which assessments are made
At-grade	At the same (ground) level
Atmospheric Dispersion model	A mathematical, often computer-based method for calculating pollutant concentrations from emissions data under a set of known variables. Models vary from screening models to detailed, 'new generation' types.
Audible range	The limits of frequency which are audible or heard as sound. The normal ear in young adults detects sound having frequencies in the region 20 Hz to 20 kHz, although it is possible for some people to detect frequencies outside these limits.
A-weighted decibels (dB(A))	The ear is not as effective in hearing low frequency sounds as it is hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the "A" filter. A sound level measured with this filter switched on is denoted as dB(A). Practically all noise is measured using the A filter. The sound pressure level in dB(A) gives a close indication of the subjective loudness of the noise.
Background noise	Background noise is the term used to describe the noise measured in the absence of the noise under investigation. It is described as the average of the minimum noise levels measured on a sound level meter and is measured statistically as the A-weighted noise level exceeded for ninety percent of a sample period. This is represented as the L□□ noise level.
Background Noise Level	The period of quiet between the various noise events in a given area and is defined as the level of noise exceeded for 90% of the time, denoted LA□□
Barrier	See "Acoustic barrier". A solid object used to attenuate sound.

Acronym / Term	Description
Baseline Environment	This is defined as the study area and its environmental characteristics assuming that the scheme is not built.
Biodiversity	Biological diversity. A term for the variety of all life on earth, including all species of plants and animals, their genetic variation and complex ecosystems of which they are part. Differs from species richness (i.e. the total number of species) in that biodiversity expressly includes the variety of life at all scales, progressing down from ecosystems, communities, species and populations, to the level of genetic variation present within species and their constituent populations.
Biodiversity Action Plans (BAP's)	Prepared by English Nature to implement the UK Biodiversity Strategy, these outline the current status of, and pressures facing particular habitats or species and set targets and propose action to maintain or increase biodiversity and identify research needs.
Biological GQA	Biological General Quality Assessment
Biological Oxygen Demand (BOD)	An indicator for the concentration of biodegradable organic matter present in a sample of water. BOD measures the rate of uptake of oxygen by micro-organisms in a sample of water at a fixed temperature and over a given period of time.
Broadband	Containing the full range of frequencies.
Bronze Age	Prehistoric period, characterised by the introduction of copper and bronze working. Dating between approximately 2500-700 BC.
Bund	A walled area or embankment used either for secondary containment (for potentially polluting materials) or for screening.
Carriageway	That part of the road constructed for use by vehicular traffic
Catchment	The area of land which drains into a river.
Chainage	Unit of measurement used on roads and other linear engineering works.
Chemical Oxygen Demand (COD)	A measure of the total organic level rather than just levels of biologically active organic matter.
CIRIA	The Construction Industry Research and Information Association
CITES	Convention of International Trade in Endangered Species
CO	Carbon monoxide
CO^2	Carbon dioxide

Acronym / Term	Description
CoCP	Code of Construction Practice
Colluvium	Re-deposited soils, which have been eroded from valley sides.
Concentration	The amount of a (polluting) substance in a volume (of air or water), typically expressed as a mass of pollutant per unit volume of gaseous pollutant per unit volume (parts per million ppm)
Confined	A fully saturated aquifer layer bound by an upper horizon of low permeability rock or sediment.
Conservation Areas (CA)	Areas of special architectural or historic interest, designated under the Planning (Listed Buildings and Conservation Areas) Act 1990, whose character and appearance should be preserved or enhanced
Countryside Stewardship	An agri-environment scheme through which frames and landowners can receive payments for management agreements that result in the maintenance and enhancement of certain important landscapes and habitats including grassland, lowland heath, waterside land and hedgerows and field boundaries which need restoring.
County Wildlife Sites	These are sites, which are considered to be of importance for nature conservation purposes from a regional perspective. They are considered to complement the national network of nature conservation sites.
CROW	Countryside and Rights of Way (Act)
Culvert	A covered cannel or pipeline, which is used to continue a watercourse or drainage path under an artificial obstruction.
Cumulative Impacts	Impacts that result from incremental changes caused by past, present or reasonably foreseeable actions together with the project.
Cutting	Section of earthworks where the level of the proposed road is below original ground level.
Cyprinid Fishery	Fishery able to support carp type fish, which require less dissolved oxygen than salmonid fish
dB	The (logarithm of the) sound-pressure level (or magnitude of sound) expressed in decibels and measured relative to the lower threshold of hearing.
dB(A)	The scale used in assessing human exposure to noise, weighted according to the frequency response of the normal human ear
dBLA10, 18hr	The A-weighted sound level exceeded for 10% of an 18-hour period. This index is used for the measurement of road traffic noise for which the period is taken from 0600 to 2400.

