Brinklow Quarry

Extension to Time and Area – Environmental Statement for 2015 Applications

October 2015
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Client: Brinklow Quarry

Project: Extension to Time and Area – Environmental Statement for 2015 Applications

Version: Final

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DISTRIBUTION

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Sustainable Direction Ltd
Warwickshire County Council
1. Introduction and Approach to the EIA

1.1 Introduction

This Environmental Statement (ES) is intended to support two planning applications: the first, a Section 73 application to allow the continued operation of Brinklow Quarry beyond May 2016, and a second to extend the quarry area. This document is the Environmental Statement and, with the Non-Technical Summary (NTS) and Technical Appendices, presents the findings of a number of detailed environmental assessments associated with the extension of time of the quarry’s current operations and the proposed extension of area.

The extant planning permission (R687/1547/1486/P) is dated 7th May 1991. It permits the extraction of sand and gravel from 69.3 hectares of land at what is now known as Brinklow Quarry. Condition No. 51 of that permission states that the extraction of sand and gravel shall cease no later than 25 years from the date of the permission, which is 7th May 2016. Brinklow Quarry is therefore obligated to submit a planning application to allow the continued operation of the existing quarry beyond that date. The site is also overdue a Periodic Review of the working conditions under the provisions of the Environment Act 1995 (Review of Old Mineral Permissions – ROMP). This application has therefore been submitted for a s.73 application to vary Condition No.51 to extend the sand and gravel extraction for a period of 10 years to 2026, but it is recognised that it will also afford Warwickshire County Council the opportunity to review and update the conditions of the extant planning permission as agreed with Planning Officer Matthew Williamson.

The existing permission was granted on the assumption that the site would yield 3.5 million tonnes of sand and gravel. It is estimated that approximately 1.7 million tonnes of sand or gravel, half the original reserve, remains to be extracted from the Quarry. This is in effect a continuing of the existing operation onsite.

In addition, Brinklow Quarry proposes an extension to the operational area of the quarry of an additional 31 hectares, which will be able to produce a further 3.1 million tonnes of usuable dryscreen sand and some gravel. This is the subject of a new planning application. This would not result in an intensification of activities onsite, as the rate of extraction would continue at the same level as that in the existing quarry. The requirement for this area is to access the resource; this area contains dryscreen sand rather than a sand and gravel mix to be found in the extension of time area.

The main features of the operational plan are as follows:

1. The completion of mineral extraction and restoration works within the Quarry as approved under the extant Planning Permission;
2. Phased extraction of sand and gravel for a period of 7-10 years (circa 1.7 million tonnes of resource);
3. Retention of the other activities that have planning permissions that are linked to the quarry development including:
   • The Mortar Plant;
   • The Open Windrow Composting Facility; and
   • The Inert Waste Recycling Facility.

This ES assesses the impact of either and both schemes (cumulative impacts) on the local area and any environmental feature of national and international significance, such as ecological or cultural designations. It sets out the proposed projects, the site locality, the policy that the developments interact with, and then a series of chapters setting out the impacts of the proposals on facets of the local environment. These chapters go into detail of what the impacts, positive and negative, will be, and also the significance of these impacts in the context of the
Brinklow Quarry Environmental Statement
Introduction and Approach to the EIA - Approach to the Environmental Impact Assessment

overall development within the county. This chapter outlines the approach to the Environmental Assessment, and the format of this Environmental Statement.

Brinklow Quarry is a valued resource for the local construction industry and a supplier of aggregates to local residents and the wider county in Warwickshire. The company was founded by the late Mr. Tony Aston as a diversification of the family arable farm. The quarry now supplies materials from building sand to clay to major UK companies. The business is now managed by Tony Aston’s sons, Mark and Dale, who run the quarrying operations alongside the large family arable farm.

1.2 Approach to the Environmental Impact Assessment

1.2.1 Need for Environmental Impact Assessment

Whilst the original permission was not subject to an Environmental Impact Assessment (EIA), the Pre-Application Enquiry letter from Warwickshire County Council (WCC) dated 5th August 2015 identifies the proposed development as being ‘EIA development’ i.e. requiring the submission of an ES by virtue of falling within the descriptions of development set out in Schedule 1 of the Town and County Planning (Environmental Impact Assessment) Regulations 2011 because the development comprises a quarry where the surface of site exceeds 25 hectares (Paragraph 19). An earlier Screening Opinion from WCC dated 3rd November 2014 had already confirmed that an application to extend the operational life of the Quarry would therefore need to be accompanied by an ES.

The pre-application letter dated 5th August states:

“Given the period of time that has elapsed since planning permission was first granted to allow mineral extraction at Brinklow Quarry [it is] consider[ed] that the scope of the EIA would need to be wide, comprehensively addressing all aspects and implications of the development”.

The letter goes on to list a range of topics the ES should cover, reproduced in Table 1-1 including where in the ES this has been addressed.

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<th>Topic Areas</th>
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<td>Chapter 6</td>
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<td>Ecology (Habitats and Protected Species)</td>
<td>Chapter 7</td>
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<td>Ground and Surface Waters</td>
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<td>Soils and Agricultural Land Quality</td>
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Chapter 1-8
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In addition the ES considers the following areas:

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<th>Topic Areas</th>
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<tr>
<td>Socio-economic Impact</td>
<td>Chapter 12</td>
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A Summary and Conclusions Chapter forms Chapter 16.

The pre-application correspondence from WCC also makes clear that the Council considers that the proposed extension of the quarry area is Schedule 2 EIA development, by virtue of falling within paragraph 13 Changes and Extensions and because the development as extended may have significant effects on the environment.

For this reason a single EIA to support both the s.73 application relating to the variation of Condition No. 51 and the application for an extension of the quarry area has been undertaken.

The EIA relates to both applications, both separately and together (cumulative impact), and it recognises the possibility that both applications may not be approved by assessing each one independently of the other before exploring cumulative impacts.

1.2.2 The approach to the EIA

The Environmental Impact Assessment has been undertaken in line with Town and Country Planning (Environmental Impact Assessment) Regulations 2011, the current regulation in England, and with regard to the Institute of Environmental Management and Assessment’s (IEMA) previous Review Criteria for Environmental Impact Assessments.

The principal process used to evaluate the impacts of the development is based on the “source-pathway-receptor” approach, as summarised below:

- The source material is the change made; a substance released, something removed or other shift from the “norm” / operations as they are currently.
- The pathway is the transport process or environmental system in which the change moves, away from its original location (e.g. through the atmosphere, drainage system, or in the case of socio-economic impacts through positive or negative multiplier effects from job creation/job reduction, etc.).
- The receptor is the object of interest or significance that could be affected by the change.

Figure 1-1 shows the relationship between magnitude of effect and receptor sensitivity, and how they interact. This will enable the team to define significance throughout the assessments.
1.3 Contributing Consultant Team

Each of the aspect-specific technical assessments have been undertaken by specialist consultants as set out in Table 1-2 below.

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<td>PT-CE Ltd</td>
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All other elements and overall management and authorship of the ES have been prepared by Sustainable Direction Ltd (SDL).
1.4 Assessment Approach

Each technical section of the ES has been prepared following a consistent structure as detailed in Table 1-3.

Table 1-3 – Section headings for the ES

<table>
<thead>
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<th>Content</th>
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<td>Introduction to the section.</td>
</tr>
<tr>
<td>Methodology</td>
<td>Details of the assessment methodology used, and justification for using this assessment approach. Definitions of impact magnitude and significance will be described.</td>
</tr>
<tr>
<td>- Legislation &amp; Policy</td>
<td>Description of the applicable legislation and relevant national, regional and local policies and how the project meets, conforms or potentially contradicts with these.</td>
</tr>
<tr>
<td>Baseline Conditions</td>
<td>Description of current environmental conditions against which potential impacts (i.e. changes – both positive and negative) will be assessed. Details of the source of baseline data will be provided and how these were forecast to the relevant timescale.</td>
</tr>
<tr>
<td>Impacts of the Proposals</td>
<td>Consisting of:</td>
</tr>
<tr>
<td>- Impacts of Extension to Time</td>
<td>Description of the potential impacts associated with the Extension to Time application only (the Section 73 to amend the condition on the closure date of the quarry, which will be extended by 10 years). This will be assessed against baseline, which is assumed to be No or Restored Quarry.</td>
</tr>
<tr>
<td>- Impacts of Extension to Area</td>
<td>Description of the potential impacts associated with the Extension to Area Application only (the new application to extend the area of the quarry, which will be operational for the next 20 years). This will be assessed against baseline, which is assumed to be No or Restored Quarry.</td>
</tr>
<tr>
<td>- Cumulative Impacts of Both Applications</td>
<td>Description of the potential impacts associated with the two applications being granted and running concurrently for 10 years (s73) and 20 years (new application).</td>
</tr>
<tr>
<td>- Conclusion of Impact Assessment</td>
<td>Summarising the main impacts from each application and cumulatively.</td>
</tr>
<tr>
<td>Mitigation Measures</td>
<td>Description of the potential measures that have been or will be incorporated into the plans or the quarry’s operational controls to minimise the environmental impact.</td>
</tr>
<tr>
<td>Residual Impacts</td>
<td>Description of the potential impacts that will remain after implementation of appropriate mitigation measures.</td>
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<tr>
<td>Summary of Impacts</td>
<td>A summary of the potential impacts and the likely residual impacts.</td>
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The main approach to each technical subject follows the approach of a cascading level of detail/information, where:

- The NTS is prepared for use by the general public;
- The Chapters in the ES are prepared for use by WCC, more interested members of the general public and Statutory Consultees; and
- The Detailed Appendices are prepared for use by specialists and the Statutory Consultees who need or want more detail than is in the main chapters.

Therefore, for each technical chapter the specialist consultant has produced a detailed report, for example ecology, and a draft chapter for the ES. The draft chapter has been progressed into the level of detail for the ES, reducing information but not changing the report method or conclusions.

Chapter 1-11
The proposed projects assessed are presented in the following chapter.
Chapter 2

2. Project Description

2.1 Quarry Overview

Brinklow Quarry is a regionally significant sand and gravel quarry located on a deposit of Dunsmore Gravel underlying agricultural land near Brinklow, Warwickshire. The Quarry produces a range of primary and recycled aggregates for sale to the construction industry and has been operational since 1994.

The purpose of the quarry is to extract materials that are in demand on the market. The materials available at Brinklow Quarry are mixed sand and gravel, mainly in the part of the site that is subject to the s. 73 application to extend the time to operate, and dryscreen sand, mainly in the part of the site subject to the extension of area application (Figure 2-1). These materials need to be accessed as the market dictates; at present the demand for dryscreen sand is high as a requirement of construction for houses and other similar construction projects in the county.

Figure 2-1 - Location of the existing quarry area and proposed quarry extension

The need for the development is discussed in more detail in the planning supporting information. As a summary: strong competition from now-closed competitors, an unprecedented economic downturn – particularly in the construction industry – and Brinklow Quarry’s use of recycled materials all mean that the existing 69.2 hectares of quarry still have a remaining aggregate reserve of 1.7 million tonnes of mixed sand and gravel, from an initial reserve of 3.5 million tonnes. This is required as building material locally. The dryscreen sand is also required as an additional resource, for which demand has increased recently as a result of housebuilding locally. Both areas are required for access as the markets dictate.

Warwickshire County Council has produced a Draft Local Aggregate Assessment (2014), which identifies that the county is not meeting its required sand and gravel apportionment of 1.043 million tonnes per year. Sales of sand and gravel have only met this apportionment once in the period 2003-2012, and in 2012 (most recent data) were only...
Brinklow Quarry Environmental Statement
Project Description - Operational Plan for the Extension of Time and Extension of Area

one third of this quantity. Brinklow Quarry is the only site in the county producing any sand and gravel, with few other deliverable sites in the pipeline, meaning continued operation at Brinklow Quarry is highly important to the county as well as nationally.

Brinklow Quarry is the largest single employer in the area, employing more than 40 staff directly and hundreds more indirectly. The continued operation of the quarry will provide secure employment for these staff.

The main features of the operational plan are as follows:

4. The completion of mineral extraction and restoration works within the Quarry as approved under the extant Planning Permission;
5. Phased extraction of sand and gravel for a period of 7-10 years (circa 1.7 million tonnes of resource);
6. Retention of the other activities that have planning permissions that are linked to the quarry development including:
   - The Mortar Plant;
   - The Open Windrow Composting Facility; and
   - The Inert Waste Recycling Facility.

These uses are symbiotic to the quarrying and agricultural activities and are accordingly conditioned to co-terminate with the main quarry Planning Permission Ref. R687/1547/1486/P. The intention is to continue these developments alongside the quarry. These have been included in the Environmental Impact Assessments contained in the ES.

The Quarry Working Plan is available as a supporting document to the planning application. The core elements of the working plan have been extracted below and for the assessment of the impacts of the quarry.

The quarry has implemented and will continue to implement a general progressive restoration concept, which is designed to minimise the extent of active operational areas, return land to agricultural production and to deliver landscape improvement and habitat diversification by means of tree planting and restoration to wetland at the earliest possible juncture. These elements have been designed to integrate with existing completed restoration to enhance the local landscape character in its wider setting.

2.2 Operational Plan for the Extension of Time and Extension of Area

Quarrying operations will be conducted to continue the extraction of sand and gravel from the residual phases of the existing quarry area (designated as Phases A to F on the Phasing Plan on Figure 2-2). This is the subject of the s. 73 application to extend the time of the existing quarry. Phases 1-4 are the subject of the extension of area application. These phases would be accessed as market forces dictate which material is most in demand.

2.2.1 Planning Application for an Extension of Time

The extant planning permission R687/1547/1486/P is for 69.3 hectares to yield 3.5 million tonnes of sand and gravel. Approximately 1.7 million tonnes of sand and gravel, or half the original reserve remains to be extracted from the quarry. The site area remaining is shown in Figure 2-2 as Phases A-F. This is the focus of the Section 73 application, which changes only the time limit on the existing operations and therefore allows for these areas to be accessed over the next ten years. The restoration scheme would be the same as that approved in R687/1547/1486/P.

2.2.2 Planning Application for an Extension of Area

It is proposed to extract dryscreen sand, gravel and clay from 31 hectares of land as an extension of the existing quarry. This is the focus of the new application and would allow access to these areas for this area’s estimated 20 year life. The site is expected to yield around 3.1 million tonnes of useable dryscreen sand and some gravel. The site area is shown in Figure 2-2 as Phases 1-4. Excavated material would be processed at the existing quarry plant area.
This proposal would also revise the existing approved restoration scheme to incorporate alternative water bodies and include agricultural afteruse, landscape improvements and habitat creation by means of tree planting and restoration to wetland.
Figure 2-2 - Extraction Map with Current Permission and Extension of Area Shown
2.2.3 Timescales

The development is expected to last a total of 30 years as shown in Table 2-1. The applications would not result in an intensification of works at the quarry. The extension to time area has mostly gravel and sand mix; the extension area has mostly dryscreen sand, a high quality building material much sought after in the county. The quarry intends to have access to both these sites from 2015 with the flexibility to access either depending on market conditions. Because the operations are not increasing in any way, just the location they are able to access, it will still take c30 years to deplete the whole site.

Table 2-1 – Approximate Phasing of Works

<table>
<thead>
<tr>
<th>Phase</th>
<th>Operations</th>
<th>Reinstatement</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Arnolds Phase, A</td>
<td>α</td>
<td>July 2015</td>
</tr>
<tr>
<td>1</td>
<td>Arnolds Phase</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>B &amp; 1</td>
<td>C, D &amp; 2</td>
<td>B, C &amp; 1</td>
<td>December 2045</td>
</tr>
<tr>
<td>E, F &amp; 3</td>
<td>C, D &amp; 2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The combined quarry processes and their interactivities are illustrated below in Figure 2-3.

A restriction on operational hours ensures that, with the exception of de-watering operations, no quarrying operations take place outside the hours of 08:00 to 18:00 Mondays to Fridays and 08:00 to 13:00 Saturdays currently. The quarry would like to amend the hours of working slightly to bring these into line with the other operations onsite, to operate from 07:30 to 18:00 Monday to Friday and 07:30 to 13:00 Saturdays. There is no working currently and there would be no working on Sundays, Bank or Public Holidays on either the existing area or the extension. This has been shown to not increase the Quarry’s impact on the amenity of the local area, as demonstrated in the Noise assessment in Chapter 9.

Excavations are conducted using a tracked 360° backhoe machine working successive 2m deep benches down to the lower limit of the deposit. Excavated minerals are either loaded into dumper trucks or on to site conveyors for transport to the Plant Area for processing.

Fixed quarry plant comprising a deck screen, crusher, wash plant and trommel screens are used to process the excavated mineral to produce individual quarry products. The plant is powered by diesel/electric generators. The design of quarry plant has been refined over the course of the last two decades and is capable of producing high-quality single size gravels and building sands to a wide range of construction specifications. Processed sands and gravels are stockpiled separately pending export off site or delivery to the Mortar Plant as required. Silt from the washing process is pumped into lagoons for settlement and to allow the recovery of process water for re-use.

Topsoils are stripped from successive quarry phases only when in a dry and friable condition (usually between the months of March to October) and placed in stockpiles of 1.5m with minimum compaction. Topsoil stockpiles are graded to shed water and to ensure stability. They are located on previously stripped areas, seeded and kept weed free, in accordance with best practice.

Where possible, topsoil is stripped and placed directly on previously sub-soiled areas to minimise soil structural damage and losses due to repetitive handling, in the sequence illustrated in the Phasing Plan (Figure 2-2) where material from C will be placed onto B, and material from 2 is placed onto 1, etc.

Loading shovels are employed to move products to stockpile areas and to load road vehicles for delivery to customers.
Figure 2-3 - Process Flow Diagram

All Phases


Topsoil to Stockpiles → Restoration of Previous Phase → Processing Plant (washing/screening) → Process Water

- 10mm Gravel → Product Stockpiles
- 20mm Gravel → Product Stockpiles
- 40mm Gravel → Product Stockpiles
- Fine Sand → Product Stockpiles
- Coarse Sand → Product Stockpiles
- Silt → Settling Lagoon

Export Off-site (Road Vehicles)

Chapter 2-6
A legal agreement on the planning permission restricts the total number of vehicle movements generated by all quarrying and associated activity at the site to 200 per day. It is expected that this will continue into the future; the Highways Assessment and Air Quality Assessment use this as the maximum base case.

**Main Haul Road**
To reduce vehicle noise and minimise the raising of dust, the main haul road is constructed from reinforced concrete along its full 1,000m length. Designated passing places ensure that vehicles do not mount the kerb or deviate on to unsurfaced areas to avoid queuing.

**Weighbridges**
A pair of weighbridges located adjacent to the Site Control Office at the Quarry entrance are used to weigh vehicles leaving the quarry with processed sands and gravels and those delivering materials to the Composting and Inert Waste Recycling Facility. Full details of the customer, vehicle, tare weight, product or waste type and date and time of transaction are stored on the site’s computer database and used to compile reports required for compliance with Planning and Environmental Permit Conditions. Physical copies of delivery notes and Waste Transfer Notes are retained on file.

**Mud & Debris Contamination of Public Highway**
Measures to prevent the deposition of mud and debris on the public highway are inherent to the design of the site. Collection and delivery vehicles accessing from and exiting to the highway are confined to areas having a hard-core or concrete surface that can be swept or brushed clean as necessary. The long, concrete-surfaced haul road from the site to the highway is sufficient for any loose mud or other debris to be spun off the vehicles before joining the highway. The haul road is swept regularly to prevent the build-up of such material. As mentioned above, the provision of designated passing places ensure that vehicles do not mount the kerb or deviate on to unsurfaced areas. Additionally, site staff inspect vehicles prior to exiting the Quarry in accordance with Site Rules.

In the event that such material from the site was deposited on the highway, the source would be identified and isolated from further trafficking. A tractor-drawn rotary brush or other suitable mobile plant would be employed to clear the affected area of the highway.

Planning Conditions impose controls on the activities to limit the generation of operational noise. Controls include restricted working hours (see above), the fitting and appropriate maintenance of effective engine silencers to mobile plant, scheduled maintenance of quarry fixed plant and vehicle speed restrictions. Plant feed hoppers are constructed with non-resonant materials or damped to reduce low frequency emissions and standard operational procedures require the minimisation of drop heights. For more on Noise, see Chapter 9.

Dust generated by crushing, screening, blending and that generated by delivery vehicles and general mobile plant movements are controlled by measures detailed below.

**Dust Control Measures**
Where necessary, loads are sprayed with water by mobile plant (tractor and bowser) to damp down and contain such material.

Stocks of material awaiting crushing or screening are maintained at an appropriate moisture content by the addition of water when necessary. To prevent generation of dust, haul roads and site surfaces are sprayed with water where necessary during periods of dry weather. For more on Dust, see Chapter 10.

**Proximity**
Site staff and visitors approaching within 250m of crushing or screening activity are required to wear suitable particulate filter masks.

**Wind Entrainment**
Loading, crushing and / or screening activity are suspended when the prevailing wind may entrain dust and particulates and transport them towards a sensitive receptor.
2.2.4 Associated Development

There are 3 additional associated land uses within the boundary of Brinklow Quarry with separate extant Planning Permissions. Namely:

- The Mortar Plant;
- Open Windrow Composting Facility; and
- The Inert Waste Recycling Facility.

These uses are symbiotic to the quarrying and agricultural activities and are accordingly conditioned to co-terminate with the main quarry Planning Permission Ref. R687/1547/1486/P. Appropriate permissions for continuing these operations will be applied for.

Mortar Plant

Brinklow Quarry produces sands to a specification suitable for the production of quality-assured mortars. The on-site mortar plant is operated by an independent BSI registered manufacturer and produces a range of consistent ready-to-use mortars for the construction market and by so doing generates a significant demand for the quarry’s building sand.

Open Windrow Composting Facility

The site has the capacity to manufacture a range of green-waste derived compost grades under the auspices of the PAS 100 Standard and Quality Protocol. Composts are applied to adjacent farmland in order to reduce its reliance on synthetic soil ameliorants. Selected overburden and by-products from the inert recycling activities can be blended with composted organic materials to produce British Standard 3882(2015) compliant topsoil. As such the facility provides a sustainable end-market for municipal and commercial green waste and inert waste products.

Inert Waste Recycling Facility

Products from the IWRF are manufactured under the terms of the EA/WRAP Aggregates Protocol and constitute a sustainable supplement to the range of virgin aggregate products offered by the quarry. Products include:

- an alternative to “MoT Type One” road stone,
- washed drainage / pipe bedding gravel and
- recycled fill sand.

Screened subsoils and inert fines from the crusher are blended with compost from the Composting Facility to manufacture a topsoil-like material to complement the Quarry’s product range.

Waste Packaging glass is reprocessed at the Inert Waste Recycling Facility and used in the production of recycled pipe bedding gravel and fill sand.

These products offer an alternative to virgin materials and their inclusion has helped extend the life of the resource at Brinklow Quarry whilst also likely reducing the carbon footprint of the products it offers.

2.3 Restoration and After-care

It is proposed that restoration arrangements currently permitted under the Conditions of the existing Planning Permission are revised to reflect a more sustainable location of water bodies, considering the relative depth of the water table on the eastern and western extremities of the site. If only the Section 73 is approved, the existing restoration scheme will stand as the restoration concept however this is not optimal in terms of the water table onsite. The water table in the bottom of the site, where the lake was originally envisaged, is too low and water would need to be pumped there in order to maintain a water body. The new Restoration concept takes advantage of the naturally high water table in these areas. The Restoration Scheme in Figure 2-4 shows the final restoration concept applied for under these applications.
Figure 2-4 - Restoration "After" Map if both applications approved
Phased reinstatement of worked out areas is effected by re-spreading stockpiled overburden to an agreed profile to create a restored landform conducive to the site’s agricultural after use and habitat diversification aspirations in harmony with the local landscape character.

The restoration scheme is designed to return the quarried area to agricultural production with tangible benefits to all areas in terms of landscape improvement and habitat diversification through tree planting and wetland creation. The scheme aims to deliver high-quality restoration and long-term agricultural and landscape benefits.

Topsoil and overburden are stripped and stockpiled to expose the mineral deposit in successive Phases. On conclusion of the mineral extraction activities in each Phase, stockpiled topsoil and overburden is re-spread to restore the landform to an agreed restoration profile. This progressive approach ensures that the minimum possible area remains unrestored at any given time. Certain areas, such as B to F and 4 and 3, would form the lakes of the final restored area, shown in Figure 2-4.

Sufficient top and subsoils would be stored to ensure a minimum combined depth of 1.0m below the approved final restoration profile. The restored land will be managed in accordance with a programme of after-care designed to comply with Mineral Planning Guidance Note 7 (The Reclamation of Mineral Workings).

Additional hedgerows and wildlife corridors will be planted and maintained. The lakes would be managed so that large waterfowl were not attracted, in accordance with policies on Airport Safeguarding (please see Chapter 14 on Airport Safeguarding). The impact of these proposals is covered in Chapter 7 on assessing the impact of each application and the restoration plans on the local and national ecology.

The main benefits of the Scheme are as follows:

i. The return of quarried areas progressively to agricultural production during the operational lifetime of the quarry and thereafter,

ii. The development of specific habitats to encourage diversification and proliferation of wildlife during and beyond the operational lifetime of the quarry, including for great crested newts, sand martins, reptiles, hedgerow species and others.

iii. The creation of a harmonious landscape in keeping with the surrounding agricultural land uses, and

iv. The retention of existing features and to provide continuous amenity to the local area.

2.4 Assessment

These operational and restoration plans were assessed in order to describe the environmental impact that these proposals would have on the local area. These assessments are presented in this ES. The baseline of the site and the local area was also taken into account, which is the subject of the next chapter in this ES.
3. **Development Site Description**

3.1 **Description of the Site**

Brinklow Quarry is located near the village and parish of Brinklow, in the Rugby district of Warwickshire (address: Brinklow Quarry, Coventry Road, Brinklow, Rugby, CV23 0NJ). The site is located approximately 1 kilometre south west of Brinklow village, 7 kilometres east of Coventry and 9 kilometres west of Rugby at Grid Reference SP 42169 78363.

The site is accessed directly from the B4027 (Coventry Road), with the quarry and associated recycling and manufacturing operations sharing a single entrance. A security gate of height 2 metres controls access, with roadside splays ensuring adequate visibility for vehicles leaving the site. Secure fencing encloses the quarry and surrounding agricultural land, with CCTV cameras placed at strategic locations to allow for 24-hour monitoring.

The general location of the quarry and main offices are shown in Figure 3-1 below:

*Figure 3-1 - Site Location*
Figure 3-2 below shows an aerial view centred on the existing quarry development.  

*Figure 3-2 - Aerial View of the existing operational quarry area, Google Maps 2010*

## 3.2 Site History

Brinklow Quarry was founded by the late Mr. Tony Aston as a diversification from the family arable farm which was started in 1963. Planning Permission Ref: R687/1547/1486/P was granted for the quarry in operation today in 1991.

Over the past two decades the quarry has developed into both a valued resource for the local construction industry and a supplier of aggregates to local residents and Warwickshire. Brinklow Quarry currently has contracts with major UK companies to supply materials ranging from building sand to clay. The existing quarry had a total estimated tonnage of 3.5 million tonnes of material in-situ with approximately 1.7 million tonnes of the remaining aggregate available for future extraction. An aggregates recycling operation at the quarry has extended the estimated life span of the quarry whilst also performing a valuable service for the county and making a significant contribution to Central Government’s hierarchical approach to waste management.

The business is now managed by Tony Aston’s sons, Mark Aston and Dale Aston, who continue to run the quarrying operations alongside the large family arable farm. The following table is a list of planning permissions that have been granted for areas of land within or linked to the quarry boundary since 2001.

*Table 3-1 - Summary of Existing Planning Permissions granted since 2001*

<table>
<thead>
<tr>
<th>Reference number</th>
<th>Description</th>
<th>Granted Date</th>
<th>Material</th>
<th>Tonnage</th>
</tr>
</thead>
<tbody>
<tr>
<td>R687/00CM023</td>
<td>Shredding and Composting of green Waste</td>
<td>24/05/2001</td>
<td>Green Waste</td>
<td>25,000 tonnes pa – in accordance with Environmental Permit GP3098CN/V002</td>
</tr>
</tbody>
</table>

Chapter 3-2
<table>
<thead>
<tr>
<th>Reference number</th>
<th>Description</th>
<th>Granted Date</th>
<th>Material</th>
<th>Tonnage</th>
</tr>
</thead>
<tbody>
<tr>
<td>R687/05CM018</td>
<td>Construction of a mortar plant and associated site infrastructure at land within Brinklow Quarry</td>
<td>06/10/2005</td>
<td>N/A</td>
<td>N/A – Permit number 88/EPR</td>
</tr>
<tr>
<td>R687/06CM011</td>
<td>Production of Loams, Soil Conditioners, Recycled Aggregates, Sale and Distribution of Imported Aggregates</td>
<td>07/02/2007</td>
<td>Loams, Soil Conditioners, Recycled Aggregates</td>
<td>75,000 tonnes pa - in accordance with Environmental Permit GP3098CN/V002</td>
</tr>
<tr>
<td>Section 106</td>
<td>Condition of Operating Quarry</td>
<td>14/01/2009</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>R687/07CM033</td>
<td>Change of Use of farm buildings to In Vessel Composting</td>
<td>16/04/2009</td>
<td>Food waste, green waste,</td>
<td>35,000 tonnes pa – in accordance with Environmental Permit GP3098CN/V002</td>
</tr>
<tr>
<td>R09/0567/HRN</td>
<td>Removal of 3 hedgerows</td>
<td>19/11/2014</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>R09/0509/CC</td>
<td>Change of Use of grain store to materials recycling facility for dry recyclables</td>
<td>06/07/2009</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>RBC/13CM006</td>
<td>Construction of a barrier and landscaped bund to the eastern and southern boundary of the existing in-vessel composting maturation pad</td>
<td>22/04/2013</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Permitted development</td>
<td>Utilising quarry land for the bagging of quarry products including concreted hard standing, bays &amp; shed for bagging equipment</td>
<td>Confirmation 07/06/2013</td>
<td>Products for bagging</td>
<td>N/A</td>
</tr>
<tr>
<td>RBC/13CM011</td>
<td>Amendment of the existing recycling facility, and to allow the importation and recycling of waste glass to produce recycled aggregates at Brinklow Quarry.</td>
<td>07/06/2013</td>
<td>Waste Glass</td>
<td>Incorporated within planning permission R687/06CM011</td>
</tr>
<tr>
<td>RBC/14CM021</td>
<td>Installation of fixed plant / machinery for the recycling of inert waste at the existing Inert Waste Recycling Facility (IWRF) within the Brinklow Quarry site</td>
<td>14/10/2014</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>R13/0308</td>
<td>Erection of on-farm anaerobic digestion plant with associated infrastructure and perimeter bund</td>
<td>19/11/2014</td>
<td>Maize silage</td>
<td>23,800 tonnes pa in accordance with Environmental Permit CB3800CY/A001</td>
</tr>
</tbody>
</table>
The waste developments on-site are linked to the quarry lifespan and are of county importance; the Warwickshire Waste Core Strategy mentions the Brinklow Quarry site and its capacity by name.

3.3 Characteristics of the Local Environment
A site check report using Magic.gov.uk shows that the site and its environs:

- Are in a Nitrate Vulnerable Zone;
- Granted Green Belt status by Rugby Borough Council;
- Local Landscape Character is designated Dunsmore and Feldon, with a provisional agricultural land classification of Grade 2 or 3;
- The area has a land use class of 6 under the Dudley Stamp Land Use Inventory meaning that it is classed as agriculturally unproductive land (buildings, mines, etc.);
- Mixed farming is listed as the primary land use around the project;
- The site lies within the SSSI Impact Risk Zone for Combe Pool SSSI;
- Within 2km there are three ancient woodlands, Birchley and New Close Wood, High Wood and Little Wood;
- There are no other internationally designated sites within 10km of the site; and
- The Environment Agency shows no recorded pollution incidents onsite or nearby.

3.4 Consideration of Alternatives
Without the proposed extension of time, Brinklow Quarry’s operation would need to cease by May 2016.

Alternative locations include the location proposed in the current adopted Minerals Local Plan for Warwickshire 1995 (saved policies). Inset map PA4 of this document shows the preferred area for sand and gravel under this adopted plan, reproduced as Figure 3-3.
The County Council is currently preparing a replacement Minerals Local Plan. The formal consultation is scheduled to commence in September 2015, with a Preferred Option and Policies Document to be consulted on which has not yet been released. In support of this process the Applicant responded to the call for sand and gravel sites in December 2014 proposing inclusion of the existing quarry and the extension area or inclusion in the Local Plan.

Previous documents prepared by the Council that include Brinklow Quarry’s future plans include:

- Minerals Core Strategy – Revised Spatial Options document; the consultation ran from the 19th February 2009 to 8th May 2009. Site 15 and Site 17 relate to Brinklow Quarry:
Figure 3-4 - Site 15 in the Minerals Spatial Plan 2009
Figure 3-4 shows the extension of area as Proposal A to the North of the existing Brinklow Quarry site. Proposal A south section and Figure 3-5 show the area that is included in the current Minerals Local Plan 1995. On investigation, it was found that this site was deficient in reserves. The proposed extension area shown in Figure 2-1 and as the north section of Proposal A in Figure 3-4 is rich in dryscreen sand which is in demand in Warwickshire. At this location there is c4m dryscreen
sand on top of 3m sand / gravel mixture, as opposed to 1m dryscreen sand lower down the valley. This is substantiated by reserve boreholing and studies undertaken on-site.

The need for this substrate is substantiated by the Draft Warwickshire Local Aggregate Assessment.

- Draft Warwickshire Local Aggregate Assessment - Warwickshire County Council has produced a Draft Local Aggregate Assessment (2014), which identifies that the County is not meeting its required sand and gravel apportionment of 1.043 million tonnes per year. Sales of sand and gravel have only met this apportionment once in the period 2003-2012, and in 2012 (most recent data) were only one third of this quantity.

Brinklow Quarry is the only site in the county producing any sand and gravel, with few other deliverable sites in the pipeline, meaning continued operation at Brinklow Quarry is highly important to the County as well as nationally.

Policy issues are discussed further in Chapter 4.
4. Planning Policy Considerations

4.1 Introduction
This chapter provides an assessment of the relevant policy framework pertinent to the determination of the proposed developments. It includes a review of UK national policies, strategic mineral and waste policies and local plan policies relevant to the proposal. The following policy instruments relate specifically to the proposals:

- National Planning Policy Framework
- Warwickshire Minerals Local Plan 1995 (Saved Policies)
- Warwickshire Waste Core Strategy – Adopted Local Plan (2013 - 2028)
- Rugby Borough Council Core Strategy 2011

Also relevant to the proposal are the following:

- WCC - Minerals Core Strategy, Revised Options (2009)
- Waste and Minerals Planning Practice Guidance
- Referendum Version of the Coton Forward Neighbourhood Development Plan 2014-2026

Section 38(6) of the Planning and Compulsory Purchase Act 2004 states:

> ‘If regard is to be had to the development plan for the purpose of any determination to be made under the planning Acts the determination must be made in accordance with the plan unless material considerations indicate otherwise.’

4.2 National Planning Policy Framework
The National Planning Policy Framework (NPPF) came into force in March 2012 and replaced all of the existing planning policy statements and minerals policy statements, excluding those relating to waste. At the heart of the NPPF is a presumption in favour of sustainable development, which should be seen as a golden thread running through when making decisions on planning applications. The NPPF identifies the three inter-dependent dimensions of sustainable development, namely the economic, social and environmental roles, and the need to balance economic growth with the protection and enhancement of the environment (including the minimisation of waste and pollution).

Paragraph 12 of the NPPF states that:

> ‘Proposed development that accords with an up to date Local Plan should be approved and proposed development that conflicts should be refused unless other material considerations indicate otherwise.’

It should be noted that the existing minerals and waste operations were previously determined to be in accordance with the extant structure plan and waste local plan. This document will demonstrate that the extension of such operations will continue to be in accordance with the current Development Plan.

While not directly applicable to decision taking, paragraph 143 of the NPPF requires Local Planning Authorities, when preparing plans, to protect (inter alia) existing, planned and potential sites for …the handling, processing and distribution of
substitute, recycled and secondary aggregate material. It is considered that in this respect, the continued minerals and waste developments at the Brinklow site are supported by the policies within the NPPF.

Section 9 of the NPPF considers the Green Belt, with Paragraph 79 stating that the Government attaches great importance to Green Belts and that the fundamental aim of Green Belt policy is to prevent urban sprawl by keeping land permanently open; the essential characteristics of Green Belts are their openness and their permanence. Paragraph 80 sets out the five purposes served by the Green Belt:

- to check the unrestricted sprawl of large built-up areas;
- to prevent neighbouring towns merging into one another;
- to assist in safeguarding the countryside from encroachment;
- to preserve the setting and special character of historic towns; and
- to assist in urban regeneration, by encouraging the recycling of derelict and other urban land.

Paragraph 90 states that mineral development is not inappropriate in Green Belt provided it preserves the openness of the Green Belt and does not conflict with the purposes of including land in Green Belt. The proposed quarry extension would complement the current permitted mineral and waste operations and ensure that the important virgin mineral is husbanded as much as practicable. It is considered that, given the current permitted land uses at Brinklow Quarry and the fact that no additional buildings or plant are proposed for the site, the proposed development would not conflict with the five stated purposes of the Green Belt and would not constitute inappropriate development. It is also proposed to restore the site to a mixture of high quality agriculture, woodland and wetlands, which will ensure that the integrity of the Green Belt is maintained over the longer term.

4.3 National Planning Policy for Waste (NPPW) (2014)

The NPPW replaced the waste policies previously contained in PPS 10. The NPPW is pertinent to this application as several waste operations have been approved at the site on a temporary basis. Such operations include green waste composting and an inert waste recycling facility that produces important recycled aggregates for the local and regional markets. The NPPW sets out the Government’s ambition to work towards a more sustainable and efficient approach to resource use and management. It states that positive planning plays a pivotal role in delivering the country’s waste ambitions through, amongst other matters, delivery of sustainable development and resource efficiency by driving waste management up the waste hierarchy and helping to secure the re-use, recovery or disposal of waste without endangering human health and without harming the environment.

Paragraph 6 of the NPPW states that Green Belts have special protection in respect to development. In preparing Local Plans, waste planning authorities, including by working collaboratively with other planning authorities, should first look for suitable sites and areas outside the Green Belt for waste management facilities that, if located in the Green Belt, would be inappropriate development. Local planning authorities should recognise the particular locational needs of some types of waste management facilities when preparing their Local Plan. There are co-locational benefits arising from the waste operations being sited on the active sand and gravel quarry, which have previously been demonstrated when such operations were permitted. It is considered that the current proposals continue to constitute sustainable development, do not introduce inappropriate development in the Green Belt and do not conflict with the thrust of this policy document.

4.4 Waste Management Plan for England 2013

by using the waste hierarchy as a guide to sustainable waste management. The continued operation of the recycling facilities at the site and the use of inert waste in the phased restoration of the Brinklow Quarry will ensure that significant quantities of waste will be recycled and recovered, rather than disposed of at landfill.

4.5 Development Plan Policies

4.5.1 Warwickshire Waste Core Strategy – Adopted Local Plan 2013-2028

The Warwickshire Waste Core Strategy sets out policies in respect of directing future waste development. The strategy notes that Brinklow currently manages a significant green waste composting contract on behalf of Coventry CC, with a further 50,000 tpa of AD capacity also permitted at the site. In terms of C&D recycling/recovery, paragraph 4.47 states that between 103,450 tpa and 496,458 tpa of additional capacity may be required during the plan period. Due to the waste operations at the site being linked to the quarrying operations, the closure of Brinklow Quarry would further impact on the County’s ability to provide sufficient recovery and recycling capacity for C&D waste and therefore significant weight should be attached to the need for the continued minerals and waste uses at the site.

The Vision Statement states that ‘By the end of the plan period in 2028, Warwickshire will have delivered equivalent self-sufficiency in its waste management capacity….All new waste developments will have facilitated the management of waste in accordance with the principles of the Waste Hierarchy…Recycling, composting and energy recovery will have increased significantly in the county to meet national targets in line with the Waste Framework Directive and waste to landfill will have been minimised….and In turn this will have facilitated waste reduction and prevented the unnecessary use of resources by promoting the value of managing waste as a resource. It is considered that the proposed developments would contribute, in a sustainable manner, to meeting the general aspirations of the Waste Core Strategy.

Policy CS1 – Waste Management Capacity states (inter alia) that the County Council will seek to ensure that there is sufficient waste management capacity provided to manage the equivalent of waste arisings in Warwickshire and, as a minimum, achieve the County’s targets for recycling, composting, reuse and landfill diversion, and, that when considering development proposals for all waste streams, the Council will take a positive approach that reflects the presumption in favour of sustainable development contained in the National Planning Policy Framework.

In terms of C&D capacity, it is important to note paragraphs 3.76 – 3.77 of the 2012/2013 Minerals & Waste Development Framework Annual Monitoring Report (AMR) (the latest available). Reference is made to the need to meet the Waste Framework Directive target of 70% recovery of C&D waste by 2020. It is also noted that, while there is roughly sufficient recovery capacity up to 2020, a significant proportion of that capacity is time limited (including the permissions subject to this application). The extension of time for the current waste management operations would ensure that the County continues to provide sufficient inert C&D waste recovery to meet the County’s needs.

This proposed development would allow the waste operations to continue to contribute, albeit on a small scale, to reducing reliance on landfill, where capacity is very limited, and to increasing the supply of recycled aggregates. This would assist in making up the County’s shortfall in primary aggregate production and the Region’s increased requirement for recycled aggregates. It is considered that significant weight should be afforded to these benefits.

Policy CS2 sets out the Spatial Waste Strategy for Warwickshire, stating that preference will be given to proposals that are in accordance with the broad locations set out in the Key Diagram and policies CS3 and 4, where individual sites are well located to sources of waste and the strategic transport infrastructure. The
policy goes on to state the preferred kind of sites for new waste developments. These proposals sit comfortably with Policy CS2 as the application site is located within the Broad Location close to Coventry Major Urban Area (MUA) and is at an active mineral site, which also benefits from existing waste management uses.

The throughput of the waste management facilities at the site would exceed 50,000 tonnes per annum and therefore Policy CS3 is applicable. Again, the proposals meet the criteria for this policy as the site is located with 5km of the Coventry Major Urban Area.

Policy CS5 states that proposals for (inter alia) recycling operations will be encouraged provided that the proposal accords with all other relevant policies. It is considered that the proposals do accord with all other policies and therefore has in-principle support.

Policy CS8 states that the County Council will seek to safeguard existing waste facilities and sites in suitable locations with a permitted waste management use. It is considered that the Brinklow site is a suitable location, with permitted waste management uses and therefore there is in-principle support for the continuation of the waste management operations currently taking place at the site.

Policy DM1 seeks to conserve, and where possible enhance, the natural and built environment by ensuring that there are no unacceptable impacts upon natural resources, biodiversity, geodiversity, archaeology, heritage and cultural assets and their settings, the quality and character of the landscape, adjacent land uses or occupiers and the distinctive character and setting of the County’s settlements. The proposed developments should also satisfy Green Belt policies, demonstrate that valued landscapes, sites, species habitats and heritage assets of international and national importance will be preserved or conserved, and where possible, enhanced.

It is considered that the location of the extant operations means that their continued use would not have an unacceptable adverse impact on any valued bio/geological asset, nor on any designated or landscape or heritage assets. As discussed in Paragraphs 4.6 & 4.7 above, it is also considered that the proposals satisfy the Green Belt policies.

Policy DM2 - Managing Health, Economic and Amenity Impacts of Waste Development seeks to protect the local environment, economy and communities from unacceptable adverse impacts such as noise, lighting, dust and road traffic either individually or cumulatively with other existing or proposed developments.