Acronym / Term	Description
DCA	Direct Comparison Approach
Decibel (dB)	The level of noise is measured objectively using a Sound Level Meter. This instrument has been specifically developed to mimic the operation of the human ear. The human ear responds to minute pressure variations in the air. These pressure variations can be likened to the ripples on the surface of water but of course cannot be seen. The pressure variations in the air cause the eardrum to vibrate and this is heard as sound in the brain. The stronger the pressure variations, the louder the sound is heard. The range of pressure variations associated with everyday living may span over a range of a million to one. On the top range may be the sound of a jet engine and on the bottom of the range may be the sound of a pin dropping. Instead of expressing pressure in units ranging from a million to one, it is found convenient to condense this range to a scale 0 to 120 and give it the units of decibels. The following are examples of the decibel readings of every day sounds:
Decibel (dB) continued	Four engine jet aircraft at 100m 120 dB Riveting of steel plate at 10m 105 dB Pneumatic drill at 10m 90 dB Circular wood saw at 10m 80 dB Heavy road traffic at 10m 75 dB Telephone Bell at 10m 65 dB Male speech, average at 10m 50 dB Whisper at 10m 25 dB Threshold hearing, 1000 Hz 0 dB
DEFRA	Department for the Environment, Food and Rural Affairs
Design Manual for Roads and Bridges (DMRB)	A handbook published (and regularly updated and augmented) by the Highways Agency, providing best practice guidance for the construction, operation and management of roads and bridges. Contains advice relating to the protection and enhancement of species and habitats.
Desire line (tracks)	Tracks created by users travelling directly towards the desired destination
DfT	Department for Transport
Do-Minimum Scenario	This scenario assumes that no improvements would be carried out to the existing road network
Do-Something Scenario	Assumes that the Proposed Scheme would be constructed in the existing road network
DWS	Drinking Water Standards
EA	Environment Agency (now natural England)
Earthworks	Excavated embankments composed of soil

Acronym / Term	Description
Embankment	A bank or mound constructed to carry a roadway at a level higher than the original ground level.
Emissions Inventory	The quantification and compilation of emission sources by geography and time, usually including data covering one or several years
EMP	Environmental Management Plan
EN	English nature (now natural England)
Environmental Agency PPG's	Pollution Prevention Guidelines
Environmental Effect/Impact	Any change in the physical, natural or cultural environment bought about by a development project. Effect and impact are used interchangeably
Environmental Impact Assessment (EIA)	A process by which certain planned projects must be assessed before a decision to proceed can be made. It involves the collection, publicising & consideration of environmental information, which fulfils the assessment requirements of Directive 97/11/EC
Environmental Impact Assessment Team	The team, which carries out the environmental studies and prepares the environmental information.
Environmental Statement (ES)	Information gathered and submitted to a relevant competent authority in compliance with EC Directives on the environmental effects of a project.
Environmental Studies	The surveys and investigations carried out by the EIA team in order to prepare the environmental information for inclusion in the ES.
EU Objectives	European Union policy targets to be achieved within a specific timescale.
Exceedence	A period of time where the concentration of a pollutant is greater that the appropriate Air Quality Objective
Façade Noise Level	The noise level measured or predicted at 1 metre external to a building façade and which includes a factor of +2.5 dB for façade reflection effects.
Flood Plain	This includes all land adjacent to a watercourse over which water flows or would flow but for flood defences in times of flood.
Flow Measurement	A measure of volume flowing at a point for a given period of time, expressed as cubic metres per second (m^3 s^1) or litres per second ($1s^1$)
Free-Field	A situation in which the radiation from a sound source is completely unaffected by the presence of any reflecting surfaces.
g/km	Grammes per kilometre (emission rate)