The development would not lead to an increase in HGV movements beyond that currently permitted, and the current operations do not adversely impact local water resources or generate noise, odour, vibration or a significant adverse visual intrusion.

In the light of the above it is considered that individually there would be no unacceptable impacts on sensitive receptors from any of the matters listed in the policy. With regard to the issue of cumulative impact, it is also considered that there is nothing out of the ordinary or unusual about the developments which would make acceptable individual impacts unacceptable in combination.

Policy DM3 – Sustainable Transportation requires developers to demonstrate that the proposal facilitates sustainable transportation. The proposal to extend the life of the existing operations and extend the quarrying operations into adjacent land would not lead to an increase in HGV traffic above that previously considered acceptable. The waste being recycled has been collected and bulked via municipal and commercial waste contracts within the Warwickshire area and the application site has previously been considered a sustainable location for waste and mineral uses. It is therefore considered that the current applications accord with this policy.

Policy DM8 – Reinstatement, restoration and aftercare states that planning permission for waste management uses in the open will not be granted unless
satisfactory provision is made for high quality reinstatement or restoration and the long term management of the site’s after use. In this instance, the waste proposals are for a temporary period and are linked to the life of the surrounding quarrying operation. The extant quarrying permission(s) has appropriate restoration and aftercare conditions (and is subject to the periodic review system under Schedule 14 to the Environment Act 1995) and it is therefore considered that the applications accord with this policy.

4.5.2 Warwickshire Minerals Local Plan

The following policies of the Warwickshire Minerals Local Plan (1995) have been saved by the Secretary of State and are considered relevant to the planning applications. While the policies are dated, they still form part of the statutory Development Plan and should be afforded weight accordingly.

Policy M1 states that areas have been defined on the Proposals Map as ‘Areas of Search’ and ‘Preferred Areas’ and that permissions will normally only be given within these areas. An area of land at Brinklow Quarry is identified on Proposals Map Inset PA4. While this area of land has benefitted previously from planning permission to quarry sand and gravel, it is clear from this policy that the Brinklow site is considered a suitable location for mineral extraction.

Policy M4 states that applications for planning permission for the working of sand and gravel will be considered in the context of an assessed regional demand and the aim to provide and maintain a stock of permitted reserves in accordance with the latest national and regional guidelines throughout the plan period.

In terms of permitted reserves, paragraph 4.10 of the 2012-2013 MWDF AMR states that multiple sites have closed in recent years and that this has resulted in a low landbank of around 4 years. It goes on to state that the apportionment for sand and gravel production within Warwickshire is for the production of 1.043 million tonnes (mt) of sand and gravel per annum over the period 2001 – 2016. It is clear from Table 4.2 in the AMR that the current sales from the much reduced sites are around one-third of the required apportionment. In order to try and address this shortfall, Warwickshire CC has carried out another ‘Request for Sites’ in order to try and determine how many new sites will be required over the plan period. The results of this request are yet to be published.

The Warwickshire Draft Local Aggregate Assessment (2014) considers in more detail the recent, current and future demands for minerals in the county. On page 23 it states that, ‘Evidence from past sales over the last 10 years and the general conditions on the ground demonstrate that Warwickshire will struggle to meet the current sub-regional apportionment set out in the current guidelines, which are due to be replaced in 2016. It is proposed that moving forward from 2016, that the apportionment should be reduced from 1.043 mtpa to 0.751mtpa. Notwithstanding this reduction, the most recent years have provided sales of only 0.4 mtpa and with other sites being left dormant or closed, it is clear that there this a demonstrable need for the Brinklow site to continue to play a vital role in meeting the sand and gravel needs of the county and wider West Midlands region.

In the light of the above, it is considered that there is an overriding need for the continued mineral extraction and inert waste recycling and also the proposed quarry extension to meet future aggregate requirements.

Policy M6 states that applications for the extraction of minerals whether within or outside the identified areas of search and preferred areas will be considered on the basis of the provisions of the Development Plan and their likely overall impact on (inter alia):

1. Operational and economic needs;
2. Physical restraints:
   a. existing and proposed developments in the area
b. areas of woodland, conservation, geological, geomorphological and ecological value

c. sites and landscapes of historical and archaeological importance

3. Other considerations:
   a. Transport
   b. Agricultural land quality and the feasibility of achieving a high quality restoration to an appropriate use
   c. the quality and quantity of surface and underground water
   d. living conditions for people

4. Policy Considerations:
   a. Green Belt

It is considered that the continuation of the existing operations at the Brinklow site and an extension to the mineral extraction operations would not have unacceptable impacts on the constraints listed in Policy M6.

**Policy M9** states that restoration of workings to a high standard and a beneficial after use will be required in accordance with the Development Plan. Satisfactory arrangements for aftercare will also be sought. The current workings are taking place in a phased manner with restoration and aftercare taking place in accordance with approved schemes. The proposed extension will require an update to the current phasing scheme, and the highest standard of restoration is paramount to the landowner and operator. There are no reasons why an acceptable restoration scheme cannot be secured and therefore the proposals do not conflict with this policy.

4.5.3 Rugby Local Development Framework Core Strategy

Rugby Borough Council adopted its Core Strategy on 21st June 2011. This sets out the long-term spatial vision for the Borough and the strategic policies which will deliver that vision.

**Policy CS1: Development Strategy** states that the location and scale of development must comply with the settlement hierarchy. It must be demonstrated that the most sustainable locations are considered ahead of those further down the hierarchy. The site lies in the Green Belt, where only development that accords with national policy will be permitted. As stated in paragraph 4.7 above, it is considered that the proposals do not conflict with the national Green Belt policies and, therefore, that the proposals are not contrary to this policy. There is one Neighbourhood Plan due to be determined via a referendum in October 2015 at Coton Park. It is considered that this plan area is sufficient distance from the Brinklow site not be relevant to this proposal.

4.6 Policy Summary and Conclusions

This assessment of the policy considerations is pertinent to the applications to extend the life of mineral and waste operations at Brinklow Quarry, including an extension to the mineral extraction facility.

The Government is committed to a plan led system, with the Development Plan forming the basis for all planning decisions. Legislation confers a presumption in favour of development proposals which accord with the Development Plan, unless material considerations indicate otherwise.

From the assessment above it is clear that the existing Brinklow minerals and waste site is of strategic importance to the county and plays an important role in meeting the county and region’s sand and gravel apportionment and waste management requirements. The current operations take place in accordance with the Development Plan and do not generate unacceptable impacts on local communities or the environment.
It is considered that the proposed quarry extension would go some way to meeting the County’s sand and gravel requirements and the current shortfall in capacity represents an overriding need for the proposed extension. The economic benefits arising from the current site should be afforded considerable weight, with 35 direct full time employee equivalents relying on the Brinklow site, in addition to around ** indirect posts allied to the operations.

It is considered that the proposals are in conformity with the Development Plan policies, that the minerals and ancillary waste operations are not unacceptable developments in the Green Belt and that there are no material considerations, which would warrant a refusal.
5. Impact on Highways and Public Rights of Way

5.1 Introduction

An assessment of the transport related impacts of the current development was undertaken. The assessment has reviewed all modes of travel to and from the site, the focus, with regard to likely environmental impacts, on vehicular traffic.

The pre-application advice letter dated 5th August 2015 simply states that both the EIA for the extension of time and the extension of area should include a chapter on Highways and Traffic, and transport, respectively. As this is the combined EIA for these applications this chapter represents these requirements.

A low level assessment is appropriate as the vehicle movements are not anticipated to change from the level they are currently, either due to the extension of time or the extension of area that would be worked. This Transport Assessment looks in detail at the potential traffic impacts of the proposals, and focuses on the impact of the current levels of transport generated by the cumulative effect of the proposals into the future.

5.2 Methodology

The transport assessment is a low level assessment to determine the significance of the Brinklow Quarry applications on the local road network. The two applications are an extension of time to the existing approved quarry (a section 73 application) and an extension to the area that the quarry will be able to access (a new application).

Currently, the quarry is accessible by road only. Material is moved to where it is required by Heavy Goods Vehicles (HGVs). Overall, the existing quarry has permission for 100 vehicles per day, therefore 200 two-way movements. To represent a worst case in this assessment, it has been assumed that 100% of the vehicles will be HGVs. There will not be additional HGV movements that exceed the total permitted under the extant consent. It reality some of the traffic entering site will be commuters, using cars. The local road conditions predicate that pedestrian and cycleway use would be limited by the staff and employees at Brinklow Quarry.

Background traffic counts were accessed from the Department of Transport website. These are available from 2008 to 2014. The existing quarry has been operating since permission was granted in 1991. As a result the background traffic data contains vehicles already originating from the quarry. It is felt that by adding 100 vehicle movements each way on top of the vehicles already captured in the data, that this is modelling a worst-case scenario.

5.2.1 Policy and Legislation

The assessment contained within this chapter has been undertaken generally in accordance with the guidelines on the preparation of ‘Environmental Impact Assessments’ produced by the Department for Transport, which refers to the Design Manual for Roads and Bridges Volume 11. In addition, Paragraph 32 of the National Planning Policy Framework sets out that developments that generate significant amounts of transport movements should be supported by a Transport Statement or Transport Assessment.

Local planning authorities must make a judgement as to whether a development proposal would generate significant amounts of movement on a case by case basis (i.e. significance may be a lower threshold where road capacity is already stretched or a higher threshold for a development in an area of high public transport accessibility).

For the purposes of this assessment, where the existing situation models exactly what the impact of the proposals will be, i.e. there will not be a change in traffic generated by the extension to time, extension to area or cumulatively together, it was felt that assessing whether there was a change of 5% or greater would be considered significant and require further study.
At a national level, transport policy is underpinned by five national transport goals which were set by the Government for the development of the UK’s future transport policy and infrastructure. These national goals and associated challenges were identified in the Department for Transport’s publication ‘Delivering a Sustainable Transport System’ (DaSTS) in 2008. The five goals are:

1. To reduce transport’s emissions of carbon dioxide and other greenhouse gases, with the desired outcome of tackling climate change;
2. To support economic competitiveness and growth, by delivering reliable and efficient transport networks;
3. To promote greater equality of opportunity for all citizens, with the desired outcome of achieving a fairer society;
4. To contribute to better safety, security and health and longer life expectancy by reducing the risk of death, injury or illness arising from transport, and by promoting travel modes that are beneficial to health; and
5. To improve quality of life for transport users and non-transport users, and to promote a healthy natural environment.

These underpin the Warwickshire Local Transport Plan, produced by Warwickshire County Council.

The third Warwickshire Local Transport Plan (LTP3) came into effect on 1st April 2011. LTP3 sets out the transport policies and strategies for the County for period 2011-2026 and replaces LTP2 (2006-2011). This policy locates the development in Eastern Warwickshire, comprising Rugby and its large rural hinterland to the west and north. This area has strong transport links with Coventry, Northampton, Daventry and Leicester. Warwickshire is traversed by a number of motorways and trunk roads, including the M6, M6 Toll, M40, M42, M45, M69, A5, A38, A45 and A46. Parts of the M1 and A14 also pass close to the County boundary. There are important interchanges on this network at Longbridge near Warwick (M40/A46), Tollbar End near Coventry (A45/A46) and the M69/A5 junction on the Warwickshire/Leicestershire border near Hinckley. In addition, the M1/M6/A14 intersection at Catthorpe provides a major interchange just outside the County within Leicestershire. Figure 5-1 is an extract of the Transport Plan and identifies the key routes and the main roads in Warwickshire.
The roads identified by this assessment as the main roads leading to Brinklow Quarry are not named as one of the key routes on the County road network, however these core roads are supplemented by B and C roads, which can carry significant volumes of local and medium distance traffic. Brinklow Quarry is close to the A46 as the main arterial road that allows it to deliver to its customers.

The overall objectives of Warwickshire’s LTP3 are:

1. To promote greater equality of opportunity for all citizens in order to promote a fairer, more inclusive society;
2. To seek reliable and efficient transport networks which will help promote full employment and a strong, sustainable local and sub-regional economy;
3. To reduce the impact of transport on people and the [built and natural] environment and improve the journey experience of transport users;
4. To improve the safety, security and health of people by reducing the risk of death, injury or illness arising from transport, and by promoting travel modes that are beneficial to health;
5. To encourage integration of transport, both in terms of policy planning and the physical interchange of modes;
6. To reduce transport’s emissions of carbon dioxide and other greenhouse gases, and address the need to adapt to climate change.

Objective 2 and Objective 3 have the potential to be impacted by these developments and the restoration. This assessment will determine whether the impact of 100 HGVs (200 movements) as a worst case scenario will impact on these objectives.
Public Rights of Way (PRoW) are public highways and are protected by law in exactly the same manner as any other public highway such as a High Street or dual carriageway. They are recorded in Warwickshire in a legal document called the Definitive Map and Statement of Public Rights of Way (DMS). Guidance states that developers must ensure that:

- Routes are protected, or suitable alternatives provided, both during and after development;
- The character of the route or its replacement must be protected, in terms of safety, directness, attractiveness and convenience; and
- New links into the network can also be provided to improve sustainable travel to, from and around the development.

The Rights of Way and Recreational Highway Strategy 2011-2026 (ROWRHS) is Warwickshire County’s second Rights of Way Improvement Plan, or ROWIP, and forms part of Warwickshire’s third Local Transport Plan (LTP). It was approved by WCC Cabinet on 17 March 2011 and took effect from 1 April 2011. Policy RW5b within it states that:

> The County Council will seek improvements, both within a development site and in the surrounding area, where the development is likely to lead to an increase in use of the local network or where the development impacts on the existing network. These improvements may include:

- practical works on existing routes
- longer term management of affected routes
- new paths and upgraded paths
- promotional materials
- use of agreements under Section 106 Town and Country Planning Act 1990.

In, or leading to a development site, it will not generally be acceptable to divert a footpath or bridleway along a road or immediately beside a road (whether new or existing) or along a private driveway serving two or more dwellings or any commercial premises.

This chapter will assess the impact on PROW and whether this policy needs to be applied.

### 5.3 Baseline Traffic and Transport Conditions

#### 5.3.1 Vehicular Access

Vehicle access to the site is located off Coventry Road, the B4027, a single carriageway road with a 50 mph hour speed limit. This access road provides access solely to the quarry and a private residence onsite.
No other entrances or exits are proposed in association with the developments. Furthermore, traffic entering and leaving Brinklow Quarry is encouraged not to pass through the village of Brinklow.

The Warwickshire Advisory Lorry Route Map (2nd Edition), reproduced as Figure 5-4, shows that the A46 is the closest Primary Road, with the A46 to the south a Major Access Road for HGVs. The village of Brinklow, which is immediately east of the quarry, is not shown on the Advisory Route Map.
5.3.2 Annual Average Daily Flow

Annual Average Daily Flow figures give the number of vehicles that will drive on adjacent roads on an average day of the year. AADF numbers have been obtained from the Department for Transport website, and averages for each year were calculated. The roads covered in this assessment are shown on the map in figure Figure 5-6, and the data collected are displayed in the following sections.
Figure 5-6 - Locations of Traffic Monitoring Data
**Figure 5-7 - Annual Average Daily Flow Numbers for the A428 between A46 (T) and Avondale Road**

![Graph showing annual average daily flow numbers for the A428 between A46 (T) and Avondale Road.](image)

**Figure 5-8 - Annual Average Daily Flow Numbers for the A428 between B4082 and A46**

![Graph showing annual average daily flow numbers for the A428 between B4082 and A46.](image)
By far the greatest percentage of vehicles on the A428 are cars and taxis. HGVs make up less than 4% of vehicles on all stretches of the A428 assessed here.

Total AADF flows show different trends on the different stretches of road. The stretch between Avondale Road in Brandon and the junction with the A46 showed a decrease in total AADF until 2008 followed by an increase to the 2014 figure of 10,887. The decrease
continued until 2013 on the other side of the junction with the A46, along the stretch to the B4082, but increased slightly in 2014 to 20,586.

Further east along the A428 the AADF fluctuated more across the time period, with 2014 levels (8,977 and 8,765 respectively) between Avondale Road and the B4455, and this and Parkfield Road lower than the peaks in 2006-2007.

**B4082 (Woodway Lane)**

*Figure 5-11 - Annual Average Daily Flow Numbers for the B4082 (Woodway Lane)*

The B4082 shows a reasonably steady total AADF, with HGVs making up less than 2% of vehicles in all years. As with the A428, cars and taxis make up the majority of vehicles. Total AADF was 9,874 in 2014.
2014 AADF figures for the B4027, both to the west in Binley and the east outside the Brinklow Quarry site, are just over half what they were in 2008, at 4,705. HGVs make up 1-4% of the total vehicles.

**B4455**

Only one AADF data point is available from the B4455 north of Brinklow, taken in 2008:
5.3.3 Public Transport

There are a number of bus services which operate near to the site. Bus stops are located in Brinklow village. The bus services routing past the site include the 585, 585a, 585b and 785 Coventry to Rugby, which stops at the Bull’s Head and Combe Abbey.

Based on the location of the site and the absence of a station within 5km, it is unlikely that many trips will be conducted by rail. The nearest rail stations are Coventry and Rugby Rail Stations, providing links to Birmingham.

5.3.4 Walking/Cycling

Due to the rural location of the site, access to the site by cyclists and pedestrians is also considered unlikely. Pedal cycles are recorded in the AADF on the B4027 with a steadily increasing trend recently.

5.3.5 Baseline Information on Public Rights of Way

Information on Public Rights of Way were accessed from the local authorities. Figure 5-16 shows the PROW within 1 km of the quarry.
Brinklow Quarry Environmental Statement
Impact on Highways and Public Rights of Way - Baseline Traffic and Transport Conditions

Figure 5-16 - Public Rights of Way within 1km of the site
5.4 Impacts of the Proposals

5.4.1 Impact of Extension to Time

Brinklow Quarry’s customers are located around the site in all directions. However, all traffic from the Quarry will be routed west along the B4027, passing under the A46 to the junction with B4082 in Binley. From here, the model assumes that approximately half of the traffic will turn northwards onto the A46 and half will go south, with this portion likely to split again with half taking the A46 southwards and half taking A428 to the east. No HGVs will leave the site to the east and go through the village of Brinklow.

As no Quarry traffic will pass along the B4455 north of Brinklow, or the B4082 (Woodway Lane), it has been assumed for the purpose of this assessment that the proposed development would lead to a 0% increase in traffic at these locations.

Figure 5-17 - Routes to be taken by HGVs from Brinklow Quarry, including approximate percentage of total Brinklow Quarry HGVs allocated to stretch of road

The baseline data has been projected forwards using the English Regional Traffic Growth and Speed Forecasts (RTFs), derived by the Department for Transport from the National Transport Model (NTM), to base the growth on region and class of road (‘principle’ in the case of A roads and ‘minor’ in the case of B roads).

The growth factors for the West Midlands for 2016 (the year of commencement of development) and 2025 are as follows:
The total number of movements to and from the site will not exceed the currently consented 200 movements per day in the current planning permission R687/1547/1486/P, i.e. 100 movements entering and 100 movements leaving the site per day.

It should be noted that as Brinklow Quarry has been operational throughout the baseline AADF movement data recording, the daily traffic movements to/from site are already captured in the data. However, these 200 movements have been taken as an over-and-above worst-case scenario and added to the projected total vehicle movements, and then the percentage of this total calculated. These percentages, for 2016 and 2015, are shown in Figure 5-20 and Figure 5-21. These found that at no location will the percentage of traffic generated by the development exceed the 5% threshold for significance.
This assessment shows an over-and-above worst-case scenario, assuming that 100% Quarry-generated HGVs travel past each monitoring point each day. In reality this will not be the case, as Figure 5-17 shows, and so the actual percentage of traffic generated by the development will be lower.

*Figure 5-20 - Percentage of total projected traffic movements in 2016 associated with the proposed development*
In terms of Public Rights of Way, none of the PROW will be moved, closed or encroached on by the development. The technical studies took into account Public Rights of Way when reaching their conclusions. The main findings are below.

There will be a change to the landscape setting of public footpaths and roads in the area as studied in the Landscape and Visual Impact Assessment (Chapter 6). The magnitude of change is dependent on the dominance of the quarrying/restoration activities within the landscape setting of the path.

This ranges from great for views from the footpaths and bridleways within the site, to small where the continued quarrying activities and propped extension site are a minor element within the wider landscape and have minimal impact on the setting of the route to none for those areas of roads and public footpath where the development is a not a perceptible element within the view and therefore has no impact on the setting of the route, and roads to the southeast.

The study also concluded that there will be no change to the setting of the long distance footpaths within the study area. The full assessment can be found as Technical Appendix 2 to this Environmental Statement.

The air quality assessment also assessed the magnitude of air quality impact for the existing quarry on nearby receptors including footpaths. There are some footpaths that are within or immediately adjacent to the quarry boundary (reference points 15 to 21 in Figure 5-22).
The magnitude of air quality impact for these receptors is assessed as ‘substantial’. However the magnitude and the sensitivity of the receptor are combined to determine the risk of impacts occurring. The assessment assumes that there is no mitigation beyond that required by legislation and good practice. Table 5-1 is an excerpt from the air quality assessment:

<table>
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<th>Ref</th>
<th>Name</th>
<th>Sensitivity of Receptor</th>
<th>Magnitude of Air Quality Impact</th>
<th>Risk of Air Quality Impact</th>
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<td>Centenary Way</td>
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<td>Slight</td>
<td>Negligible</td>
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<tr>
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<td>Local footpath</td>
<td>Low</td>
<td>Substantial</td>
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</tr>
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<td>Slight</td>
</tr>
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</tr>
<tr>
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<td>Local footpath</td>
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<td>Slight</td>
<td>Negligible</td>
</tr>
</tbody>
</table>

For all receptors considered, the risk of air quality impacts (dust annoyance and health impacts) is assessed as ‘negligible’ or ‘slight’. Where the risk is assessed as ‘negligible’ no additional mitigation is considered necessary.

The full assessment can be found as Technical Appendix 5 to this Environmental Statement.
5.4.2 Impact of Extension to Area

The total number of movements to and from the site will not exceed the currently consented 200 movements per day in the current planning permission R687/1547/1486/P, i.e. 100 movements entering and leaving the site per day regardless of the development onsite. This means that the results shown in Figure 5-20 and Figure 5-21 would also apply to the extension of area.

In terms of Public Rights of Way, none of the PROW will be moved, closed or encroached on by the development. The technical studies took into account Public Rights of Way when reaching their conclusions. The main findings are below.

There will be a change to the landscape setting of public footpaths and roads in the area as studied in the Landscape and Visual Impact Assessment (Chapter 6). The magnitude of change is dependent on the dominance of the quarrying/restoration activities within the landscape setting of the path.

This ranges from great for views from the footpaths and bridleways within the site, to small where the continued quarrying activities and propped extension site are a minor element within the wider landscape and have minimal impact on the setting of the route to none for those areas of roads and public footpath where the development is not a perceptible element within the view and therefore has no impact on the setting of the route, and roads to the southeast.

The study also concluded that there will be no change to the setting of the long distance footpaths within the study area. The full assessment can be found as Technical Appendix 2 to this Environmental Statement.

The air quality assessment (Chapter 10) also assessed the magnitude of air quality impact for the existing quarry on nearby receptors including footpaths. There are some footpaths that are within or immediately adjacent to the quarry boundary (reference points 15 to 21 in Figure 5-23):
The magnitude of air quality impact for these receptors is assessed as ‘substantial’. However the magnitude and the sensitivity of the receptor are combined to determine the risk of impacts occurring. The assessment assumes that there is no mitigation beyond that required by legislation and good practice. Table 5-2 is an excerpt from the air quality assessment:

Table 5-2 – Summary of the risk of air quality impacts arising from the operation of the existing quarry

<table>
<thead>
<tr>
<th>Ref</th>
<th>Name</th>
<th>Sensitivity of Receptor</th>
<th>Magnitude of Air Quality Impact</th>
<th>Risk of Air Quality Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>R15</td>
<td>Centenary Way</td>
<td>Low</td>
<td>Slight</td>
<td>Negligible</td>
</tr>
<tr>
<td>R16</td>
<td>Local footpath</td>
<td>Low</td>
<td>Substantial</td>
<td>Slight</td>
</tr>
<tr>
<td>R17</td>
<td>Local footpath</td>
<td>Low</td>
<td>Substantial</td>
<td>Slight</td>
</tr>
<tr>
<td>R18</td>
<td>Local footpath</td>
<td>Low</td>
<td>Substantial</td>
<td>Slight</td>
</tr>
<tr>
<td>R19</td>
<td>Coventry Way</td>
<td>Low</td>
<td>Slight</td>
<td>Negligible</td>
</tr>
<tr>
<td>R20</td>
<td>Local footpath</td>
<td>Low</td>
<td>Substantial</td>
<td>Slight</td>
</tr>
<tr>
<td>R21</td>
<td>Local footpath</td>
<td>Low</td>
<td>Slight</td>
<td>Negligible</td>
</tr>
</tbody>
</table>

For all receptors considered, the risk of air quality impacts (dust annoyance and health impacts) is assessed as ‘negligible’ or ‘slight’. Where the risk is assessed as ‘negligible’ no additional mitigation is considered necessary.

The full assessment can be found as Technical Appendix 5 to this Environmental Statement.
5.4.3 Cumulative Impact of Both Applications

Using a "worst case scenario" of 200 movements a day, the maximum percentage of all motor vehicles on the B4027 that can be attributed to Brinklow Quarry is 3.96% in 2016 and 3.76% in 2025. This is below the 5% threshold for significance.

In terms of Public Rights of Way, none of the PROW will be moved, closed or encroached on by the development. Visual Impact from PROW has been assessed as part of the Landscape and Visual Impact Assessment forming Chapter 6. The conclusions regarding the impact on PROW from Visual intrusion were that there will be a change to the landscape setting of public footpaths and roads in the area. The magnitude of change is dependent on the dominance of the quarrying / restoration activities within the landscape setting of the path.

This ranges from great for views from the footpaths and bridleways within the site, to small where the continued quarrying activities and propped extension site are a minor element within the wider landscape and have minimal impact on the setting of the route to none for those areas of roads and public footpath where the development is a not a perceptible element within the view and therefore has no impact on the setting of the route, and roads to the southeast.

The study also concluded that there will be no change to the setting of the long distance footpaths within the study area.

5.4.4 Conclusion of Impact Assessment

This assessment concludes that there will be no significant impact from the proposals either to extend the closing date of the existing quarry or extend the area of the quarry.

Objective 2 and 3 of the Warwickshire Local Transport Plan 3 were:

2. To seek reliable and efficient transport networks which will help promote full employment and a strong, sustainable local and sub-regional economy;

3. To reduce the impact of transport on people and the [built and natural] environment and improve the journey experience of transport users;

As there is no significant impact from the transport from these developments these objectives will not be compromised.

5.5 Mitigation Measures

5.5.1 HGV Routing

The Warwickshire Advisory Lorry Route Map has formed part of the site procedures during the operation of the quarry. The transport assessment took these route maps into account when setting out the methodology.

5.5.2 Main Haul Road

To reduce vehicle noise and minimise the raising of dust, the main haul road is constructed from reinforced concrete along its full 1,000m length. Designated passing places ensure that vehicles do not mount the kerb or deviate on to unsurfaced areas to avoid queuing.

5.5.3 Weighbridges

A pair of weighbridges located adjacent to the Site Control Office at the Quarry entrance are used to weigh vehicles leaving the quarry with processed sands and gravels and those delivering waste materials to the Composting and Inert Waste Recycling Facility. Full details of the customer, vehicle, tare weight, product or waste type and date and time of transaction are stored on the site’s computer database and used to compile reports required for compliance with Planning and Environmental Permit Conditions. Physical copies of delivery notes and Waste Transfer Notes are retained on file.

5.5.4 Mud & Debris Contamination of Public Highway
Measures to prevent the deposition of mud and debris on the public highway are inherent in the design of the site. Collection and delivery vehicles accessing from and exiting to the highway are confined to areas having a hard-core or concrete surface that can be swept or brushed clean as necessary. The long, concrete-surfaced haul road from the site to the highway is sufficient for any loose mud or other debris to be spun off the vehicles before joining the highway. The haul road is swept regularly to prevent the build-up of such material. As mentioned in 2.2 above, the provision of designated passing places ensure that vehicles do not mount the kerb or deviate on to unsurfaced areas. Additionally, site staff inspect vehicles prior to exiting the Quarry in accordance with Site Rules.

In the event that such material from the site is deposited on the highway, the source would be identified and isolated from further trafficking. A tractor-drawn rotary brush or other suitable mobile plant would be employed to clear the affected area of the highway.

5.5.5 Dust Prevention

It is not possible to eliminate emissions of dust from the quarry activities completely. In order to minimise the impacts, a mitigation programme will be developed and incorporated into the Working Plan. In general, dust mitigation requirements should be minimal due to the high moisture content typically associated with sand and gravel.

The full mitigation measures for preventing and monitoring dust are in Chapter 10 Air Quality Impact Assessment Section 10.5 Mitigation Measures of this Environmental Statement.

5.6 Residual Impacts

With management in place for dust and traffic and monitoring as discussed above, the impact of the quarry on local air quality has been assessment as not significant.

5.7 Conclusion

The impact on the surrounding highway network has been assessed using projected vehicular movements from the site, AADF flows along eight stretches of road, and projected flows in 2016 and 2025. The impact has been determined to not be significant.

The site is not in a location where it benefits from access to sustainable transport options such as bus services, rail services and pedestrian/cycle routes.

It can be concluded from the information provided that the amount of traffic generated when the full S73 and extension of area site is in operation is minimal when compared to the background traffic flows along all affected roads.

5.8 Summary of Impacts

5.8.1 Extension to Time

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact of HVGs on local road network</td>
<td>Dust / dirt</td>
<td>Low</td>
<td>Negligible</td>
<td>Long-term</td>
<td>Adverse</td>
<td>Slight</td>
<td>Reasonable</td>
</tr>
</tbody>
</table>

5.8.2 Extension to Area

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
</table>
### Impact on Highways and Public Rights of Way - Summary of Impacts

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact of HVGs on local road network</td>
<td>Dust / dirt</td>
<td>Low</td>
<td>Negligible</td>
<td>Long-term</td>
<td>Adverse</td>
<td>Slight</td>
<td>Reasonable</td>
</tr>
</tbody>
</table>

#### 5.8.3 Cumulative Impacts

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact of HVGs on local road network</td>
<td>Dust / dirt</td>
<td>Low</td>
<td>Negligible</td>
<td>Long-term</td>
<td>Adverse</td>
<td>Slight</td>
<td>Reasonable</td>
</tr>
</tbody>
</table>

*Importance / Sensitivity of Receptor: High, Medium, Low, Negligible*

*Magnitude / Scale of Change: Large, Medium, Small, Negligible*

*Duration: Temporary, Short-term, Long-term, Permanent*

*Nature: Adverse, Beneficial*

*Significance: Very Substantial, Substantial, Moderate, Slight, None*

*Certainty: Absolute, Reasonable*
6. Landscape and Visual Impact Assessment

6.1 Introduction

The Landscape and Visual Impact Assessment (LVIA) was prepared by White Young Green (WYG). The LVIA is the baseline against which the effects of the proposed development, on the landscape of the site and its context, were assessed. The design of the proposed development and the identification of mitigation measures incorporated within the design to minimise adverse effects, was informed by the findings of the assessment. During the assessment, effects on features identified as important to the scenic quality, or effects on the landscape character of the site and its setting were assessed. Effects on peoples’ views of the site and its setting, or visual amenity, were also assessed.

Formal pre-application advice dated 5th August 2015 and subsequent conversations with the Landscape Officer securing suitable viewpoints acted as the scoping exercise for this assessment.

The objectives of the assessment were to:

- Describe and evaluate the landscape of the site and surrounding landscape context and the visual amenity of people in the surrounding area, which might be affected by the proposed development;
- Examine the development proposals and analyse the potential effects on the landscape and visual amenity associated with the scheme’s design or operation, and whether they are likely to be significant;
- Set out mitigation measures which could be implemented in order to avoid, reduce or offset adverse effects, especially those identified as significant;
- Describe any enhancements of the landscape or visual amenity incorporated in the development proposals, and
- Provide an assessment of the significance of the landscape and visual effects of the proposed development with integral mitigation measures in place.

6.2 Methodology

The methodology used for assessing the landscape and visual effects is based on the recommendations in Guidelines for Landscape and Visual Assessment 3rd Edition published by The Landscape Institute and the Institute of Environmental Management & Assessment in 2013 (GLVIA3). The assessment process comprises a combination of desk studies and field surveys, with subsequent analyses, and involved:

- A review of landscape designations and planning policies for the landscape, and of other landscape studies relevant to the area, as indicators of landscape value, including national and local landscape character assessments;
- A survey of the site and landscape context study areas and inspection of views of the site from publicly accessible viewpoints, including a photographic survey. The proposed viewpoints were supplied to Warwickshire County Council for their comment;
- Evaluation of the features and elements of the landscape and their contribution to the landscape character, context and setting, based on these studies;
- Analysis of the development proposals and consideration of potential landscape and visual effects of the proposed development;
- Assessment of the susceptibility and sensitivity of the landscape to the changes likely to arise from the development;
6.2.1 Policy – National, Regional and Local

National planning policy of relevance to mineral development are contained within Chapter 13 of the National Planning Policy Framework (NPPF) entitled, Facilitating the Sustainable Use of Minerals.

The NPPF confirms that mineral extraction:

should avoid unacceptable adverse impacts on the natural and historic environment... visual intrusion; and take into account the cumulative effects of multiple impacts from individual sites and/or a number of sites in a locality. It is also stated that worked land is reclaimed at the earliest opportunity.... and that high quality restoration and aftercare of mineral sites takes place, ...conserving soil resources, geodiversity, biodiversity, native woodland, the historic environment and recreation.

Relevant policy, landscape character assessments, and other contextual information sources were also referred to, including:

- Natural England updated character area descriptions, July 2013

Policies relevant to the landscape and visual amenity in regional and local policy included:

- the Minerals Local Plan for Warwickshire (February 2005),
- the emerging Warwickshire Minerals Development Framework,
- the Rugby Borough Council Local Development Framework,
- the Rugby Borough Council Core Strategy Adopted Plan (June 2011),
- Rugby Borough Council – Local Development Scheme (January 2015),
- the Landscape Assessment of the Borough of Rugby:
  - Sensitivity and Condition Study;

Relevant landscape policies in each of these plans relating to the proposed development are listed below. Further details are available in the full LVIA Technical Assessment, Appendix 2.
6.2.2 Rugby Borough Council Core Strategy (Adopted June 2011):

- **CS1 Development Strategy.** The site lies within the area designated as Green Belt. Policy for the Green Belt states that “New development will be resisted; only where national policy on Green Belt allows will development be permitted.” The site lies within the West Midlands Green Belt. This policy and the Minerals Local Plan seeks to protect the green belt but also recognises that minerals can only be worked where they are found and that extraction need not be incompatible with Green Belt objectives. Green Belt has not been used as an absolute constraint for the purposes of identifying mineral extraction areas, although the onus is on the operator to demonstrate that high environmental standards can be achieved during working and restoration and that it is necessary to work within the Green Belt.

- **CS14 Enhancing the Strategic Green Infrastructure Network** states that “Where appropriate new developments must provide suitable GI linkages throughout the development and link into adjacent strategic and local GI networks or assets, where present.”

- **CS16 Sustainable Design** states that “All development will demonstrate high quality, inclusive and sustainable design and will only be allowed where proposals are of a scale, density and design that would not cause any material harm to the qualities, character and amenity of the areas in which they are situated.”

6.2.3 Minerals Local Plan for Warwickshire (February 1995 – saved policies)

- **Policy M1: Areas of Search and Preferred Areas** - permissions will normally only be given within these areas. It does not follow that all applications within these areas will be acceptable.

- **Policy M4: Sand and Gravel Extraction in the context of Landbanks** - Applications for planning permission for the working of sand and gravel will be considered in the context of an assessed regional demand.

- **Policy M6: Considerations and Constraints affecting Minerals Extraction** - Applications for the extraction of minerals whether within or outside the identified areas of search and preferred areas will be considered on the basis of the provisions of the Development plan and their likely overall impact on designated landscapes and other areas of importance.

- **Policy M7: Mitigation and Planning Conditions/Agreements** – seeks to ensure that any adverse environmental effects and the implications for residents’ quality of life are mitigated at all mineral workings.

- **Policy M9: Restoration of Mineral Workings** - Restoration of workings to a high standard and a beneficial after use will be required in accordance with the development plan. Satisfactory arrangements for aftercare will also be sought.

- **Policy M10: Monitoring of Minerals Sites** - The County Council will regularly monitor mineral workings and restoration schemes for their effect on the local environment to ensure compliance with planning conditions.

6.2.4 Warwickshire Minerals Development Framework – Mineral Core Strategy – Revised Spatial Options

- **Policy Principle 1 Criteria for assessing Mineral Development Proposals** - Proposals put forward for all Site Allocations in the Minerals Development Core Strategy and planning applications will be assessed against the demonstrated need for the mineral, the provisions of the Development Plan and the potential impacts and proposed mitigation measures on the criteria outlined in Appendix 1 to the Minerals Development Core Strategy.
• **Policy Principle 2 Extensions to Existing Mineral Workings** - Proposals for the extension of existing mineral workings will be encouraged for allocated and unallocated sites, where contiguous with an existing, dormant or un-restored site, and provided their impacts are environmentally acceptable and in accordance with the development criteria set out in Policy Principle 1. Site submissions and applications will be carefully assessed against the cumulative impact of developments on local communities.

• **Policy Principle 4a Mineral Safeguarding** - Minerals Safeguarding Areas and Mineral Consultation Areas will be established. Planning Permission should not normally be granted for development contained in such areas where the sterilisation of mineral resources is likely to occur.

• **Policy Principle 5 Buffer Zones** - The Minerals Core Strategy will state no minimum distance around settlements, properties and other important sites but standoff zones around mineral developments from sensitive receptors will be decided at the application stage on a site by site basis.

• **Policy Principle 6 Transport** - Sites put forward for allocation must have good access to major roads and demonstrate that there will be no unacceptable adverse impact on communities.

• **Policy Principle 7 Sand and Gravel** - Applications for the extraction of sand and gravel will be considered within the context of the assessed regional demand and against the development criteria for sites set out in Policy Principle 1.

• **Policy Principle 15 Restoration of Mineral Sites** - All proposals for mineral developments will have approved restoration and after use schemes which should be of a high environmental standard. Restoration schemes for mineral developments must make a positive contribution to agreed biodiversity action plan targets.

• **Policy Principle 19 Renewable energy and carbon reduction measures**. Operators should be required to demonstrate how proposed minerals operations would enable a proportion of renewable energy to be produced on site and/or how low carbon technologies could enable carbon reduction measures.

6.2.5 Rugby Borough Council – Brinklow Parish Plan / Village Design Statement

The Village Design Statement includes a number of guidelines for development of the village which are also of relevance to the development of the site:

• The preservation of the Green Belt is of great importance in maintaining the character and ‘shape’ of the village;

• The existing hedges, trees, wild areas and ponds should be protected and enhanced; and

• The new planting of indigenous species in appropriate areas should be encouraged, and the opportunity to develop more planted areas should be considered.

6.3 Background

6.3.1 Designations

The setting of conservation areas, listed buildings, scheduled monuments and registered parks and gardens is a consideration during the preparation of landscape and visual impact assessments.

There are no internationally designated sites relating to landscape value at or close to the application area, and no part of the site is designated as a Site of Special Scientific Interest (SSSI), National Nature Reserve (NNR), Area of Outstanding Natural Beauty (AONB) or National Park. Ecological designations have been identified in Chapter 7, and include Coombe Pool SSSI (0.8km north west), Herald
Way Marsh SSSI and Local Nature Reserve (3km south west), Stoke Floods Local Nature Reserve (3km west), and three areas of ancient woodland within 2km of the site; Birchley and New Close Wood; High Wood and Little Wood.

There is no open access land either within or adjacent to the site, the only area within the study area is a small area of woodland which lies 2.5km to the south-west of the site boundary at Piles Coppice.

The nearest listed buildings to the site are located to the west at the Coombe Country Park entrance, to the north-west at Coombe Abbey, to the north at East Lodge and Woodhill Farm and to the east within Brinklow, as shown in Figure 6-1.

There are four conservation areas within 5km of the site boundary which could potentially be affected by the Development:

- Brinklow (1.5 km north-east);
- Brandon (2 km south-west);
- Wolston (2.5 km south-west); and
- Easenhall (4.2 km east north-east).

Scheduled Monuments are also shown on Figure 6-1. The nearest to the site is located around 1.2km to the south-east, Barrow cemetery 1/4 mile (400m) NE of Bretford. 1.4km to the east lies a Motte and Bailey Castle, 30m east of St John the Baptists Church in Brinklow (known locally as The Tump).

There are three Registered Parks and Gardens within 7km of the site boundary; Coombe Abbey, Newton Paddox and Ryton House. The latter two are unlikely to be affected by the development due to landform and intervening features and so were not studied further.

In terms of the landscape planning context the following locally specific issues need to be considered in the assessment of effects:

- The site lies within an area designated as Green Belt, the Minerals Local Plan seeks to protect the green belt but also recognises that extraction need not be incompatible with Green Belt objectives;
- The site is not located within a nationally important landscape designation, such as a National Park or an Area of Outstanding Natural Beauty;
- Ensure that there are no significant adverse impact on local landscape character, scenic quality and distinctive landscape features;
- Careful consideration should be given to the potential effects the development proposals may have on setting of historic assets including listed buildings, scheduled monuments and Registered Parks and Gardens;
- Careful consideration should be given to the impact development proposals may have on residential amenity; and
- Ecological designations, although not specifically related to landscape amenity, are an indication of landscape value.
Figure 6-1 - Landscape Designations within 3km of site
6.3.2 Landscape Sensitivity

The sensitivity of landscape receptors is dependent on their value and susceptibility to, or ability to accommodate, the changes that would be brought about by the proposed development. The sensitivity of landscape receptors combines professional judgments of their susceptibility to the type of change arising from the development proposal and the value attached to the landscape or its components.

The landscape baseline is a description and analysis of the existing landscape, against which the effects of the proposed development are assessed, first, by reference to landscape character assessments for the area in which the site is located, at national and local levels and, then, from site-specific surveys and analysis carried out for the purposes of this assessment.

The site is located within the National Character Area 96: Dunsmore and Feldon, predominantly a rural, agricultural landscape, crossed by numerous small rivers and tributaries. It is an important food producing area and the agricultural expanse of large arable fields, improved pasture and small villages forms a transitional landscape between the surrounding National Character Areas. Within the ‘Landscape Change’ section, the following points are of relevance to the area:

- The prolonged and continued loss of hedgerows that has occurred over the last 50 years has left many habitats, such as woodlands, and some species isolated;
- Habitat creation – a number of important schemes are in progress or at the planning stage. At Rugby Works, plans for a new quarry include final restoration to wildlife habitat. The ongoing extension of Southam Quarry may create opportunities for major habitat creation in future years while at Edge Hill Quarry preparation is being made for establishing a wildlife site within the main quarry;
- Ufton Fields Local Nature Reserve (LNR) and Newbold Quarry Country Park LNR are disused quarries and are good examples of alternative uses for those sites both for conservation and their potential recreational use; and
- Mineral extraction will continue but this could bring opportunities for nature conservation as more quarry companies actively look to set aside areas for biodiversity and through post-extraction habitat creation.

The most recently published Landscape Character assessment of relevance to the site is the Landscape Assessment of the Borough of Rugby, Sensitivity and Condition Study, which was published in April 2006. The site lies within the Dunsmore Parklands Landscape Character Area. The area is evaluated by the study as follows:

- Sensitivity – Fragility: Cultural sensitivity is generally moderate due to the historic coherent pattern which exists in this area. Where it is high this is due to a slightly older, more unified pattern (ancient woodlands are contributing to this pattern). Overall ecological sensitivity is moderate due to the ancient wooded landscape character;
- Sensitivity – Visibility: Visibility is generally low, due both to the level of tree cover, as well as to the low-lying, rolling topography. It is moderate when tree cover is reduced;
- Overall sensitivity: Overall sensitivity is moderate as a result of both cultural (time depth) and ecological factors – primarily ancient woodlands; and
- Condition: Apart from an area to the south of Harborough Parva, where the condition is strong, this area is generally in decline.

Key characteristics of the landscape of the site include the gently undulating landscape of low hills, narrow, meandering river valleys. Agricultural areas consist of mainly large fields, with regular or rectilinear shapes. Woodland cover in the
wider LCA is sparse, though in the area around the site has a well wooded character, with parkland and belts of trees forming key landscape features in the area.

The site is situated at the bottom of a shallow valley between two ridgelines, the height difference between the valley bottom and the ridges reaches a maximum of 38m to the north and 18m to the south. This is just sufficient to create some isolation and enclosure for the site from the surrounding landscape in these directions. The topography to the west and east is much flatter. The site is well enclosed by surrounding vegetation, to the north by Wood Hill, High Wood and the well vegetated landscape of Coombe Country Park and Birchley Wood and New Close Wood to the southwest. High hedgerows in the area to the north and west of the site also add to the sense of enclosure. To the south as the landform rises the land becomes more open, with low or more well maintained hedgerows contributing to a greater sense of openness. Many hedgerows in this area still contain large trees, which provide maturity to the landscape setting and filter views towards the site.

6.3.3 Components of the Project which could affect Landscape or Visual Amenity

Chapter 2 gives a fuller account of the details of the existing and proposed development onsite. This section describes the main aspects of the proposed development which could potentially affect landscape and/or visual amenity. It also identifies features of the proposals which will assist in mitigating adverse landscape and visual impacts.

The main features of the development proposal which could potentially result in landscape and visual impacts are:

- The completion of mineral extraction and restoration works within the Quarry as approved under the Existing Planning Permission;
- Phased extraction of sand and gravel for a period of 10 years
- Retention of the other activities that have planning permissions that are linked to the quarry development including:
  - The Mortar Plant - Brinklow Quarry produces sands to a specification suitable for the production of quality-assured mortars;
  - The Open Windrow Composting Facility - The site has the capacity to manufacture a range of green-waste derived compost grades under the auspices of the PAS 100 Standard and Quality Protocol; and
  - The Inert Waste Recycling Facility - Products from the IWRF are manufactured under the terms of the EAWRAP Aggregates Protocol and constitute a sustainable supplement to the range of virgin aggregate products offered by the quarry.

These uses are conditioned to co-terminate with the main quarry Planning Permission reference R687/1547/1486/P.

Following the cessation of quarrying operations, the phased and progressive restoration of the site in accordance with the approved Restoration Plan would potentially have an impact. The Phasing Plan (Figure 2-2) illustrates the general progressive restoration concept, designed to minimise the extent of active operational areas, return land to continued agricultural production and to deliver landscape improvement and habitat diversification by means of tree planting and restoration to wetland at the earliest possible juncture. These elements would be designed to integrate with existing completed restoration to enhance the local landscape character in its wider setting.

The potential for adverse effects on landscape and visual amenity have been recognised and mitigation measures incorporated in the scheme to avoid or reduce adverse effects or to offset or compensate for unavoidable adverse effects.
In order to minimise the landscape impact of the development, a number of mitigation measures have been incorporated into the scheme and are described below, along with their associated effects.

The site is already partially screened by existing vegetation, particularly boundary vegetation along Coventry Road to the north and existing vegetation on the screen bund to the south east, along with woodland blocks of vegetation in the wider landscape.

6.4 Impacts of the Development

The full assessment is available in the full Landscape and Visual Impact Assessment by White Young Green in the Technical Appendices as Appendix 2.

Using the information gathered above, the degree of the likely landscape effects of the proposed development is determined by relating the sensitivity of the receptors to the changes arising from the development proposals, and the degree and nature of the changes in the landscape arising from the proposals.

The scale of magnitude of the changes is related to considerations of the size or scale of the change, the geographical extent of the area influenced, and the duration and reversibility of the change.

The degree of effect, whether adverse or beneficial, is assessed by relating the sensitivity of the receptor and the magnitude of change.

Following the desk top studies and fieldwork the following key landscape issues were considered in the detailed assessment of the effects:

- Retaining the rural agricultural character of the area with mainly large regular or rectilinear fields;
- Retention of areas of woodland linked by landscaped parklands and hedgerow trees;
- The impact of the proposal on the character and setting of the Green Belt;
- Consideration of the setting of Coombe Abbey Registered Park and Garden, scheduled monuments and listed buildings as important historical features of the area.

In considering the impact of the proposed development on the site and its context the most sensitive features in the landscape are the existing vegetation surrounding the site and the open character of the adjacent rural areas. The main issues likely to be critical are the effects of proposed development on the features which contribute to landscape character.

The visual appraisal, informed by a Zone of Theoretical Visibility (ZTV) study identified a number of locations from which the existing quarry and the extension area are visible. Six viewpoints were identified as representative of the most sensitive views available, namely:

01) B4027 Coombe Abbey

02) Brinklow Castle

03) Heath Lane

04) Bridleway, Birchley Wood

05) Bridleway, Brinklow Heath

06) B4455 Fosse Way

These were studied in detail and the full study is available as Appendix 2 in the Technical Appendices to this Environmental Statement. A summary of the findings is below.
6.4.1 Extension to Time

Impacts on Landscape

The impact on the vegetation pattern would be minor adverse during quarrying, as existing vegetation within the site boundary, including hedgerow trees, would be removed. However, the areas of vegetation to be removed are small and their contribution to the overall vegetation pattern is minor. Birchley Wood and the mature vegetation along the north boundary of the site would be retained in its entirety. During restoration, the impact on the vegetation pattern would be minor - moderate beneficial as the restoration would bring the site into part of the pattern of woodland in the wider landscape.

The impact on the character of the landscape would range from moderate adverse for areas closer to the site, to negligible in the context of the wider landscape. Restoration would have a moderate beneficial impact due to the change to a diverse area of restored agricultural land.

Publicly accessible routes located within and immediately adjacent to the site would experience a major adverse impact, reducing to minor adverse for roads and footpaths where the development is not a major element in the view. There would be negligible impact on the setting of long distance footpaths. The residential property at Woodhill Farm would continue to experience moderate adverse impact, and minor adverse for the properties at Highwood Lodge and the dwellings on Heath Lane. There would be no impact to the setting of dwellings to the east due to the screen bund, and no impact on the residential properties in Brinklow. Following restoration, there would immediately be a negligible impact on public access and settlement, though this would increase to a minor-major beneficial impact over time, depending upon how near to the site the receptor is.

There would be negligible impact on the Registered Park and Garden at Coombe Park, and no impact on areas of ancient woodland. There would be a slight adverse or negligible impact on the Green Belt, as the setting of the site means that there would not be an impact on wider views. However, following restoration there would be a minor beneficial impact on the setting of the Green Belt.

Impacts on Visual Amenity

The impact on visual amenity to road and bridleway users, visitors to scheduled monuments and residential properties at the six studied viewpoints would largely be none or negligible, with some receptors experiencing minor adverse impacts during operation and minor beneficial impacts following restoration.

6.4.2 Extension to Area

Impacts on Landscape

As with the extension of time, the impact on the vegetation pattern during quarrying would be minor adverse, and negligible/beneficial in the long term, following restoration.

The impact on the character of the landscape would range from moderate adverse to negligible in the context of the wider landscape. The area would be restored to agricultural land, with a lake and tussocky grassland, which would have a moderate beneficial impact on the character of the landscape.

Publicly accessible routes located within and immediately adjacent to the site would experience a major adverse impact, reducing to minor adverse for roads and footpaths where the development is not a major element in the view. There would be negligible impact on the setting of long distance footpaths. The residential property at Woodhill Farm would continue to experience moderate adverse impact, and minor adverse for the properties at Highwood Lodge and East Lodge, and negligible impact on the dwellings on Heath Lane. There would be no impact to the setting of dwellings to the east due to the screen bund, and no
impact on the residential properties in Brinklow. Following restoration, there would immediately be a negligible impact on public access and settlement, though this would increase to a minor-major beneficial impact over time, depending upon how near to the site the receptor is.

As for the extension of time, there would be negligible impact on the Registered Park and Garden at Coombe Park, and no impact on areas of ancient woodland. There would be a slight adverse or negligible impact on the Green Belt, as the setting of the site means that there would not be an impact on wider views. However, following restoration there would be a minor beneficial impact on the setting of the Green Belt.

**Impacts on Visual Amenity**
The impact on visual amenity at the six studied viewpoints would largely be none or negligible, with some receptors experiencing minor adverse impacts during operation and minor beneficial impacts following restoration.

6.4.3 Cumulative Impact of Both Applications

**Impacts on Landscape**
The impacts on the vegetation pattern would be minor adverse during quarrying, reducing to negligible/minor beneficial in the long term. Following restoration, there would be a slight beneficial impact due to the planting of different vegetation types including grassland, trees, hedgerows and scrub. This will bring the benefit of increased native tree and shrub cover. In the longer term, once the vegetation established as part of the restoration matures the impact will be major beneficial.

In terms of the landscape character, the site would be moderately affected, however this would only be perceptible locally. For this reason, the overall impact would range from moderate adverse for areas close to the site, to negligible in the context of the wider landscape. Following restoration, a moderate beneficial impact will be brought by the tree lines, woodlands, shallow ponds and grassland, as well as the recreational areas developed.

There are limited views of the site from footpaths in the area, however of those paths with a view of the site there would be a major-minor adverse impact, dependent on the section of the route and the dominance of quarrying operations in relation to the setting of the path. The impact on long distance footpaths would be negligible, and the impact on vehicle travellers would less than that on pedestrians. The impact on Brinklow village will be negligible, the view being screened by vegetation. Properties to the north of the site are also largely screened by vegetation, though there may be some views affected from upstairs windows. Following restoration, there would immediately be a negligible impact on public access and settlement, though this would increase to a minor-major beneficial impact over time, depending upon how near to the site the receptor is.

There would be negligible impact on the Registered Park and Garden at Coombe Park, and no impact on areas of ancient woodland. There would be a slight adverse or negligible impact on the Green Belt, as the setting of the site means that there would not be an impact on wider views. However, following restoration there would be a minor beneficial impact on the setting of the Green Belt.

**Impacts on Visual Amenity**
The cumulative impact on visual amenity at the six studied viewpoints would largely be none or negligible, with some receptors experiencing minor adverse impacts during operation and minor beneficial impacts following restoration.
6.5 Mitigation Measures

In order to minimise the landscape impact of the development, a number of mitigation measures are suggested. The site is already partially screened by existing vegetation, particularly boundary vegetation along Coventry Road to the north and existing vegetation on the screen to the south east, along with woodland blocks of vegetation in the wider landscape. The phasing of the mineral working has been designed to form a progressive sequence of working and restoration operations, which should minimise the area of land undergoing mineral working.

Mitigation measures incorporated into the scheme design include:

- Retention of existing hedgerows along Coventry Road to screen views into the site from the north
- Retention of the existing screen bund along the southeast boundary to screen views into the site from the east

6.6 Residual Impacts

Impacts on Landscape

Once new planting defined on the restoration plan has been implemented the overall impact on vegetation will improve to slight beneficial. This includes planting for tussocky grassland, lake margins, individual tree planting, hedgerows, scrub and lowland deciduous woodland areas. The application site will benefit from an increase in native tree and shrub cover, and supplementary and replacement tree planting that will reinforce existing boundaries. In the medium-term, there should be an increase in the nature conservation value of the site. In the longer term, once vegetation defined on the restoration plan matures and establishes, the impact will be major beneficial.

Following completion of restoration there will be a change from operational activities to a diverse area of restored agricultural land within a framework of retained tree lines, woodland and shallow ponds, tussocky grassland and woodland areas. There will also be recreational areas developed, which will create additional recreational amenity values for the area. This improved landscape amenity will have a moderate beneficial impact on the landscape character of the area.

Following restoration of the site the impact on the setting of residential properties would initially reduce to negligible, with the potential for improved areas of vegetation to provide a minor-moderate beneficial impact on the amenity of the properties as it matures.

The impact of the restoration proposal on the Green belt would initially be neutral. Over time as the restoration proposals mature, the areas of restored agricultural land retained tree lines, new woodland and shallow ponds, tussocky grassland and recreational areas will create additional recreational and amenity value for the Green Belt. This improved landscape amenity will have a minor beneficial impact on the wider setting of the Green Belt.

There would continue to be a negligible impact on other designated landscapes identified within the study area.

Impacts on Visual Amenity

The impact on visual amenity of the restoration to road and bridleway users, visitors to scheduled monuments and residential properties at the six studied viewpoints would largely be none or negligible, with some receptors experiencing minor beneficial impacts.

6.7 Conclusion

The visual impact is assessed as minor-moderate adverse during quarrying operations. The progressive restoration of the quarry would be visible, and selective areas of quarry planting and return to agricultural land would soften their
appearance. Following restoration of the site the visual impact would be **negligible** to **minor beneficial**.

Vegetation around the site boundaries will continue to be retained. Proposed new areas of planting as defined on the restoration and after use plan will have a **minor beneficial** impact on vegetation. In the longer term, as vegetation establishes and nature conservation value and amenity improve, this will increase to **major beneficial**.

There would continue to be a change in the character of the original site from agricultural land to the quarry landscape works and buildings. Likewise there would be a change from the agricultural land of the extension site to the quarry landscape. However, retained vegetation on the site boundary limits the potential for this impact. The character of the site will be moderately affected, but will only be perceptible from a local scale, with the impact on the character of the landscape ranging from **moderate adverse** for areas closer to the site, to **negligible** in the context of the wider landscape. Following restoration, this improved landscape amenity will have a **moderate beneficial** impact on the landscape character of the area.

There would be a **minor adverse - negligible** impact on public routes within the wider study area, dependent on the dominance of the site in relation to the setting of the path. For a small section of bridleway between the existing site and proposed quarry extension the impact would be **major adverse** during operation, but then reducing to **moderate beneficial** following restoration as vegetation establishes.

Vehicle travellers would continue to experience glimpsed views from limited locations, resulting in glimpsed views, users of the roads within the study area would continue experience a **slight adverse - negligible** impact on the landscape setting of the road. This would reduce to negligible following restoration.

There will be no significant impact on the setting of, and limited impact on the setting Brinklow and limited impact on dwellings to the immediate north and east of the site. The impact on the setting of these properties will increase from **minor adverse to moderate adverse** where quarrying activities move closer to the setting of the property as the extension site is worked. Following restoration of the site this impact would reduce to **negligible**, with the potential for improved areas of vegetation to provide a **slight beneficial** impact on the setting of the properties.

There would be **negligible** impacts on the setting of Coombe Park Country Park/Registered Historic Park and Garden as the setting of this area is well contained within existing mature vegetation.

The quarry extension would not be a dominating feature within the area to such an extent that it would alter the character and perception of the Green Belt. The overall impact on the Green Belt is assessed as **minor adverse** during operation, with the introduction of quarrying activities, reducing to negligible following restoration, which over time has the potential to create a **slight beneficial** impact on the character of the Green Belt.

There would continue to be a change in the character of the original site from agricultural land to the quarry landscape works and buildings. Likewise there would be a change from the agricultural land of the extension site to the quarry landscape. However, retained vegetation on the site boundary limits the potential for this impact. The character of the site will be moderately affected, but will only be perceptible from a local scale. The quarry extension would not be a dominating feature within the area to such an extent that it would alter the character and perception of the Green Belt. There will be no significant effects on other designated landscapes within the study area, including the Registered Park and Garden/Country Park at Coombe Park.
The proposed restoration strategy aims to create a diverse area of restored agricultural land within a framework of retained tree lines, woodland and shallow ponds, tussocky grassland and woodland areas. There will also be recreational areas developed, which will create additional recreational amenity values for the area.

There will be no significant impacts on the setting of Brinklow, and limited impact on dwellings to the immediate north and east of the site during the operational period. Following restoration of the site this impact would reduce to negligible, with the potential for improved areas of vegetation to provide a slight beneficial impact on the setting of the properties.

Impacts on visual amenity would range from none to minor adverse during operation, and minor beneficial following restoration.

### 6.8 Summary Impact Tables

#### 6.8.1 Extension to Time

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landscape amenity</td>
<td>Reduced landscape amenity</td>
<td>Medium – public rights of way and residents Low roads</td>
<td>Large onsite. Small to negligible further from site</td>
<td>Long-term</td>
<td>Adverse during operation Beneficial following restoration</td>
<td>Moderate to none, depending on distance of receptor from quarry</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Designations</td>
<td>Reduced landscape amenity in Green Belt</td>
<td>Medium</td>
<td>Small</td>
<td>Long-term</td>
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<td>Reasonable</td>
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<tr>
<td>Visual Amenity</td>
<td>Reduced visual amenity</td>
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#### 6.8.2 Extension to Area

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<td>Beneficial following restoration</td>
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### 6.8.3 Cumulative Impacts

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<td></td>
<td>Beneficial following restoration</td>
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<td></td>
</tr>
</tbody>
</table>

*Importance / Sensitivity of Receptor: High, Medium, Low, Negligible*

*Magnitude / Scale of Change: Large, Medium, Small, Negligible*

*Duration: Temporary, Short-term, Long-term, Permanent*

*Nature: Adverse, Beneficial*

*Significance: Very Substantial, Substantial, Moderate, Slight, None*

*Certainty: Absolute, Reasonable*
7. **Ecological Issues**

7.1 **Introduction**

This chapter of the ES will consider the ecological impacts of the two proposals for the Brinklow Quarry site:

- Scenario 1 involves an ‘extension to the time’ for the operation of the current quarry site, which is due to cease in May 2016. In this scenario, a Section 73 application will be made to extend the operation of the quarry by 10 years with all operations taking place within the boundaries of the current quarry site.

- Scenario 2 is for a new application to permit extraction over a further 31 ha of land, thus extending the area over which quarrying takes place, with 20 years of operation being sought.

It is possible that both applications will be approved meaning that there will be an extension to time and extension to area over which quarrying takes place. This is Scenario 3 and represents the cumulative impact of the two developments.

For all scenarios, the client has requested that the baseline is assumed to be the one that would exist after the current quarry has been restored, according to an agreed (1991) for restoration. Part of the quarry site has already been restored (Zone LS – the ‘Landscaped Area’) but the extension to time is not granted then other parts of the site would be restored from 2016 onwards. The baseline for the restored quarry area is thus a projected baseline for 10 years time (2026), when the restored habitats will have established.

This Ecological Impact Assessment (EcIA) was completed by Rachel Folkes (associate member of the Chartered Institute of Ecology and Environmental Management (ACIEEM)) and Dr Jeff Kirby (Fellow of CIEEM (FCIEEM)).

The area considered with regards to ecological impacts consisted of the existing quarry area and the proposed extension area (referred to collectively as ‘the site’ hereafter), see Figure 7-1 (Section 7.10). The site currently consists of an active sand and gravel quarry and arable and improved grassland fields. Habitats include mounds of gravel and sand, numerous waterbodies, poor semi-improved grassland, arable fields, strips of mixed plantation woodland, and species-poor and species-rich hedgerows containing mature and broadleaved trees.

The surrounding landscape is composed of arable and grazed pastures, with large areas of woodland and fields bordered by woodland strips. The Smite Brook is located approximately 1 km to the north, and the River Avon is located approximately 1.9 km to the south. The large woodland of Birchley Wood lies adjacent to the south west and connects with another large wood at New Close wood.

Further details of the proposed developments are provided in Chapter 2 and 3 of this ES.

Surveys and reports prepared by Just Ecology Limited to inform this EcIA include:

- Ecological Appraisal (Just Ecology 2015a, Technical Appendix 3a);
- Great Crested Newt Surveys (Just Ecology 2015b, Technical Appendix 3b);
- Protected Species Surveys (interim report) (Just Ecology 2015c, Technical Appendix 3c) including bat, dormouse and reptile surveys; and

Given this background, the study seeks to identify:
The baseline ecological features of the site and its surroundings and the role the site plays in hosting biodiversity in the wider landscape; and

The likely impacts of the proposed developments, either alone and in combination, on the ecology of the area, in the light of proposed mitigation measures.

This study has been prepared in accordance with best practice guidance for EcIA, including, but not limited to ODPM (2000), IEMA (2004) and IEEM (2006). It contains sections that:

- Describe the projected baseline environment;
- Identify and evaluate the likely ecological impacts arising from the proposed developments; and
- Describe appropriate mitigation and enhancement measures.

### 7.2 Legislation and Policy

To provide background and context for this EcIA, relevant conservation and legal issues as they pertain to wildlife sites, habitats and species are summarised. This summary is organised according to present relevant international, national and local laws and policies.

**International**

The EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora 92/43/EEC (the ‘Habitats Directive’), Annex II, lists animal and plant species of Community interest whose conservation requires the designation of Special Areas for Conservation (SACs) – sites of European Community importance. Annex IV of the Directive lists animal and plant species of Community interest (usually referred to as ‘European Protected Species’ (EPS)), in need of strict protection. EPS that are currently present on the site include great crested newts, bat species and hazel dormice.

The European Directive on the Conservation of Wild Birds 79/409/EEC (the ‘Birds Directive’) includes, as one of its main provisions: The maintenance of the favourable conservation status of all wild bird species across their distributional range (Article 2), with the encouragement of various activities to that end (Article 3). Article 4(1) states ‘…species mentioned in Annex I shall be the subject of special conservation measures concerning their habitat…member states shall classify…the most suitable…as special protection areas (SPAs)…’ and Article 4(2) ‘…take similar measures for regularly occurring migratory species not listed in Annex I…’ There is also a requirement under Article 4(4) that member states ‘…take appropriate steps to avoid pollution or deterioration of habitats….outside these protection areas…’

SAC and SPA sites together form the Natura 2000 network of internationally important sites.

**National**

The Conservation (Natural Habitats, &c.) Regulations 1994 (the ‘Habitats Regulations’) transposed the Habitats Directive into national law, but have been amended and updated by the Conservation (Natural Habitats, &c.) (Amendment) Regulations 2007 and the Conservation of Habitats and Species Regulations 2010. The amendments have introduced some significant changes to species protection provisions. Importantly, many defences that existed in the Habitats Regulations have been removed, including the commonly relied on ‘incidental result of a lawful operation defence’.

The Wildlife & Countryside Act 1981 (as amended) provides the basis for most of the UK’s wildlife protection measures. This national legislation provides the legal framework for the notification of Sites of Special Scientific Interest (SSSIs) as the very best national examples of sites for wildlife or geology.
The Natural Environment and Rural Communities (NERC) Act 2006 amends part of the 1981 Act in relation to SSSIs, for example in relation to offences and the serving of notices.

The Wildlife & Countryside Act 1981 (as amended) also contains a wide variety of species protection measures under Schedules 1, 5 and 8. All wild birds have a measure of protection making it illegal to deliberately or recklessly kill, injure or take wild birds, or take, damage or destroy a nest while in use or being built. Some rare bird species are afforded special additional protection under Schedule 1 of the Act, often referred to as ‘Schedule 1 birds’.

Other species likely to be encountered on potential development sites are afforded protection by the 1981 Act (as amended), for example, the hazel dormouse, European otter, all British species of bats, and great crested newts (all under Schedule 5). Additionally, the four relatively widespread reptiles of Britain – the adder, grass snake, slow worm and common lizard – receive partial protection under Schedule 5 of the Act, making it an offence to knowingly kill or injure any of these species.

Species protection measures were updated through the Countryside and Rights of Way Act 2000 (CRoW), and some are afforded European protected status also through the EC Habitats Directive (above) and the Bern Convention (The Convention on the Conservation of European Wildlife and Natural Habitats 1982). The Bern Convention imposes legal obligations on contracting parties, such as the UK, to protect over 500 wild plant species and more than 1,000 wild animal species.

Some of these species may also be UK Biodiversity Action Plan (UK BAP) priority species. Biodiversity Action Planning was the UK Government's response to the Convention on Biological Diversity (CBD) signed in Rio in 1992 (JNCC 2006). This established a detailed approach for the protection of biological resources and was comprised of linked Habitat Action Plans (HAPs), Species Action Plans (SAPs) and Local Biodiversity Action Plans (LBAPs). National HAPs provided detailed actions and targets for conserving different habitats which are a priority at a national level (JNCC 2006). National SAPs involved action for hundreds of species which are rare or declining at a national level, along with the habitats which support them. The protection of these habitats and species is considered to be of vital importance nationally and may also be significant locally.

Though initially largely a voluntary initiative, BAP species and habitats were given statutory protection through Section 74 of the CRoW Act 2000 in England and Wales, superseded by Section 41 of NERC Act 2006. This requires the listing of habitats and species of principal importance for the purpose of conserving biodiversity, and the habitats and species in Section 74 have been adopted for this purpose.

The UK Post-2010 Biodiversity Framework, covering the period from 2011 to 2020 has now replaced the UK BAP. This focuses on managing the environment as a whole. However, the lists of priority species and habitats agreed under UK BAP still form the basis of much biodiversity work at county level.

For birds, in addition to the protection measures outlined above, the UK lists of Birds of Conservation Concern (BoCC; Eaton et al., 2009) have gained recognised significance in the UK. Red list species are of high importance, some of which are globally threatened, whilst the Amber list birds also have an unfavourable conservation status and are of conservation concern.

Though a relatively common species, the Protection of Badgers Act 1992 makes it illegal to wilfully kill, injure or take any badger, or attempt to do so, and it is an offence to intentionally or recklessly damage, destroy or obstruct access to any part of a badger sett.
In England, The National Planning Policy Framework 2012 (NPPF) sets out the government’s planning policies for England. The NPPF is accounted for in the preparation of development plans (including local plans and neighbourhood plans) and planning permission must be determined in accordance with these. The NPPF considers the economy, society and the environment. The environmental aim is to protect and enhance the natural environment, including improving biodiversity and providing net gains (where possible).

The NPPF provides guidance for Local Planning Authorities (LPAs) in creating development plans and determining applications. It states that planning policies should:

- Plan for landscape-scale biodiversity;
- Identify ecological networks;
- Preserve, restore and re-create priority habitats, ecological networks; and
- Protect priority species.

In determining planning applications LPAs should:

- Refuse permission if significant harm cannot be avoided;
- Refuse permission if the development will have an adverse effect on a SSSI, unless the benefits clearly outweigh the impacts; and
- Refuse permission to development resulting in the loss or deterioration of irreplaceable habitats (ancient woodland, veteran trees), unless the benefits clearly outweigh the impacts.

Local

The Rugby Borough Council Core Strategy (adopted June 2011) contains policies which guide the development within the borough up to 2026. The Core Strategy promotes conserving and enhancing biodiversity through the use of Green Infrastructure (GI). Policy CS14: Enhancing the Strategic Green Infrastructure Network states that the council will create a borough wide GI network by protecting, restoring, enhancing and linking existing GI. It also states that new development should provide GI linkages.

The study area falls within the Warwickshire administrative area. Although BAPs have been succeeded by the UK-Post 2010 Biodiversity Framework the objectives of the Warwickshire BAP remain relevant, including the list of priority habitats and species contained in the plan.

Local nature conservation sites are identified by local partnerships as sites of local importance for wildlife, geology, landscape or recreation. These sites may be of importance locally for the delivery of BAP targets and some may be of SSSI quality. Detailed guidance on the identification, selection and management of local sites is available (Defra 2006).

At the local level, areas of woodland or individual trees may be the subject of Tree Preservation Orders (TPOs) and thus have a formally recognised value. TPOs can be applied to all types of trees, including hedgerow trees, and can be applied to one or more trees, an area of trees, or woodland.

TPOs are used by LPAs to protect selected trees and woodlands if their removal would have a significant impact on the local environment and its enjoyment by the public (IEEM 2006).

7.3 Methodology

Scope of Assessment

An overall zone of influence of 1 km is assessed throughout this EcIA. This is considered appropriate as the main trans-boundary impact associated with the quarry workings will be dust deposition. Dust concentration decreases with distance...
from site and dust assessments of ecological receptors are only required for receptors within 50m of the site boundary (IAQM 2014).

The assessment is undertaken using best practice methodology for EcIA developed by CIEEM, formerly the Institute for Ecology and Environmental Management (IEEM 2006). This is widely used in the ecology profession and has been endorsed by the Statutory Nature Conservation Organisations of Great Britain.

**Desk Study**

Desk research included:

- A search for statutory designated sites, ancient woodlands and BAP priority habitats within 1 km of the site using Multi-Agency Geographic Information for the Countryside (MAGIC) (http://magic.defra.gov.uk/MagicMap.aspx), accessed June 2015; and
- A request for environmental records to Warwickshire Biological Records Centre (WBRC) extending to a 1 km buffer around the site. The records were obtained in June 2015.

The data search results are presented and interpreted in Just Ecology’s Ecological Appraisal (Technical Appendix 3a), and are utilised in describing and projecting the baseline environment.

**Field Surveys**

A range of field surveys have been undertaken to investigate the current ecological features of the site. These included:

- Ecological appraisal (inclusive of Extended Phase 1 habitat survey) (Just Ecology, 2015a);
- Habitat Suitability Index (HSI) assessments for Great crested newts (Just Ecology, 2015a);
- Great crested newt surveys, inclusive of eDNA tests (Just Ecology 2015b);
- Bat activity surveys and static automated detector surveys (Just Ecology 2015c);
- Bat tree assessments and building inspections (Just Ecology 2015c);
- Dormouse tube surveys (in progress; Just Ecology 2015c);
- Reptile surveys (Just Ecology 2015c); and

Brief details of the survey methodologies, dates and surveyors are provided in Table 7-1. Detailed descriptions of survey methods, weather conditions and any constraints or limitations are provided in the survey reports.
### Table 7-1 - Field Survey Details

<table>
<thead>
<tr>
<th>Survey</th>
<th>Date(s)</th>
<th>Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extended phase 1</td>
<td>19/05/15</td>
<td>JNCC phase 1 methodology to map habitats and features of interest (JNCC, 2010). Potential of the site for protected and notable species assessed including for birds, bats, hazel dormouse, badger, other mammals, amphibians, reptiles, invertebrates, plants and non-native and invasive species.</td>
</tr>
<tr>
<td>HSI</td>
<td>06/05/15</td>
<td>Oldham et al., 2000</td>
</tr>
<tr>
<td>Great crested newt</td>
<td>22/05/15 - 30/05/15</td>
<td>Survey methods in accordance with Natural England's Standing Advice.</td>
</tr>
<tr>
<td>Bat activity and static detector surveys</td>
<td>01/07/15-11/08/15</td>
<td>Hundt et al., 2012</td>
</tr>
<tr>
<td>Bat dusk emergence surveys</td>
<td>11/08/15-23/09/15</td>
<td>Hundt et al., 2012</td>
</tr>
<tr>
<td>Bat tree assessments and building inspections</td>
<td>02/07/15-08/07/15</td>
<td>Hundt et al., 2012</td>
</tr>
<tr>
<td>Hazel dormouse</td>
<td>01/07/15 - 28/07/15</td>
<td>Survey methods in accordance with Natural England's Standing Advice.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Study Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site plus 30 m buffer for badgers (where access available)</td>
</tr>
<tr>
<td>Waterbodies within 250 m</td>
</tr>
<tr>
<td>Waterbodies with average and above HSI scores and within 250 m</td>
</tr>
<tr>
<td>Quarry extension area</td>
</tr>
<tr>
<td>Tree 36</td>
</tr>
<tr>
<td>Trees and stable buildings within quarry extension area</td>
</tr>
<tr>
<td>Site</td>
</tr>
</tbody>
</table>

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1 Surveyor qualifications:

Rachel Folkes - MSc Ecology; ACIEEM

Rob Dunn - BSc Biological Sciences; MSc Environmental Biology

Katie Smart - BSc Environmental Science; MSc Taxonomy and Biodiversity; GradCIEEM, Natural England Class 1 Bat Licence (CL17, 2015-13215).

Chris Greenland – BSc Wildlife Management & Conservation

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Chapter 7-6
<table>
<thead>
<tr>
<th>Survey</th>
<th>Date(s)</th>
<th>Methodology</th>
<th>Surveyors$^1$</th>
<th>Study Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reptile</td>
<td>18/08/15 02/09/15</td>
<td>Froglife Advice Sheet 10 (Froglife, 1999)</td>
<td>Rachel Folkes, Rob Dunn and Katie Smart</td>
<td>Site</td>
</tr>
<tr>
<td></td>
<td>10/09/15 23/09/15 24/09/15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hedgerow</td>
<td>08/07/15</td>
<td>Hedgerow Regulations 1997 survey and assessment</td>
<td>Rachel Folkes and Rob Dunn</td>
<td>Quarry extension area</td>
</tr>
</tbody>
</table>
Assessment

Key ecological features were identified from the desk research and field surveys, including key habitats and species that are likely to be affected by the continuation of current quarrying activities and the extension of works into the proposed quarry extension area.

After desk research and field survey in order to project baseline conditions, the assessment proceeds as a five stage process, as follows:

- Ecological knowledge of the site is used to value the ecological features likely to be present, taking account of relevant conservation and legal issues;
- Impact assessment is undertaken, in the absence of any mitigation for the impacts;
- Assessment of the likely significance of impacts is undertaken, categorised in terms of the level of importance/sensitivity of the feature and the scale of likely effect;
- Mitigation proposals are developed, in order to reduce or eliminate, where possible, the construction, operational and decommissioning impacts identified; and
- Residual impact assessment is undertaken, identifying and characterising impacts that remain after the proposed mitigation measures are taken account of.

Further details are provided in the sections that follow.

Ecological Valuation

The objective for this part of the assessment is to assign values to the ecological features/resources likely to be present in the study area, including those that have been designated for their nature conservation interest. The procedure outlined in IEEM (2006) is followed in order to undertake the evaluation.

It is important to understand that legal protection and the policy framework is not implicitly used during the valuation process, though some aspects are relevant, for example lists of the status of internationally and nationally important species, BAP habitat and species listings, and methods that assess the relative importance of particular features, such as Hedgerow Regulations (1997) criteria.

In accordance with IEEM (2006), categories of ecological value relating to a geographical framework (e.g. international to parish) are adopted, using examples of the ecological features/resources that qualify for each category. This is summarised in Table 7-2.

Often the valuation of a feature is relatively straightforward, for example the valuation of a designated site. However, in the absence of a recognised categorisation for all habitats and species in all localities, valuation is sometimes based on professional judgment, referring to a range of guidance material, including:

- Designated status of sites and the interest feature(s) supported;
- Designated status of habitats and relevant HAP objectives;
- Vulnerability and restoration/re-creation potential (e.g. of woodlands);
- Designated status of species and relevant SAP objectives; and
- Rarity, distribution and trends of species.

Legal protection status is not used in valuation per se (although some legally protected species may have a high biodiversity value).
Brinklow Quarry Environmental Statement
Ecological Issues - Methodology

Table 7-2 - Indicative Values of Ecological Features

<table>
<thead>
<tr>
<th>Level of Value</th>
<th>Indicative Values of Ecological Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>International</td>
<td>Internationally designated or candidate/proposed site. Regularly occurring population of an internationally important species.</td>
</tr>
<tr>
<td>National</td>
<td>Nationally designated site, or nationally important habitat. Regularly occurring population of a nationally important species, including national level BAP species.</td>
</tr>
<tr>
<td>Regional</td>
<td>Viable area of key habitat identified in a regional BAP. Regularly occurring population of a regionally important species.</td>
</tr>
<tr>
<td>County</td>
<td>County designated site or important habitat listed in a county BAP. Regularly occurring population of a species important at a county level.</td>
</tr>
<tr>
<td>District</td>
<td>Area of habitat identified in a District/Borough BAP. Regularly occurring population of a species important at District/Borough level.</td>
</tr>
<tr>
<td>Parish</td>
<td>Area of habitat of appreciable nature conservation value.</td>
</tr>
</tbody>
</table>

Impact Assessment

The objective for this part of the assessment is to predict and characterise the impacts arising from the proposed developments in the absence of any mitigation. Assessments are presented separately for the construction, operational and decommissioning phases of the development (where needed). Mitigation is outlined in Section 7.8, followed by an assessment of residual impacts for the fully mitigated schemes in Section 7.9.

Impact assessment is carried out by considering the nature/scale of each development impact on the ecological features within the study area, and assessing the likely direction, magnitude and scale of impacts, guided by the criteria for sites, habitats and species (Table 7-3).

For the purposes of this assessment, a permanent (irreversible) impact is one from which recovery is not possible within a reasonable timescale or for which there is no reasonable chance of action being taken to reverse it. A reversible (temporary) impact is one from which spontaneous recovery is possible or for which effective mitigation is possible and a commitment has been made.

Table 7-3 - Criteria for Sites Habitats and Species

<table>
<thead>
<tr>
<th>Impact</th>
<th>Criteria for SITES</th>
<th>Criteria for HABITATS</th>
<th>Criteria for SPECIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Negative</td>
<td>The change is likely to cause a permanent adverse effect on the integrity of a key site or ecosystem.</td>
<td>The change is likely to cause a permanent adverse effect on the conservation status of habitats present.</td>
<td>The change is likely to cause a permanent adverse effect on the conservation status of species present.</td>
</tr>
<tr>
<td>Negative</td>
<td>The change adversely affects a key site, but there will probably be no permanent effects.</td>
<td>The change adversely affects a key habitat but there will probably be no permanent effect.</td>
<td>The change adversely affects a species, but there will probably be no permanent effects.</td>
</tr>
<tr>
<td>Neutral</td>
<td>No significant effect.</td>
<td>No significant effect.</td>
<td>No significant effect.</td>
</tr>
<tr>
<td>Positive</td>
<td>The change is likely to benefit a key site in terms of the factors that confer it ecological value.</td>
<td>The change is likely to benefit a key habitat in terms of the factors that confer it ecological value.</td>
<td>The change is likely to benefit a key species in terms of the factors that confer it ecological value.</td>
</tr>
</tbody>
</table>
Assessing Significance
After determining the scale of each impact, significance is categorised with respect to the level of importance/value and the scale of the likely effect. Significance is defined as a combination of a particular value and the predicted magnitude of impact, as shown in Table 7-4.

As with other parts of this assessment, professional judgement has been exercised during this assessment of impacts and their significance.

Table 7-4 - Impact Significance Matrix

<table>
<thead>
<tr>
<th>Impact</th>
<th>Criteria for SITES</th>
<th>Criteria for HABITATS</th>
<th>Criteria for SPECIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Positive</td>
<td>The change is likely to restore the integrity of a key site or ecosystem, or create it for the first time.</td>
<td>The change is likely to restore a habitat to a favourable conservation status, or create it for the first time.</td>
<td>The change is likely to restore a key species to a favourable conservation status, or create it for the first time.</td>
</tr>
</tbody>
</table>

Mitigation
Mitigation measures are identified in order to reduce and if possible eliminate construction, operational and decommissioning impacts and, where possible, enhance the site in accordance with best practice for net ecological gain (IEEM 2006) and in harmony with the NPPF.

Within the mitigation part of the assessment, measures are identified to:

- Avoid negative ecological impacts;
- Reduce negative impacts that cannot be avoided; and
- Enhance the biodiversity of the site.

Where possible, priority is given to the avoidance of impacts at source through the re-design of the scheme (so-called ‘designed-in’ mitigation). Where this does not prove possible, measures are identified to reduce impacts ideally to the point that they are no longer significant. Enhancement methods are included to provide positive biodiversity benefits, as promoted by the NPPF.

7.4 Baseline Conditions
In this section of the EcIA, the ecological features that could be affected by each of the proposed developments are identified and described.

For Scenario 1, the ‘extension to time’ development, the areas of direct impact are Zones A-F and Zones AL, AN and LS as shown in Figure 7-1. The baseline is the restored quarry, as would be the case if there was no extension to time. Without approval of the Section 73 application, the quarry would be required to cease...
operations (in 2016) and the restoration would be underway, taking perhaps 10 years to complete. The baseline is derived from the original approved 1991 restoration scheme as per planning permission R687/1547/1486/P (see Figure 7-2, Section 7.10).

For Scenario 2, the extension to quarrying activities, the areas of direct impact are Zones 1-4 as shown on Figure 7-1. Quarrying in this area is a new application to be studied in isolation to the Section 73 application (Scenario 1). The area has not been quarried previously and is mainly arable land. The baseline is derived from the current habitats within Zones 1-4, with the restored quarry (as shown on Figure 7-2) within the immediate surrounds to the west, east and south.

An Ecology Constraints and Opportunities Map for the whole site is provided in Figure 7-3 (Section 7.10) to show the locations of the key ecological features detailed in this section.

**Wildlife Sites**

Details for wildlife sites within or close to the study area are included in Technical Appendix 3a.

Within 1 km of the site there are no internationally designated sites.

There is one nationally important site, an SSSI (Combe Pool), approximately 780 m to the north west. The Brinklow Quarry site lies within the SSSI Impact Risk Zone (IRZ) for this SSSI. The IRZ is used by Natural England to make an initial assessment of the potential impacts of development proposals on SSIs. It defines a zone around each SSSI according to the particular sensitivities of the features for which it is notified, and specifies the types of development that have the potential to have adverse impacts. Any quarry proposals, including extensions, are considered to pose a risk to the Combe Pool SSSI.

There are also three ancient woodlands within 1 km, the closest being located adjacent to the south west of the site boundary (Birchley and New Close Wood). Deciduous woodland BAP priority habitat is also present within 1 km of the site, the closest being adjacent to the south west of the site boundary (Birchley and New Close Wood).

WBRC provided records of all Local Wildlife Sites (LWSs), potential LWS and Ecosites within 1 km of the site. These records are summarised in Table 7-5.

<table>
<thead>
<tr>
<th>Site</th>
<th>Type</th>
<th>Habitats</th>
<th>Distance and direction from current quarry area (m)</th>
<th>Distance and direction from extension area (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birchley and New Close Wood</td>
<td>Ecosite, LWS</td>
<td>Ancient woodland</td>
<td>Adjacent S</td>
<td>12 S</td>
</tr>
<tr>
<td>Combe Pool</td>
<td>SSSI</td>
<td>Pool, woodland, reed beds</td>
<td>780 NW</td>
<td>1000 NW</td>
</tr>
<tr>
<td>Combe Pool</td>
<td>Ecosite, LWS</td>
<td>Pool, woodland, tall herb, species-rich grassland</td>
<td>130 NW</td>
<td>450 NW</td>
</tr>
<tr>
<td>High Wood</td>
<td>Ecosite, pLWS</td>
<td>Ancient woodland</td>
<td>150 N</td>
<td>480 N</td>
</tr>
<tr>
<td>Little Wood and Reservoir</td>
<td>Ecosite, LWS</td>
<td>Ancient woodland and reservoir.</td>
<td>660 NW</td>
<td>290 N</td>
</tr>
<tr>
<td>Old Pools Wood</td>
<td>Ecosite, LWS</td>
<td>Mixed woodland</td>
<td>460 SW</td>
<td>950 SW</td>
</tr>
<tr>
<td>Smite Brook</td>
<td>Ecosite</td>
<td>Brook</td>
<td>940 NW</td>
<td>1000 NW</td>
</tr>
</tbody>
</table>

*Table 7-5 - LWS and Ecosites within 1 km of the Quarry Site (Source: WBRC, June 2015)*

Chapter 7-11
### Habitats

According to the 1994 approved restoration plan (Figure 7-2, Section 7.10) the existing quarry area would mainly be restored to arable, with an amenity lake and a landscaped area which is already planted in part with trees. Some hedgerows have been retained (exist in 2015) and others that are species poor will be restored.

Habitat types which would therefore be present (recorded during the Ecological Appraisal and projected) would be:

- Dry ditch;
- Standing water;
- Running water;
- Dense and scattered scrub;
- Scattered trees;
- Tall ruderal;
- Arable;
- Hedgerows;
- Mixed plantation woodland; and
- Improved grassland.