Acronym / Term	Description
g/sec	Grammes per second (emission rate)
GQA	General Quality Assessment
Green Belt	Areas of open land where new development is strictly controlled. Policy on development in Green Belts is defined by Government in PPG2
Greenfield runoff rate	The rate of runoff that would occur from a site in its undeveloped (undisturbed) state
Groundwater	Refers to all subsurface water, as distinct from surface water. Generally, groundwater is considered to be that water which is below the zone of saturation and contained within porous soil or rock stratum (aquifer).
Habitat	A place in which a particular plan or animal lives. Often used in a wider sense, referring to major assemblages of plants and animals found together such as woodlands or grassland.
Hardness	A measure of the mineral content of water, usually dominated by ions of calcium and magnesium in the form of carbonates. Hard waters have a high mineral content.
HCs	Hydrocarbons
Heavy Vehicle	Heavy vehicles are assumed to be buses, rigid trucks and semi trailer trucks with a weight greater than 3 tonnes. Also heavy vehicles can be defined in terms of length as buses, or trucks with a length exceeding 5.25 metres.
HGV	Heavy Goods Vehicle
In-situ	In its place
Indirect Impacts	Impacts on the environment, which are not a direct result of the project, often produced away from, or as a result of, a complex pathway. Sometimes referred to as secondary impacts.
Inert Waste	Category of waste which includes material which will either not decompose, or will decompose very slowly. Materials in this category would include waste from the construction industry; such as hardcore, soil, stone and glass.
Iron Age	Prehistoric period, characterised by the introduction of iron working. Dating between approximately 700BC – AD43.
Isopleth	Contour line on a map drawn through points of equal concentrations/attributes
IUCN	International Union for Conservation of Nature
JNCC	Joint Nature Conservancy Council
L_1	The sound pressure level that is exceeded for 1% of the time for which the given sound is measured.

Acronym / Term	Description
L_{10}	The sound pressure level that is exceeded for 10% of the time for which the given sound is measured.
$L_{10(18\text{-}Hour)}$	The arithmetic average of the L10(1hr) levels for the 18-hour period between 6am and 12 midnight on a normal working day. It was a common traffic noise descriptor. For traffic noise it is usually about 3dB(A) higher than Leq (24 hours).
$L_{10(1\text{-}Hour)}$	The L10 level measured over a 1-hour period.
L_{A90}	The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L90 noise level expressed in units of dB(A).
LA	Local authority
LA max	The maximum RMS A-weighted sound pressure level occurring within a specified time period.
Landscape	The visual appearance of non-urban areas.
LBA	Less Background Action Plan
LBAP	Local Biodiversity Action Plan
Leach	The movement of substances through soils and rocks to surface and groundwater is known as leaching and the solution they are carried in is the leachate.
Leachate	Water that has dissolved or washed material out of solid material such as soil. Leachate can be polluted if it contains dissolved material from contaminated soil.
L_{eq}	Equivalent sound pressure level – the steady sound level that, over a specified period of time, would produce the same energy equivalence as the fluctuating sound level actually occurring.
$L_{eq\ (1hr)}$	The Leq noise level for a specific one-hour period.
$L_{eq\ (24hr)}$	The equivalent continuous noise level during a 24-hour period, usually from midnight to midnight.
L_{MAX}	The maximum noise level over a given assessment period.
Listed building	Buildings of “special architectural or historic interest” which are on a list complied by the Department of National Heritage on the advice of English Heritage. Any material alteration to or demolition/part demolition of a Listed Building, whether external or internal would require Listed Building Consent. Provisions relating to Listed Buildings are contained in the Planning (Listed Buildings and Conservation Areas) Act 1990.
Lithic	Prehistoric stone tool or manufacturing waste.

Acronym / Term	Description
Ln noise descriptors	Because noise varies with time, a single noise value cannot adequately define the ambient noise. For this reason, the acoustic environment is described using a number of different noise level descriptors.
LNR	Local Nature Reserve
Local Biodiversity Action Plan	These usually cover a county or group of unitary authorities, and are produced by a partnership of local authorities, relevant agencies and voluntary organisations for the local implementation of the UK BAP and national habitat and species action plans.
Local Plan (LP)	Prepared by District Councils and sets out detailed (local level) policies and proposals for the development and use of land.
Local Planning Authority (LPA)	A LPA is the local authority statutorily obliged to carry out the implementation of the Town and Country Planning Acts and Regulations.
Loudness	A rise of 10 dB in sound level corresponds approximately to a doubling of subjective loudness. That is, a sound of 85 dB is twice as loud as a sound of 75 dB which is twice as loud as a sound of 65 dB and so on. Thus the sound of 85 dB is four times the loudness of a sound of 65 dB.
Made ground	Ground that has been disturbed or created by the activities of humans.
Main River	A watercourse designated under the Water Resources Act 1991. The EA has permissive powers to carry out works of maintenance and improvement on these rivers.
Mean Shooting Noise level (mean SNL)	The arithmetic average of the individual SNL values.
Medieval	Historic period dating between AD1066 and c. AD1540
Mesolithic	Prehistoric period, characterised by hunter-gatherer communities. Dating between approximately 8000-3800 BC.
mg/m^3	Milligrammes per cubic metre of air. A unit for describing the concentration of air pollutants in the atmosphere, as a mass of pollutant per unit volume of clean air. This unit is one thousand times larger than the $\mu g/m^3$ unit.
Microphone	An electro acoustic transducer, which receives an acoustic signal and delivers a corresponding electrical signal.
Mitigation	The measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment.
N	Nitrogen
NAQS	National Air Quality Strategy

Acronym / Term	Description
NATA	New Approach to Transport Appraisal – current UK government framework for assessing the effects of transport infrastructure schemes.
Neolithic	Prehistoric period characterised by the first farming communities. Dating between approximately 3800-2500 BC.
NE	Natural England
NHS	Natural Heritage Site
NO^2	Nitrogen dioxide
Noise	Sound which a listener does not wish to hear.
Noise monitor	See "sound level meter"
Non Technical Summary (NTS)	A brief report summarising the principle sections of Volume 1 of the Environmental Statement in non-technical language. The NTS is bound into the main volume, but may also be available as a free-standing document.
NOx	Nitrogen oxides
NRA	National Rivers Authority
NVC	National Vegetation Classification
OS	Ordinance Survey
Palaeo-environmental	Relating to the past environment.
Particulates (PM^{10})	Fine solid particles found in the air or in emissions.
Permeability	A measure of the capacity of a medium (ie. Rock or soil) to allow liquids (especially water) to pass through them.
pH	A measure of the acidity or alkalinity of a solution.
Pile	A heavy beam driven directly vertically into the ground to support the foundations of buildings or structures.
PM^{10}	Particulate matter with a (equivalent aerodynamic) diameter of ten microns (10µm) or less.
PMA	Private Means of Access, private roads to residential or commercial premises.
Post-Medieval	Historic period dating between c. AD1540 and the present
PPG	Planning Policy Guidance
PPS	Planning Policy Statement
RC	River Corridor

Acronym / Term	Description
RDB	Red Data Book
Receptors	People, locations, plants or animals that may be affected by an environmental impact.
Regionally Important Geological/Geomorphological Sites (RIGS)	These are sites which are important for the geological exposures or physiographic features. The most important of these are designated as SSSI's but more locally important sites can be designated as RIGS by local conservation groups.
Remediation	Treating, containing or removing contaminated material so that it no longer presents a hazard.
Residual Impacts	Any remaining effects as a consequence of the development assuming implementation of proposed mitigation measures.
Retaining Wall	A wall supporting an earth bank.
Ridge and Furrow	Corduroy like earthworks denoting areas of Medieval strip farming or later drainage.
Road Alignment	The geometric layout of the road (see horizontal alignment and vertical alignment) refers to the direction and course of the roadway.
Roman Period	Period of the Roman conquest. Dating between AD43-AD410.
RPG	Regional Planning Guidance
RQO	River Quality Objective
RSNC	The Royal Society for Nature Conservation
RSPB	The Royal Society for the Protection of Birds
RSS	Regional Spatial Strategy
RTS	Regional Transport Strategy
SAC	Special Area of Conservation
Salmonid Fishery	Fishery able to support salmon/trout type fish, which require more dissolved oxygen then cyprinid fish.
SBI	Site of Biological Importance