For the extended quarry area, the Ecological Appraisal (Technical Appendix 3a) can be used to identify the habitats present. Thus 11 habitat types have been recorded in the quarry extension area, as follows:

- Dry ditch;
- Standing water;
- Running water;
- Dense and scattered scrub;
- Scattered trees;
- Tall ruderal;
- Arable;
- Hedgerows;
- Mixed plantation woodland;
- Improved grassland; and
- Buildings.
Brinklow Quarry Environmental Statement
Ecological Issues - Baseline Conditions

From the above habitats, the most ecologically significant are the hedgerows (and mature trees) and waterbodies. These are UK BAP and Warwickshire, Coventry & Solihull BAP priority habitats.

By contrast, the other habitats are not considered to be key habitats for this EcIA and were 'scoped-out' as they either have limited biodiversity value and/or will not be impacted by the proposed developments.

Species
The species information below is relevant to both the ‘extension to time’ development and the ‘extension to area’ development (except where stated) as it is assumed that the restored quarry baseline would provide similar habitats to the habitats that persist in site or are found within the extension area.

The Ecological Appraisal (Technical Appendix 3a) identified that the site had potential for a range of species with the key species which may be impacted by the development being:

- Birds;
- Bats;
- Hazel dormouse;
- Amphibians; and
- Reptiles.

The Ecological Appraisal also noted the presence of a badger sett within the eastern landscaped area of the quarry (Zone LS). Badgers are not considered a key receptor as they are a common species and are unlikely to be impacted significantly. However, they do need to be considered in terms of the legal protection afforded to them, to ensure that an offence is not committed, through disturbance or destruction of the sett. As badgers are sometimes subject to human persecution the location of the badger sett is provided separately (Figure 7-4, confidential). This drawing must remain confidential and should not be placed in the public domain.

The Ecological Appraisal also noted the presence of Japanese Knotweed, which is a non-native invasive and notifiable species. This is listed under Schedule 9, Section 14, of The Wildlife and Countryside Act 1981 (and amendments), whereby it is illegal to plant or otherwise cause the species to grow in the wild. Again, this is not considered a key receptor but the presence of this species should be considered in operations to ensure that an offence is not committed.

Birds
The data from WBRC included records of 24 protected and notable bird species within 1 km of the site. Only one record was from within the site; a record of golden plover made in 1977. Many of the records were of wading birds which are likely to be occasionally attracted to the waterbodies on site.

During the Extended Phase 1 survey for the Ecological Appraisal (Technical Appendix 3a), bird species recorded included carrion crow, coot, mallard, blackbird, robin, common buzzard, barn swallow, sand martin (nesting in quarry cliffs) and yellow wagtail. Yellow wagtail is a BoCC red list species and swallow, sand martin and mallard are amber list species. Yellow wagtail is also a BAP priority species. It is not known whether the Yellow wagtail remained to nest or was a migrant.

The arable field margins provide hunting opportunities for birds of prey. The woodland strips, hedgerows and waterbodies provide some potential nesting and foraging habitat for local bird species. Stable buildings to the west of the extension area also offer some nesting potential, with two barn swallow nests observed.

Bats
WBRC provided 31 records of eight bat species (brown long-eared bat, common pipistrelle, Daubenton's bat, noctule, serotine, soprano pipistrelle, Myotis species
and whiskered bat) within 1 km of the site. None of these records were from within the site itself.

The site offers potential for commuting and foraging bats along the hedgerows, woodland strips, arable field margins, scrub and waterbodies. Eleven trees on-site were assessed to have medium potential for roosting bats and 12 assessed to have low potential. The stable buildings to the west of the quarry extension area were also assessed to have low to medium potential for roosting bats.

Emergence surveys of the one tree (Tree 36, see Figure 7-3, Section 7.10) with medium bat roosting potential which will be removed immediately did not reveal any bat activity within this tree. The remaining trees and buildings with bat roosting potential are not proposed to be removed for several years. Therefore, emergence surveys will need to be undertaken at a later date.

Bat activity surveys have shown that the site is used by small numbers of common and rarer bat species. Four of the species recorded (common and soprano pipistrelle, noctule and brown long-eared bat) are common and widespread throughout Warwickshire (Eaton and Smith, 2013). The Myotis species are either frequent or scarce in Warwickshire and all are vulnerable. The Leisler’s bat is scarce and vulnerable. The common bat species were the most frequently recorded, with common and soprano pipistrelle being the most abundant species to use the site.

Bats were observed using hedgerows and woodland strips within the extension area for commuting and foraging (see Technical Appendix 3c). Most activity was concentrated along the northern hedgerow adjacent to the B4027 Coventry Road and along the central west-east hedgerow which follows the public footpath. Foraging also occurs along hedgerows within the active quarry area near to excavations and quarry tracks.

Hazel Dormouse
WBRC did not provide any records of hazel dormice within 1 km of the site boundary.

Although the dense scrub and hedgerows across the site do not offer optimum habitat for hazel dormice, they do have some potential, with food sources including bramble, blackthorn, hawthorn, hazel and ash. Many of the hedgerows are currently heavily managed but there are also several thick, bushy hedgerows within the extension area. As the hedgerows connect areas of woodland they may be important for dispersal if a hazel dormouse population is present.

To date, dormouse surveys have found potential dormouse nests located in hedgerows and woodland strips bordering arable fields (see Figure 7-3, Section 7.10). Further surveys are scheduled for October and November 2015, in accordance with best practice, when the presence of dormice could be confirmed.

Amphibians
WBRC provided 12 records of common toad from 1982 to 1997, ten records of common frog from 1983 to 2005 and two records of smooth newt from 1982. All the records were located in Combe County Park, approximately 750 m north west.

The site offers some potential for amphibians with 17 waterbodies within 250 m of the combined boundary of both applications, 4 non-quarry waterbodies within the site boundary and one, large, new waterbody within the proposed restoration of the existing quarry area. The tall ruderal vegetation, scrub and hedgerows provide potential foraging and refuge habitat.

HSI assessments of the waterbodies concluded that 14 waterbodies (including 2 within the extension area boundary) had ‘average’ to ‘excellent’ suitability for great crested newts.

Great crested newt surveys of waterbodies with an average and above HSI within 250 m of the site boundary found a medium population of great crested newts in three ponds (Ponds 9, 19 and 30) and small populations in Ponds 8 and 13.
Brinklow Quarry Environmental Statement
Ecological Issues - Baseline Conditions

Locations are shown on Figure 7-3 (Section 7.10) (note that all quarry waterbodies are not shown on the map).

**Reptiles**

WBRC provided three records of grass snake from 1982 to 2006 located approximately 720 m south east and 750 m north west. Common lizard and grass snake have been observed within the site boundary during field surveys.

The tall ruderal vegetation, scrub and hedgerows across the site provide potential foraging and refuge habitat.

Reptile surveys revealed the presence of a small population of grass snakes (a maximum of 3 recorded during any one survey visit). All grass snake observations were under refugia to the west of the site (see Figure 7-3, Section 7.10).

**Information Gaps and Other Constraints**

Pre-existing information has been utilised to help describe and predict the baseline environments. Some of the information used is not contemporary and it should be noted that a species record within 1 km does not mean that the site necessarily provides habitat for these species.

Ecology surveys have been undertaken using best practice survey methods. As with all ecological surveys, and because species come and go, the possibility of important ecological features being found through further investigation and/or by survey at different times of the year or in different years cannot be completely eliminated.

**Valuation of Ecological Receptors**

This section presents the valuation of the ecological features and resources associated with the overall site. Methods used are described in Section 7.3 Justifications for the values assigned are provided in Table 7-6.

Detailed impact assessment is required in order to assess the level of significance of the effects of the proposed developments upon the ecological features identified. The potential impacts and impact assessments are outlined in subsequent sections of this EcIA.

*Table 7-6 - Assessment of Value of Key Ecological Receptors within or close to the Brinklow Quarry Site*

<table>
<thead>
<tr>
<th>Receptor</th>
<th>Level of Value</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combe Pool SSSI</td>
<td>National</td>
<td>A nationally designated site which if significantly impacted would result in an impact to the national Natura network of designated sites.</td>
</tr>
<tr>
<td>Ancient woodlands and BAP deciduous woodland</td>
<td>National</td>
<td>UK and Local BAP priority habitat, which if significantly impacted would result in a loss to the national woodland resource.</td>
</tr>
<tr>
<td>LWS, Ecosites</td>
<td>County</td>
<td>Local sites designated at a county level where loss would impact the county network of wildlife sites.</td>
</tr>
<tr>
<td>Waterbodies (lake, ponds)</td>
<td>County</td>
<td>UK and Local BAP priority habitat, however many are in poor condition and therefore not considered significant at a national level.</td>
</tr>
<tr>
<td>Hazel dormouse</td>
<td>County</td>
<td>EPS present using hedgerows and woodland strips. The recorded distribution of hazel dormouse in Warwickshire indicates the species is rare (Moffat, 2014). Therefore a population could be significant at county level.</td>
</tr>
<tr>
<td>Reptiles</td>
<td>County</td>
<td>UK BAP priority species present (common lizard and grass snake). Common lizard has a limited distribution in Warwickshire and therefore the population is important at a county level (WART, no date).</td>
</tr>
</tbody>
</table>
Receptor | Level of Value | Justification
--- | --- | ---
Bats | District ●● | Common and small numbers of rarer bat species (EPS) use the site for commuting and foraging. Site has some roosting potential for bats.
Great crested newt | District ●● | Small and medium populations of great crested newt (EPS) present. Population not considered large enough to have a value above district level and great crested newt are widespread in Warwickshire (Sherwell & Tanner 2013).
Hedgerows and mature trees | Parish ● | UK and LBAP priority habitat. None of the hedgerows are species-rich under the Hedgerow Regulations (1997) and similar quality hedgerows are present in the surrounding landscape. Important for bats, birds and dormice at the local level.
Birds | Parish ● | UK BAP species and BoCC red list and amber list species potentially present within buildings and vegetation on-site. There is extensive similar pasture and arable habitat available in the surrounding landscape.
Other Amphibians | Parish ● | Common amphibian species (smooth newt, palmate newt and common frog) present within ponds on-site.

7.5 Impacts of the Proposals

**Impacts of Extension to Time (Scenario 1)**

In summary, the Section 73 application is for continued operation of the current quarry including completion of mineral extraction phased over ten years from 2016 to 2026, restoration works and continued operation of the mortar plant, open window composting facility and inert waste recycling facility. As the baseline assumes that the quarry will have been restored, there will be a direct impact on areas that have not yet been quarried (e.g. those that exist as arable in 2015; see Figure 7-2) and on the area designated as an amenity lake if this area is to be reused in some way. There may be indirect impacts on surrounding habitats in all directions.

There is also a proposed change to the hours of operation such that working hours will be increased during week days (start at 07.30 hours rather than 08.00) and working on Saturday will be permitted from 07:30 to 13:00.

No fixed lighting is proposed and vehicle lights will be used (when needed) during the operating hours in the winter months.

**Impact Description**

Operational activities have been grouped and characterised according to their likely ecological impacts, as shown in Table 7-7.

**Table 7-7 - Ecological Characterisation of Activities Involved in the Operation of the current quarry area**

<table>
<thead>
<tr>
<th>Operational Activities</th>
<th>Impact Characterisation</th>
</tr>
</thead>
</table>
| Extraction of sand, gravel and clay | • Loss of habitats (primarily arable, lake and grassland).  
• Potential for injury/death to less mobile wildlife species, e.g. reptiles, great crested newts, bats within roosts etc.  
• Raising and settlement of dust.  
• Noise disturbance to wildlife species.  
• Pollution of nearby watercourses through run-off.  
• Creation of quarry habitats which can be beneficial to some wildlife species. |
Operational Activities | Impact Characterisation
--- | ---
Processing of excavated mineral | • Raising and settlement of dust.  * Noise disturbance to wildlife species.  * Pollution of water used for washing process. This is then pumped back into quarry excavations to allow the silt to settle and recover the process water for re-use.
Vehicular movement including delivery of waste to site and export off site of quarry materials | • Raising and settlement of dust.  * Noise disturbance to wildlife species.

The primary impact from the extension to time arises from the loss of habitats. The habitats lost will include arable (and field margins) and the amenity lake and surrounding grasslands. It is understood that there will be no loss of hedgerows and woodland strips within the current quarry area, i.e. Zones A-F and Zones AL, AN and LS (see Figure 7-1; Section 7.10).

Extraction of minerals and processing has the potential to cause injury/death to any wildlife using the habitats to be removed. This particularly applies to less mobile species such as amphibians and reptiles.

Secondary impacts are associated with noise disturbance, the raising of dust and water use and pollution during extraction, processing and export of quarry materials.

Operation of the quarry results in associated noise from plant, vehicle movements and processing operations. Operational noise, unless mitigated, may cause disturbance to wildlife, particularly bats, dormice and birds.

Dust production is associated with quarry operations from extraction, processing and vehicular movements. Dust can impact plant communities by direct deposition on leaves affecting photosynthesis, respiration and transpiration. Dust can also lead to changes in soil chemistry altering the plant community structure. Dust concentration decreases with distance from site and dust assessments of ecological receptors are only required for receptors within 50 m of the site boundary (IAQM 2014). Therefore dust may impact on habitats within close proximity (50 m) to the boundary of the current quarry area. This includes Birchley and New Close Wood (LWS and Ecosite) and Woodhill Spinney and Verge (Ecosite), both of which are within 50 m.

The site description for Birchley and New Close Wood provided by WBRC states that the woodland consists of mixed broad-leaved woodland with a ground flora consisting predominantly of bracken and bramble. Key concerns within broad-leaved woodlands for air pollution are lichens and sensitive ground flora, especially bryophytes (APIS, no date). The woodland features described are considered to have low sensitivity to dust deposition. Additionally quarrying work will only be adjacent to a very short section of the woodland edge (approximately 300 m). It is unlikely that work along a short length of the perimeter of the woodland will significantly impact this large area of woodland.

Woodhill Spinney and Verge is a smaller woodland strip which could be impacted by dust deposition.

Although the current quarry area lies within the IRZ for Combe Pool SSSI, this is located 780 m north west and is not within 50 m. Additionally the SSSI is not downwind of the south-westerly prevailing wind (Met Office, 2015) and therefore is less likely to be impacted by dust emissions.

Dust may also pollute waterbodies on-site or within 50 m. Three non-quarry waterbodies (Ponds 19, 20 and 30) will be retained within or on the boundary of the Section 73 area (see Figure 7-3, Section 7.10). These are located within or on the boundary of the landscaped area where no further work is proposed and they are not within 50 m of areas where work is proposed. Thus, pollution to these ponds is unlikely. The only other retained non-quarry waterbodies are the wet ditches which
are located within an arable environment and therefore already experience pollution (sediments and chemicals).

There are five waterbodies within 50 m of the current quarry boundary (see Figure 7-3, Section 7.10). Pond 9 is to the south west of the landscaped area and therefore not within 50 m of an active quarry area. Ponds 1, 2 and 38 are within a strip of woodland and therefore it is considered that little dust will reach the waterbodies. Pond 14 is located to the south west of the Section 73 area and may be impacted by dust emissions.

Water used in the washing process is taken from quarry excavations, where ground water has risen. This is then pumped back into quarry excavations to allow the silt to settle and recover the process water for re-use. As water is re-used and the amount of water will not increase with the quarry extension an impact on local hydrology is not anticipated. The process water is polluted with silt and sediment however, this is settled out in quarry waterbodies and therefore it is considered that local water quality is unlikely to be impacted. There is also potential for other pollutants to pollute the process water, such as fuel and oil seepage from the vehicles used on-site, and this could lead to pollution of waterbodies. Run-off during extraction also has the potential to pollute local waterbodies with sediment when the ground is left bare.

No fixed lighting is proposed and therefore there will be no disturbance to nocturnal species through lighting.

Impact Assessment

The projected ecological impacts arising from continued operation of the current quarry site are summarised in Table 7-8.

In general impacts are associated with the loss of habitat (arable, lake, grassland), pollution and potential injury/death associated with quarry operations. There is one impact of High significance without mitigation associated with the potential for pollution to the waterbody at Combe Pool SSSI.

Impacts of Medium significance are associated with the potential for dust deposition on Woodhill Spinney and Verge Ecosite, the loss and potential pollution of waterbodies, the potential for disturbance to dormice and the potential for injury/death to reptiles.

The loss of habitat for bats and disturbance is of Medium to Low significance. The potential for injury/death to great crested newts and loss of some suitable terrestrial habitat is of Medium to Low significance as it is only likely to affect small numbers and the potential for injury/death to other common amphibians is of Low significance. The loss of the lake and some suitable terrestrial habitat for common amphibians is of Low significance. The loss of habitat and potential for injury/death to birds through vegetation clearance is also of Low significance, as this is only considered to impact small numbers of local species.
### Table 7-8 - Assessment of Potential Ecological Impacts of Extension to Time (Scenario 1) during Operation Without Mitigation

<table>
<thead>
<tr>
<th>Receptor</th>
<th>Value</th>
<th>Impact Description</th>
<th>Likely Scale of Impact Without Mitigation</th>
<th>Justification for Scale of Impact</th>
<th>Likely Significance of Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combe Pool SSSI</td>
<td>●●●●●</td>
<td>Dust deposition</td>
<td>Neutral ⪖</td>
<td>Dust deposition is mainly contained to within 50 m from a site boundary. As the SSSI is located 780 m northwest, not downwind of the prevailing wind, no significant effects are anticipated.</td>
<td>No Impact</td>
</tr>
<tr>
<td>Combe Pool (LWS and Ecosite)</td>
<td>●●●</td>
<td>Dust deposition</td>
<td>Neutral ⪖</td>
<td>Dust deposition is mainly contained to within 50 m from a site boundary. As the LWS and Ecosite is located 130 m northwest, not downwind of the prevailing wind, no significant effects are anticipated.</td>
<td>No Impact</td>
</tr>
<tr>
<td>Birchley and New Close Wood (LWS and Ecosite)</td>
<td>●●●</td>
<td>Dust deposition</td>
<td>Neutral ⪖</td>
<td>No significant effect – quarrying work will only be adjacent to a very short section of the woodland edge (approximately 300 m). As deciduous woodland is a low sensitivity receptor to dust deposition it is unlikely that work along a short length of the perimeter of the woodland will significantly impact this large area of woodland.</td>
<td>No Impact</td>
</tr>
<tr>
<td>Woodhill Spinney and Verge (Ecosite)</td>
<td>●●●</td>
<td>Dust deposition</td>
<td>Negative ⬡</td>
<td>This small strip of woodland is separated from the quarry boundary by the B4027 Coventry Road. However, it is within 50 m of the current quarry area boundary and as it is a smaller area of woodland is at greater risk from dust deposition.</td>
<td>Medium</td>
</tr>
<tr>
<td>Receptor</td>
<td>Value</td>
<td>Impact Description</td>
<td>Likely Scale of Impact Without Mitigation</td>
<td>Justification for Scale of Impact</td>
<td>Likely Significance of Impact</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-------</td>
<td>-------------------------</td>
<td>-------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>Waterbodies</td>
<td>⬤⬤⬤</td>
<td>Loss or habitat</td>
<td>Negative ◊</td>
<td>The Section 73 application will result in the loss of the lake that has been provided as part of the restoration of the site.</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Water pollution</td>
<td>Negative ◊</td>
<td>Dust emissions may result in the pollution of one field pond. Pollution of process water and run-off could pollute nearby waterbodies. It will be possible for retained waterbodies to recover after quarry operations cease.</td>
<td>Medium</td>
</tr>
<tr>
<td>Hazel dormouse</td>
<td>⬤⬤⬤</td>
<td>Noise disturbance</td>
<td>Negative ◊</td>
<td>Quarry operations could cause noise disturbance and result in displacement.</td>
<td>Medium</td>
</tr>
<tr>
<td>Reptiles</td>
<td>⬤⬤⬤</td>
<td>Loss of habitat</td>
<td>Neutral ◊</td>
<td>Loss of arable habitat, although sub-optimal. More suitable terrestrial habitat associated with the less disturbed quarry areas will be created.</td>
<td>No Impact</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Injury/death</td>
<td>Negative ◊</td>
<td>Quarry operations could lead to the injury/death of reptile species without mitigation.</td>
<td>Medium</td>
</tr>
<tr>
<td>Bats</td>
<td>⬤</td>
<td>Loss of habitat</td>
<td>Negative ◊</td>
<td>Loss of arable field margins will remove some potential foraging areas.</td>
<td>Medium to Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Noise disturbance</td>
<td>Negative ◊</td>
<td>Quarry operations finish at 18:00 and therefore nocturnal bat activity will not be impacted by noise. However, noise disturbance could impact roosts, if present.</td>
<td>Medium to Low</td>
</tr>
</tbody>
</table>
### Ecological Issues - Impacts of the Proposals

<table>
<thead>
<tr>
<th>Receptor</th>
<th>Value</th>
<th>Impact Description</th>
<th>Likely Scale of Impact Without Mitigation</th>
<th>Justification for Scale of Impact</th>
<th>Likely Significance of Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Great crested newt</td>
<td>● ●</td>
<td>Loss of habitat</td>
<td>Negative</td>
<td>Loss of some suitable terrestrial habitat (arable field margins, lake margins and grasslands). All ponds with great crested newt populations will be retained and all non-quarry waterbodies within 500 m of these, which may be used as part of a metapopulation, will be retained.</td>
<td>Medium to Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Injury/death</td>
<td>Negative</td>
<td>Quarry operations could lead to the injury/death of small numbers of great crested newts without mitigation. It is only considered that small numbers would be impacted as the quarry is generally a hostile environment which great crested newts are likely to avoid.</td>
<td>Medium to Low</td>
</tr>
<tr>
<td>Birds</td>
<td>●</td>
<td>Loss of habitat</td>
<td>Negative</td>
<td>Loss of any habitat which may be used by local bird populations for foraging and nesting.</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Noise disturbance</td>
<td>Negative</td>
<td>Quarry operations could cause disturbance due to noise.</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Injury/death</td>
<td>Negative</td>
<td>Removal of nesting habitat without mitigation could result in injury/death to bird species.</td>
<td>Low</td>
</tr>
<tr>
<td>Amphibians</td>
<td>●</td>
<td>Loss of habitat</td>
<td>Negative</td>
<td>Loss of the lake created by the 1991 restoration plan. Loss of some suitable terrestrial habitat, mainly arable fields margins.</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Injury/death</td>
<td>Negative</td>
<td>Quarry operations could lead to the injury/death of small numbers of amphibians without mitigation. It is only considered that small numbers would be impacted as the quarry is generally a hostile environment which amphibians are likely to avoid.</td>
<td>Low</td>
</tr>
</tbody>
</table>
Decommissioning Effects
The continued operation of the quarry is a phased process with restoration of quarried areas after each phase is complete. Restoration of the final phase in the current quarry area is scheduled for 2026. Restoration involves the re-spreading of stripped topsoil and overburden to return approximately 43.5 ha of the quarried area to agricultural production. The area to the east (approximately 8 ha), which is already landscaped (Zone LS), will remain as it is (scattered trees, scrub, tall ruderal vegetation). The remaining area (approximately 17.8 ha) will be established as lakes and enhanced for wildlife. Approximately 14.5 ha of this area will be open to the public; the other 11.3 ha will be retained as an undisturbed area for wildlife.

Impact Description
Decommissioning activities have been grouped and characterised according to their likely ecological impacts, as shown in Table 7-9.

Table 7-9 - Ecological Characterisation of Activities Involved in the Decommissioning of the Current Quarry Area

<table>
<thead>
<tr>
<th>Decommissioning Activities</th>
<th>Impact Characterisation</th>
</tr>
</thead>
</table>
| Clearance of vegetation in areas to be restored to agriculture  | • Loss of habitats (e.g. poor semi-improved grassland, scrub and tall ruderal associated with the quarry).  
• Potential for injury/death to less mobile wildlife species using vegetation. |
| Re-spreading of topsoil                                         | • Loss of quarry habitats (e.g. bare ground, cliff faces, quarry waterbodies).            
• Potential for injury/death to less mobile wildlife species using the quarry area. |
| Works associated with creation of lakes and wildlife features    | • Potential for injury/death to less mobile wildlife species using the quarry area.        |

The primary impact associated with decommissioning is the loss of quarry habitats which will be returned to agriculture. Habitats lost will include poor semi-improved grassland, scrub, tall ruderal, bare ground, cliff faces and quarry waterbodies.

Preparing the site for return to agriculture (vegetation clearance and re-spreading of topsoil) has the potential to cause injury/death to any wildlife using these habitats. This particularly applies to less mobile species such as amphibians and reptiles.

Habitat diversification will also be sought during decommissioning, with enhancement measures for wildlife incorporated into the area of lakes to be created to the west of the quarried area. This is detailed further within the mitigation section of this EcIA and should result in some positive impacts.

Impact Assessment
The projected ecological impacts arising from decommissioning of the quarry are summarised in Table 7-10.

In general impacts are associated with the loss of habitat and potential injury/death associated with restoring the site to agriculture. There are no impacts of high significance. Impacts of Medium significance are associated with the loss of quarry waterbodies which provide habitat for birds, loss of reptile habitat and the potential for injury/death to reptiles.

The loss of potential bat foraging habitat is of Medium to Low significance as it is only likely to affect small numbers of bats and only small areas of suitable habitat will be lost. The loss of great crested newt habitat and the potential for injury/death to great crested newts is of Medium to Low significance as it is only likely to affect small numbers. Habitat loss and the potential for injury/death to other common amphibians is of Low significance. The loss of habitat and potential for injury/death to birds through vegetation clearance is also of Low significance, as this is only considered to impact small numbers of local species.
### Table 7-10 - Assessment of Potential Ecological Impacts during Decommissioning of the current quarry area Without Mitigation

<table>
<thead>
<tr>
<th>Receptor</th>
<th>Value</th>
<th>Impact description</th>
<th>Likely scale of impact without mitigation</th>
<th>Justification for scale of impact</th>
<th>Likely significance of impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combe Pool SSSI</td>
<td>●●●●●</td>
<td>No Impact</td>
<td>Neutral ◯</td>
<td>It is not considered that any of the decommissioning activities will impact the SSSI.</td>
<td>No Impact</td>
</tr>
<tr>
<td>LWS, Ecosites</td>
<td>●●●</td>
<td>No Impact</td>
<td>Neutral ◯</td>
<td>It is not considered that any of the decommissioning activities will impact currently designated wildlife sites.</td>
<td>No Impact</td>
</tr>
<tr>
<td>Ancient woodland and BAP deciduous woodland</td>
<td>●●●</td>
<td>No Impact</td>
<td>Neutral ◯</td>
<td>It is not considered that any of the decommissioning activities will impact nearby habitats.</td>
<td>No Impact</td>
</tr>
<tr>
<td>Waterbodies</td>
<td>●●●</td>
<td>Loss of habitat</td>
<td>Negative ◯</td>
<td>There will be loss of quarry waterbodies which provide temporary habitat for wildlife species, e.g. birds.</td>
<td>Medium</td>
</tr>
<tr>
<td>Hazel dormouse</td>
<td>●●●</td>
<td>No Impact</td>
<td>Neutral ◯</td>
<td>It is not considered that any of the decommissioning activities will impact hazel dormouse populations, assuming that field boundaries are not impacted.</td>
<td>No Impact</td>
</tr>
<tr>
<td>Reptiles</td>
<td>●●●</td>
<td>Loss of habitat</td>
<td>Negative ◯</td>
<td>There will be loss of quarry habitat which provides potential for reptiles, including loss of rubble piles associated with the quarry workings which may act as refuge and hibernation sites for reptiles.</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Injury/death</td>
<td>Negative ◯</td>
<td>Decommissioning activities could lead to the injury/death of reptile species without mitigation.</td>
<td>Medium</td>
</tr>
<tr>
<td>Receptor</td>
<td>Value</td>
<td>Impact description</td>
<td>Likely scale of impact without mitigation</td>
<td>Justification for scale of impact</td>
<td>Likely significance of impact</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-------</td>
<td>--------------------</td>
<td>------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>Bats</td>
<td>●●</td>
<td>Loss of habitat</td>
<td>Negative Ø</td>
<td>Loss of scrub, tall ruderal, poor semi-improved grassland and quarry waterbodies which have some potential for foraging bats.</td>
<td>Medium to Low</td>
</tr>
<tr>
<td>Great crested newts</td>
<td>●●</td>
<td>Loss of habitat</td>
<td>Negative Ø</td>
<td>There will be loss of quarry waterbodies which provide very limited potential for great crested newts. Loss of rubble piles associated with the quarry workings which may act as refuge and hibernation sites for great crested newts.</td>
<td>Medium to Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Injury/death</td>
<td>Negative Ø</td>
<td>Decommissioning activities could lead to the injury/death of small numbers of great crested newts without mitigation.</td>
<td>Medium to Low</td>
</tr>
<tr>
<td>Hedgerows and mature trees</td>
<td>●</td>
<td>No Impact</td>
<td>Neutral Ø</td>
<td>It is not considered that any of the decommissioning activities will impact upon hedgerows.</td>
<td>No Impact</td>
</tr>
<tr>
<td>Birds</td>
<td>●</td>
<td>Loss of habitat</td>
<td>Negative Ø</td>
<td>Loss of quarry habitats (vertical cliffs for sand martins, quarry waterbodies and vegetation) which may be used by local bird populations for foraging and nesting.</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Injury/death</td>
<td>Negative Ø</td>
<td>Removal of nesting habitat without mitigation could result in injury/death to bird species.</td>
<td>Low</td>
</tr>
<tr>
<td>Amphibians</td>
<td>●</td>
<td>Loss of habitat</td>
<td>Negative Ø</td>
<td>There will be loss of quarry waterbodies which provide very limited potential for amphibians. Loss of rubble piles associated with the quarry workings which may act as refuge and hibernation sites for amphibians.</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Injury/death</td>
<td>Negative Ø</td>
<td>Decommissioning activities could lead to the injury/death of amphibian species without mitigation.</td>
<td>Low</td>
</tr>
</tbody>
</table>
Impacts of Extension to Area (Scenario 2)

The application for a quarry extension is to extend the quarry with an additional 31 ha of workable area (Zones 1-4 on Figure 7-1, Section 7.10). Operation of the extended area is expected to last 20 years to 2036.

Impact Description
Operational activities have been grouped and characterised according to their likely ecological impacts, as shown in Table 7-11.

<table>
<thead>
<tr>
<th>Operational Activities</th>
<th>Impact Characterisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extraction of sand, gravel and clay</td>
<td>• Loss of habitats (primarily arable, improved grassland, hedgerows, two trees and two field ponds).</td>
</tr>
<tr>
<td></td>
<td>• Potential for injury/death to less mobile wildlife species using the quarry area, e.g. reptiles, great crested newts, bats within roosts etc.</td>
</tr>
<tr>
<td></td>
<td>• Raising and settlement of dust.</td>
</tr>
<tr>
<td></td>
<td>• Noise disturbance to wildlife species.</td>
</tr>
<tr>
<td></td>
<td>• Pollution of nearby watercourses through run-off.</td>
</tr>
<tr>
<td></td>
<td>• Creation of quarry habitats which can be beneficial for wildlife.</td>
</tr>
<tr>
<td>Processing of excavated mineral</td>
<td>• Raising and settlement of dust.</td>
</tr>
<tr>
<td></td>
<td>• Noise disturbance to wildlife species.</td>
</tr>
<tr>
<td></td>
<td>• Pollution of water used for washing process. This is then pumped back into quarry excavations to allow the silt to settle and recover the process water for re-use.</td>
</tr>
<tr>
<td>Vehicular movement including delivery of waste to site and export off site of quarry materials</td>
<td>• Raising and settlement of dust.</td>
</tr>
<tr>
<td></td>
<td>• Noise disturbance to wildlife species.</td>
</tr>
</tbody>
</table>

Quarrying within the extension area will produce impacts that are similar to the operation of the current quarry area and these are summarised as follows:

- Loss of habitats will include arable (and field margins), improved grassland, approximately 1500 m of hedgerows, two trees, two field ponds and stable buildings.
- Injury/death to less mobile wildlife species using these habitats.
- Noise disturbance.
- Raising of dust - Birchley and New Close Wood (LWS and Ecosite) and Woodhill Spinney and Verge (Ecosite) are also both within 50 m of the extension area. Again it is considered that Birchley and New Close Wood is unlikely to be impacted due to quarry operations only occurring close to the north east corner of the woodland. Woodhill Spinney and Verge is a smaller woodland strip which could be impacted by dust deposition from the extension area.
- Combe Pool SSSI is located 1 km north west of the extension area and therefore is unlikely to be impacted by dust deposition.
- Dust pollution may impact two non-quarry waterbodies (Ponds 2 and 4) located within 50 m of the boundary (see Figure 7-3, Section 7.10). However Pond 2 is within a strip of woodland and therefore it is considered that little dust will reach this waterbody. The only other retained non-quarry waterbodies are the wet ditches which are located within an arable environment and therefore already experience pollution.
- Two field ponds (Ponds 3 and 17) will be removed in association with the quarry extension.
- Water pollution may occur through quarry processing activities, fuel and oil seepage from vehicles and run-off.
- No fixed lighting is proposed and therefore there will be no disturbance to nocturnal species through lighting.

**Impact Assessment**

The projected ecological impacts arising from operation of the extended site are summarised in Table 7-12.

In general impacts are associated with the loss of habitat, pollution and potential injury/death associated with quarry operations. There is one impact of **High** significance without mitigation associated with the potential for pollution to the waterbody at Combe Pool SSSI.

Impacts of **Medium** significance are associated with the potential for dust deposition on Woodhill Spinney and Verge Ecosite, the loss and potential pollution of waterbodies, the loss of dormouse habitat, disturbance to dormice and the potential for injury/death to dormice and reptiles.

The loss of habitat for bats, disturbance and potential for injury/death due to removal of roosts (if present) is of **Medium to Low** significance. The potential for injury/death to great crested newts and loss of some suitable terrestrial habitat is of **Medium to Low** significance as it is only likely to affect small numbers and the potential for injury/death to other common amphibians is of **Low** significance. The loss of two field ponds with smooth and palmate newts present and some suitable terrestrial habitat is of **Low** significance. The loss of habitat and potential for noise disturbance and injury/death to birds through vegetation clearance is also of **Low** significance, as this is only considered to impact small numbers of local species.

Loss of hedgerows is also of **Low** significance given that none of the hedgerows are species-rich and there is further hedgerow resource within the surrounding landscape. However, hedgerows are important for a variety of wildlife species and, at this site, their loss would have implications for dormice, bats and birds in particular.
Table 7-12 - Assessment of Potential Ecological Impacts of Extension Area (Scenario 2) during Operation Without Mitigation

<table>
<thead>
<tr>
<th>Receptor</th>
<th>Value</th>
<th>Impact Description</th>
<th>Likely Scale of Impact Without Mitigation</th>
<th>Justification for Scale of Impact</th>
<th>Likely Significance of Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combe Pool SSSI</td>
<td>⬤⬤⬤⬤⬤</td>
<td>Dust deposition</td>
<td>Neutral Ø</td>
<td>Dust deposition is mainly contained to within 50 m from a site boundary. As the SSSI is located 1 km northwest, not downwind of the prevailing wind, no significant effects are anticipated.</td>
<td>No Impact</td>
</tr>
<tr>
<td>Combe Pool (LWS and Ecosite)</td>
<td>⬤⬤⬤</td>
<td>Dust deposition</td>
<td>Neutral Ø</td>
<td>Dust deposition is mainly contained to within 50 m from a site boundary. As the LWS and Ecosite is located 450 m northwest, not downwind of the prevailing wind, no significant effects are anticipated.</td>
<td>No Impact</td>
</tr>
<tr>
<td>Birchley and New Close Wood (LWS and Ecosite)</td>
<td>⬤⬤⬤</td>
<td>Dust deposition</td>
<td>Neutral Ø</td>
<td>No significant effect – quarrying work will only be close to the north east corner of the woodland. As deciduous woodland is a low sensitivity receptor to dust deposition it is unlikely that work in close proximity to a short length of the perimeter of the woodland will significantly impact this large area of woodland.</td>
<td>No Impact</td>
</tr>
<tr>
<td>Woodhill Spinney and Verge (Ecosite)</td>
<td>⬤⬤⬤</td>
<td>Dust deposition</td>
<td>Negative Ø</td>
<td>This small strip of woodland is separated from the quarry boundary by the B4027 Coventry Road. However, it is within 50 m of the extension boundary and as it is a smaller area of woodland is at greater risk from dust deposition.</td>
<td>Medium</td>
</tr>
</tbody>
</table>
### Ecological Issues - Impacts of the Proposals

<table>
<thead>
<tr>
<th>Receptor</th>
<th>Value</th>
<th>Impact Description</th>
<th>Likely Scale of Impact Without Mitigation</th>
<th>Justification for Scale of Impact</th>
<th>Likely Significance of Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Waterbodies</strong></td>
<td>⬤⬤⬤</td>
<td>Loss or habitat</td>
<td>Negative Ø</td>
<td>The quarry extension will result in the loss of the two field ponds.</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Water pollution</td>
<td>Negative Ø</td>
<td>Dust emissions may result in the pollution of one field pond. Pollution of process water and run-off could pollute nearby waterbodies. It will be possible for retained waterbodies to recover after quarry operations cease.</td>
<td>Medium</td>
</tr>
<tr>
<td><strong>Hedgerows and mature trees</strong></td>
<td>●</td>
<td>Loss of habitat</td>
<td>Negative Ø</td>
<td>Loss of hedgerows within the quarry extension area.</td>
<td>Low</td>
</tr>
<tr>
<td><strong>Hazel dormouse</strong></td>
<td>⬤⬤⬤</td>
<td>Loss of habitat</td>
<td>Negative Ø</td>
<td>Removal of hedgerows could impact on dormice and could impact on the ability of dormice to disperse.</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Noise disturbance</td>
<td>Negative Ø</td>
<td>Quarry operations could cause disturbance due to noise.</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Injury/death</td>
<td>Negative Ø</td>
<td>Removal of hedgerows could lead to injury/death of dormice (if present) without mitigation.</td>
<td>Medium</td>
</tr>
<tr>
<td><strong>Reptiles</strong></td>
<td>⬤⬤⬤</td>
<td>Loss of habitat</td>
<td>Neutral Ø</td>
<td>Loss of sub-optimal arable habitat and some hedgerows. More suitable terrestrial habitat associated with the less disturbed quarry areas will be created.</td>
<td>No Impact</td>
</tr>
</tbody>
</table>
# Ecological Issues - Impacts of the Proposals

<table>
<thead>
<tr>
<th>Receptor</th>
<th>Value</th>
<th>Impact Description</th>
<th>Likely Scale of Impact Without Mitigation</th>
<th>Justification for Scale of Impact</th>
<th>Likely Significance of Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injury/death</td>
<td>Negative Ø</td>
<td>Quarry operations could lead to the injury/death of reptile species without mitigation.</td>
<td>Medium</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loss of habitat</td>
<td>Negative Ø</td>
<td>Removal of hedgerows will decrease connectivity between areas of woodland to the north and south west of the site. Loss of arable field margins will remove some potential foraging areas.</td>
<td>Medium to Low</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noise disturbance</td>
<td>Negative Ø</td>
<td>Quarry operations finish at 18:00 and therefore nocturnal bat activity will not be impacted by noise. However, noise disturbance could impact roosts (if present).</td>
<td>Medium to Low</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Injury/death</td>
<td>Negative Ø</td>
<td>Removal of trees and buildings with bat roost potential without any mitigation could lead to injury/death of bats (if present).</td>
<td>Medium to Low</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loss of habitat</td>
<td>Negative Ø</td>
<td>Loss of some suitable terrestrial habitat, mainly hedgerows within arable fields and field margins. All ponds with great crested newt populations will be retained and all non-quarry waterbodies within 500 m of these, which may be used as part of a metapopulation, will be retained.</td>
<td>Medium to Low</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Injury/death</td>
<td>Negative Ø</td>
<td>Quarry operations could lead to the injury/death of small numbers of great crested newts without mitigation. It is only considered that small numbers would be impacted as the quarry is a hostile environment which great crested newts are likely to avoid.</td>
<td>Medium to Low</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loss of habitat</td>
<td>Negative Ø</td>
<td>Loss of hedgerows, trees and arable field margins which may be used by local bird populations for foraging and nesting.</td>
<td>Low</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noise disturbance</td>
<td>Negative Ø</td>
<td>Quarry operations could cause disturbance due to noise.</td>
<td>Low</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Receptor</td>
<td>Value</td>
<td>Impact Description</td>
<td>Likely Scale of Impact Without Mitigation</td>
<td>Justification for Scale of Impact</td>
<td>Likely Significance of Impact</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------</td>
<td>--------------------</td>
<td>------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>Injutry/death</td>
<td></td>
<td>Negative Ø</td>
<td>Removal of nesting habitat without mitigation could result in injury/death to bird species.</td>
<td>Low</td>
<td></td>
</tr>
<tr>
<td>Amphibians</td>
<td>●</td>
<td>Loss of habitat</td>
<td>Negative Ø</td>
<td>Loss of two field ponds with smooth and palmate newt populations. Loss of some suitable terrestrial habitat, mainly hedgerows within arable fields and field margins.</td>
<td>Low</td>
</tr>
<tr>
<td>Injury/death</td>
<td></td>
<td>Negative Ø</td>
<td>Quarry operations could lead to the injury/death of small numbers of amphibians without mitigation. It is only considered that small numbers would be impacted as the quarry is a hostile environment which amphibians are likely to avoid.</td>
<td>Low</td>
<td></td>
</tr>
</tbody>
</table>
Decommissioning Effects

The operation of the extended quarry area would be a phased process with restoration of quarried areas after each phase is complete. Restoration of the final phase in the extension area is scheduled for 2046. Restoration of the extension area is a similar process to that planned for the current quarry area and involves the re-spreading of stripped topsoil and overburden to return approximately 11.6 ha of the quarried area to agricultural production. The remaining area (approximately 19.4 ha) will be established as lakes and enhanced for wildlife.

Impact Description

Decommissioning activities and impacts associated with the restoration of the extension area will be the same as for decommissioning of the current quarry area. Therefore, refer to Tables 7-9 and 7-10 above, for details of the activities involved in decommissioning and the associated impacts.

Cumulative Impacts of Both Applications (Scenario 3)

If both the extension to time application and quarry extension application are permitted then the two areas will be operational at the same time and therefore there will be associated cumulative impacts.

The operational effects of both applications are very similar and the cumulative impact of operation of both areas is not considered to lead to any additional impacts; see Table 7-13.

Quarrying both areas will lead to a greater loss of arable habitat (including field margins) and a larger number of waterbodies (3). There will be no increased tree or hedgerow removal as no removal of these features is associated with the current quarry area. Therefore cumulatively the applications will not significantly increase the number of waterbodies lost and will only result in the loss of a greater area of sub-optimal wildlife habitat.

A larger area of quarry operations could lead to the injury/death of a greater number of wildlife species. However, as there will be no additional hedgerow or tree removal the impacts to dormice, birds and bats are not increased. The impacts on reptiles and amphibians is also unlikely to be greater as there is only a low population of reptiles and the quarry will remain a hostile environment and therefore species are likely to avoid the active areas. Additionally although a larger area will be quarried the quarry works will not intensify, therefore there will be no greater activity posing a danger to species.

As quarry works will not intensify with both applications the noise disturbance associated with both areas will be no greater.

Quarrying of a larger area could result in the raising of more dust. The only wildlife sites within 50 m of the boundary of both applications are Birchley and New Close Wood (LWS and Ecosite) and Woodhill Spinney and Verge (Ecosite). With both applications it is still unlikely that there will be a significant impact to Birchley and New Close Wood (LWS and Ecosite) as the woodland is a low sensitivity receptor and is located to the south west of both sites and therefore not downwind of the prevailing wind. The impacts of this have been assessed in Chapter 11 – Air Quality.

Cumulatively the two applications will result in a longer section of Woodhill Spinney and Verge (Ecosite) being within 50 m of quarry activities. However, as quarrying activities will not intensify the amount of dust generated is unlikely to be significantly greater and therefore the cumulative impact will be no greater.

It is not considered that any non-quarry waterbodies will be impacted by dust emission from both applications, as any waterbodies within 50 m of both boundaries are located in woodland and therefore unlikely to experience dust deposition. Cumulatively the number of waterbodies which may be impacted by pollution of process water and run-off does not significantly increase, due to the close proximity of both applications.
As quarry activities will not intensify the potential for water pollution through quarry processing activities and fuel and oil seepage from vehicles is not considered to increase.

No fixed lighting is associated with either application and therefore there will be no disturbance to nocturnal species through lighting.

**Decommissioning Effects**

The process of decommissioning both applications is the same, with restoration to arable and wildlife areas. As decommissioning is a phased process it is not considered that the decommissioning of both areas will result in any increased impacts as it will not be undertaken in one time period. Therefore it is not anticipated that there will be any cumulative impacts associated with the decommissioning of both applications.
### Table 7-13 - Assessment of Potential Cumulative Ecological Impacts of Both Applications (Scenario 3) during Operation Without Mitigation

<table>
<thead>
<tr>
<th>Receptor</th>
<th>Value</th>
<th>Impact Description</th>
<th>Likely Scale of Impact Without Mitigation</th>
<th>Justification for Scale of Impact</th>
<th>Likely Significance of Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combe Pool SSSI</td>
<td>⚫⚫⚫⚫⚫</td>
<td>Dust deposition</td>
<td>Neutral (♀)</td>
<td>Quarrying of a larger area could result in the raising of additional dust, however the SSSI is not within 50 m of either application boundary and therefore no significant cumulative effects are anticipated.</td>
<td>No Impact</td>
</tr>
<tr>
<td>Combe Pool (LWS and Ecosite)</td>
<td>⚫⚫⚫</td>
<td>Dust deposition</td>
<td>Neutral (♀)</td>
<td>Quarrying of a larger area could result in the raising of additional dust, however the LWS and Ecosite is not within 50 m of either application boundary and therefore no significant cumulative effects are anticipated.</td>
<td>No Impact</td>
</tr>
<tr>
<td>Birchley and New Close Wood (LWS and Ecosite)</td>
<td>⚫⚫⚫</td>
<td>Dust deposition</td>
<td>Neutral (♀)</td>
<td>The cumulative impacts of quarrying adjacent to approximately 300 m of the woodland edge and in close proximity to the north eastern corner are still unlikely to impact the woodland. As deciduous woodland is a low sensitivity receptor to dust deposition it is unlikely that work along a short length of the perimeter of the woodland will significantly impact this large area of woodland. Additionally the woodland is located to the south west of both applications and therefore not downwind of the prevailing wind.</td>
<td>No Impact</td>
</tr>
<tr>
<td>Woodhill Spinney and Verge (Ecosite)</td>
<td>⚫⚫⚫</td>
<td>Dust deposition</td>
<td>Negative (♂)</td>
<td>Quarrying of a larger area will result in a longer length (approximately 560 m) of the woodland being within 50 m of quarry activities. However, the potential impacts of dust deposition remain the same and therefore the impact remains negative.</td>
<td>Medium</td>
</tr>
<tr>
<td>Receptor</td>
<td>Value</td>
<td>Impact Description</td>
<td>Likely Scale of Impact Without Mitigation</td>
<td>Justification for Scale of Impact</td>
<td>Likely Significance of Impact</td>
</tr>
<tr>
<td>----------</td>
<td>-------</td>
<td>--------------------</td>
<td>------------------------------------------</td>
<td>---------------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>Waterbodies</td>
<td>●●●</td>
<td>Loss or habitat</td>
<td>Negative Ø</td>
<td>The two applications will result in the loss of three waterbodies (the lake in the original restoration plan of the Section 73 area and two field ponds in the extension area), the impact is still considered to remain negative as there is not a significant increase in the number of waterbodies lost.</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Water pollution</td>
<td>Negative Ø</td>
<td>No non-quarry waterbodies will be impacted by dust pollution from both applications. Pollution of process water and run-off could pollute nearby waterbodies. It will be possible for retained waterbodies to recover after quarry operations cease. The impact is still considered to remain negative as there is not a significant increase in the number of waterbodies potentially impacted.</td>
<td>Medium</td>
</tr>
<tr>
<td>Hazel dormouse</td>
<td>●●●</td>
<td>Loss of habitat</td>
<td>Negative Ø</td>
<td>No removal of hedgerows is associated with the Section 73 application and therefore there will be no cumulative impacts of habitat loss, only the impact associated with loss of hedgerows in the extension area.</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Noise disturbance</td>
<td>Negative Ø</td>
<td>Although a larger area will be quarried the works will not intensify and therefore noise disturbance associated with both applications will be no greater.</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Injury/death</td>
<td>Negative Ø</td>
<td>No removal of hedgerows is associated with the Section 73 application and therefore there will be no greater potential for injury/death to dormice, only the impact associated with loss of hedgerows in the extension area.</td>
<td>Medium</td>
</tr>
<tr>
<td>Reptiles</td>
<td>●●●</td>
<td>Loss of habitat</td>
<td>Neutral Ø</td>
<td>Loss of a larger area of arable habitat and some hedgerows. More suitable terrestrial habitat associated with the less disturbed quarry areas will be created. The impact remains negative as there is still only loss of sub-optimal habitat.</td>
<td>No Impact</td>
</tr>
<tr>
<td>Receptor</td>
<td>Value</td>
<td>Impact Description</td>
<td>Likely Scale of Impact Without Mitigation</td>
<td>Justification for Scale of Impact</td>
<td>Likely Significance of Impact</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-------</td>
<td>--------------------</td>
<td>------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>Injury/death</td>
<td></td>
<td></td>
<td>Negative $\oplus$</td>
<td>A larger area of quarry operations could lead to the injury/death of a greater number of reptiles without mitigation, however this is not considered to be significantly larger as only low populations are present and the quarry works will not intensify.</td>
<td>Medium</td>
</tr>
<tr>
<td>Loss of habitat</td>
<td>●●</td>
<td></td>
<td>Negative $\oplus$</td>
<td>Cumulatively the applications will result in the loss of a greater area of arable field margins, which will remove some low potential foraging areas. Similar habitat resource will still remain in the surrounding landscape. As no hedgerow removal is associated with the Section 73 application there will no greater loss of connectivity associated with both applications.</td>
<td>Medium to Low</td>
</tr>
<tr>
<td>Noise disturbance</td>
<td></td>
<td></td>
<td>Negative $\oplus$</td>
<td>Although a larger area will be quarried the works will not intensify and therefore noise disturbance associated with both applications will be no greater.</td>
<td>Medium to Low</td>
</tr>
<tr>
<td>Injury/death</td>
<td></td>
<td></td>
<td>Negative $\oplus$</td>
<td>Cumulatively the applications will not result in the removal of a larger number of trees, as no trees are proposed to be removed within the Section 73 area and therefore there will be no greater probability of injury/death through removal of a bat roost.</td>
<td>Medium to Low</td>
</tr>
<tr>
<td>Loss of habitat</td>
<td>●●</td>
<td></td>
<td>Negative $\oplus$</td>
<td>Cumulatively the applications will result in the loss of a larger area of arable field margins which offer some suitable habitat, however this habitat is sub-optimal and therefore the impact is not increased. There will be no greater loss of hedgerow habitat as no hedgerow removal is associated with the Section 73 application.</td>
<td>Medium to Low</td>
</tr>
<tr>
<td>Injury/death</td>
<td></td>
<td></td>
<td>Negative $\oplus$</td>
<td>A larger area of quarry operations could lead to the injury/death of a greater number of great crested newts without mitigation. However it is still considered that only small numbers would be impacted as the quarry is a hostile environment which great crested newts are likely to avoid. Additionally the quarry works will not intensify and therefore the impact is not increased.</td>
<td>Medium to Low</td>
</tr>
<tr>
<td>Loss of habitat</td>
<td>●</td>
<td></td>
<td>Negative $\oplus$</td>
<td>As no hedgerow removal is associated with the Section 73 application there will be no additional cumulative impact.</td>
<td>Low</td>
</tr>
<tr>
<td>Loss of habitat</td>
<td>●</td>
<td></td>
<td>Negative $\oplus$</td>
<td>Cumulatively a larger area of arable field margins will be lost, however similar habitat resource will still remain in the surrounding landscape.</td>
<td>Low</td>
</tr>
</tbody>
</table>

Chapter 7-35
### Ecological Issues - Impacts of the Proposals

<table>
<thead>
<tr>
<th>Receptor</th>
<th>Value</th>
<th>Impact Description</th>
<th>Likely Scale of Impact Without Mitigation</th>
<th>Justification for Scale of Impact</th>
<th>Likely Significance of Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise disturbance</td>
<td>Noise disturbance</td>
<td>Negative Ø</td>
<td>Although a larger area will be quarried the works will not intensify and therefore noise disturbance associated with both applications will be no greater.</td>
<td>Low</td>
<td></td>
</tr>
<tr>
<td>Injury/death</td>
<td>Injury/death</td>
<td>Negative Ø</td>
<td>As no hedgerow removal is associated with the Section 73 application there will be no additional cumulative impact.</td>
<td>Low</td>
<td></td>
</tr>
<tr>
<td>Amphibians</td>
<td>Amphibians</td>
<td>Loss of habitat</td>
<td>Negative Ø</td>
<td>Loss of the lake in the original restoration plan and two field ponds with smooth and palmate newt populations. Cumulatively the applications will result in the loss of a larger area of arable field margins which offer some suitable habitat, however this habitat is sub-optimal and therefore the impact is not increased. There will be no greater loss of hedgerow habitat as no hedgerow removal is associated with the Section 73 application.</td>
<td>Low</td>
</tr>
<tr>
<td>Injury/death</td>
<td>Injury/death</td>
<td>Negative Ø</td>
<td>A larger area of quarry operations could lead to the injury/death of a greater number of amphibians without mitigation. However it is still considered that only small numbers would be impacted as the quarry is a hostile environment which amphibians are likely to avoid. Additionally the quarry works will not intensify and therefore the impact is not increased.</td>
<td>Low</td>
<td></td>
</tr>
</tbody>
</table>
Conclusion of Impact Assessment

Scenarios 1 (extended time) and 2 (extended area) share a lot of the same impacts as shown in Table 7-13a. The ones of greatest significance, without mitigation, relate to:

- The potential for a pollution / dust impact on nearby wildlife sites and surrounding waterbodies, e.g. ponds.
- The loss of the amenity lake from Zone AL (which is assumed to have developed into important wildlife habitat).
- The potential for noise disturbance to dormice that use the hedgerows on this site.
- The potential for injury / death to reptiles from quarrying activities.

A range of other impacts of medium to low and low significance are common to each of the proposed developments as shown in Table 7-13a.

Additional impacts associated only with Scenario 2, i.e. the commencement of quarrying in Zones 1-4 of the site, are also shown in Table 7-13a. The impacts of significance without mitigation are:

- The loss of two wildlife ponds.
- The removal of hedgerows with implications for dormice, birds and bats, in particular.
- The potential to disrupt landscape connectivity for bats, arising from the removal of hedgerows.
- The potential for injury / death to dormice and bats from the removal of hedgerows and trees.

Should both developments proceed at the same time, then there is a greater overall loss of wetland habitats (lake and ponds), a greater loss of foraging habitat for bats and a greater loss of great crested newt terrestrial habitat. This is also a higher risk of injury / death to reptiles and great crested newts.

Decommissioning impacts are similar across all phases of the developments and, most importantly, will result in the loss of quarry habitats for birds, reptiles and amphibians and a potential for injury / death to these species as the fields are restored to agricultural use.

Mitigation measures will need to be identified in order to reduce and if possible eliminate predicted impacts associated with the operation and decommissioning phases of the proposed developments.

Where possible enhancements will be needed in accordance with best practice for net ecological gain.

Table 7-13a – Operational impacts summary for the three scenarios assessed without mitigation (neutral impacts are excluded)

<table>
<thead>
<tr>
<th>Significance of impacts</th>
<th>Scenario 1 &amp; 2 impacts</th>
<th>Additional impacts associated with Scenario 2</th>
<th>Main cumulative effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>• Pollution on Combe Pool SSSI.</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Chapter 7-37
### Significance of Impacts

**Medium**
- Dust deposition on Woodhill Spinney and Verge Ecosite.
- Loss of lake.
- Pollution of nearby waterbodies.
- Noise disturbance on dormice.
- Injury / death to reptiles.

**Additional impacts associated with Scenario 2**
- Loss of two ponds
- Removal of hedgerow impacts on dormouse habitat.
- Injury / death to dormice.

**Main cumulative effects**
- Loss of 3 waterbodies
- Greater risk of injury / death to reptiles.

**Medium to Low**
- Loss of bat foraging areas.
- Potential for noise impacts on roosts.
- Loss of GCN terrestrial habitat.
- Injury / death to GCN.

**Low**
- Loss of bird nesting / foraging habitat.
- Noise disturbance to birds.
- Injury / death to birds.
- Loss of amphibian habitat.
- Injury / death to amphibians.

- Loss of hedgerows.

### Mitigation Measures

Where possible, priority has been given to the avoidance of impacts at source through the re-design of the scheme (so-called ‘designed-in’ mitigation).

Where the avoidance of impacts has not proved possible, mitigation measures are identified in order to avoid and reduce impacts ideally to the point that they are no longer significant. Enhancement measures are included to provide positive biodiversity benefits, where possible.

Mitigation and enhancement features must be installed as early as possible in the proposed development to allow establishment of habitats and to allow other measures to have the desired effect.

### Operation

This section provides a summary of the mitigation necessary to offset any of the operational impacts identified. Mitigation measures are presented for each key impact in Tables 7-8 (extension of time) and 7-12 (extended area) and are detailed also in Table 7-14 and summarised in Figure 7-5, Section 7.10. The various elements of mitigation (designed-in mitigation, other avoidance/reduction measures and enhancement measures) are further described in the following sections.
Designed-in mitigation

Designed-in mitigation is a form of avoidance and is a key feature of good project design.

During operation of the quarry, where possible, wildlife species and habitats will be retained and protected. It is proposed to retain and protect three field ponds within and on the boundary of the landscaped area by establishing a buffer of at least 10m around them (Natural England 2010). It is also proposed to retain and protect all waterbodies with great crested newts present and all non-quarry waterbodies within 500 m of these ponds. A buffer of at least 10 m should be established around these waterbodies and for any which are close to working areas this should be fenced off to protect the habitat. A permanent fence which allows wildlife movement (e.g. post and rail) is appropriate for pond protection.

One of the existing sand martin nest sites will be protected from collapse and retained (e.g. no heavy machinery should be used nearby), until a suitable location for an artificial sand martin nest bank is identified and has been provided. This should be within the area to be restored and enhanced for wildlife (further details provided under decommissioning mitigation section).

Where possible hedgerows and trees will be retained and protected by erecting temporary fencing around a standard root protection zone and maintaining it throughout operation in accordance with BS 5837: 2012 ‘Trees in relation to design, demolition and construction’.

Hedgerows and woodland strips where dormouse nests have been found should be buffered by at least 10 m. These buffers should be fenced off using a permanent fence which allows wildlife movement (e.g. post and rail) and clearly labelled as a ‘no-go’ area for quarry contractors.

No quarry workings are proposed in the area where the majority of grass snakes were found. This area will be protected during quarry operations by erecting temporary fencing through which wildlife can continue to move.

Dust impacts on Woodhill Spinney and Verge (Ecosite) will be avoided by retaining a 40 m buffer of scattered trees and hedgerow along the northern perimeter of the site where it is adjacent to this woodland.

The existing main haul road will continue to be used. This is constructed from reinforced concrete to minimise dust creation and noise. Passing places are also located along the haul road to ensure vehicles do not deviate onto un-surfaced areas and create dust.

Although badgers are not considered as a key receptor a sett is present to the east of the active quarry area, with the landscaped quarry area to the south and an arable field, which is not included as part of the applications, to the north. No further quarrying activities are proposed within the vicinity of the badger sett and therefore the sett will be retained and protected.

Other Avoidance/Reduction Measures

Pollution of habitats within the site and in proximity to the quarry is possible. Pollutants can arise from a variety of sources but are most likely to occur through pollution of run-off, from fuel and oil seepage from the many vehicles that will use parts of the site, through waste water created during the processing of extracted material or through the raising of dust during operation of the site.

The quarry will implement rigorous pollution protection measures which will help to ensure that nearby wildlife sites and waterbodies are not significantly impacted by quarry operations. Measures will include:

- Recirculation of water internally;
- Catchment of waste water by the wheel wash;
• Water naturally drains down through the site to the processing water at the bottom of the site reducing contamination;
• Confining collection and delivery vehicles to areas of hard-core and concrete which can be swept;
• A long haul road (1,000 m) ensures all debris has left vehicles before leaving the site;
• Regular sweeping of the haul road;
• Inspection of vehicles that exit the quarry;
• Use of a tractor-drawn rotary brush or other suitable mobile plant to clear the highway if dust does accumulate;
• If necessary incoming loads are sprayed with water by mobile plant to damp down and contain loose material;
• Waste loads solely of dust, powder and loose fibre are rejected;
• Stock piles are maintained at appropriate moisture contents;
• Haul roads and site surfaces are sprayed with water if necessary during dry weather; and

Loading, crushing and/or screening activity is to be suspended if the prevailing wind is strong enough to entrain dust and transport it towards a sensitive receptor.

For a variety of the ecological receptors on-site, careful timing of works can be used to avoid the most sensitive time of year or period of the day for the species concerned. The quarry operating hours will be restricted to 07:30 - 18:00 Monday to Friday and 07:30 to 13:00 on Saturdays which reduces disturbance effects on nocturnal wildlife species. Avoiding the destruction of nesting habitats for birds (e.g. buildings, hedgerows, trees, and ground vegetation etc.) during the bird breeding season (March to August inclusive) is also important.

Until an artificial sand martin nest bank is provided, work that may cause collapse of sand martin nests in quarry walls will cease during the breeding season (March to August inclusive). Once an artificial sand martin nest bank is provided, to discourage sand martins nesting in operational slopes, it is recommended to provide suitable sloping batters in order to make areas less attractive for sand martins (RSPB, no date).

Measures will be put in place to reduce the noise impact of the quarry with restricted operating hours (detailed above) and a legal agreement to restrict vehicle movements associated with quarry operations to a maximum of 200 per day.

Features (trees and buildings) which have been assessed to have bat roost potential will be surveyed prior to removal. Surveys of Tree 36 with medium bat roost potential did not reveal the presence of any roosts. The remaining features (one tree and the stable buildings) are not proposed to be removed for several years, therefore the surveys need to be completed at a later date. If surveys show that these features have bat roosts present an EPS licence may be required, alongside suitable mitigation measures to avoid injury/death.

Although surveys of Tree 36 did not reveal the presence of a roost, occupancy at other times of year remains a possibility. Absolute absence of bats is difficult to prove and so a precautionary approach should be taken to tree removal. Therefore it is recommended that the tree is soft-felled during March to May or September to October (avoiding the main bat maternity and hibernation periods). Where possible soft felling should also avoid the bird breeding season (March to August inclusive) as damage, destruction or disturbance of a nest whilst occupied is illegal under the Wildlife and Countryside Act 1981 (and amendments). If the bird breeding season can not be avoided a pre-work check by a qualified ecologist will be undertaken to ensure that nesting birds are absent.
The tree will be cut in sections which will be gently lowered to the ground and left for 24 hours to enable bats (if present) to escape. Any cavities/crevices must be brought down intact (not sawn through). Cut sections will be inspected for bats prior to removal from site. If bats are found, work must cease and a bat licensed ecologist must be consulted for advice.

As dormouse nests have been found within hedgerows, if it is not possible to retain and protect these, a Natural England licence will be required to permit hedgerow removal. A detailed method statement is required as part of a licence application. This will detail mitigation measures to minimise any potential impacts on individuals and the population.

It will be necessary to obtain a great crested newt development licence from Natural England before works begin. A detailed method statement is required as part of a licence application. This will detail mitigation measures to minimise any potential impacts on individuals and the population.

A precautionary method statement should be prepared which details how to minimise risk to reptiles and amphibians during quarry operations.

As a badger sett is present and badgers are protected through the Protection of Badgers Act (1992), which protects the animals themselves and also their setts it is recommended that the quarry remains vigilant to the possible presence of badger. General mitigation measures will be followed to ensure that badgers are not harmed during operation of the quarry:

- Fuel, oil and chemicals should only be stored in secure sites within a construction compound;
- No fires should be lit;
- Excavations and piping (>200 mm in diameter) should be fenced/capped overnight to deter badgers from entering. Excavations that cannot be covered should have a means of escape for any animals that may fall in (e.g. sloping/sides/ramps of minimum 1:2 gradient); and
- All site workers and contractors should be briefed on the badger protection measures.

Although Japanese knotweed is not considered as a key receptor as it is listed under Schedule 9, Section 14, of the Wildlife and Countryside Act 1981 (and amendments) mitigation measures must be followed to ensure that it isn’t spread. It is recommended that a Japanese Knotweed management plan is prepared and measures outlined in The Knotweed Code of practice (Environment Agency 2013) are followed including:

- Clearly mark out all areas of Japanese knotweed;
- Fence off areas that will not be disturbed during operation, allowing a buffer of 7 m from the nearest growth;
- Don’t use tracked vehicles in contaminated areas or if tracked vehicles must be used use a strong root barrier membrane protected by a layer of sand above and below and overlain with hardcore; and
- Vehicles leaving contaminated areas should be cleaned within a designated area and the left over material disposed of appropriately.

Enhancement Measures

As an enhancement either new hedgerows of the same length as those lost (approximately 1500 m) will be planted or existing hedgerows will be planted with additional native hedgerow species (following best practice) to widen/thicken the hedgerows. The following species mix will be used and thus create species-rich hedgerows: 20% hawthorn, 20% blackthorn, 10% field maple, 10% elder and 40% mix of hazel, crab apple, dog-rose and guelder rose.
The 10 m buffer of the western woodland strip should be planted with a range of plants which attract invertebrates to provide a food source for bats. This may include planting a range of flowering plants, including night-scented plants.

The provision of two hibernacula; one within the landscaped quarry area, to the east of the active quarry, close to great crested newt ponds, and one within the area where grass snakes were observed, will enhance the area for great crested newts, grass snakes and other amphibians and reptiles. They will provide a more permanent shelter for hibernation in areas which will not be impacted by quarry workings. The hibernacula will be created according to the following specification:

- The hibernacula will be 2 m long, by 1 m wide by 1 m high.
- The body of the hibernacula will be filled with cut logs, brash, rocks etc., to provide numerous crevices within. Materials that will decompose should not be placed beneath heavy components such as rocks, to avoid the risk of collapse. Woodchippings or loose topsoil can be incorporated into the construction, to pack some of the larger cavities.
- Access points will be left around the edges. These are best created by ensuring that timber or stones protrude from the edge, creating crevices that allow animals to get deep inside.
- To reduce the risk of flooding an entirely above-ground structure should be created. Turf should be removed from the footprint of the hibernaculum so that it can be used to cover the completed construction.
- The rapid establishment of vegetation cover is important to keep the structure together. If this cannot be achieved by use of turf, then seeding with a meadow mix may be required.

**Indicative Hibernaculum Design**

![Diagram of hibernaculum design]

It is proposed to install 20 dormouse boxes, 21 bat boxes and ten bird boxes. This will enhance the site providing additional roosting and nesting opportunities. It is recommended that all bat and bird boxes are made from woodcrete to ensure a longer lifespan.

Dormouse boxes will be installed within dense hedgerows and woodland strips, in locations where dormice nests have been observed and in other potentially good areas.

Bat boxes will be installed on mature trees in groups of three, with the boxes in each cluster facing west, south and east. This will provide a range of suitable...
conditions. Boxes will be installed at least 4 m above ground. The location will be advised by a qualified ecologist on-site.

Two designs are illustrated below which would be suitable for a range of common species such as pipistrelle, brown long-eared bats, noctule and *Myotis* species. These are available from a range of online sources such as [http://www.nhbs.com/](http://www.nhbs.com/). They should be placed in areas with minimum light spill, and good shelter and ground cover.

Bird boxes will also be installed on mature trees. The boxes will cater for a range of species with appropriate boxes sourced and supplied to site by a qualified ornithologist. Suitable designs are as follows and the numbers to be installed as part of this scheme are indicated. These are available from a range of online sources such as [http://www.nhbs.com/](http://www.nhbs.com/).

All bird boxes will be installed according to the manufacturer’s instructions and supplied guidance, with their precise locations and orientation determined by a qualified ornithologist on-site.
### Table 7.14 - Mitigation and Enhancement Measures to Offset Potential Operational Impacts (see Figure 7-5 (Section 7.10))

<table>
<thead>
<tr>
<th>Receptor</th>
<th>Designed-in Mitigation</th>
<th>Other Avoidance/ Reduction Measures</th>
<th>Enhancements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combe Pool SSSI</td>
<td>The existing main haul road is constructed from reinforced concrete to minimise dust creation. Passing places are also located along the haul road to ensure vehicles do not deviate onto un-surfaced areas and create dust.</td>
<td>Follow rigorous pollution protection measures to minimise dust and water pollution.</td>
<td>None proposed.</td>
</tr>
<tr>
<td>Birchley and New Close Wood (LWS and Ecosite)</td>
<td>The existing main haul road is constructed from reinforced concrete to minimise dust creation. Passing places are also located along the haul road to ensure vehicles do not deviate onto un-surfaced areas and create dust.</td>
<td>Follow rigorous pollution protection measures to minimise dust and water pollution.</td>
<td>None proposed.</td>
</tr>
<tr>
<td>Woodhill Spinney and Verge (Ecosite)</td>
<td>Retain a 40 m buffer along the northern perimeter of the quarry extension area where the Ecosite is adjacent to the boundary. The existing main haul road is constructed from reinforced concrete to minimise dust creation. Passing places are also located along the haul road to ensure vehicles do not deviate onto un-surfaced areas and create dust.</td>
<td>Follow rigorous pollution protection measures to minimise dust and water pollution.</td>
<td>None proposed.</td>
</tr>
<tr>
<td>Waterbodies</td>
<td>Retain three field ponds within the landscaped area of the quarry, ensuring a buffer of at least 10 m.</td>
<td>Follow rigorous pollution protection measures to minimise dust and water pollution.</td>
<td>None proposed.</td>
</tr>
<tr>
<td>Reptiles</td>
<td>No quarry workings proposed in area where majority of grass snakes were found.</td>
<td>Prepare a precautionary method statement detailing how to minimise risk to reptiles during operation over the remainder of the quarry areas.</td>
<td>Provision of hibernaculum in area where grass snakes were observed during surveys.</td>
</tr>
</tbody>
</table>
## Bats
- Retain and protect hedgerows and trees (where possible) in accordance with BS 5837: 2012.
- The existing main haul road is constructed from reinforced concrete to minimise noise.
- Protect the western woodland strip from disturbance by establishing a buffer of at least 10 m. This buffer should be fenced off using a permanent fence which allows wildlife movement (e.g. post and rail) and clearly labelled as a ‘no-go’ area for quarry contractors.

### Other Avoidance/Reduction Measures
- No roosts were observed in Tree 36 with medium bat roost potential, however as a precaution this tree should be soft felled. All other features (trees and buildings) which have been assessed to have bat roost potential will be surveyed prior to removal. As some of these features are not proposed to be removed for several years these surveys will be completed at a later date. If these surveys show that these features have bat roosts present an EPS licence may be required, alongside suitable mitigation measures.
- Quarry operating hours restricted to 07:30 - 18:00 Monday to Friday and 07:30 to 13:00 on Saturdays to minimise impact on nocturnal species.
- Vehicle movements associated with quarry operations are restricted to 200 per day to minimise noise.

### Enhancements
- Twenty one bat boxes to be installed within retained trees across the site.
- Plant the 10 m buffer with plants which attract invertebrates to provide food sources for bats (e.g. night-scented plants).

## Hazel dormouse
- Retain and protect hedgerows and trees (where possible) in accordance with BS 5837: 2012.
- Buffer all hedgerows and woodland strips where dormouse nests have been found by 10 m. Buffers should be fenced off using a permanent fence which allows wildlife movement (e.g. post and rail) and clearly labelled as a ‘no-go’ area for quarry contractors.
- The existing main haul road is constructed from reinforced concrete to minimise noise.

### Other Avoidance/Reduction Measures
- As dormouse nests have been found, if it is not possible to design-in hedgerow retention and buffers, an EPS licence will be required to permit hedgerow removal, alongside suitable mitigation measures.
- Quarry operating hours restricted to 07:30 - 18:00 Monday to Friday and 07:30 to 13:00 on Saturdays to minimise impact on nocturnal species.
- Vehicle movements associated with quarry operations are restricted to 200 per day to minimise noise.

### Enhancements
- Install 20 dormice boxes within hedgerows and woodland strips to provide additional places of shelter.

## Great crested newts
- All ponds with great crested newt populations will be retained and all non-quarry waterbodies within 500 m of these will be retained. Fence off a buffer of at least 10 m around these waterbodies.

### Other Avoidance/Reduction Measures
- Obtain a great crested newt development licence from Natural England before works begin. A detailed method statement is required as part of a licence application, to detail mitigation measures for any potential impacts on individuals and the population.

### Enhancements
- Provision of hibernaculum within landscaped quarry area, close to great crested newt waterbodies.

## Hedgerows and mature trees
- Retain and protect hedgerows and trees (where possible) in accordance with BS 5837: 2012.

### Other Avoidance/Reduction Measures
- None proposed.

### Enhancements
- Compensate for removal of hedgerow lengths by re-planting the same length of hedgerow lost, or by enhancing retained hedgerows (thickening and diversifying).

## Quarry
- None proposed.
### Brinklow Quarry Environmental Statement
#### Ecological Issues - Mitigation Measures

<table>
<thead>
<tr>
<th>Receptor</th>
<th>Designed-in Mitigation</th>
<th>Other Avoidance/ Reduction Measures</th>
<th>Enhancements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birds</td>
<td>Retain at least one of the quarry cliffs used by sand martins until an artificial sand martin nest bank is provided. All woodland strips, hedgerows and areas of scrub that can be retained will be retained, across any part of the site. The existing main haul road is constructed from reinforced concrete to minimise noise.</td>
<td>Avoid the destruction of nesting habitats for birds (e.g. buildings, hedgerows, trees, and ground vegetation etc.) during the bird breeding season (March to August inclusive). Work must cease around sand martin nests in quarry cliffs during breeding (March to August inclusive). After an artificial sand martin nest bank has been provided sloping batters can be created to discourage sand martins nesting in cliffs which need to be worked during the breeding season. Vehicle movements associated with quarry operations are restricted to 200 per day to minimise noise.</td>
<td>Ten bird boxes to be installed within woodland strips and retained trees across the site.</td>
</tr>
<tr>
<td>Amphibians</td>
<td>Retain three field ponds within the landscaped area of the quarry, ensuring a buffer of at least 10 m.</td>
<td>Prepare and follow a precautionary method statement detailing how to minimise risk to amphibians during operation.</td>
<td>Provision of hibernaculum within landscaped quarry area.</td>
</tr>
</tbody>
</table>
Decommissioning
This section provides a summary of the mitigation necessary to off-set any of the decommissioning impacts identified. Mitigation measures are presented for each of the key impacts identified in Table 7-10. The various elements of mitigation are further described in the following sections and are detailed also in Table 7-15.

Designed-in Mitigation
During restoration quarry features used by wildlife may be lost as the land is converted back to arable. Where possible, features of importance to wildlife will be retained. An area of quarry habitat (at least 2 ha) will be retained to the west of the site, this will be allowed to succeed naturally and continue to provide suitable habitat for reptiles and other wildlife.

An artificial sand martin nest bank will be provided within the restored area to be enhanced for wildlife. This will be sited near an area of water. The exact design and location will be determined by a qualified ornithologist. An example design is shown below.

Other Avoidance/Reduction Measures
To ensure amphibians and reptiles are not harmed when quarry areas are returned to agriculture a precautionary method statement will be prepared and followed. Quarry waterbodies in areas which are to be returned to agriculture will be filled in during the winter months (November to January) when amphibians are hibernating and unlikely to be in waterbodies.

If areas of bird nesting habitat (scrub, tussocky grassland, quarry cliffs with sand martin nests) are to be lost during restoration to agriculture these areas will not be destroyed during the bird breeding season (March to August inclusive). Additionally the existing sand martin nest sites will not be destroyed until an artificial sand martin nest bank is provided.

Enhancement Measures
Although much of the quarried area will be returned to agriculture (approximately 55 ha) enhancements will be made within an area (approximately 37 ha) to the west which will be restored as lakes and wildlife habitat. The detailed design and location of restoration proposals for this area will be informed by a qualified ecologist. An outline sketch design is provided in Figure 7-6 (Section 7.10).

This area will retain areas of quarry habitat (at least 2 ha), with bare ground, pioneer species and cliff faces. This will be allowed to succeed naturally and provide habitat for a range of wildlife species including reptiles, amphibians and invertebrates. This area will offer greater potential than the current (baseline) quarry habitat, as it will be undisturbed, without risk of injury/death.

Three lakes are proposed within this area. Two will be stocked with fish, the third (Lords Lake) will not be purposefully stocked with fish. It is recommended that the other two lakes are not stocked with fish until vegetation has established. It is important that they are not overstocked with fish. These lakes will be designed so that they provide good habitat for wildlife species. They will be profiled so that they contain permanent water of varying depths (including some shallow marginal areas) which will allow colonisation by a diversity
of aquatic and marginal plant species. If the quarry pit is deep with steep sides, inert material such as rubble and silt can be used for profiling (WWT 1994).

Marginal and aquatic planting will be undertaken (where necessary and as far as practical constraints allow) to create a mixture of well-vegetated and open water with a diversity of native plant species (locally sourced wherever possible). A general scheme to be followed is shown on the next page.

It is also recommended that at least three smaller ponds are created which will not be stocked with fish. These will range from 50 to 150 m² to provide a variety of habitats for amphibian and other wildlife species. These will be designed following the same scheme as the lakes, however the depth will be no deeper than 0.7 to 1 m at the deepest point.

Around the lake area patches of scrub habitat and tussocky grassland will be established providing additional habitat for reptiles and amphibians.

A reptile and amphibian hibernaculum will be provided following the specifications detailed earlier. This will be located close to one of the new ponds. Again this will provide greater hibernation potential than the existing quarries spoil heaps as it will be undisturbed.
Indicative Lake/Pond Design

- Birds eye view:
- Cross section view:

- Undulating pond edge to provide a variety of microhabitats
- Marginal vegetation surrounding approx. 30% of the pond perimeter
- Initially filled from sterilized rainwater or water pumped from nearby watercourses
- Submerged plants covering approx. 30% of pond base
- 60mm subsoil in base and troughs for plant substrate
- Geosynthetic clay/puddled clay lining (if necessary)
- Undulating profile increasing the range of habitats available
- Broad area of shallow water at the margin sloping by 10cm over 1m

Chapter 7-49
Approximately 1014 m of species-rich hedgerows will be replanted within areas returned to agriculture which will provide an enhancement from the baseline where none of the hedgerows were classified as species rich (see Technical Appendix 3d). The following species mix will be used to do this and thus create species-rich hedgerows: 20% hawthorn, 20% blackthorn, 10% field maple, 10% elder and 40% mix of hazel, crab apple, dog-rose and guelder rose. The species should be planted so that the hedgerow contains at least five woody species per 30 m length creating a species-rich hedgerow.

Additionally approximately 2290 m of woodland belt and 1000 m of scrub is proposed along the margins of restored arable fields and within the area restored for wildlife. These lengths will connect the eastern landscaped area of the quarry with the proposed wildlife area, connecting ponds with great crested newts to the new wildlife ponds. Tree species planted will be native and will be planted with an understorey of shrub species such as dogwood, hawthorn, guelder rose, dog rose and spindle to create a variety of structure for invertebrates. The woodland edges should be scalloped to provide sheltered areas, increasing the density of invertebrate prey for bats (Entwhistle et al., 2001).
### Table 7-15 - Mitigation and Enhancement Measures to Offset Potential Decommissioning Impacts (see Figure 7-5 (Section 7.10))

<table>
<thead>
<tr>
<th>Receptor</th>
<th>Designed-in mitigation</th>
<th>Other avoidance/ reduction measures</th>
<th>Enhancements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combe Pool SSSI</td>
<td>None proposed.</td>
<td>None proposed.</td>
<td>None proposed.</td>
</tr>
<tr>
<td>LWS, pLWS and Ecosites</td>
<td>None proposed.</td>
<td>None proposed.</td>
<td>None proposed.</td>
</tr>
<tr>
<td>Ancient woodland and BAP deciduous woodland</td>
<td>None proposed.</td>
<td>None proposed.</td>
<td>None proposed.</td>
</tr>
<tr>
<td>Waterbodies</td>
<td>None proposed.</td>
<td>None proposed.</td>
<td>Creation of new waterbodies specifically designed for wildlife.</td>
</tr>
<tr>
<td>Reptiles</td>
<td>Retain an area of quarry habitat.</td>
<td>Prepare and follow a precautionary method statement that details working methods to ensure that reptiles are not harmed during site clearance and restoration to agriculture.</td>
<td>Provision of hibernaculum close to new ponds. Creation of areas of tussocky grassland and scrub around area of lakes.</td>
</tr>
<tr>
<td>Bats</td>
<td>None proposed.</td>
<td>None proposed.</td>
<td>Planting hedgerows and creating waterbodies will diversify the habitat for bats.</td>
</tr>
<tr>
<td>Hazel dormouse</td>
<td>None proposed.</td>
<td>None proposed.</td>
<td>Planting of species-rich hedgerows will diversify the habitat for dormice (if present).</td>
</tr>
<tr>
<td>Great crested newts</td>
<td>None proposed.</td>
<td>Fill in quarry waterbodies during the winter months (November to January) when great crested newts are hibernating and unlikely to be in waterbodies. Prepare and follow a precautionary method statement that details working methods to ensure that great crested newts are not harmed during site clearance and restoration to agriculture.</td>
<td>Provision of hibernaculum close to new ponds. Creation of waterbodies specifically designed for wildlife.</td>
</tr>
<tr>
<td>Hedgerows and mature trees</td>
<td>None proposed.</td>
<td>None proposed</td>
<td>Planting of species-rich hedgerows.</td>
</tr>
<tr>
<td>Birds</td>
<td>Provision of artificial sand martin nest.</td>
<td>Avoid the destruction of nesting habitats for birds (e.g. quarry cliffs, hedgerows, trees, and ground vegetation etc.) during the bird breeding season (March to August inclusive). Work must cease around sand martin nests in quarry walls during breeding (March to August inclusive).</td>
<td>Design of waterbodies for foraging and nesting birds.</td>
</tr>
</tbody>
</table>
### Brinklow Quarry Environmental Statement
#### Ecological Issues - Mitigation Measures

<table>
<thead>
<tr>
<th>Receptor</th>
<th>Designed-in mitigation</th>
<th>Other avoidance/ reduction measures</th>
<th>Enhancements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amphibians</td>
<td>None proposed.</td>
<td>Fill in quarry waterbodies during the winter months (November to January) when amphibians are hibernating and unlikely to be in waterbodies. Prepare and follow a precautionary method statement that details working methods to ensure that amphibians are not harmed during site clearance and restoration to agriculture.</td>
<td>Provision of hibernaculum close to new ponds. Creation of waterbodies specifically designed for wildlife.</td>
</tr>
</tbody>
</table>
7.7 Residual Impacts

The detailed design of the quarry restoration will need to be informed by a suitably qualified ecologist to achieve the objectives of the mitigation and enhancement strategy outlined above. The implementation of the ecological mitigation measures will be overseen by the Site Manager and subsequently verified by a suitably qualified ecologist as the works progress. Only then will there be the required impetus to ensure that the ecology of the site is disturbed as little as possible, and that the enhancements specified are implemented to good effect. To ensure that impacts are minimised mitigation and enhancement measures must be established as soon as possible during the phased operation. Taken together, the ecological mitigation measures outlined will help to reduce the impacts from the proposed developments.

As shown in Tables 7-16, 7-17 and 7-18 the mitigation measures proposed have reduced the significance of the majority of impacts. The only adverse impact remaining associated with an extension to time in the current quarrying area is a medium significant impact associated with loss of the restored lake during operation. A medium adverse impact is associated with the loss of the two field ponds in the extension area and a low adverse impact due to the loss of hedgerows reducing connectivity for bats within the extension area. These habitat losses have implications for dormice and reptiles also.

The loss of the waterbody resource is only short-medium term. The overall operation of the quarry (current and extended area) is proposed to last for 30 years, from 2016 to 2046, over six phases. The field ponds will be lost during the second and fifth phases of the quarry operations. However, restoration of areas to the west of the quarry (to include wildlife ponds) will begin in phase 4 and therefore there will only be a short period when the waterbody resource is depleted. As the ponds and lakes created will be designed specifically for wildlife they will enhance the current baseline. The residual impact once the project is completed after decommissioning is considered to be medium positive.

The loss of habitat connectivity for bats is also only short-term and once the project is completed after decommissioning it is considered that the new habitat provisions will provide an enhancement to the current arable landscape baseline.

For all other receptors, residual impacts have all been reduced to a low or 'no impact' level of significance during operation and many have a positive impact once decommissioning and the enhancement measures are complete.

In summary, provided the new habitat provisions proposed are successfully established any adverse impacts should be short-medium term only and in the long-term the restoration scheme will enhance the current baseline.