Acronym / Term	Description
Scheduled Ancient Monument (SAM)	The Secretary of State for National Heritage is responsible for compiling a schedule of ancient archaeological sites which be reason of period, rarity, fragility, potential, etc appear to be of national importance. The statutory provisions relating to Scheduled Ancient Monuments are contained in the Ancient Monuments and Archaeological Areas Act 1979 and the National Heritage Act 1983.
Scoping	The process of identifying the content and extent of the Environmental Information to be submitted under the EIA procedure.
Severance	A term used to describe the possibility that a development may disrupt activities or movements in an area or divide an area, community, etc. in an adverse manner.
Shooting Noise level (SNL)	Logarithmic average of the 25 average shot (noise) levels.
SINC	Site of Interest for Nature Conservation.
Site of Special Scientific Interest (SSSI)	Sites of national importance for their plants, animals, or geological or physiographical features designated by English Nature under the Wildlife and Countryside Act 1981 (as amended).
SMR	Sites and Monument Record
Sound	A fluctuation of air pressure, which is propagated as wave through air.
Sound level meter	An instrument consisting of a microphone, amplifier and indicating device, having a declared performance and designed to measure sound pressure levels.
Sound Pressure Level (SPL)	The level of noise, usually expressed in decibels, as measured by a standard sound level meter with a microphone.
Source Protection Zones (SPZs)	Protection zones around certain sources of groundwater used for public water supply. Within these zones, certain activities and process are prohibited or restricted.
SPA	Special Protection Area.
Structure Plan (SP)	County Councils in Shire Counties in non-metropolitan and non-unitary areas prepare Structure Plans which set out the broad level planning strategy and policies to guide the development and other use of land in the County. Local Plans are expected to confirm to the guidance in Structure Plans.
Surface water	Water features present above ground, including lakes, ponds and all watercourses.
TAG	The DfTs Transport Appraisal Guidance.
Target Notes	Notes of a particular area of ecological interest taken during the Phase 1 Habitat Survey.

Acronym / Term	Description
Townscape	The visual appearance of towns and other urban areas.
Township	A sub-division of a parish.
Township Boundary	A boundary delineating one township from its neighbours.
Tree Preservation Order (TPO)	Section 198 of The Town and Country Planning Act 1990 enables Local Planning Authorities to make provision for the preservation of individual trees, groups of trees or woodland, in the interests of amenity. Tree Preservation Orders are made under this Section and they prohibit the felling, topping, lopping, uprooting, pruning, wilful damage or destruction of trees without prior consent of the Local Planning Authority. Carrying out unauthorised works to a tree subject to a TPO is a criminal offence.
Trunk road	A road for which the Secretary of State for Transport is legally responsible. The Highways Agency is responsible for discharging the Secretary of State's duties, including the planning, funding and execution of maintenance and other works.
TVEP	Time Varying Emission Profile
UK National Biodiversity Action Plan (UKBAP)	The Government plan for the protection and sustainable use of biodiversity. As part of this process national action plans for individual habitats and species have been provided. These give an assessment of the current situation, 10-15 year targets and objectives for management, restoration and expansion of habitats, or maintenance or enhancement of species populations.
Unconfined	An aquifer that is not bound by an upper strata and is characterised by the presence of a water table.
Underpass	Thoroughfare below another road or structure to facilitate passage of either all, or some of: vehicles, pedestrians, cyclists or pedestrians.
Unitary Development Plan (UDP)	Unitary Authorities in metropolitan and unitary areas prepare UDPs which set out both broad and local level planning strategy and policies to guide the development and other use of land in the authority area. UDPs replace both Structure and Local Plans in Unitary Authorities areas.
Vertical Alignment	Direction and course of the roadway in profile.
Visual envelope	The extent of visibility to and from a point on a site.
VOCS	Volatile Organic Compounds
Water table	The surface of an unconfined aquifer at which the pore water pressure is atmospheric. The water table marks the approximate transition between saturated and unsaturated conditions within the aquifer.

Acronym / Term	Description
WebTAG	Web based version of the DfT's Transport Appraisal Guidance (TAG)
Wildlife corridor	A linear feature (e.g. canal, hedgerow) that allows the movement of animals between otherwise isolated sites.
ZVI / ZTV	Zone of Visual Influence or Zone of Theoretical Visibility is the area from in which the development can be viewed.