The Institute of Environmental Management and Assessments (IEMA) 2004 approach to Environmental Impact Assessment (EIA) is still considered to be valuable by Sustainable Direction and is based upon the "source-pathway-receptor" approach. The approach used for this EcIA is translated to the IEMA 2004 assessment criteria in Table 7-19. The summary in Table 7-19 assumes that all decommissioning and enhancement measures have been successfully completed.
Brinklow Quarry Environmental Statement  
Ecological Issues - Residual Impacts

*Cross refer to 7-14 for details of mitigation proposed.*

Table 7-16 - Residual Impact Assessment for Potential Operational Impacts (impacts the same for both applications except where stated in bold text)

<table>
<thead>
<tr>
<th>Receptor</th>
<th>Likely Significance (without mitigation)</th>
<th>Residual Significance (with mitigation)</th>
<th>Reasoning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combe Pool SSSI</td>
<td>No Impact</td>
<td>No Impact</td>
<td>As the SSSI is over 50 m from the site boundary and with the pollution prevention measures followed at the quarry it is unlikely that the SSSI will be impacted by dust deposition or water pollution.</td>
</tr>
<tr>
<td>Combe Pool (LWS and Ecosite)</td>
<td>No Impact</td>
<td>No Impact</td>
<td>As the wildlife site is over 50 m from the site boundary and with the pollution prevention measures followed at the quarry it is unlikely that it will be impacted by dust deposition or water pollution.</td>
</tr>
<tr>
<td>Birchley and New Close Wood (LWS and Ecosite)</td>
<td>No Impact</td>
<td>No Impact</td>
<td>As quarrying work is only adjacent to a short section of the woodland edge, and with the pollution prevention measures followed at the quarry, it is unlikely that the woodland would be impacted by dust deposition.</td>
</tr>
<tr>
<td>Woodhill Spinney and Verge (Ecosite)</td>
<td>Medium</td>
<td>No Impact</td>
<td>Ensure 40 m buffer strip is maintained and pollution prevention measures are followed. This will negate any potential impact on the Ecosite.</td>
</tr>
<tr>
<td>Waterbodies</td>
<td>Medium</td>
<td>Medium</td>
<td>Loss of waterbodies during operation will decrease the availability of this resource for wildlife, particularly amphibians. Ensure pollution prevention measures are followed to protect retained waterbodies.</td>
</tr>
<tr>
<td>Hazel dormouse</td>
<td>Medium</td>
<td>Low</td>
<td>If hedgerows and woodland containing dormouse are protected, retained and enhanced then the dormouse population should not be impacted. If hedgerows are removed the mitigation plan to be included as part of the Natural England licence application will be designed to minimise any negative effects to the population. Some disturbance / displacement of dormice are likely.</td>
</tr>
</tbody>
</table>

Chapter 7-54
<table>
<thead>
<tr>
<th>Receptor</th>
<th>Likely Significance (without mitigation)</th>
<th>Residual Significance (with mitigation)</th>
<th>Reasoning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reptiles</td>
<td>Medium</td>
<td>Low</td>
<td>Ensure a precautionary method statement is followed which is informed by the reptile survey results to minimise risk of injury/death to reptiles.</td>
</tr>
<tr>
<td>Bats (current quarry area)</td>
<td>Medium to Low</td>
<td>No Impact</td>
<td>Retention of as many trees as possible with stand-offs, restriction of night-time activities and an increase in invertebrates within the current quarry area should ensure that bats are not negatively impacted.</td>
</tr>
<tr>
<td>Bats (extension area)</td>
<td>Medium to Low</td>
<td>Medium to Low</td>
<td>Loss of hedgerows within the extension area will reduce landscape connectivity for bats.</td>
</tr>
<tr>
<td>Great crested newts</td>
<td>Medium to Low</td>
<td>No Impact</td>
<td>The mitigation plan to be included as part of the Natural England licence application will be designed to minimise negative effects to the population of great crested newts.</td>
</tr>
<tr>
<td>Hedgerows and mature trees (extension area only)</td>
<td>Low</td>
<td>Low</td>
<td>Hedgerows are to be removed although an aim should be to retain at least some of them. Planting new species-rich hedgerows of the same length elsewhere on-site, or enhancing retained hedgerows, will ensure that the hedgerow resource is replaced although these habitats will take time to establish.</td>
</tr>
<tr>
<td>Birds</td>
<td>Low</td>
<td>No Impact</td>
<td>Impacts to breeding birds are avoidable by removal of any suitable nesting habitat outside of the breeding season. Relatively low numbers of breeding birds will be affected, and nest boxes/sites and new hedgerow planting will be provided during operation.</td>
</tr>
<tr>
<td>Amphibians</td>
<td>Low</td>
<td>No Impact</td>
<td>Although waterbodies will be lost the preparation of a precautionary method statement detailing how to minimise risk to amphibians during operation will ensure that common amphibian populations are not negatively impacted. There are many other waterbodies within close proximity to the two to be lost.</td>
</tr>
</tbody>
</table>

Chapter 7-55
Cross refer to 7-15 for details of mitigation proposed. Enhancement measures to be established as soon as possible during the phased restoration.

**Table 7-17 - Residual Impact Assessment for Potential Decommissioning Impacts**

<table>
<thead>
<tr>
<th>Receptor</th>
<th>Likely Significance (without mitigation)</th>
<th>Residual Significance (with mitigation)</th>
<th>Reasoning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combe Pool SSSI</td>
<td>No Impact</td>
<td>No Impact</td>
<td>It is not considered that decommissioning activities will impact the SSSI and therefore no mitigation is proposed.</td>
</tr>
<tr>
<td>LWS, Ecosites</td>
<td>No Impact</td>
<td>No Impact</td>
<td>It is not considered that decommissioning activities will impact wildlife sites and therefore no mitigation is proposed.</td>
</tr>
<tr>
<td>Ancient woodland and BAP deciduous woodland</td>
<td>No Impact</td>
<td>No Impact</td>
<td>It is not considered that decommissioning activities will impact nearby habitats and therefore no mitigation is proposed.</td>
</tr>
<tr>
<td>Waterbodies</td>
<td>Medium (negative)</td>
<td>Medium (positive)</td>
<td>The restoration scheme will enhance the current baseline.</td>
</tr>
<tr>
<td>Reptiles</td>
<td>Medium (negative)</td>
<td>Medium (positive)</td>
<td>Ensure a precautionary method statement is followed to minimise risk of injury/death. The restoration scheme will enhance the current baseline habitat for reptiles.</td>
</tr>
<tr>
<td>Bats</td>
<td>Medium to Low (negative)</td>
<td>Medium to Low (positive)</td>
<td>The restoration scheme will enhance the current baseline.</td>
</tr>
<tr>
<td>Hazel dormouse</td>
<td>No Impact</td>
<td>Medium to Low (positive)</td>
<td>The restoration scheme will enhance the current baseline in the long-term.</td>
</tr>
<tr>
<td>Great crested newts</td>
<td>Medium to Low (negative)</td>
<td>Medium to Low (positive)</td>
<td>Ensure a precautionary method statement is followed to minimise risk of injury/death. The restoration scheme will enhance the current baseline habitat for great crested newts.</td>
</tr>
<tr>
<td>Hedgerows and mature trees</td>
<td>No Impact</td>
<td>Low (positive)</td>
<td>Planting new species-rich hedgerows will enhance the baseline hedgerow resource.</td>
</tr>
<tr>
<td>Birds</td>
<td>Low (negative)</td>
<td>Low (positive)</td>
<td>Impacts to breeding birds are avoidable by removal of any suitable nesting habitat outside of the breeding season. The restoration scheme will enhance the current baseline habitat for birds.</td>
</tr>
<tr>
<td>Amphibians</td>
<td>Low (negative)</td>
<td>Low (positive)</td>
<td>Ensure a precautionary method statement is followed to minimise risk of injury/death. The restoration scheme will enhance the current baseline habitat for amphibians.</td>
</tr>
</tbody>
</table>
Brinklow Quarry Environmental Statement
Ecological Issues - Residual Impacts

Cross-refer to Tables 7-8, 7-10 and 7-12 for impact descriptions, and to Tables 7-14 and 7-15 for mitigation details.

Table 7-18 - Summary of Residual Impact Assessment for Operational and Decommissioning Impacts on Ecology (impacts the same for both developments except where stated in bold text)

<table>
<thead>
<tr>
<th>Phase</th>
<th>Receptor</th>
<th>Likely significance (without mitigation)</th>
<th>Residual significance (with mitigation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation</td>
<td>Combe Pool SSSI</td>
<td>High</td>
<td>No Impact</td>
</tr>
<tr>
<td>Decommissioning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operation</td>
<td>LWS, pLWS and Ecosites</td>
<td>Medium</td>
<td>No Impact</td>
</tr>
<tr>
<td>Decommissioning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operation</td>
<td>Ancient woodland and BAP deciduous woodland</td>
<td>Medium</td>
<td>No Impact</td>
</tr>
<tr>
<td>Decommissioning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operation</td>
<td>Waterbodies</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Decommissioning</td>
<td></td>
<td></td>
<td>Medium (positive)</td>
</tr>
<tr>
<td>Operation</td>
<td>Hazel dormouse</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>Decommissioning</td>
<td></td>
<td></td>
<td>Medium to Low (positive)</td>
</tr>
<tr>
<td>Operation</td>
<td>Reptiles</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>Decommissioning</td>
<td></td>
<td></td>
<td>Medium (positive)</td>
</tr>
<tr>
<td>Operation</td>
<td>Bats (Section 73 area)</td>
<td>Medium to Low</td>
<td>No Impact</td>
</tr>
<tr>
<td>Decommissioning</td>
<td></td>
<td></td>
<td>Medium to Low (positive)</td>
</tr>
<tr>
<td>Operation</td>
<td>Bats (Extension area)</td>
<td>Medium to Low</td>
<td>Medium to Low</td>
</tr>
<tr>
<td>Decommissioning</td>
<td></td>
<td></td>
<td>Medium to Low (positive)</td>
</tr>
<tr>
<td>Operation</td>
<td>Great crested newts</td>
<td>Medium to Low</td>
<td>No Impact</td>
</tr>
<tr>
<td>Decommissioning</td>
<td></td>
<td></td>
<td>Medium to Low (positive)</td>
</tr>
<tr>
<td>Operation</td>
<td>Hedgerows and mature trees</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Decommissioning</td>
<td></td>
<td></td>
<td>Low (positive)</td>
</tr>
<tr>
<td>Operation</td>
<td>Birds</td>
<td>Low</td>
<td>No Impact</td>
</tr>
<tr>
<td>Decommissioning</td>
<td></td>
<td></td>
<td>Low (positive)</td>
</tr>
<tr>
<td>Operation</td>
<td>Amphibians</td>
<td>Low</td>
<td>No Impact</td>
</tr>
<tr>
<td>Phase</td>
<td>Receptor</td>
<td>Likely significance (without mitigation)</td>
<td>Residual significance (with mitigation)</td>
</tr>
<tr>
<td>-------------</td>
<td>----------</td>
<td>------------------------------------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>Decommissioning</td>
<td></td>
<td>Low</td>
<td>Low (positive)</td>
</tr>
</tbody>
</table>
### Table 7-19 - Summary of Impacts on Ecology using a Translation of the Approach used for EcIA to the IEMA (2004) Assessment Criteria

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combe Pool SSSI</td>
<td>None</td>
<td>High</td>
<td>Negligible</td>
<td>-</td>
<td>-</td>
<td>None</td>
<td>Reasonable</td>
</tr>
<tr>
<td>LWS, pLWS and Ecosites</td>
<td>None</td>
<td>Medium</td>
<td>Negligible</td>
<td>-</td>
<td>-</td>
<td>None</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Ancient woodland and BAP deciduous woodland</td>
<td>None</td>
<td>Medium</td>
<td>Negligible</td>
<td>-</td>
<td>-</td>
<td>None</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Waterbodies</td>
<td>Loss of lake and/or two field ponds during operation compensated for by creation of three lakes and ponds during decommissioning.</td>
<td>Medium</td>
<td>Small</td>
<td>Long-term</td>
<td>Benefit</td>
<td>Moderate</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Hazel dormouse</td>
<td>Dormouse population disturbed but maintained and baseline habitat enhanced.</td>
<td>Medium</td>
<td>Small</td>
<td>Long-term</td>
<td>Benefit</td>
<td>Moderate</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Reptiles</td>
<td>Reptile population disturbed but maintained and undisturbed habitat with greater potential than the baseline created.</td>
<td>Medium</td>
<td>Small</td>
<td>Long-term</td>
<td>Benefit</td>
<td>Moderate</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Bats</td>
<td>Bat population protected and baseline habitat enhanced. Connectivity restored.</td>
<td>Medium</td>
<td>Small</td>
<td>Long-term</td>
<td>Benefit</td>
<td>Moderate</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Great crested newts</td>
<td>Great crested newt population maintained and undisturbed habitat with greater potential than the baseline created.</td>
<td>Low</td>
<td>Small</td>
<td>Long-term</td>
<td>Benefit</td>
<td>Small</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Hedgerows and mature trees</td>
<td>Hedgerow resource re-established and creation of species-rich hedgerows.</td>
<td>Low</td>
<td>Small</td>
<td>Long-term</td>
<td>Benefit</td>
<td>Small</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Quarry</td>
<td>Undisturbed area of quarry habitat created for wildlife over long-term.</td>
<td>Low</td>
<td>Small</td>
<td>Long-term</td>
<td>Benefit</td>
<td>Small</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Birds</td>
<td>Habitat created with greater potential than the baseline.</td>
<td>Low</td>
<td>Small</td>
<td>Long-term</td>
<td>Benefit</td>
<td>Small</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Amphibians</td>
<td>Amphibian population disturbed but maintained and undisturbed habitat with greater potential than the baseline created.</td>
<td>Low</td>
<td>Small</td>
<td>Long-term</td>
<td>Benefit</td>
<td>Small</td>
<td>Reasonable</td>
</tr>
</tbody>
</table>
### Brinklow Quarry Environmental Statement
#### Ecological Issues - Residual Impacts

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
</table>

Importance/Sensitivity of Receptor: High, Medium, Low, Negligible  
Magnitude/Scale of Change: Large, Medium, Small, Negligible  
Duration: Temporary, Short-term, Long-term, Permanent  
Nature: Adverse, Beneficial  
Significance: Very Substantial, Substantial, Moderate, Slight, None  
Certainty: Absolute, Reasonable
7.8 Summary

This chapter of the ES considered the ecological impacts of two proposed developments, both individually and cumulatively. Scenario 1 is for an extension to time for gravel and sand extraction within the current quarry site. Scenario 2 is for the commencement of quarrying activities within a different, though adjacent, area.

This chapter contains sections that: describe the baseline environments (real and projected); identify and evaluate the likely ecological impacts from the proposals; and describe appropriate mitigation and enhancement measures. Also provided is a summary of relevant conservation policy and legal issues as they pertain to wildlife sites, habitats and species. The study has been prepared in accordance with best practice guidance for EcIA, principally IEEM 2006.

The site currently offers a mix of habitats consistent with those associated with quarrying and agricultural activities, including mounds of gravel and sand, numerous waterbodies, poor semi-improved grassland, arable fields, woodland strips and hedgerows containing mature trees. Hedgerow and waterbodies are the key habitats being both UK and LBAP priority habitats. Quarry is a LBAP priority habitat also.

Within 1 km of the site there is one SSSI (Combe Pool) and several LWS, pLWS, Ecosites, ancient woodlands and areas of BAP deciduous woodland habitat. In particular Birchley and New Close Wood and Woodhill Spinney and Verge are within 50 m of the site boundary.

Key species that are present are birds, bats, hazel dormouse, amphibians and reptiles. The hazel dormouse, great crested newt and bat species are European Protected Species.

The assessment of potential ecological impacts highlights that a number of habitats and species are susceptible to the effects of an unmitigated scheme, necessitating the requirement for mitigation proposals.

An analysis of the potential impacts of the proposals on ecological receptors is provided, for the operational and decommissioning phases of the proposals. The analysis is based on supplied project information.

Impact assessment highlights that an unmitigated scheme would have significant negative effects on a number of valued ecological receptors nearby and on-site.

An impact of high importance is predicted at Combe Pool SSSI due to the potential for water pollution without mitigation.

Several impacts of medium significance are also predicted to occur due to the potential for dust to pollute the adjacent Woodhill Spinney and Verge Ecosite, the loss of waterbodies on-site, the pollution of nearby waterbodies, noise disturbance to dormice, and the potential for reptiles to be injured / killed. The proposed extension to quarrying activities would also mean that two wildlife ponds are lost and hedgerow is removed, with key implications for dormice, judged to be of medium significance.

Impacts of medium to low significance are predicted because of bat foraging areas, the potential for noise impacts on bat roosts and the loss of habitat and the potential for injury/death of great crested newts. Extension of the quarry area might also disrupt commuting routes used by bats and result in injury / death to bats if roosts are removed.

Low significance impacts are associated with the loss of amphibian and bird habitats and the potential for injury/death to these species. Also a low impact is predicted due to the loss of quarry habitat with benefit to wildlife species during decommissioning.
The assessment of impacts highlights that an unmitigated scheme would have significant implications for the ecology of the area. If both developments proceed, the removal of habitats is more extensive and the risk to wildlife species is increased.

Mitigation measures are identified in order to reduce and, if possible, eliminate predicted impacts and, where possible, enhance the site in accordance with best practice for net ecological gain.

A key aspect of the mitigation is to establish wildlife habitats and features within a restored area of the quarry. This includes wildlife ponds and lakes, scrub and tussocky grassland habitat, a hibernaculum, a sand martin nest bank and bird and bat boxes.

It is also proposed to retain and protect wildlife features where possible during operation and decommissioning. For example retention of ponds, hedgerows, scrub, woodland strips and sand martin nest sites (where possible).

Avoidance and reduction measures will include continuing to follow rigorous pollution prevention measures, restricted operating hours and vehicle movements, and the adoption of sensitive working practices including those detailed in precautionary method statements for reptiles and amphibians. The existing infrastructure of the quarry is also designed to minimise impacts with a haul road of reinforced concrete to minimise noise and dust impacts.

The implementation of the ecological mitigation measures will be overseen by the Site Manager but needs input and advice from a suitably qualified ecologist, to ensure that the ecology on-site and off site is disturbed as little as possible, and that the enhancements specified are implemented to good effect.

Residual impact assessment has been undertaken to consider the impacts of the mitigated schemes, with the assumption that the mitigation measures proposed will be enacted fully, to a high standard, and as early as possible in the phasing of the quarry.

The mitigation measures proposed have reduced the significance of most impacts to no impact or a positive impact once all enhancements are enacted. However, the positive enhancements will only materialise once quarrying activities have been completed and restoration of the quarried areas takes place. During operation, some impacts of medium to low significance will remain.

Significant beneficial impacts are projected associated with the restoration of an area of the quarry which will enhance the waterbody resource, provide a safer, more permanent habitat for reptiles and amphibians, and diversify the landscape for bats and birds.

Further work is necessary for potential bat roost features, with emergence surveys of the stable buildings and Tree 9 (location shown on Figure 7-2, Section 7.10) prior to removal to ascertain if bat roosts are present and ensure appropriate mitigation is undertaken if roosts are present.

7.9 References

- Air Pollution Information System (APIS), [http://www.apis.ac.uk/](http://www.apis.ac.uk/)


Brinklow Quarry Environmental Statement
Ecological Issues - References


8. Cultural Heritage

8.1 Introduction

Cultural heritage is defined as the legacy of physical artefacts and intangible attributes of a group or society that are inherited from past generations, maintained in the present and bestowed for the benefit of future generations. In the context of cultural heritage that is valued and protected by law the focus is on archaeology, buildings and sites; the following provides the formal definition taken from the 1972 UNESCO World Heritage Convention (UNESCO, 1972):

For the purposes of this Convention, the following shall be considered as "cultural heritage":

- **monuments**: architectural works, works of monumental sculpture and painting, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features, which are of outstanding universal value from the point of view of history, art or science;
- **groups of buildings**: groups of separate or connected buildings which, because of their architecture, their homogeneity or their place in the landscape, are of outstanding universal value from the point of view of history, art or science;
- **sites**: works of man or the combined works of nature and man, and areas including archaeological sites which are of outstanding universal value from the historical, aesthetic, ethnological or anthropological point of view.

8.2 Methodology

The aim of this assessment is to establish the known and potential cultural heritage resource within the site of the proposed projects and its environs which may be affected by the proposed developments, and the extent to which it may be potentially affected by the developments. This chapter identifies the significance of the resource, summarises the likely impact of the proposed developments on it and provides identifies the adopted mitigation measures. Impacts are described in terms of the developments' potential effects on the asset's cultural significance and the extent to which it would degrade or enhance the asset's significance. Cultural heritage is here taken to include:

- Designated assets, including Scheduled Monuments, Listed buildings and Conservation Areas; and
- Undesignated assets that are of value because of their archaeological or historical interest.

8.2.1 Legislation and Policy

The National Planning Policy Framework (NPPF), effective as of March 2012, Paragraph 128 states that:

In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets’ importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which development is proposed includes or has the potential to include heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation.
8.3 Baseline Conditions

Brinklow Quarry has a number of statutory cultural resources within 2km of its quarry workings. These are displayed in Table 8-1 along with their proximity:

Table 8-1 - Heritage assets within 2km (Magic.gov.uk)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Distance from Quarry Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combe Abbey</td>
<td>820m North West</td>
</tr>
<tr>
<td>Brinklow with Listed Buildings</td>
<td>1400m East</td>
</tr>
<tr>
<td>Motte and Bailey Castle, 30m E of St John the</td>
<td>2000m East</td>
</tr>
<tr>
<td>Baptist’s Church</td>
<td></td>
</tr>
<tr>
<td>Nearest Listed Building – Woodhill Farm</td>
<td>760m North</td>
</tr>
<tr>
<td>East Lodge</td>
<td>935m North</td>
</tr>
</tbody>
</table>

Combe Abbey is a grade II* listed park. It is a late 18th century park landscaped by Lancelot Brown with structures designed by Henry Holland, together with mid and late 19th Century formal gardens laid out by William Andrews Nesfield and William Miller which incorporate elements of late 16th century and early 17th century formal gardens.

Today the house and formal gardens are leased for use as a hotel, while the park is a country park run by Rugby Borough Council; other areas of the site are in divided private ownership.

Combe Abbey is situated c7km north west of Rugby and c4km east of Coventry, to the north of the A427. The c270ha site comprises some 6ha of formal gardens and informal pleasure grounds, c2ha of walled gardens and c262ha of parkland, lakes and avenues.

Motte and Bailey Castle, 30m E of St John the Baptist’s Church is in the village of Brinklow, situated to the East of the Church. It includes the motte and double bailey castle and an area of ridge and furrow cultivation. The motte and bailey castle in Brinklow is a good example of this type of monument and it survives very well. The castle occupied a site of significant strategic importance on the Fosse Way and is associated with the campaigns of William the Conqueror.

Woodhill Farm is a Grade II listed building.

East Lodge is a Grade II listed building.

8.4 Impacts of the Proposals

Either of the Brinklow Quarry proposals to extend the time of the existing quarry (section 73 application) or extend the area of sand extraction could impact on these monuments through the creation of noise, dust, and impacting the views of the local landscape from these monuments. Each of these have been dealt with both separately and cumulatively in the Noise, Air Quality and LVIA chapters.

Table 8-2 – Impacts on cultural heritage assets

<table>
<thead>
<tr>
<th>Potential Impact Source</th>
<th>Location in ES where this is dealt with</th>
<th>Summary of Conclusions with regards to the asset</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise</td>
<td>Chapter 9 – Noise Assessment</td>
<td>Noise levels for the existing and future quarrying operations are within statutory limits</td>
</tr>
<tr>
<td>Dust</td>
<td>Chapter 10 – Air Quality</td>
<td>The developments will not create dust or have</td>
</tr>
</tbody>
</table>
8.5 **Mitigation measures**

It is not considered that any mitigation measures would be required for Cultural Heritage outside of those already in place to minimise noise, dust and visual intrusion.

8.6 **Residual Impacts**

There are potential residual impacts from occasional noise events, or the potential failure of a management measure which means dust is created. However these are abnormal or emergency events only and are not anticipated to have a significant impact on the cultural resources outlined above.

8.7 **Summary of Impacts**

8.7.1 **Extension to Time**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultural Heritage</td>
<td>Abnormal or emergency noise or dust creation</td>
<td>Medium</td>
<td>Negligible</td>
<td>Short term</td>
<td>Adverse</td>
<td>None</td>
<td>Reasonable</td>
</tr>
</tbody>
</table>

8.7.2 **Extension to Area**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultural Heritage</td>
<td>Abnormal or emergency noise or dust creation</td>
<td>Medium</td>
<td>Negligible</td>
<td>Short term</td>
<td>Adverse</td>
<td>None</td>
<td>Reasonable</td>
</tr>
</tbody>
</table>

8.7.3 **Cumulative Impacts**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultural Heritage</td>
<td>Abnormal or emergency noise or dust creation</td>
<td>Medium</td>
<td>Negligible</td>
<td>Short term</td>
<td>Adverse</td>
<td>None</td>
<td>Reasonable</td>
</tr>
</tbody>
</table>
Importance / Sensitivity of Receptor: High, Medium, Low, Negligible
Magnitude / Scale of Change: Large, Medium, Small, Negligible
Duration: Temporary, Short-term, Long-term, Permanent
Nature: Adverse, Beneficial
Significance: Very Substantial, Substantial, Moderate, Slight, None

8.8 References
Magic.gov.uk
National Planning Policy Framework, 2012
1972 UNESCO World Heritage Convention
9. **Noise**

9.1 **Introduction**

This Chapter assesses the potential noise impacts of Brinklow Quarry. This assessment has been carried out in order to determine the impact of noise from the proposed section 73 extension of time and also the proposed extension of area. It takes a “worst case” assessment.

The assessment found that both the existing operations which are proposed to be renewed as part of the extension to time, and the extension of area are within PPG guidance limits and therefore do not adversely affect even sensitive nearby locations. An additional hour of operation in the morning (from 0800 hrs to 0700 hrs) should not be an issue for a noise impact perspective, as the daytime period starts at 0700 hrs in any case and the impact is assessed over the entire period 0700 hrs – 1900 hrs.

A glossary of the acoustical terms used in this Chapter, together with technical details of the baseline noise monitoring surveys and data used for evaluation of noise impact for the construction and operational phases, is provided in a separate technical appendix (Appendix 4).

9.2 **Methodology**

9.2.1 Legislation & Policy

Relevant national and local legislation and policy is discussed below.

**National Planning Policy Framework**

The National Planning Policy Framework (NPPF) was released in March 2012 and has replaced the Planning Policy Guidance which previously covered planning and pollution control and new development in England. Paragraph 123 of the NPPF states that planning policies and decisions should aim to:

- Avoid noise from giving rise to significant adverse impacts (see Explanatory Note to the Noise Policy Statement for England (DEFRA)) on health and quality of life as a result of new development;
- Mitigate and reduce to a minimum other adverse impacts (see Explanatory Note to the Noise Policy Statement for England (DEFRA)) on health and quality of life arising from noise from new development, including through the use of conditions;
- Recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land use since they were established (Subject to the provisions of the Environmental Protection Act 1990 and other relevant law); and
- Identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

**Noise Policy Statement for England**

The Noise Policy Statement for England (NPSE) aims to ‘through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- avoid significant adverse impacts on health and quality of life;
- mitigate and minimise adverse impacts on health and quality of life; and
- where possible, contribute to the improvement of health and quality of life’
Planning Practice Guidance - Minerals

The Planning Practice Guidance (PPG), published March 2014, provides advice on the appropriate noise standards for mineral operators for normal operations. Paragraphs 021 (Reference ID: 27-021-20140306) and 022 (Reference ID: 27-022-20140306) of the minerals section state that;

“Paragraph 021:
What are the appropriate noise standards for mineral operators for normal operations?

Mineral planning authorities should aim to establish a noise limit, through a planning condition, at the noise-sensitive property that does not exceed the background noise level (LA90,1h) by more than 10dB(A) during normal working hours (0700-1900). Where it will be difficult not to exceed the background level by more than 10dB(A) without imposing unreasonable burdens on the mineral operator, the limit set should be as near that level as practicable. In any event, the total noise from the operations should not exceed 55dB(A) Lreq, 1h (free field). For operations during the evening (1900-2200) the noise limits should not exceed the background noise level (LA90,1h) by more than 10dB(A) and should not exceed 55dB(A) Lreq, 1h (free field). For any operations during the period 22.00 – 07.00 noise limits should be set to reduce to a minimum any adverse impacts, without imposing unreasonable burdens on the mineral operator. In any event the noise limit should not exceed 42dB(A) Lreq,1h (free field) at a noise sensitive property.

Where the site noise has a significant tonal element, it may be appropriate to set specific limits to control this aspect. Peak or impulsive noise, which may include some reversing bleepers, may also require separate limits that are independent of background noise (e.g. Lmax in specific octave or third-octave frequency bands – and that should not be allowed to occur regularly at night.)

Care should be taken, however, to avoid any of these suggested values being implemented as fixed thresholds as specific circumstances may justify some small variation being allowed.”

“Paragraph 022:
What type of operations may give rise to particularly noisy short-term activities and what noise limits may be appropriate?

Activities such as soil-stripping, the construction and removal of baffle mounds, soil storage mounds and spoil heaps, construction of new permanent landforms and aspects of site road construction and maintenance.

Increased temporary daytime noise limits of up to 70dB(A) Lreq 1h (free field) for periods of up to eight weeks in a year at specified noise-sensitive properties should be considered to facilitate essential site preparation and restoration work and construction of baffle mounds where it is clear that this will bring longer-term environmental benefits to the site or its environs.

Where work is likely to take longer than eight weeks, a lower limit over a longer period should be considered. In some wholly exceptional cases, where there is no viable alternative, a higher limit for a very limited period may be appropriate in order to attain the environmental benefits. Within this framework, the 70 dB(A) Lreq 1h (free field) limit referred to above should be regarded as the normal maximum.”
Statutory Powers
Additional statutory powers to control noise exist outside of the planning system, and the granting of planning permission does not remove the need to comply with these controls. The major legislative instruments are:

- Part III of the Environmental Protection Act 1990, as amended by the Noise and Statutory Nuisance Act 1993, which requires local authorities to serve abatement notices where noise emitted from any premises constitutes a statutory nuisance.
- Part III of the Control of Pollution Act 1974, which gives local authorities certain powers to control noise from construction sites.

It is usual for the implementation of this legislation to be applied under delegated powers to the Environmental Health Department of the relevant local authority.

Local Planning Policy - Warwickshire County Council
Having reviewed the Warwickshire County Council “Minerals and Waste Development Scheme 2012-2015” (adopted February 2015) and the “Warwickshire Draft Local Aggregate Assessment 2014”, there is no specific criteria regarding noise from quarrying activities in either document. We therefore used the guidance provided within the PPG.

9.3 Baseline Conditions
In order to characterise the existing noise climate, a detailed noise measurement study has been carried out in the vicinity of Brinklow Quarry. The identified noise sensitive receptors are shown in Figure 9-1.

Figure 9-1 - Existing Quarry Area and Identified Noise Sensitive Receptors

Noise measurements were carried out between 1200hrs on 4th August 2015 and 1200hrs on 5th August 2015. The noise measurements were utilised to calibrate a noise model of the site and surrounding area. Two semi-permanent positions were chosen, MP1 and MP2 on Figure 9-2, and four satellite positions, MP3 to 6 on Figure 9-2.
Measurement position 1 (MP1) was located in a free-field location to the west of the site, approximately 500m south of the B4027 and approximately 950m west of the quarry access road at a height of 1.5m. At MP1, the ambient noise climate was dominated by road traffic noise (mostly from HGVs) on the site access road. Distant road traffic noise from the A428 was also audible. Noise from operations of the quarry, such as reversing alarms and the movement of HGVs was audible.

Measurement position 2 (MP2) was located in a free-field location approximately 200m south of the weighbridge office and approximately 100m east of the quarry access road at a height of 1.5m. At MP2, the ambient noise climate was dominated by rustling from the nearby maize field with noise from Brinklow Quarry also audible.

Satellite noise measurements were carried out on the 4th August 2015 and on the 5th August 2015. The noise measurements were utilised to calibrate a noise model of the site and surrounding area.

Measurement position 3 (MP3) was located in a free-field location to the east of the site on Green Lane, approximately 50m south of the B4027 at a height of 1.5m. MP3 is representative of the noise level of the closest houses to the quarry in Brinklow. At MP3, the ambient noise climate was dominated by road traffic noise on the B4027 and some local traffic on Green Lane. Noise from operations of the quarry were only audible when a particularly loud event from the quarry corresponded with a period of low traffic on the B4027.

Measurement position 4 (MP4) was located in a free-field location on the B4455, approximately 300m north of the village of Bretford at a height of 1.5m. MP4 is representative of the closest houses to the existing quarry that are near the village of Bretford. At MP4, the ambient noise climate was dominated by road traffic noise from the B4455. Occasionally rustling of trees and farming operations became audible. Noise from the quarry operations was inaudible.

Measurement position 5 (MP5) was located in a free-field location on Speedway Lane, approximately 100m east of the Coventry Speedway at a height of 1.5m. MP5 is representative of the closest houses to the quarry within the villages of Brandon and Binley Woods, as well as those houses located in close proximity to Coventry Speedway. At MP5, the ambient noise climate included distant road traffic noise from the A428. Occasionally rustling of trees and air traffic noise became audible. Noise from the quarry operations was inaudible.
Measurement position 6 (MP6) was located in a free-field location within the Car Park of Coombe Country Park, at a height of 1.5m. MP6 is representative of Coombe Country Park and Coombe Abbey Hotel. At MP6, the ambient noise climate was dominated by road traffic noise from the B4027 with some vehicle movements in the Coombe Country Park car park also becoming audible. Noise from the quarry operations was inaudible.

The noise specialists then used noise modelling software CadnaA in order to predict noise levels from quarrying activities at the nearest noise sensitive receptors using a plant list (available as Table 5.1 in Appendix 4). The noise model has been used to determine the noise levels from the existing and the proposed future quarry activities.

9.4 Impacts of the Proposal

9.4.1 Impacts of the Extension to Time

Planning Conditions impose controls on the current activities to limit the generation of operational noise. Controls include restricted working hours, the fitment and appropriate maintenance of effective engine silencers to mobile plant, scheduled maintenance of quarry fixed plant and vehicle speed restrictions. Plant feed hoppers are constructed with non-resonant materials or damped to reduce low frequency emissions and standard operational procedures require the minimisation of drop heights.

Conditions associated with the existing planning permission impose controls on the activities to limit the generation of operational noise. Controls include restricted working hours, the fitment and appropriate maintenance of effective engine silencers to mobile plant, scheduled maintenance of quarry fixed plant and vehicle speed restrictions. Plant feed hoppers are constructed with non-resonant materials or damped to reduce low frequency emissions and standard operational procedures require the minimisation of drop heights. Additionally, the site currently operates between 0800hrs and 1800hrs Monday to Friday and between 0800hrs and 1300hrs on Saturdays but seeks to extend this.

To determine whether the existing site meets the criteria set out in the PPG, a noise assessment has been carried out to determine the suitability of continued use of the site as a quarry. In order to achieve the requirements of the PPG, the predicted noise level from quarrying activities should not exceed a noise level that is 10 dB above the existing background noise level, and should not exceed 55 dB LAeq,1hr.

Table 9-1 below presents the assessment of the predicted noise levels and compares them against the criteria set out in the PPG. Based on on-site observations, quarrying activity is presently only taking place in the south-east corner of the existing site. A noise contour map is shown in Figure 9-3.

<table>
<thead>
<tr>
<th>Receptor</th>
<th>Background Noise Level L_{A90, 1 hour}</th>
<th>Predicted Noise Level</th>
<th>Greater than 55 dBA?</th>
<th>Difference between Predicted Noise Level and Background Noise Level</th>
<th>Meets PPG Criteria?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brinklow</td>
<td>46</td>
<td>49</td>
<td>No</td>
<td>+3</td>
<td>Yes</td>
</tr>
<tr>
<td>Bretford</td>
<td>45</td>
<td>46</td>
<td>No</td>
<td>+1</td>
<td>Yes</td>
</tr>
<tr>
<td>Speedway Lane</td>
<td>45</td>
<td>41</td>
<td>No</td>
<td>-4</td>
<td>Yes</td>
</tr>
<tr>
<td>Coombe Country Park</td>
<td>47</td>
<td>40</td>
<td>No</td>
<td>-7</td>
<td>Yes</td>
</tr>
</tbody>
</table>
9.4.2 Impacts of the Extension of Quarrying Area

To determine whether the new working areas would meet the criteria set out in the PPG, a noise assessment has been carried out to determine the noise impact of the proposed extension of the quarry. The identified noise sensitive receptors are also shown in Figure 9-1.

In order to achieve the requirements of the PPG, the predicted noise level from quarrying activities should not exceed a noise level that is 10 dB above the existing background noise level, and should not exceed 55 dB LAeq,1hr. Table 9-2 below presents the assessment of the predicted noise levels and compares them against the criteria set out in the PPG. In order to predict a worst-case noise level, the noise specialists have assumed that the quarrying activities may occur concurrently at both the east and west boundaries of the proposed extended area. A noise contour map is shown in Figure 9-4.

Table 9-2 - Noise Impact Assessment - Extended Quarrying Area

<table>
<thead>
<tr>
<th>Receptor</th>
<th>Background Noise Level L_{A90, 1 hour}</th>
<th>Predicted Noise Level</th>
<th>Greater than 55 dBA?</th>
<th>Difference between Predicted Noise Level and Background Noise Level</th>
<th>Meets PPG Criteria?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brinklow</td>
<td>46</td>
<td>49</td>
<td>No</td>
<td>+3</td>
<td>Yes</td>
</tr>
<tr>
<td>Bretford</td>
<td>45</td>
<td>42</td>
<td>No</td>
<td>-3</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Figure 9-3 indicates that the predicted noise levels will achieve the requirements of the PPG.

An additional hour of operation in the morning (from 0800 hrs to 0700 hrs) should not be an issue for a noise impact perspective, as the daytime period starts at 0700 hrs in any case and the impact is assessed over the entire period 0700 hrs – 1900 hrs.
Table 9-2 indicates that the predicted noise levels will achieve the requirements of the PPG.

A legal agreement restricts the total number of vehicle movements generated by all quarrying and associated activity at the site to 200 HGVs per day. This will not alter with the proposed development and therefore the noise impact from the maximum number of vehicles per day will not increase.

### 9.4.3 Cumulative Impacts of Both Applications

As both applications together do not result in activities intensifying this does not result in an increased impact from noise. However, in order to predict a worst-case noise level, the noise specialists have assumed that the quarrying activities may occur concurrently at the east, west and south-east boundaries of the site. A noise contour map is shown in Figure 9-6.
9.4.4 Conclusion of Impact Assessment

Either application separately, and the applications when taken together, meets the requirements of planning guidance.

9.5 Mitigation Measures

Conditions associated with the existing planning permission impose controls on the activities to limit the generation of operational noise. Controls include restricted working hours, the fitment and appropriate maintenance of effective engine silencers to mobile plant, scheduled maintenance of quarry fixed plant and vehicle speed restrictions. Plant feed hoppers are constructed with non-resonant materials or damped to reduce low frequency emissions and standard operational procedures require the minimisation of drop heights.

Chapter 9-8
Additionally, the stockpiling of quarried material around the work area could act as a noise barrier that will further reduce noise levels at noise sensitive receptors, depending on where the stockpiles are located. As the excavations proceed, the walls of the quarry area will also act as a noise barrier and will assist in reducing noise still further at the noise sensitive receptors. Brinklow Quarry operate a 20-40m buffer when stockpiling topsoil material, this acts as a bund towards the closest sensitive receptors that will move with the workings.

9.6 Residual Impacts

It is considered that with appropriate management in place there would be no residual impacts.

9.7 Summary

A detailed assessment has been carried out in order to determine the noise impact from Brinklow Quarry.

The assessment has shown that noise from the existing quarrying activities are below the criteria set out in the Planning Practice Guidance (PPG).

The assessment has also shown that noise from the proposed extended quarrying activities will be below the criteria set out in the PPG.

Achievement of the target noise criteria demonstrates that noise from quarrying activities will not cause a significant adverse impact on the nearby noise sensitive receptors, in line with the principles of paragraph 123 of the NPPF.

An additional hour of operation in the morning (from 0800 hrs to 0700 hrs) should not be an issue for a noise impact perspective, as the daytime period starts at 0700 hrs in any case and the impact is assessed over the entire period 0700 hrs – 1900 hrs.

9.8 Summary of Impacts

9.8.1 Extension to Time

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact of noise of operations</td>
<td>None</td>
<td>Medium</td>
<td>Small</td>
<td>Long-term</td>
<td>Adverse</td>
<td>Slight – within PPG guidance</td>
<td>Reasonable</td>
</tr>
</tbody>
</table>

9.8.2 Extension to Area

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact of noise of operations</td>
<td>None</td>
<td>Medium</td>
<td>Small</td>
<td>Long-term</td>
<td>Adverse</td>
<td>Slight – within PPG guidance</td>
<td>Reasonable</td>
</tr>
</tbody>
</table>

9.8.3 Cumulative Impacts

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
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<tbody>
<tr>
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<td>None</td>
<td>Medium</td>
<td>Small</td>
<td>Long-term</td>
<td>Adverse</td>
<td>Slight – within PPG guidance</td>
<td>Reasonable</td>
</tr>
</tbody>
</table>

Importance / Sensitivity of Receptor: High, Medium, Low, Negligible
Magnitude / Scale of Change: Large, Medium, Small, Negligible
Brinklow Quarry Environmental Statement
Noise - Summary of Impacts

Duration: Temporary, Short-term, Long-term, Permanent
Nature: Adverse, Beneficial
Significance: Very Substantial, Substantial, Moderate, Slight, None
10. **Air Quality**

10.1 **Introduction**

Gair Consulting Ltd was commissioned by Sustainable Direction Ltd (SDL), to undertake an assessment of potential air quality impacts arising from the two proposals, separately and in combination.

Activities that could give rise to an air-related impact from quarrying operations include dust creation and emissions from transport. The quarrying operations have the potential to generate airborne particles and suspended dust from the following sources:

- excavation of the working face;
- loading of quarried minerals;
- on-site transport of minerals;
- re-suspended dust from heavy duty vehicles (HDVs) and other mobile plant;
- soil stripping and overburden removal;
- emissions from stockpiles;
- screening plant; and
- crushing plant.

The potential impact of quarry activities may cause an annoyance by the deposition of particles to surfaces or a health impact from airborne particles. In addition, the generation of airborne particles may deposit to vegetation and impact sensitive habitat sites. Therefore, the assessment has considered the impact of the quarry activities on dust annoyance, human health and habitat sites.

In addition to the quarrying of sand and gravel, there are a number of additional activities carried out at the site. These include the following:

- A mortar plant operated by an independent manufacturer to produce a range of consistent ready-to-use mortars for the construction market. This generates a significant demand for the quarry’s sand.
- An open windrow composting facility for the treatment of municipal and commercial green waste.
- An inert waste recycling facility generates a variety of products including an alternative to Type One roadstone, washed drainage/pipe bedding gravel and recycled fill sand.

Local records from Rugby Borough Council (RBC) and Coventry City Council (CCC) indicate that there have been no complaints relating to dust or traffic as a result of the quarry operations since its beginning in 1994, apart from one incident reported to RBC on 15th January 2009 relating to the soiling of the complainant’s car with dry mud and dust from a vehicle leaving the quarry.

A detailed assessment of the potential impacts of the existing quarry and quarry extension on air quality has included the following:

- A description of the surrounding environment and an assessment of the sensitivity of the location with respect to dust emissions.
- A review of any monitoring data (airborne particles or dust deposition) available for the location. This includes monitoring data carried out by the operator, local and national monitoring, where available.
- A review of any complaints relating to off-site dust and whether or not these have been reported and investigated in line with the complaints procedure.
- A review of current control measures for controlling dust generation to ensure that these are adequate and in accordance with the present planning permission and current best practice.
- An assessment of future impacts with regard to the proposed future phasing of the quarry.
- The recommendation of any further mitigation measures for the future operation of the quarry, where required.

Guidance is provided by the Institute of Air Quality Management (IAQM) and Environmental Protection UK (EPUK) on indicative criteria for requiring an air quality assessment in their land-use planning development control: planning for air quality (May 2015). For sites that are not located within an air quality management area (AQMA), these are 500 light duty vehicles (LDVs) AADF and/or 100 HGVs. Where there is an AQMA this is reduced to 100 LDVs and 25 HDVs. Within RBC’s jurisdiction and roads accessed by quarry traffic, the changes in traffic flows are below the criteria for requiring a detailed assessment. Therefore, it is concluded that the assessment of traffic-related air quality impacts for the quarry extension is not required for sensitive receptors located within RBC.

The majority of traffic accessing the quarry will do so via Brinklow Road. The majority of vehicles will travel via Coventry and then further afield via the A46. Therefore, there would be potentially 157 HDV movements along Brinklow Road, as a worst-case assuming all traffic travels via Coventry. The entire City of Coventry has been designated as an AQMA for annual mean concentrations of nitrogen dioxide. Therefore, following consultation with both CCC and RBC it was agreed that the impact of quarry traffic along Brinklow Road should be the subject of a detailed traffic-related air quality assessment.

10.2 Methodology

10.2.1 Assessment Criteria

Detailed information on the appropriate assessment criteria are provided in Technical Appendix 5. A summary of air quality standards and limit values of relevance to the assessment are summarise in Table 10-1.

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Description</th>
<th>Averaging Period</th>
<th>Value (μg m⁻³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen dioxide (NO₂)</td>
<td>Objective for the protection of human health</td>
<td>1-hour mean, not to be exceeded more than 18 times a year (a)</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Annual mean</td>
<td>40</td>
</tr>
<tr>
<td>Fine particles PM₁₀</td>
<td>Objective for the protection of human health</td>
<td>24-hour mean, not to be exceeded more than 35 times a year (b)</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Annual mean</td>
<td>40</td>
</tr>
<tr>
<td>Fine particles (PM₂₅)</td>
<td>Objective for the protection of human health</td>
<td>Annual mean – stage 1 limit value</td>
<td>25</td>
</tr>
</tbody>
</table>

(a) This corresponds to the 99.8th percentile of hourly means
(b) This corresponds to the 90.4th percentile of 24-hour means
Habitat sites in close proximity to the quarry development may be affected by combustion emissions from quarry plant (e.g. diesel generators and quarry vehicles) and from airborne dust which have the potential to deposit onto vegetation. If the level of deposition is sufficiently high then the stomata may be damaged or blocked resulting in drought stress. In addition, chemical effects of dust either directly on the plant surface or on to soils.

Critical levels are thresholds of airborne pollutant concentrations above which damage may be sustained to sensitive plants and animals. High concentrations of pollutants in ambient air directly cause harm to leaves and needles of forests and other plant communities.

A summary of the critical levels relevant to the assessment is presented in Table 10-2.

**Table 10-2 – Critical levels, limit values and objectives for the protection of vegetation and ecosystems**

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Description</th>
<th>Averaging Period</th>
<th>Concentration (µg m⁻³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxides of nitrogen (NOₓ)</td>
<td>Critical Level / Limit Value</td>
<td>Annual mean</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>24-hour mean</td>
</tr>
</tbody>
</table>

10.2.2 Legislation and Policy

**National Policy**

For planning purposes, significance criteria in air quality assessments have not been in common use or widely agreed until quite recently, when the Institute of Air Quality Management and Environmental Protection UK produced some guidance on the subject ². The EPUK 2010 guidance has recently been updated in association with the Institute of Air Quality Management (IAQM ³). This provides some changes to the impact descriptors and the assessment of significance. The impact descriptors for individual receptors is presented in Table 2.5. The table is intended to be used by rounding the change in percentage pollutant concentration to whole numbers, which then makes it clearer which cell the impact falls within.

**Table 10-3 – Impact description for individual receptors**

<table>
<thead>
<tr>
<th>Concentration with Development</th>
<th>Percentage Change in Air Quality Relative to the Air Quality Assessment Level (AQAL)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt; 1%</td>
</tr>
<tr>
<td>75% or less of AQAL</td>
<td>Negligible</td>
</tr>
<tr>
<td>76 to 94% of AQAL</td>
<td>Negligible</td>
</tr>
<tr>
<td>95 to 102% of AQAL</td>
<td>Slight</td>
</tr>
<tr>
<td>103 to 109% of AQAL</td>
<td>Moderate</td>
</tr>
<tr>
<td>110% or more of AQAL</td>
<td>Moderate</td>
</tr>
</tbody>
</table>


³ Land-Use Planning & Development Control: Planning for Air Quality, EPUK and IAQM (May 2015)
The assessment of significance is principally left to professional opinion and guidance is provided on the factors that need to be considered when judging significance and include the following:

- the existing and future air quality in the absence of the development;
- the extent of current and future population exposure to impacts;
- the worst-case assumptions adopted when undertaking the prediction of impacts; and
- the extent to which the proposed development has adopted best practice to eliminate and minimise emissions.

The National Planning Policy Framework (2012) set out the Government’s planning policies for England and how these are expected to be applied, must be taken into account by local authorities when developing local plans and is a material consideration in planning decisions. In dealing specifically with air quality, the Framework states that ‘planning policies should sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas. Planning decisions should ensure that any new development in AQMAs is consistent with the local air quality action plan’.

The Environment Agency’s H1 guidance specifies criteria to enable the potential significance of an impact to be determined on a habitat site. For the process contribution (PC), the impact is deemed insignificant if the annual mean PC is less than 1% of the critical level (or air quality objective) and the short term PC is less than 10% of the critical level (or air quality objective). If either of these criteria are exceeded, they are not necessarily significant however, it is then necessary to consider the total predicted environmental concentration or deposition (PC plus the background contribution) as discussed above.

Local Policy
Local authorities are required to periodically review and assess the current and future quality of air in their areas. Where it is determined that an air quality objective is not likely to be met within the relevant time period, the authority must designate an Air Quality Management Area (AQMAs) and produce a local action plan. The quarry site is located within the administrative boundary of Rugby Borough Council (RBC). However, the administrative boundary of Coventry City Council (CCC) lies approximately 2 km to the west of the existing quarry boundary (2.3 km from the proposed extension to the quarry). Therefore, the review and assessment process for both councils has been considered for the assessment.

10.3 Baseline Conditions
This section defines the baseline environment for the assessment and includes a summary of background monitoring data for the local area. A detailed assessment of background conditions and local climate conditions were also included in the assessment and are available in Technical Appendix 5.

10.3.1 Baseline Environment

The Site and Surroundings
The quarry site (existing and proposed extension) is located within a rural setting. There are a number of isolated residential receptors located in close proximity to the quarry but these are owned and occupied by the operators of the development. The nearest residential area is the village of Brinklow which is approximately 500 m to the east of the existing quarry and 850 m to the east of the proposed quarry extension. Coventry is located to the west of the Brinklow Quarry. The nearest residential properties within the city are located approximately 2 km from the existing quarry and 2.5 km from the proposed quarry extension.
There is a single habitat site within 1 km of the quarry boundary. This is the Combe Pool Site of Special Scientific Interest (SSSI). The habitats within Combe Pool SSSI comprise standing water, reed bed and woodland. The SSSI is mainly designated due to its ornithological interest. At its nearest point, it is approximately 800 m from the existing quarry and 1,000 m from the proposed quarry extension. Brinklow Road, along which most of the quarry traffic will travel, is adjacent to the southern boundary of the SSSI.

To date mineral has been partially extracted from the two areas within the thin strip in the centre of the quarry. Area B (see Figure 2-2) has been partially extracted and the area to the east of Area 1 has also been extracted. The wet processing area is located within the most southern portion of the existing quarry site. The conveyor for the excavated material runs to the north of Area A and the adjacent area to the east and then to the south of Area C and Area F.

Identification of Sensitive Human Receptors

Sensitive human receptors that have been considered for the assessment are provided in Table 10-4. These are the sensitive receptors located within 1 km of the quarry boundaries. The location of these receptors is also shown in Figure 10-1. Fourteen discrete receptors have been considered as well as seven footpath receptors for the extensive network of footpaths in the area that includes the Centenary Way and the Coventry Way.

Table 10-4 – Sensitive human receptors within 1km of the existing and extended quarry boundaries

<table>
<thead>
<tr>
<th>Reference</th>
<th>Name</th>
<th>Description</th>
<th>Grid Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
<td>Combe Abbey</td>
<td>Country House and Hotel</td>
<td>440384 279796</td>
</tr>
<tr>
<td>R2</td>
<td>Woodhill Farm</td>
<td>Farm and residential</td>
<td>441701 279229</td>
</tr>
<tr>
<td>R3</td>
<td>Birchley Farm</td>
<td>Farm and residential</td>
<td>441431 278356</td>
</tr>
<tr>
<td>R4</td>
<td>Sunrise Farm</td>
<td>Farm and residential</td>
<td>441233 277492</td>
</tr>
<tr>
<td>R5</td>
<td>Hill Farm</td>
<td>Farm and residential</td>
<td>442706 277571</td>
</tr>
<tr>
<td>R6</td>
<td>Cottage Farm</td>
<td>Farm and residential</td>
<td>442798 278446</td>
</tr>
<tr>
<td>R7</td>
<td>Brinklow Village</td>
<td>Residential properties</td>
<td>442971 279243</td>
</tr>
<tr>
<td>R8</td>
<td>Longacre</td>
<td>Residential</td>
<td>442840 278814</td>
</tr>
<tr>
<td>R9</td>
<td>Highwood Farm</td>
<td>Farm and residential</td>
<td>442118 279446</td>
</tr>
<tr>
<td>R10</td>
<td>Allotment Gardens</td>
<td>Allotment gardens</td>
<td>442663 279532</td>
</tr>
<tr>
<td>R11</td>
<td>East Lodge</td>
<td>Residential</td>
<td>441778 279489</td>
</tr>
<tr>
<td>R12</td>
<td>Highwood Bungalow</td>
<td>Residential</td>
<td>442746 279663</td>
</tr>
<tr>
<td>R13</td>
<td>Properties B4029</td>
<td>Residential</td>
<td>442547 280261</td>
</tr>
<tr>
<td>R14</td>
<td>Riding Stables</td>
<td>Agricultural</td>
<td>441135 278994</td>
</tr>
<tr>
<td>R15 to R21</td>
<td>Footpath</td>
<td>Footpath users</td>
<td>-</td>
</tr>
</tbody>
</table>
Identification of Sensitive Habitat Sites
Within 1 km of the quarry boundary there is one habitat site, Combe Pool SSSI. The location and extent of the SSSI is presented in Figure 10-2.

Figure 10-2 – Sensitive habitat sites within 1km of the quarry boundary
10.3.2 Background Monitoring

**Rugby Borough Council**

Up until June 2012, RBC operated a network of continuous monitoring stations for NO\textsubscript{2} and PM\textsubscript{10} but these have subsequently been decommissioned and the most up to date annual data set is for 2011. The RBC also operates a network of diffusion tubes for monitoring NO\textsubscript{2}. These have operated since 2000 at 17 sites and these were expanded to 48 sites in April 2012. In April 2013, three new diffusion tube monitoring sites were added to the network, including one new site located in Brinklow. These are shown on Figure 10-3.

Diffusion tubes S4 and S14 are urban background sites and are likely to be most characteristic of air quality in and around the quarry development site due to their proximity. The roadside sites will experience higher concentrations of NO\textsubscript{2} due to their proximity to the road. In particular, S16 and S5 are located close to the busy A45 and are unlikely to be characteristic of air quality at roadside locations close to the quarry site.

*Figure 10-3 - Location of the Rugby Borough Council Diffusion Tubes*

Measured concentrations at the two urban background sites are low with an average for the four years of 15.5 µg m\textsuperscript{-3} for S4 and 19.1 µg m\textsuperscript{-3} for S14. These represent 39% and 48% of the air quality standard (AQS) of 40 µg m\textsuperscript{-3}, respectively. At the Brinklow site data are only available for two years. Average concentrations for this roadside location were 31.9 µg m\textsuperscript{-3} (80% of the AQS). Measured concentrations at the Ryton Village Hall near-road site (S5) and the Bretford roadside site (S45) were similar at 78% and 69% of the AQS, respectively. At the Oxford Road site (S46) measured concentrations for the three year period data are available are relatively high with an average of 39.6 µg m\textsuperscript{-3} (99% of the AQS) and with a measured exceedance of the AQS in 2013. However, given the location of this site from the quarry site it is not considered to be characteristic of the site.
It was concluded that the monitoring data available from CCC would not be characteristic of the quarry site.

**Particulate Matter**

There are no monitoring data for fine particles available for the quarry site measured by either RBC or CCC. Therefore, background information for PM$_{10}$ and PM$_{2.5}$ has been obtained from the Defra mapped data. Mapped concentrations are presented in Technical Appendix 5 (Figure 2.4 for PM$_{10}$ and Figure 2.5 for PM$_{2.5}$).

The distribution of PM$_{10}$ and PM$_{2.5}$ are similar as would be expected. For the quarry site, annual mean PM$_{10}$ and PM$_{2.5}$ concentrations are around 16.5 and 11.0 µg m$^{-3}$, respectively. As for NO$_{2}$, highest concentrations occur along the major roads including the A46 to the east of Coventry and the M6 to the north.

**Summary of Monitoring Data for Background Air Concentrations**

Based on the information presented, estimated background annual mean NO$_{2}$, PM$_{10}$ and PM$_{2.5}$ concentrations for the location are estimated as 13.0, 16.5 and 11.0 µg m$^{-3}$, respectively. However, concentrations within Coventry increase and at Brinklow Road to the west of the A46 are estimated to be 20, 17.5 and 12.0 µg m$^{-3}$ for NO$_{2}$, PM$_{10}$ and PM$_{2.5}$, respectively.

10.3.3 Traffic Related Air Quality Impacts

As agreed with RBC and CCC, an assessment of the air quality impacts of quarry traffic emissions on Brinklow Road has been assessed. This road will have the highest traffic flows due to the operation of the quarry. However, there are no diffusion tubes or other monitoring data with which to verify the model results along Brinklow Road. Monitoring carried out by CCC is mainly within the city centre which few quarry vehicles would access. However, RBC has three diffusion tubes locations in close proximity to the quarry or on nearby local roads. Therefore, two of these (S14 at Binley Woods and S45 at Bretford) have been used to verify the model. The diffusion tube within Brinklow village cannot be used for verification purposes as there are no traffic flow data for this location.

Detailed information on the road links considered for the assessment and the traffic flows and percentage of heavy duty vehicles (HDVs) is provided in Technical Appendix 5 (Section 4).

Background concentrations (i.e. without the contribution of existing traffic) for the receptors considered are variable due to the rural and urban locations considered. Therefore, background concentrations have been based on the Defra background maps and are summarised in Table 10-5.

<table>
<thead>
<tr>
<th>Receptor</th>
<th>NO$_{2}$ (µg m$^{-3}$)</th>
<th>PM$_{10}$ (µg m$^{-3}$)</th>
<th>PM$_{2.5}$ (µg m$^{-3}$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1, R22, R23 and R24</td>
<td>20.0</td>
<td>17.0</td>
<td>11.4</td>
</tr>
<tr>
<td>R2, R9 and R11</td>
<td>18.0</td>
<td>16.5</td>
<td>10.8</td>
</tr>
<tr>
<td>Brinklow Road (west of A46)</td>
<td>28.0</td>
<td>17.5</td>
<td>12.0</td>
</tr>
<tr>
<td>S14 (Binley Woods)</td>
<td>24.0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>S45 (Bretford)</td>
<td>17.0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Combe Pool SSSI</td>
<td>20.0</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Model verification was done using Local Air Quality Management Technical Guidance, LAQM.TG(09), and found that the application of a correction factor is not necessary. Further details on this are in Technical Appendix 5.
10.4 Impacts of the Proposals

10.4.1 Impacts of Extension to Time

Potential Impacts

The most common air quality impacts relating to quarry activities are as follows:

- dust deposition, resulting in the soiling of surfaces;
- visible dust plumes, which are evidence of dust emissions;
- elevated PM$_{10}$ concentrations, as a result of dust generating activities within the quarry site; and
- an increase in concentrations of airborne particles and nitrogen dioxide due to exhaust emissions from diesel powered vehicles and equipment used on site (non-road mobile machinery, NRMM) and vehicles accessing the site.

The risk of dust emissions from quarrying activities causing loss of amenity and/or health or ecological impact is related to:

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

Dust can be generated by numerous activities associated with mining and quarrying. It can potentially be derived from soil stripping and overburden removal; the extraction of the sand and gravel; transportation of material on-site; material processing; wind erosion from dry, un-vegetated surfaces; vehicle movements and their exhaust emissions. The following potential sources are generic and based on information specified within the Environmental Effects of Dust from Surface Mineral Workings, 1995.

There are a number of existing procedures which impact the creation of dust. The future extraction of sand and gravel at the quarry will be undertaken in a number of phases. Each phase will be soil stripped and any overburden removed prior to mineral extraction. This period has the potential for dust generation. However, the duration of these activities will be limited whilst the impact can be similar to agricultural operations such as ploughing. The topsoil and subsoil stripped during each phase of the development will be loosely tipped within the previous area of extraction to prevent compaction.

In addition, the development of perimeter bunds has the potential to generate dust and they generally represent the closest activity to receptors. Whilst the longer term benefits of bunding can reduce dust emissions, their construction involves both vehicle movements and tipping activities. Whilst the duration of bund construction is short, where bunding is proposed, operations will require mitigation.

The extraction of sand and gravel will utilise a hydraulic excavators (approximately 40 tonnes) and wheeled loading shovels (approximately 20 tonnes). Depending on the area being worked excavated material will be loaded into a feed hopper of the conveyor system for the material to be transported across the mineral site to the existing processing plant. For locations closer to the processing plant, dumper trucks (approximately 30 tonnes) will be used to transport the extracted minerals. Extraction of mineral has the potential to generate dust when the material is dry and friable. However, the sand and gravel deposits at Brinklow Quarry possess a
relatively high moisture content, which should result in minimal dust being created by excavation and loading activities at the working quarry face. However, in order to minimise any emissions, the mitigation measures outlined in Section 0 The assessment has considered the impact of quarrying activities (existing and proposed) on the generation of fugitive dust and the impact of emissions on dust annoyance (dust soiling), human health from exposure to fine particles and habitat sites. The assessment concluded that the risk of air quality impacts for surrounding sensitive receptors would be ‘negligible’ to ‘slight’ principally due to the remote nature of the quarry site.

Although the quarry traffic is already present on the local road network, the impact of vehicle movements on the air quality management area (AQMA) in Coventry was also assessed. The assessment has considered NOx, NO2, PM10 and PM2.5 which are the primary pollutants associated with road traffic. The impact at both residential properties and sensitive habitat sites (Combe Pool SSSI) has been assessed. The assessment concluded that the quarry traffic has a ‘negligible’ impact on sensitive receptor locations along Brinklow Road in Coventry and within the Combe Pool SSSI.

The impact of the existing quarry and proposed quarry extension on local air quality has been assessed as not significant. Therefore, it is considered that air quality should not pose a constraint to the continued use of the quarry and the quarry extension as proposed.

Mitigation measures will be followed.

Material processing will be undertaken at the existing wet processing plant within the current Brinklow Quarry. The processing plant is used to wash and screen the extracted mineral. The first stage of the process is washing and screening of the mineral. This separates the mineral into three grades of gavel (10 mm, 20 mm and 40 mm), two grades of sand (fine sand and coarse sand) and the remaining silt is settled out within the settling lagoon. Water from the washing and screening process is recirculated. The separated products are stockpiled and loaded into road vehicles for export from the quarry. The potential for dust generation during processing is limited due to the wet process. However, during very dry weather conditions, stockpiled material may dry out and the potential exists for dust generation during the loading of road vehicles.

The processing plant is powered via a small diesel generator with a rating of 500 kVA. Emissions from this would be similar to those from a heavy goods vehicle or non-road mobile machinery plant.

**Defining the Sensitivity of the Receptors**

Detailed information used to determine the sensitivity of each receptor is provided in Technical Appendix 5 (Section 3.4.3). The assigned sensitivity of each is also provided in Table 10-6.

The habitats within Combe Pool SSSI are standing water, reed bed and woodland. The SSSI is mainly designated due to its ornithological interest. There is no note in the citation for the site that the woodland contains lower plants and therefore it is most likely of low sensitivity to dust. Similarly, for the standing water and reed beds the main interest features are the wildfowl and there is no note of protected/notable plant species, therefore these are likely to be of low sensitivity to dust. However, given that this is a nationally designated site, a precautionary approach has been taken and it is assumed that the habitat features may be affected by dust deposition. Therefore, the site is assumed to be of ‘medium’ sensitivity.

**Defining the Magnitude of Air Quality Impacts**

The receptors considered are also indicated on Figure 10-4 along with the buffer distances (10 m, 100 m and 1000 m) used for assessing the potential magnitude of air quality impact. The distances of each receptor from the quarry boundary is used to assess the magnitude of impact. Detailed information used to determine the
The majority of residential properties the air quality impacts are assessed as ‘slight’ as these are located beyond 100 m of the quarry boundary. Only for Highwood Farm are the impacts assessed as ‘moderate’ but this residential property is owned and occupied by the Aston family (operators of the quarry). The impacts on the riding stables are also assessed as ‘moderate’ but it is understood that this is no longer in use and the land is owned by the Aston family. There are some footpaths that are within or immediately adjacent to the quarry boundary and the magnitude of air quality impact for these is assessed as ‘substantial’.

The Combe Pool SSSI is located 800 m from the existing quarry boundary. Therefore, the potential magnitude of air quality impacts at this receptor are assessed as ‘slight’.

**Defining the Risk of Impacts**
The magnitude of air quality impact and the sensitivity of the receptor are combined to determine the risk of impacts. A summary of the risks is presented in Table 10-6. These are defined on the basis of no mitigation beyond that required by legislation and good practice. Where the risk is assessed as ‘negligible’ no additional mitigation is considered necessary.

For all receptors considered, the risk of air quality impacts (dust annoyance and health impacts) is assessed as ‘negligible’ or ‘slight’.

For the Combe Pool SSSI which is considered to be medium sensitivity and with a slight magnitude of air quality impact, the risk of air quality impacts is assessed as ‘slight’.
Table 10-6 – Summary of the risk of air quality impacts arising from the operation of the existing quarry

<table>
<thead>
<tr>
<th>Reference</th>
<th>Name</th>
<th>Sensitivity of Receptor</th>
<th>Magnitude of Air Quality Impact</th>
<th>Risk of Air Quality Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
<td>Combe Abbey</td>
<td>High</td>
<td>Slight</td>
<td>Slight</td>
</tr>
<tr>
<td>R2</td>
<td>Woodhill Farm</td>
<td>Low</td>
<td>Slight</td>
<td>Negligible</td>
</tr>
<tr>
<td>R3</td>
<td>Birchley Farm</td>
<td>High</td>
<td>Slight</td>
<td>Slight</td>
</tr>
<tr>
<td>R4</td>
<td>Sunrise Farm</td>
<td>High</td>
<td>Slight</td>
<td>Slight</td>
</tr>
<tr>
<td>R5</td>
<td>Hill Farm</td>
<td>High</td>
<td>Slight</td>
<td>Slight</td>
</tr>
<tr>
<td>R6</td>
<td>Cottage Farm</td>
<td>High</td>
<td>Slight</td>
<td>Slight</td>
</tr>
<tr>
<td>R7</td>
<td>Brinklow Village</td>
<td>High</td>
<td>Slight</td>
<td>Slight</td>
</tr>
<tr>
<td>R8</td>
<td>Longacre</td>
<td>High</td>
<td>Slight</td>
<td>Slight</td>
</tr>
<tr>
<td>R9</td>
<td>Highwood Farm</td>
<td>Low</td>
<td>Moderate</td>
<td>Slight</td>
</tr>
<tr>
<td>R10</td>
<td>Allotment Gardens</td>
<td>Low</td>
<td>Slight</td>
<td>Negligible</td>
</tr>
<tr>
<td>R11</td>
<td>East Lodge</td>
<td>High</td>
<td>Slight</td>
<td>Slight</td>
</tr>
<tr>
<td>R12</td>
<td>Highwood Bungalow</td>
<td>High</td>
<td>Slight</td>
<td>Slight</td>
</tr>
<tr>
<td>R13</td>
<td>Properties B4029</td>
<td>High</td>
<td>Negligible</td>
<td>Negligible</td>
</tr>
<tr>
<td>R14</td>
<td>Riding Stables</td>
<td>Low</td>
<td>Moderate</td>
<td>Slight</td>
</tr>
<tr>
<td>R15</td>
<td>Centenary Way</td>
<td>Low</td>
<td>Slight</td>
<td>Negligible</td>
</tr>
<tr>
<td>R16</td>
<td>Local footpath</td>
<td>Low</td>
<td>Substantial</td>
<td>Slight</td>
</tr>
<tr>
<td>R17</td>
<td>Local footpath</td>
<td>Low</td>
<td>Substantial</td>
<td>Slight</td>
</tr>
<tr>
<td>R18</td>
<td>Local footpath</td>
<td>Low</td>
<td>Substantial</td>
<td>Slight</td>
</tr>
<tr>
<td>R19</td>
<td>Coventry Way</td>
<td>Low</td>
<td>Slight</td>
<td>Negligible</td>
</tr>
<tr>
<td>R20</td>
<td>Local footpath</td>
<td>Low</td>
<td>Substantial</td>
<td>Slight</td>
</tr>
<tr>
<td>R21</td>
<td>Local footpath</td>
<td>Low</td>
<td>Slight</td>
<td>Negligible</td>
</tr>
</tbody>
</table>

Traffic Related Impacts

Predicted ground level concentrations of NO₂ arising from vehicle emissions with (baseline + quarry) and without (baseline) the quarry traffic are presented in Technical Appendix 5 (Table 4.6). The difference between the two sets of predictions represents the impact of the quarry traffic. Using the IAQM/EPUK methodology the impact at each receptor is described.

The predicted annual mean NO₂ concentrations with and without the quarry were well within the air quality objective of 40 µg m⁻³ at all of the sensitive locations assessed.

The contribution of the quarry traffic to baseline concentrations is very small. The highest contribution is predicted at R49 and at 0.7 µg m⁻³ is 2% of the air quality standard. Higher concentrations are predicted for this receptor due to its proximity to the roadside and to the road junction to the east. The total predicted concentration at this location is 22.9 µg m⁻³ and is 57% of the air quality standard of 40 µg m⁻³. Therefore, the impact would be described as ‘negligible’.

Predicted ground level concentrations of PM₁₀ arising from vehicle emissions with and without the proposed development were modelled (refer Technical Appendix to the ES, Table 4.7). Predicted annual mean PM₁₀ concentrations are well within the quality objective of 40 µg m⁻³ at all receptor locations. At worst, the change due to the quarry traffic is less than 0.1 µg m⁻³ (0.3% of the air quality standard of 40 µg m⁻³). The impact of the quarry for all receptors would be described as ‘negligible’.

The existing annual mean PM₂.₅ concentrations are well within the EU limit value of 25 µg m⁻³ at all receptor locations. The maximum impact of the additional traffic associated with the quarry is 0.1 µg m⁻³ (0.4% of the air quality standard of 25
The impact of the quarry at all receptors would be described as ‘negligible’ according to the IAQM/EPUK criteria.

Predicted concentrations of NO\textsubscript{x} at the Combe Pool habitat site were analysed, and concentrations were compared to the relevant critical levels. Maximum predicted annual mean NO\textsubscript{x} concentrations are 30.7 µg m\textsuperscript{-3} and are 102% of the critical load. This is for a background concentration of 20 µg m\textsuperscript{-3}. However, this represents worst-case conditions as APIS indicates background annual mean concentrations (including traffic) of 21.6 µg m\textsuperscript{-3} for this habitat site.

The maximum contribution of baseline traffic is 10.7 µg m\textsuperscript{-3} (35.6% of the critical level). It should also be noted that the highest impact at the habitat site occurs adjacent to the A46, 400 m to the north of Brinklow Road.

The maximum contribution of the quarry traffic to annual mean concentrations at the habitat site is very small at 0.1 µg m\textsuperscript{-3} (0.3% of the critical level). Therefore, the impact of the quarry traffic on this habitat site is assessed as ‘not significant’ using the Environment Agency significance criteria (i.e. less than 1% of the critical level).

For the 24-hour mean, maximum concentrations of NO\textsubscript{x} including the baseline traffic are 70% of the critical level. At worst the contribution of the quarry on predicted 24-hour mean NO\textsubscript{x} is 0.1 µg m\textsuperscript{-3}. This would be assessed as ‘not significant’ as the quarry contribution is less than 10% of the critical level.

10.4.2 Impacts of Extension to Area

**Defining the Sensitivity of the Receptor**

Similar sources of dust are expected from the Extension to Area proposals as those for the existing quarry, and so they are not reproduced here. For the sensitive receptors considered for the assessment the sensitivity of each to dust impacts are detailed in Technical Appendix 5 and summarised in Table 10-7.

As for the existing quarry, the Combe Pool SSSI is assumed to be of ‘medium’ sensitivity.

**Defining the Magnitude of Air Quality Impacts**

The receptors considered are also indicated on Figure 10-5 along with the buffer distances (10 m, 100 m and 1000 m) used for assessing the potential magnitude of air quality impact. The assigned magnitude of impact for the quarry extension is presented in Technical Appendix 5 (Section 3.4.3) and summarised in Table 10-7.
As for the existing quarry, the impact on the majority of residential properties are assessed as ‘slight’ as these are located beyond 100 m of the quarry boundary. Compared to the existing quarry, there is only one significant change. This occurs for the residential property East Lodge (R11) where the distance from the quarry boundary changes from 570 m to 415 m.

The Combe Pool SSSI is located just less than 1 km from the existing quarry boundary. Therefore, the potential magnitude of air quality impact at this receptor is assessed as ‘slight’.

**Defining the Risk of Impacts**

The magnitude of air quality impact and the sensitivity of the receptor are combined to determine the risk of impacts. A summary of the risks is presented in Table 10-7 for the quarry extension. These are defined on the basis of no mitigation beyond that required by legislation and good practice. Where the risk is assessed as ‘negligible’ no additional mitigation is considered necessary.
Table 10-7 – Summary of the risk of air quality impacts arising from the operation of the existing quarry

<table>
<thead>
<tr>
<th>Reference</th>
<th>Name</th>
<th>Sensitivity of Receptor</th>
<th>Magnitude of Air Quality Impact</th>
<th>Risk of Air Quality Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
<td>Combe Abbey</td>
<td>High</td>
<td>Slight</td>
<td>Slight</td>
</tr>
<tr>
<td>R2</td>
<td>Woodhill Farm</td>
<td>Low</td>
<td>Slight</td>
<td>Negligible</td>
</tr>
<tr>
<td>R3</td>
<td>Birchley Farm</td>
<td>High</td>
<td>Slight</td>
<td>Slight</td>
</tr>
<tr>
<td>R4</td>
<td>Sunrise Farm</td>
<td>High</td>
<td>Slight</td>
<td>Slight</td>
</tr>
<tr>
<td>R5</td>
<td>Hill Farm</td>
<td>High</td>
<td>Slight</td>
<td>Slight</td>
</tr>
<tr>
<td>R6</td>
<td>Cottage Farm</td>
<td>High</td>
<td>Slight</td>
<td>Slight</td>
</tr>
<tr>
<td>R7</td>
<td>Brinklow Village</td>
<td>High</td>
<td>Slight</td>
<td>Slight</td>
</tr>
<tr>
<td>R8</td>
<td>Longacre</td>
<td>High</td>
<td>Slight</td>
<td>Slight</td>
</tr>
<tr>
<td>R9</td>
<td>Highwood Farm</td>
<td>Low</td>
<td>Moderate</td>
<td>Slight</td>
</tr>
<tr>
<td>R10</td>
<td>Allotment Gardens</td>
<td>Low</td>
<td>Slight</td>
<td>Negligible</td>
</tr>
<tr>
<td>R11</td>
<td>East Lodge</td>
<td>High</td>
<td>Slight</td>
<td>Slight</td>
</tr>
<tr>
<td>R12</td>
<td>Highwood Bungalow</td>
<td>High</td>
<td>Slight</td>
<td>Slight</td>
</tr>
<tr>
<td>R13</td>
<td>Properties B4029</td>
<td>High</td>
<td>Negligible</td>
<td>Negligible</td>
</tr>
<tr>
<td>R14</td>
<td>Riding Stables</td>
<td>Low</td>
<td>Moderate</td>
<td>Slight</td>
</tr>
<tr>
<td>R15</td>
<td>Centenary Way</td>
<td>Low</td>
<td>Slight</td>
<td>Negligible</td>
</tr>
<tr>
<td>R16</td>
<td>Local footpath</td>
<td>Low</td>
<td>Substantial</td>
<td>Slight</td>
</tr>
<tr>
<td>R17</td>
<td>Local footpath</td>
<td>Low</td>
<td>Substantial</td>
<td>Slight</td>
</tr>
<tr>
<td>R18</td>
<td>Local footpath</td>
<td>Low</td>
<td>Substantial</td>
<td>Slight</td>
</tr>
<tr>
<td>R19</td>
<td>Coventry Way</td>
<td>Low</td>
<td>Slight</td>
<td>Negligible</td>
</tr>
<tr>
<td>R20</td>
<td>Local footpath</td>
<td>Low</td>
<td>Substantial</td>
<td>Slight</td>
</tr>
<tr>
<td>R21</td>
<td>Local footpath</td>
<td>Low</td>
<td>Slight</td>
<td>Negligible</td>
</tr>
</tbody>
</table>

For all receptors considered, the risk of air quality impacts (dust annoyance and health impacts) is assessed as ‘negligible’ or ‘slight’.

For the Combe Pool SSSI which is considered to be medium sensitivity and with a slight magnitude of air quality impact, the risk of air quality impacts is assessed as ‘slight’.

Traffic Related Impacts
As the quarry would produce the same vehicle movements as the existing quarry, the transport impacts would be the same.

10.4.3 Cumulative Impacts of Both Applications
As both applications together do not represent an intensification of operations, the cumulative effect of the applications on transport related air quality impacts is the same as those assessed against the existing quarry.

10.4.4 Conclusion of Impact Assessment
The assessment has considered the impact of quarrying activities (existing and proposed) on the generation of fugitive dust and the impact of emissions on dust annoyance (dust soiling), human health from exposure to fine particles and habitat sites. The assessment concluded that the risk of air quality impacts for surrounding sensitive receptors would be ‘negligible’ to ‘slight’ principally due to the remote nature of the quarry site.

Although the quarry traffic is already present on the local road network, the impact of vehicle movements on the air quality management area (AQMA) in Coventry was...
also assessed. The assessment has considered NO\textsubscript{x}, NO\textsubscript{2}, PM\textsubscript{10} and PM\textsubscript{2.5} which are the primary pollutants associated with road traffic. The impact at both residential properties and sensitive habitat sites (Combe Pool SSSI) has been assessed. The assessment concluded that the quarry traffic has a ‘negligible’ impact on sensitive receptor locations along Brinklow Road in Coventry and within the Combe Pool SSSI.

The impact of the existing quarry and proposed quarry extension on local air quality has been assessed as not significant. Therefore, it is considered that air quality should not pose a constraint to the continued use of the quarry and the quarry extension as proposed.

10.5 Mitigation measures

The existing quarry is relatively remote from sensitive receptor locations and consequently has operated with only the occasional complaint from local residents. There are a number of measures used at the quarry for minimising emissions of dust and include the use of a road sweeper to keep internal roads clean, a wheel wash facility, paved access road to the wet processing area and a conveyor system for transporting extracted mineral to the processing area.

Key will be Dust Management Procedures in the Working Plan. These measures will be adopted for both the existing quarry and extended quarry. Furthermore, these measures will be applied to other activities within the quarry (composting facility, mortar plant and inert waste recycling).

It is not possible to eliminate emissions of dust from the quarry activities completely. In order to minimise the impacts, a mitigation programme will be developed and incorporated into the Working Plan. In general, dust mitigation requirements are likely to be minimal due to the high moisture content typically associated with sand and gravel. Therefore, the proposed site-specific mitigation measures will include the following:

- The adoption of best practicable means to ensure dust and fumes from the site are effectively suppressed;
- Mobile plant and diesel generators will be regularly serviced and equipped with effective exhausts to minimise emissions;
- Haul roads will be adequately maintained;
- A water bowser will be used during dry conditions on the access road and any other trafficked areas;
- Vehicle speed control on access and other trafficked areas will be implemented by the Site Manager and must be adhered to with due regard to weather and ground conditions in order to reduce dust generation;
- All vehicles shall be inspected and cleaned as appropriate prior to leaving the site onto the public highway;
- All vehicles leaving the site onto the public highway shall be suitably sheeted;
- In the unlikely event that dust or mud from the site has been deposited on the public highway, a road sweeper will be employed;
- The Site Manager or instructed site personnel will undertake regular inspections (daily) of the public highway in order to identify the need for any cleaning requirements. Observations from all inspections will be logged;
A conveyor system will be used to transport extracted sand and gravel across the mineral site to the existing processing plant situated to the east of the extraction area. This will minimise the number of vehicle movements along unpaved internal haul roads;

The loading and unloading of vehicles will ensure drop heights are minimised. This is especially pertinent during soil and overburden removal, construction of any screening bunds and restoration activities in the vicinity of sensitive receptors;

Restoration operations will be undertaken with due regard to weather conditions and type of material being utilised for restoration in order to reduce dust generation;

Any screening bunds will be seeded or hydro-seeded as soon as possible, whilst the mineral site will undergo progressive restoration in accordance with the sequence of operations;

Water sprays or surface binders will be utilised to maintain damp surfaces on exposed tip and stockpile faces and any exposed friable surfaces during dry and windy weather;

All site employees will receive appropriate training in order to ensure that they are conversant with the site dust control strategy;

All dust and air quality complaints will be recorded, the cause identified and appropriate measures taken to reduce emissions in a timely manner. The complaints log will be made available to the local authority when requested;

Any exceptional incidents giving rise to dust and or air emissions, either on or off-site will be recorded and the action taken to resolve the situation will be recorded;

The Site Manager will carry out regular site inspections (daily) to monitor compliance with the Working Plan, record inspection results and make an inspection log available for the local authority when required (refer to Dust Monitoring below);

Increase the frequency (two hourly) of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions;

Ensure all vehicles switch off engines when stationary – no idling vehicles; and

Ensure an adequate supply water supply on the site for the effective dust/particle suppression/ mitigation, using non-potable water where possible and appropriate.

Dust Monitoring
Monitoring of dust impacts will be carried out on a daily basis. This ensures that the mitigation measures employed on site are adequately controlling dust emissions, thereby reducing the risk of dust annoyance or exceedences of the air quality objectives for PM$_{10}$ and/or PM$_{2.5}$.

The level of dust monitoring that will be carried out is dependent on the phase of the development and the estimated risk of impacts occurring. A daily visual inspection of dust deposition to surfaces will be carried out both on and off-site. This is particularly important at times where meteorological conditions are likely to increase impacts off-site (e.g. dry and windy) or if the prevailing wind is in the direction of...
Brinklow Quarry Environmental Statement  
Air Quality - Residual Impacts

Sensitive receptors. Observations will be recorded in a site log, providing a useful reference document in the event of complaints relating to dust annoyance.

Visual assessment of on-site dust releases such as stockpiling and loading and unloading activities will also be carried out as a matter of course to ensure the mitigation measures employed are effective.

At sites where there is a high risk of dust impacts occurring, monitoring at the site boundary or sensitive receptors will also be considered. There are a variety of analysers available ranging from hand-held samplers and deposit gauges to real-time particle measuring systems. However, given the low risk of air quality impacts and the proposed mitigation measures the impact of the quarry activities on dust generation is assessed as low. Therefore, the daily visual monitoring of dust will be undertaken to ensure that mitigation measures are effective.

Traffic Management  
It is important to manage the routing of traffic along the local road networks. In particular, the entire City of Coventry has been declared as an AQMA. However, it is considered that the majority of areas accessed by the quarry traffic do not concentrations of NO\textsubscript{2} in excess of the air quality standard. This is confirmed from the traffic-related air quality assessment carried out. In addition, measured concentrations of NO\textsubscript{2} in the village of Brinklow are relatively high compared to other monitoring sites in the vicinity of the quarry. Measured concentrations are around 80% of the air quality standard at this location and are elevated due to the monitor being located at a road junction in the centre of the village.

Therefore, a HDV route plan will be adopted for the site that limits the movement of HDVs through the village of Brinklow. It will also be necessary to provide a method of ensuring that the route plan is enforced.

10.6 Residual Impacts  
With management in place for dust and traffic and monitoring as discussed above, the impact of the quarry on local air quality has been assessment as not significant.

10.7 Summary of Impacts  

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dust emission and potential for soil ing</td>
<td>With management in place this should be low</td>
<td>High</td>
<td>Negligible</td>
<td>Long-term</td>
<td>Adverse</td>
<td>Slight</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Traffic related emissions</td>
<td>With management in place this should be low</td>
<td>High</td>
<td>Negligible</td>
<td>Long-term</td>
<td>Adverse</td>
<td>Slight</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Impact on Coventry AQMA from Traffic related emissions</td>
<td>With management in place this should be low</td>
<td>High</td>
<td>Negligible</td>
<td>Long-term</td>
<td>Adverse</td>
<td>Slight</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Impact on Combe Pool SSSI from dust or traffic emissions</td>
<td>From dust or traffic emissions</td>
<td>High</td>
<td>Negligible</td>
<td>Long-term</td>
<td>Adverse</td>
<td>Slight</td>
<td>Reasonable</td>
</tr>
</tbody>
</table>

10.7.2 Extension to Area
### 10.7.3 Cumulative Impacts

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dust emission and potential for soiling</td>
<td>With management in place this should be low</td>
<td>High</td>
<td>Negligible</td>
<td>Long-term</td>
<td>Adverse</td>
<td>Slight</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Traffic related emissions</td>
<td>With management in place this should be low</td>
<td>High</td>
<td>Negligible</td>
<td>Long-term</td>
<td>Adverse</td>
<td>Slight</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Impact on Coventry AQMA from Traffic related emissions</td>
<td>With management in place this should be low</td>
<td>High</td>
<td>Negligible</td>
<td>Long-term</td>
<td>Adverse</td>
<td>Slight</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Impact on Combe Pool SSSI</td>
<td>From dust or traffic emissions</td>
<td>High</td>
<td>Negligible</td>
<td>Long-term</td>
<td>Adverse</td>
<td>Slight</td>
<td>Reasonable</td>
</tr>
</tbody>
</table>

Importance / Sensitivity of Receptor: High, Medium, Low, Negligible
Magnitude / Scale of Change: Large, Medium, Small, Negligible
Duration: Temporary, Short-term, Long-term, Permanent
Nature: Adverse, Beneficial
Significance: Very Substantial, Substantial, Moderate, Slight, None

### 10.8 References

National Planning Practice Guidance -
http://planningguidance.planningportal.gov.uk/


The Air Quality Standards Regulations 2010

WHO (1984) Working Group on Ecological Effects, Les Diablerets, Switzerland, also provided by Environment Agency’s EPR H1


Local Air Quality Management Technical Guidance, LAQM.TG(09)

11. Flood Risk Assessment

11.1 Introduction
The flood risk assessment (FRA) has been carried out in order to determine the potential constraints of flooding on the existing site for a Section 73 application for an extension of time to the existing quarrying operations. Additionally, the assessment also considers the flood risk constraints from a proposed extended quarrying area and the extent to which there are cumulative impacts of the existing operations and extended operations occurring simultaneously.

The Environment Agency (EA) Flood Risk map indicates that all of the site falls within Flood Zone 1.

The assessment has been carried out in accordance with the detailed guidance set out in Planning Practice Guidance (PPG) for Flood Risk and Coastal Change which accompanies the National Planning Policy Framework (NPPF).

11.2 Methodology

11.2.1 Legislation and Policy

National Policy
The National Planning Policy Framework (2012) set out the Government’s planning policies for England and how these are expected to be applied, must be taken into account by local authorities when developing local plans and is a material consideration in planning decisions.

PPG for Flood Risk and Coastal Change
The Planning Policy Guidance (PPG) for Flood Zones (paragraph 65) states that a Zone 1 Low Probability Flood Zone describes land having a less than 1 in 1000 annual probability of river or sea flooding in any year. All uses of land are appropriate in this zone.

The requirements for an FRA are therefore as follows:

FRA requirements
For development proposals on sites comprising one hectare or above the vulnerability to flooding from other sources as well as from river and sea flooding, and the potential to increase flood risk elsewhere through the addition of hard surfaces and the effect of the new development on surface water run-off, should be incorporated in a FRA. This need only be brief unless the factors above or other local considerations require particular attention.

Policy aims
In this zone, developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area and beyond through the layout and form of the development, and the appropriate application of sustainable drainage techniques.

In Paragraph 6 the Flood Risk Vulnerability Classification is set out, describing development and assigning them to a vulnerability category from Essential Infrastructure, Highly Vulnerable, More Vulnerable, Less Vulnerable and Water Compatible Development. Water compatible development is that development which is not prioritised for flood protection; this category includes sand and gravel workings. The full classifications are set out in the FRA Report in Technical Appendix 6 to this Environmental Statement.

The Flood Risk Vulnerability is then compared against the Flood Zone Classification to check for compatibility between the vulnerability of the development to flooding at the proposed site location. It is then possible to see if development is appropriate for each case. The table within the guidance determines whether development is acceptable or not given the Flood Risk Vulnerability and Flood Zone Compatibility. However, in certain circumstances, it recommends that an Exception Test is passed to ensure that the development will not increase the flood risk. This table is reproduced as Table 11-1 below:
**Table 11-1 - Flood Risk Vulnerability and Flood Zone 'Compatibility' Paragraph 67 of PPG**

<table>
<thead>
<tr>
<th>Flood Risk Vulnerability Classification</th>
<th>Essential Infrastructure</th>
<th>Highly Vulnerable</th>
<th>More Vulnerable</th>
<th>Less Vulnerable</th>
<th>Water Compatible</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>2</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>3a</td>
<td>Exception Test Required</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3b</td>
<td>Exception Test Required</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Key:**

 ✓ Development is appropriate

 × Development should not be permitted

**Local Policy**

A Level 1 Strategic Flood Risk Assessment (SFRA) was produced by URS (Final Report September 2013) on behalf of Warwickshire County Council, Stratford on Avon DC, North Warwickshire BC and Rugby BC. It identifies that the quarry site is not within Flood Zones 2, 3a or 3b.
The Level 1 Strategic Flood Risk Assessment (PFRA) published in September 2013 by Rugby Borough Council, was developed to inform the revision of flooding policies and to assist in allocating land for future development.

The SFRA identifies areas around the Borough into Zones 1, 2, 3(a) and 3(b). The site is not identified as Zone 2, 3a or 3b.

There are no specific policies in the Local Plan which relate to minerals sites and flood issues.

11.3 Baseline Conditions

The quarry site is located to the southwest of Brinklow Village. There are existing residential areas in the nearby villages of Brinklow and Bretford and a country park and hotel at Coombe Country Park. The nearest residential area is located on Heath Lane near Brinklow, approximately 600m to the east of the site.

The site currently comprises a working arable farm, incorporating a quarry, a mortar plant, bagging of quarry products and a waste sorting and composting facility. The main business of the quarry is in the supply and delivery of various types of sand, roadstone and gravels to the Warwickshire and West Midlands areas to both trade and household customers.

Over the years the business has diversified and expanded to include composting. Green waste, waste glass, and construction and demolition waste largely comprising waste wood, topsoil and hardcore is composted or recycled on-site. Diesel-powered generators, with a capacity of c2MW Electric (MWe), are currently used to provide the electricity required to power equipment, dry products, etc.
The proposed quarrying operations comprise the extension of duration for the existing consented quarry area (Section 73 application) and an extended quarry area.

The site has been identified on geological mapping as having sand and gravel deposits on outline Triassic surface geology.

11.4 Impacts of the Proposals

11.4.1 Impacts of Extension to Time

The EA has published Flood Zone Mapping based upon the probability of flooding using flood zone designations outlined in the PPG. The Environment Agency has categorised the site as Flood Zone 1, and it was confirmed in correspondence with the EA, that none of the site is within Flood Zones 2 or 3. The site is confirmed as being within Flood Zone 1.

The British Geological Survey (BGS) provides two data sets available to flood risk assessors to help assess flood risk. The BGS provides data regarding groundwater flooding susceptibility and data regarding the geological indicators of flooding.

The groundwater flooding susceptibility data shows the degree to which areas of England, Scotland and Wales are susceptible to groundwater flooding on the basis of geological and hydrogeological conditions. It does not show the likelihood of groundwater flooding occurring, i.e. it is a hazard not a risk-based dataset, it merely states that groundwater flooding could occur.

The groundwater flooding susceptibility data shows that the site is not within an area which has the “potential for groundwater flooding to occur at surface”. There is some potential for groundwater flooding to occur on areas of land to the north, south and west of the site.

Data obtained from Landmark indicates that the site is not located in an area which was flooded historically.

Flood maps are available in the full FRA Report in the Technical Appendix 6 to this Environmental Statement.

The following conclusions can be drawn from flood maps issued from various sources:

- EA maps indicate that the site is not located in an area at risk of significant surface water flooding or which is “at risk of flooding from reservoirs”;
- The JBA Canal Failure Map indicates that the site is not located in an area liable to canal failure;
- The EA/NRW Flood Data Map shows that the site is located in Flood Zone 1, which has a low probability of flooding (1 in 1000 annual probability) and all uses of land are appropriate in this flood zone; and
- The ESI Groundwater Flood Map indicates that the site is not located in an area of groundwater flood risk.
- The BGS Flood data – Geological Indicators of Flooding indicates that the site is not in an area at risk of flooding.

The assessment concludes that because the EA has determined the site to be wholly located within Flood Zone 1, and as a site for quarrying is considered to be water compatible, there are no flood issues identified with the site for the Section 73 application.

In addition, the potential impacts of the development on hydrology and hydrogeology were studied.

In terms of hydrology, the site is above the 80m AOD contour. There are limited significant local surface water features on the site with the principal ones being the ponds presently left by the existing quarrying activity.

In terms of hydrogeology, groundwater levels will be at some depth below the surface such that any sand and gravel extraction will to some extent fill with groundwater. Whilst,
the extraction of minerals will remove the ability of the ground to absorb rainfall the
mineral voids left during operation will provide an effective storage compensation area. As
quarrying is an entirely water compatible use of the site, as demonstrated by existing
quarrying on the site, no direct impacts are envisaged either on or off site.

11.4.2 Impacts of Extension to Area
Similarly, as the EA has determined the site to be wholly located within Flood Zone 1, and
as a site for quarrying is considered to be water compatible, there are no flood issues
identified with the site for the extension to area application.

11.4.3 Cumulative Impacts of Both Applications
The two proposal areas are both firmly designated as Flood Zone 1, and as a site for
quarrying is considered to be water compatible, there are no flood issues identified with
the cumulative impact of the applications, or risks to other sites from hydrogeological
changes.

11.4.4 Conclusion of Impact Assessment
As Table 11-1 indicates, the development is appropriate within the flood risk vulnerability
and is a compatible use of the site. Therefore the assessment concludes that there is no
risk either to the site from flooding, or from the site to existing hydrology and hydrological
regimes.

11.5 Mitigation measures
As there is no risk either from flooding to the development, or from the development to the
hydrogeological system, no mitigation measures are proposed by the FRA.

11.6 Residual Impacts
As there is no risk either from flooding to the development, or from the development to the
hydrogeological system, no residual impacts are proposed by the FRA.

11.7 Summary of Impacts

11.7.1 Extension of Time

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk to the development from flooding</td>
<td>None</td>
<td>Negligible</td>
<td>Negligible</td>
<td>Long-term</td>
<td>Beneficial</td>
<td>None</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Risk to local hydrogeology from the site</td>
<td>None</td>
<td>Negligible</td>
<td>Negligible</td>
<td>Long-term</td>
<td>Beneficial</td>
<td>None</td>
<td>Reasonable</td>
</tr>
</tbody>
</table>

11.7.2 Extension of Area

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk to the development from flooding</td>
<td>None</td>
<td>Negligible</td>
<td>Negligible</td>
<td>Long-term</td>
<td>Beneficial</td>
<td>None</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Risk to local hydrogeology from the site</td>
<td>None</td>
<td>Negligible</td>
<td>Negligible</td>
<td>Long-term</td>
<td>Beneficial</td>
<td>None</td>
<td>Reasonable</td>
</tr>
</tbody>
</table>
11.7.3 Cumulative Impact

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk to the development from flooding</td>
<td>None</td>
<td>Negligible</td>
<td>Negligible</td>
<td>Long-term</td>
<td>Beneficial</td>
<td>None</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Risk to local hydrogeology from the site</td>
<td>None</td>
<td>Negligible</td>
<td>Negligible</td>
<td>Long-term</td>
<td>Beneficial</td>
<td>None</td>
<td>Reasonable</td>
</tr>
</tbody>
</table>

Importance / Sensitivity of Receptor: High, Medium, Low, Negligible
Magnitude / Scale of Change: Large, Medium, Small, Negligible
Duration: Temporary, Short-term, Long-term, Permanent
Nature: Adverse, Beneficial
Significance: Very Substantial, Substantial, Moderate, Slight, None
Certainty: Absolute, Reasonable

11.8 References


Planning Policy Statement 4 – Planning for Sustainable Economic Growth, from the CLG (Communities and Local Government)

Office of National Statistics (various)


Planning Policy Statement 4 – Planning for Sustainable Economic Growth, from the CLG (Communities and Local Government)
12. **Socioeconomic Impact Assessment**

12.1 **Introduction**

Socio-economic factors are those relating to or concerned with the interaction of social and economic facets of a subject. The socio-economic characteristics of an area include demographics (the ages and genders of the population), employment rates and skills base. This quantitative assessment has considered the impacts of Brinklow Quarry’s continued operation, and the proposed extension of area, on the social and economic characteristics of the local area.

12.2 **Methodology**

The Socio-Economic Impact Assessment (SEIA) analyses the local socio-economic characteristics and undertakes an assessment of the impact on employment at Brinklow Quarry.

National Planning Practice Guidance has limited guidance on socio-economic assessment. The SEIA set out in this chapter therefore follows the guidance and recommendations in Planning Policy Statement 4 (PPS4) Planning for Sustainable Economic Growth, which although no longer extant is still commonly used, and it is the Institute for Environmental Management and Assessment (IEMA)’s recommendation to apply PPS4 to projects.

There is no set methodology or prescribed guidance on conducting socio-economic impact assessment for EIA. The methodology adopted here has been to use a desktop study of publicly available statistical information to establish a baseline of socio-economic conditions. The factors investigated were taken from Annex C of PPS4, what was the Government’s comprehensive policy framework for sustainable economic development in urban and rural areas. While PPS4 has been superseded by the NPPF, it remains the most robust governmental guidance. Annex C suggests the following factors for consideration:

- Occupations and employment by sector;
- Economic activity rate, unemployment and worklessness;
- Earnings;
- Business size, activity and performance;
- Demographics;
- Indices of deprivation; and
- Housing affordability.

Data and forecasts were compared where available with the expected employment, occupations, earnings etc. to be generated by the development. The baseline against which socio-economic impacts have been assessed is no quarrying activity at the site.

No assessment has been made regarding any effects on the existing social infrastructure as this expected to be negligible.

12.2.1 **Legislation and Policy**

Assessing the socio-economic impacts of a project is not covered by any particular legislation or policy, however both national and local policy considers social and economic factors to be highly important in decision-making.

*National Policy*

The National Planning Policy Framework (2012) set out the Government’s planning policies for England and how these are expected to be applied, must be taken into account by local authorities when developing local plans and is a material consideration in planning decisions. The NPPF states that there are three dimensions to sustainable development; environmental, economic and social. With regard to socioeconomics it states (paragraph 7) that the planning system must perform the following roles:
An economic role – contributing to building a strong, responsive and competitive economy, by ensuring that sufficient land of the right type is available in the right place and at the right time to support growth and innovation; and by identifying and coordinating development requirements, including the provision of infrastructure.

A social role – supporting strong, vibrant and healthy communities, by providing the supply of housing required to meet the needs of present and future generations; and by creating a high quality built environment, with accessible local services that reflect the community’s needs and support its health, social and cultural wellbeing.

The NPPF sets out the Government’s proposed social and economic planning policies for England, and includes the promotion of presumption in favour of sustainable development, including “1. Building a strong economy”. Paragraphs 18-19 and 21 are especially relevant:

‘Paragraph 18: The Government is committed to securing economic growth in order to create jobs and prosperity, building on the country’s inherent strengths, and to meeting the twin challenges of global competition and of a low carbon future.

Paragraph 19: The Government is committed to ensuring that the planning system does everything it can to support sustainable economic growth. Planning should operate to encourage and not act as an impediment to sustainable growth. Therefore significant weight should be placed on the need to support economic growth through the planning system.

Paragraph 21: In drawing up Local Plans, local planning authorities should:

- support existing business sectors, taking account of whether they are expanding or contracting and, where possible, identify and plan for new or emerging sectors likely to locate in their area. Policies should be flexible enough to accommodate needs not anticipated in the plan and to allow a rapid response to changes in economic circumstances;

The NPPF also specifically supports a prosperous rural economy. Paragraph 28 states:

To promote a strong rural economy, local and neighbourhood plans should:

- Support the sustainable growth and expansion of all types of business and enterprise in rural areas, both through conversion of existing buildings and well designed new buildings;
- Promote the development and diversification of agriculture and other land-based rural businesses;

Paragraph 144 states that planning authorities should ‘give great weight to the benefits of mineral extraction, including to the economy.’

Local Policy
Rugby Borough Council’s Core Development Strategy was formally adopted in June 2011, and sets out the Borough’s development until 2026.

Chapter 8 of the Core Strategy set out targets for sustainable economic development.
The Employment Land Development Target for 2006-2026 was 108 hectares. 14ha had (in 2011) been developed, 3ha were allocated and 14ha covered by planning permissions. This gives 67ha employment land left to deliver over the life of the Core Strategy. An Economic Prosperity Study (EPS) was conducted in 2008, which highlights:

In achieving a thriving and successful economy, support needs to be provided for existing businesses and attracting new and established enterprises to the area are key targets which will ensure a prosperous economy for the future in line with the Spatial Objectives of this strategy.

12.1 Baseline Conditions

The site is within Rugby Borough. The Nomenclature of Units for Territorial Statistics (NUTS) is a hierarchical classification of administrative areas, used across the European Union for statistical purposes. The NUTS 3 classification for the project area is ‘Warwickshire’ in ‘Herefordshire, Worcestershire and Warwickshire’ (NUTS 2), and Local Administrative Unit (LAU 1) ‘Rugby’.

In 2011, 100,075 people were living in Rugby Borough (Office of National Statistics), with a population density of 292 people per km$^2$ in 2014 (compared to the National Average of 255). Of these, 50% were women, and 63% of the population was aged 16-64 (See Figures 12-2 and 12-3 below).
From ONS 2014 data, 79% of the population (aged 16-64) is in employment, with 3% unemployed and a further 18% economically inactive (retired, disabled, long-term sick, in study) (Figure 12-4). This is an employment rate of above the UK average (72%). Of the 10% of the population in long-term unemployment, 65% are full-time students.

Figure 12-4 – Labour Market Indicators, Rugby Borough (2014), population aged 16-64
The population of Rugby is comparatively affluent and social groups A, B and C (managerial, administrative, professional occupations) make up 70% of the population (Figure 12-5).

*Figure 12-5 – Socio-economic Class*
Figure 12-6 - Industry of Employment
The largest sector employer in Rugby Borough is the wholesale and retail sector, employing 18% of economically active individuals, followed by 12% in manufacturing and 11% in human health and social work activities. Approximately 40 people are employed in mining and quarrying (Figure 12-6).

The Gross Value Added (GVA) per employee of the mining and quarrying industry is £608,355 (2010 data\(^4\)), compared with an average of £41,612. This is the highest GVA per employee of any UK sector, the next highest being electricity, gas and water supply at £158,089.

The median gross weekly earnings for the Rugby Borough is £479, £39 less than the national average at £518.

Rugby Borough contains 4 of the 37 areas in Warwickshire that are within the 30% most deprived nationally, and a number of villages that feature in the bottom 10% national with regard to access to services.

12% of the population (aged 16 to 64) has no formal qualifications.

12.2 Impacts of the Proposals

12.2.1 Impacts of Extension to Time

The proposal is to extend the life of the quarry by a further 30 years. This will deliver long-term security of supply of sand, gravel and aggregate materials in the region to meet both existing and developing markets, and support associated sustainable economic development.

Brinklow Quarry is currently the single largest employer in the area, employing approximately 0.08% of the employed workforce in Rugby Borough, and 100% of the population employed in quarrying and/or mining. Against a baseline of no quarrying activity after May 2016, the proposed extension of time would provide approximately 30-40 full-time positions and maintain steady employment for the local workforce, the breakdown of which is as follows:

<table>
<thead>
<tr>
<th>Role</th>
<th>Number of Positions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Truck drivers</td>
<td>10</td>
</tr>
<tr>
<td>Quarry</td>
<td>15-20</td>
</tr>
<tr>
<td>Office (including management)</td>
<td>10</td>
</tr>
<tr>
<td>Maintenance workers</td>
<td>3-5</td>
</tr>
</tbody>
</table>

This will provide employment for people with specific expertise in the quarrying and mining sector, in which alternative roles are not available in the local area. As these workers are currently employed by Brinklow Quarry, there is already a skills match in the local area.

As well as direct benefits to employment, there will be indirect socio-economic benefits in all operational and value chains related to Brinklow Quarry, and also income earned through employees’ expenditure in the local economy. Continued operation at Brinklow Quarry will enable employment to be maintained across a range of industries, many of which rely upon quarrying, including Brinklow Quarry, for business.

---

\(^{4}\) ONS Labour Market Figures
As identified in section 11.3 above, quarrying/mining provides the highest GVA of any UK sector. With 40 employees this would be equal to a GVA of £24 million at Brinklow Quarry.

12.2.2 Impacts of Extension to Area

The proposed extension of area, compared with a baseline of no quarrying activity, would provide 30-40 full-time positions as shown in Table 12-1 and would provide indirect support for other sectors as outlined above.

Additionally, the extension of area complements planning policy, which is in place to ‘support existing business sectors’, ‘support sustainable growth and expansion of all types of business and enterprise in rural areas’ and ‘promote the development and diversification of agriculture and other land-based rural activities’ (NPPF).

The material which would extracted from the extension of area is particularly in demand, leading to additional economic benefit.

12.2.3 Cumulative Impacts of Both Applications

There would be negligible cumulative socio-economic impact, as a similar number of workers would be employed whether the extension of time or extension of area was developed, or both.

12.2.4 Conclusion of Impact Assessment

The main socio-economic impact of the proposed development is the direct employment of workers who already have skills and experience matched to the requirements of the Quarry. These specific skills are not required elsewhere in the area as Brinklow Quarry is currently the only local quarrying operation. The production of material from the quarry would also support the local economy, particularly the construction sector.

12.3 Mitigation measures

As the nature of the socio-economic impacts of the proposal are beneficial, it is not considered that any mitigation measures would be required. Skills development of the local community would not be requisite to meet Brinklow Quarry’s requirement as the Quarry currently employs an appropriately skilled workforce.

12.4 Residual Impacts

As no mitigation measures are required, the residual impacts are the same as detailed above.

12.5 Summary of Impacts

12.5.1 Extension to Time

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receiver</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economy of the locality studied</td>
<td>A number of employment opportunities will be created</td>
<td>N/A</td>
<td>Small</td>
<td>Long-term</td>
<td>Beneficial</td>
<td>Slight</td>
<td>Reasonable</td>
</tr>
</tbody>
</table>

12.5.1 Extension to Area

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receiver</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economy of the locality studied</td>
<td>Material supply will support the local economy</td>
<td>N/A</td>
<td>Small</td>
<td>Long-term</td>
<td>Beneficial</td>
<td>Moderate</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Topic</td>
<td>Significant Residual Effects</td>
<td>Importance of Receptor</td>
<td>Magnitude of Change</td>
<td>Duration</td>
<td>Nature</td>
<td>Significance</td>
<td>Level of Certainty</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>-----------------------------------------------</td>
<td>------------------------</td>
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<td>----------</td>
<td>--------------</td>
<td>--------------------</td>
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<td>Beneficial</td>
<td>Moderate</td>
<td>Reasonable</td>
</tr>
</tbody>
</table>

12.5.2 Cumulative Impact

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
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<th>Significance</th>
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12.6 References


Planning Policy Statement 4 – Planning for Sustainable Economic Growth, from the CLG (Communities and Local Government)

Office of National Statistics (various)


Planning Policy Statement 4 – Planning for Sustainable Economic Growth, from the CLG (Communities and Local Government)
13. **Agricultural Land Assessment**

13.1 **Introduction**
This chapter covers an Agricultural Land Assessment. Planning Authorities are expected to consider the economic and other benefits of the “best and most versatile” agricultural land. Where development of agricultural land is necessary, Local Planning Authorities should seek to use poorer quality land in preference to high quality agricultural land.

13.2 **Methodology**
For the purposes of agricultural land quality assessment, “best and most versatile quality” land is that assessed as being of Grade 1, 2 or 3a, whilst poorer quality land is that of Grades 3b, 4 and 5. Assessment is made according to the Ministry of Agriculture, Fisheries and Food (MAFF) revised guidelines and criteria for grading the quality of agricultural land (1988). These gradings are described in Table 13-1.

<table>
<thead>
<tr>
<th>Quality</th>
<th>Summary</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 1</td>
<td>Excellent quality</td>
<td>Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.</td>
</tr>
<tr>
<td>Grade 2</td>
<td>Very good quality</td>
<td>Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.</td>
</tr>
<tr>
<td>Grade 3a</td>
<td>Good quality</td>
<td>Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.</td>
</tr>
<tr>
<td>Grade 3b</td>
<td>Moderate quality</td>
<td>Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.</td>
</tr>
<tr>
<td>Grade 4</td>
<td>Poor quality</td>
<td>Land with severe limitations which significantly restrict the range of crops and/or level of yields. It is mainly suited to grass with occasional arable crops (e.g. cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.</td>
</tr>
<tr>
<td>Grade 5</td>
<td>Very poor quality</td>
<td>Land with very severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.</td>
</tr>
</tbody>
</table>

This assessment will identify the grade of land currently occupied by Brinklow Quarry and the grade of land within the area for the extension of area.

13.2.1 **Legislation and Policy**
Paragraph 109 of the NPPF states that:

*The planning system should contribute to and enhance the natural and local environment by:*
protecting and enhancing valued landscapes, geological conservation interests and soils;

Paragraph 112 goes on to advise that ‘local planning authorities should take into account the economic and other benefits of the best and most versatile agricultural land’ when making decisions on development, and that ‘where significant development of agricultural land is demonstrated to be necessary, local planning authorities should seek to use areas of poorer quality land in preference to that of a higher quality’.

In terms of Local Policy, Rugby Borough Council’s Core Strategy does not include reference to agricultural land or soils that need to be identified in this Chapter.

13.3 Baseline Conditions

Magic.gov.uk was accessed for the Post 1988 Agricultural Land Classification (England). The static map shows that the approximate location of Brinklow Quarry is Grade 3 land (Figure 13-1).

Figure 13-1 - Agricultural Land Classification 1988 (Magic.gov.uk)

Finer detail from Magic.gov.uk was not available, therefore the Dudley Stamp Land Use Inventory was used to classify each of the extraction areas (as per Table 13-2).

Table 13-2 - Land Use Classification of the Existing and Proposed Extraction Areas (Magic.gov.uk)

<table>
<thead>
<tr>
<th>Extraction Area</th>
<th>Dudley Stamp Land Use Inventory</th>
<th>Land Use Character Type</th>
<th>Broad Pattern of Primary Land Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4 and 6 – Arable and RBA</td>
<td>Mixed farming</td>
<td></td>
</tr>
</tbody>
</table>

Chapter 13-2
# Agricultural Land Assessment - Impacts of the Proposals

<table>
<thead>
<tr>
<th>Extraction Area</th>
<th>Dudley Stamp Land Use Inventory</th>
<th>Land Use Character Type</th>
<th>Broad Pattern of Primary Land Use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Grassland</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>6 - Grassland</td>
<td>RBA</td>
<td>Mixed farming</td>
</tr>
<tr>
<td>C</td>
<td>4 - Arable</td>
<td>RBA</td>
<td>Mixed farming</td>
</tr>
<tr>
<td>D</td>
<td>4 - Arable</td>
<td>RBA</td>
<td>Mixed farming</td>
</tr>
<tr>
<td>E</td>
<td>4 - Arable</td>
<td>RBA</td>
<td>Mixed farming</td>
</tr>
<tr>
<td>F</td>
<td>4 - Arable</td>
<td>RBA</td>
<td>Mixed farming</td>
</tr>
<tr>
<td>1</td>
<td>6 - Grassland</td>
<td>RBA</td>
<td>Mixed farming</td>
</tr>
<tr>
<td>2</td>
<td>4 and 6 - Arable and Grassland</td>
<td>RBA</td>
<td>Mixed farming</td>
</tr>
<tr>
<td>3</td>
<td>6 - Grassland</td>
<td>RBA</td>
<td>Mixed farming</td>
</tr>
<tr>
<td>4</td>
<td>6 - Grassland</td>
<td>RBA</td>
<td>Mixed farming</td>
</tr>
</tbody>
</table>

RBA under the National Character Areas means:

**Table 13-1 - Explanation of RBA Land Use Character Type (Magic.gov.uk)**

<table>
<thead>
<tr>
<th>Character Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>R</strong></td>
<td>Intermediate</td>
</tr>
<tr>
<td></td>
<td>Rolling/undulating areas, below 1000 ft, including descriptive landform classes 'low hills - plateau' and 'rolling lowland' (see below) - associated mainly with Mesozoic (Cretaceous, Jurassic, Triassic &amp; Permian) or Tertiary rocks of sedimentary origin and glacial till.</td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>Other Light Land</td>
</tr>
<tr>
<td></td>
<td>Light land associated with free-draining loamy and sandy solid developed on permeable rocks (sandstones, siltstones &amp; mudstones), or sandy drift at elevations below about 300 metres. Within the soft rock zone, where there are few constraints to agricultural production, this ground type is strongly associated with arable cultivation. Mixed farming predominates on the shallower soils found in western hard rock areas.</td>
</tr>
<tr>
<td><strong>A</strong></td>
<td>wooded - ancient woods</td>
</tr>
<tr>
<td></td>
<td>Settled agricultural landscapes (dispersed or nucleated settlement) characterised by an assorted pattern of ancient woodlands which pre-date the surrounding enclosure pattern - in places associated with densely scattered hedgerow trees (typically oak).</td>
</tr>
</tbody>
</table>

Interviewing the family that has farmed the land, according to Table 13-1 it would be classed as Grade 3b, however, to take a worst case scenario, we have assumed that the land is Grade 3a or Grade 2, and that it falls into good quality land classification.

**Chapter 13-3**
13.4 Impacts of the Proposals

13.4.1 Impacts of Extension to Time

The impact of the proposed extension to time is to prolong the period for which the site will be used for quarrying and delay the return of the site to agricultural production by 10 years. This will also allow a greater extent of land to be quarried and removed from agricultural use than currently. The minerals underneath the land applied for here are gravel and sand mixed, which are of use to the county and could be in demand in the future. The minerals are located here – extensive borehole analysis onsite and on deposits further down the valley indicate that the san deposit peters out moving south.

Topsoil and overburden are stripped and stockpiled to expose mineral deposit in successive Phases (as shown in Figure 13-2). This will not be disposed of. On conclusion of the mineral extraction activities in each Phase, stockpiled topsoil and overburden is re-spread to restore the landform to an agreed restoration profile. This progressive approach ensures that the minimum possible area remains unrestored at any given time.

Topsoils are stripped from successive quarry phases only when in a dry and friable condition (usually between the months of March to October) and placed in stockpiles with minimum compaction. Topsoil stockpiles are graded to shed water and to ensure stability. They are located on previously stripped areas (outside those at risk of flooding), seeded and kept weed free, in accordance with best practice.

Where possible, topsoil is stripped and placed directly on previously sub-soilled areas to minimise soil structural damage and losses due to repetitive handling, in the sequence illustrated in the Phasing Plan (Figure 13-2).

Sufficient top and subsoils will be stored to ensure a minimum combined depth of 1.0m below the approved final restoration profile. The restored land will be managed in accordance with a programme of after-care designed to comply with Mineral Planning Guidance Note 7 (The Reclamation of Mineral Workings).

The result is a return of quarried areas progressively to agricultural production during the operational lifetime of the quarry and thereafter, and the creation of a harmonious landscape in keeping with the surrounding agricultural land uses.

13.4.2 Impacts of Extension to Area

The minerals underneath the land applied for here are dryscreen sand, which are of use to the county and currently in high demand at the time of writing. The minerals are located here – extensive borehole analysis onsite and on deposits further down the valley indicate that the san deposit peters out moving south.

The impacts of the proposed extension to area will be that the soil and subsoils (overburden) will be disturbed in order to expose the sand and gravel underneath, and will remain in a bund while the resource is extracted. The method of overburden removal will be conducted as per paragraph 13.4.1 above, and the area will be similarly returned to agricultural land.

13.4.3 Cumulative Impacts of Both Applications

The cumulative impact of both applications will be the combined area of overburden removal and quarrying. This will not happen together but successively; no area will be stripped and left for long periods of time as that increases the risk of dust impacts and visual impacts.

13.4.4 Summary of Impact Assessment

The proposals relate to the non-agricultural development of agricultural land. However, this development is not proposed to be permanent, and an integral part of the project will be the gradual restoration of the site to agricultural land in keeping with the surrounding land.
Figure 13-2 - Extraction Areas and Progression of Overburden Movement
**13.5 Mitigation measures**

It is not considered that any mitigation measures would be required for Agricultural Land.

**13.6 Residual Impacts**

The land will temporarily lose status as agricultural land whilst the minerals are removed. When the area is restored it will take time for the land to recover but the soil nutrients and components will not be lost. Soil formation and regeneration processes will be able to recover from displacement. The land will then be agricultural land and can be retested to Grade 2 / 3.

**13.7 Summary of Impacts**

13.7.1 **Extension to Time**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
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<td>Permanent</td>
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13.7.3 **Cumulative Impact**

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*Importance / Sensitivity of Receptor: High, Medium, Low, Negligible*

*Magnitude / Scale of Change: Large, Medium, Small, Negligible*

*Duration: Temporary, Short-term, Long-term, Permanent*

*Nature: Adverse, Beneficial*

*Significance: Very Substantial, Substantial, Moderate, Slight, None*

*Certainty: Absolute, Reasonable*
13.8 References
Rugby Borough Council (June 2011): Local Development Framework, Final Core Strategy
Mineral Planning Guidance Note 7 (The Reclamation of Mineral Workings)
14. **Airport Safeguarding**

14.1 **Introduction**

Airport Safeguarding is the process established to ensure that all appropriate measures are taken to secure the safety of aircraft when taking off, landing or flying within the vicinity of an airport.

Birmingham International Airport (BIA) is located in Solihull Metropolitan Borough close to the Warwickshire County boundary, and provides scheduled services to numerous domestic and international destinations. Coventry Airport is considerably smaller than BIA and is currently used for domestic and European freight traffic.

Coventry Airport is located at Baginton in Warwickshire, close to the County boundary with Coventry. The facility is considerably smaller than BIA and is used primarily for domestic and European freight traffic, along with some recreational flying and training. In 2003/04 new owners of the airport began to operate and expand scheduled passenger services to a number of European destinations. These terminated in 2008 after planning permission for a new permanent passenger terminal was refused. However, in 2010 new owners were found for the airport and a licence was subsequently granted for the operation of leisure, business and freight flights.

14.2 **Methodology**

Local and county policies were reviewed with regard to potential impact of the developments and restoration on local airports.

14.2.1 **County Policy**

The third Warwickshire Local Transport Plan (LTP3) came into effect on 1st April 2011. LTP3 sets out the transport policies and strategies for the County for period 2011-2026 and replaces LTP2 (2006-2011). The County Council’s Airport Accessibility Strategy can be found in Part B of the Plan but this relates to accessing the airport (i.e. travel modes to use the facility) rather than impacts on the facility.

14.2.2 **Local Policy**

In order to ensure that an airport’s operation is not restrained by development in the vicinity of the airport, the airport operator is responsible for producing a safeguarding map and providing this to all Local Planning Authorities whose boundaries fall within a 15km radius of the airport. The Local Planning Authority will use this safeguarding map to determine the implications of development for the airport. Saved Policy T13 (Safeguarding airport flight paths) mentions that the Council will safeguard the Coventry airport flight path and the Daventry Pailton radio technical site in accordance with the requirements of the Civil Aviation Authority.

Coventry Airport is within 8km of the development and therefore falls under this requirement.

Airport safeguarding is specifically concerned with:

- Physical safeguarding – Ensuring that buildings, structures or works do not infringe protected surfaces / airspace, obscure runway approach lights or contain lighting which has the potential to distract pilots. This does not just include buildings but also other structures such as transmitter towers and tall cranes on construction sites, therefore it is not just permanent development requiring planning permission that should be identified but also temporary equipment on construction sites.

- Technical safeguarding – Ensuring that development, including wind farms, does not have the potential to impair the performance of aircraft / airport navigation aids, radio aids or telecommunication systems such as the Instrument Landing System (ILS) and Distance Measuring Equipment (DME).
• Birdstrike – controlling developments (e.g. water features and waste disposal sites) which have the potential to increase the number of birds or the bird hazard risk.

The 1991 restoration scheme that is currently consented includes a waterbody, which theoretically could increase the number of birds or the bird hazard risk by attracting waterbird species (e.g. gulls, swans, geese, ducks etc.). The applications propose to move this waterbody. The 1995 restoration scheme, in planning terms, means that there is no net increase in the area of lake created above that already proposed, i.e. the development represents the movement of the currently consented lake from the south of the site to the west. However, in real terms, waterbodies will be created on site and therefore Coventry Airport must be consulted.

14.3 Baseline Conditions

The baseline condition for assessment is that the already approved, 1991, restoration proposals have been carried out, and that there is a waterbody in the South East of the site.

Coventry Airport may be concerned with an increased number of waterbirds because of a higher risk of bird strike. In particular it would be important not to encourage large flocking birds such as gulls, geese and swans, which can present a significant risk to aircraft operations.

14.4 Impacts of the Proposals

The creation of lakes as part of the restoration proposals, both extant and for the new restoration scheme, have the potential to attract waterbirds. This could lead to a birdstrike issue for Coventry Airport by increasing the bird hazard risk. This is a design issue, where the restoration lakes can be designed not to attract air-strike species or designed to target mainly non-bird or small bird aquatic species.

14.5 Mitigation measures

Definitive mitigation measures will be agreed at the detailed design stage through the discharge of a relevant planning condition and reserved matters. Possible mitigation measures, which are very likely to be effective, include:

• Water that will be deep as possible, i.e. over 4m to minimise bottom growing vegetation and place such vegetation out of reach of most waterbird species. Without vegetation, the invertebrates on which some waterbirds feed will be few.
• No development of islands so as not to encourage nesting or roosting;
• Banks that will be as steep as possible, preferably vertical, to prevent birds from walking in and out of the water or the provision of a vertical fence approximately 1 m high placed around the water’s edge to achieve the same affect;
• Wires suspended above the surface to deter wildlife that requires long take-off and landing runs, e.g. swans and geese. The wires would be made visible with tags 10 x 6 cm minimum to increase the visibility to wildlife;
• Dense vegetation, which provides nesting cover, will be avoided and the water will be surrounded with long grass or sterile substrate;
• Planting tall trees at each end of the lake to remove a landing/take off flight line for large waterfowl to/from the lake;
• Planting a 50 cm depth of thick water plants in open areas to prevent walk in access for large waterfowl to/from the water.

The restoration scheme has accordingly been adjusted to take into account T13 to safeguard Coventry Airport approaches.
14.6 Residual Impacts

The final restoration plan will be agreed with Coventry Airport and the County Ecologist to balance attracting waterbirds against the long term ecological benefit and recreation on the restored site.

14.7 Summary of Impacts

14.7.1 Extension to Time

<table>
<thead>
<tr>
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<th>Importance of Receptor</th>
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<td>Risk of attracting birdstrike species</td>
<td>Restoration scheme to be agreed with Coventry Airport and County Ecologist</td>
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14.7.2 Extension to Area

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14.7.3 Cumulative Impact

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14.8 References

Rugby Borough Council (June 2011): Local Development Framework, Final Core Strategy
Design Manual for Roads and Bridges: Volume 11 Environmental Assessment
Warwickshire County Council - The Rights of Way and Recreational Highway Strategy 2011-2026 (ROWRHS)
Planning Application R12-0411 to Rugby Borough Council

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15. **Restoration**

15.1 **Introduction**

Brinklow Quarry is a regionally significant sand and gravel quarry located on a deposit of Dunsmore Gravel underlying agricultural land near Brinklow, Warwickshire. The Quarry produces a range of primary and recycled aggregates for sale to the construction industry and has been operational since 1994.

The purpose of the quarry is to extract materials that are in demand on the market. The materials available at Brinklow Quarry are mixed sand and gravel, mainly in the part of the site that is subject to the section 73 application to extend the time to operate, and dryscreen sand, mainly in the part of the site subject to the extension of area application. These materials need to be accessed as the market dictates; at present the demand for dryscreen sand is high as a requirement of construction for houses and other similar construction projects in the county.

*Figure 15-1 - Location of the existing quarry area and proposed quarry extension*

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The main features of the quarry are as follows:

1. The completion of mineral extraction and restoration works within the Quarry as approved under the extant Planning Permission;
2. Phased extraction of sand and gravel for a period of 7-10 years (circa 1.7 million tonnes of resource);
3. Retention of the other activities that have planning permissions that are linked to the quarry development including:
   - The Mortar Plant;
   - The Open Windrow Composting Facility; and
   - The Inert Waste Recycling Facility.
These uses are symbiotic to the quarrying and agricultural activities and are accordingly conditioned to co-terminate with the main quarry Planning Permission Ref. R687/1547/1486/P. The intention is to continue these developments alongside the quarry.

The quarry has implemented and will continue to implement a general progressive restoration concept, which is designed to minimise the extent of active operational areas, return land to agricultural production and to deliver landscape improvement and habitat diversification by means of tree planting and restoration to wetland at the earliest possible juncture. These elements have been designed to integrate with existing completed restoration to enhance the local landscape character in its wider setting.

15.2 **Restoration in Phases**

Quarrying operations will be conducted to continue the extraction of sand and gravel from the residual phases of the existing quarry area (designated as Phases A to F on the Phasing Plan on Figure 2-2). This is the subject of the Section 73 application to extend the time of the existing quarry. Phases 1-4 are the subject of the extension of area application. These phases would be accessed as market forces dictate which material is most in demand.

15.2.1 **Restoration for the Extension of Time**

The extant planning permission R687/1547/1486/P is for 69.3 hectares to yield 3.5 million tonnes of sand and gravel. Approximately 1.7 million tonnes of sand and gravel, or half the original reserve remains to be extracted from the quarry. The site area remaining is shown in Figure 15-2 as Phases A-F. This is the focus of the Section 73 application, which changes only the time limit on the existing operations and therefore allows for these areas to be accessed over the next ten years. The restoration scheme for the purposes of assessment is assumed to be the same as that approved in R687/1547/1486/P, however this requires amendment (see below).

15.2.2 **Restoration for the Extension of Area**

It is proposed to extract dryscreen sand, gravel and clay from 31 hectares of land as an extension of the existing quarry. This is the focus of the new application and would allow access to these areas for this area’s estimated 20 year life. The site is expected to yield around 3.1 million tonnes of useable dryscreen sand and some gravel. The site area is shown in Figure 2-2 as Phases 1-4. Excavated material would be processed at the existing quarry plant area.

This proposal would also revise the existing approved restoration scheme to incorporate alternative water bodies and include agricultural afteruse, landscape improvements and habitat creation by means of tree planting and restoration to wetland. This chapter focuses on this updated scheme.

15.2.3 **Timescales and Phasing of Restoration**

The development is expected to last a total of 30 years as shown in Table 15-1. The applications would not result in an intensification of works at the quarry. The extension to time area has mostly gravel and sand mix; the extension area has mostly dryscreen sand, a high quality building material much sought after in the county. The quarry intends to have access to both these sites from 2015 with the flexibility to access either depending on market conditions. Because the operations are not increasing in any way, just the location they are able to access, it will still take c30 years to deplete the whole site.
Table 15-1 - Approximate Phasing of Works

<table>
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<th>Operations</th>
<th>Reinstatement</th>
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<td>July 2015</td>
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<tr>
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<td>2</td>
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<td>C, D &amp; 2</td>
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Topsoils are stripped from successive quarry phases only when in a dry and friable condition (usually between the months of March to October) and placed in stockpiles with minimum compaction. Topsoil stockpiles are graded to shed water and to ensure stability. They are located on previously stripped areas, seeded and kept weed free, in accordance with best practice.

Where possible, topsoil is stripped and placed directly on previously sub-soiled areas to minimise soil structural damage and losses due to repetitive handling, in the sequence illustrated in the Phasing Plan (Figure 2-2) where material from C will be placed onto B, and material from 2 is placed onto 1, and so on.
Figure 15-2 – Progressive Restoration Map with Current Permission and Extension of Area Shown

Arrows indicate direction of overburden from the phase to be worked onto the proceeding phase.

To be restored to a lake

Wildlife corridor

Restored to agricultural land

Remains as landscaped area

Hibernaculum area
15.3 Restoration and After-care

It is proposed that restoration arrangements currently permitted under the Conditions of the existing Planning Permission are revised to reflect a more sustainable location of water bodies, considering the relative depth of the water table on the eastern and western extremities of the site. If only the Section 73 is approved, the existing restoration scheme will stand as the restoration concept however this is not optimal in terms of the water table onsite. The water table in the bottom of the site, where the lake was originally envisaged, is too low and water would need to be pumped there in order to maintain a water body. The new Restoration concept takes advantage of the naturally high water table in these areas. The Restoration Scheme in Figure 2-4 shows the final restoration concept applied for under these applications.

Phased reinstatement of worked out areas is effected by re-spreading stockpiled overburden to an agreed profile to create a restored landform conducive to the site’s agricultural after use and habitat diversification aspirations in harmony with the local landscape character.

The restoration scheme is designed to return the quarried area to agricultural production with tangible benefits to all areas in terms of landscape improvement and habitat diversification through tree planting and wetland creation. The scheme aims to deliver high-quality restoration and long-term agricultural and landscape benefits.

Topsoil and overburden are stripped and stockpiled to expose the mineral deposit in successive Phases. On conclusion of the mineral extraction activities in each Phase, stockpiled topsoil and overburden is re-spread to restore the landform to an agreed restoration profile. This progressive approach ensures that the minimum possible area remains unrestored at any given time. Certain areas, such as B to F and 4 and 3, would form the lakes of the final restored area, shown in Figure 2-4.

Sufficient top and subsoils would be stored to ensure a minimum combined depth of 1.0m below the approved final restoration profile. The restored land will be managed in accordance with a programme of after-care designed to comply with Mineral Planning Guidance Note 7 (The Reclamation of Mineral Workings).

Additional hedgerows and wildlife corridors will be planted and maintained. The lakes would be managed so that large waterfowl were not attracted, in accordance with policies on Airport Safeguarding (please see Chapter 14 on Airport Safeguarding). The impact of these proposals is covered in Chapter 7 on assessing the impact of each application and the restoration plans on the local and national ecology.

The main benefits of the Scheme are as follows:

v. The return of quarried areas progressively to agricultural production during the operational lifetime of the quarry and thereafter;

vi. The development of specific habitats to encourage diversification and proliferation of wildlife during and beyond the operational lifetime of the quarry, including for great crested newts, sand martins, reptiles, hedgerow species and others. This includes wildlife corridors (shown in Figure 15-4 and Figure 15-5).

vii. The creation of a harmonious landscape in keeping with the surrounding agricultural land uses and

viii. The retention of existing features and to provide continuous amenity to the local area.
Brinklow Quarry Environmental Statement
Restoration - Restoration and After-care

Figure 15-3 - Restoration "After" Map if both applications approved
Figure 15-4: "After" Photomontage of Restoration of the Quarry - looking towards the east towards Brinklow Village.
Figure 15-5 - "After" Photomontage of Restoration of the Quarry looking towards the North East
15.4 Assessment of the Restoration Scheme

The restoration scheme was included in the assessment of the environmental impacts, and especially in the following:

- Ecology
- LVIA
- Agricultural Land
- Airport Safeguarding

15.4.1 Ecology

During restoration quarry features used by wildlife may be lost as the land is converted back to arable. Where possible, features of importance to wildlife will be retained. An area of quarry habitat (at least 2 ha) will be retained to the west of the site, this will be allowed to succeed naturally and continue to provide suitable habitat for reptiles and other wildlife.

An artificial sand martin nest bank will be provided within the restored area to be enhanced for wildlife. This will be sited near an area of water. The exact design and location will be determined by a qualified ornithologist. An example design is shown below.

Other Avoidance/Reduction Measures

To ensure amphibians and reptiles are not harmed when quarry areas are returned to agriculture a precautionary method statement will be prepared and followed. Quarry waterbodies in areas which are to be returned to agriculture will be filled in during the winter months (November to January) when amphibians are hibernating and unlikely to be in waterbodies.

If areas of bird nesting habitat (scrub, tussocky grassland, quarry cliffs with sand martin nests) are to be lost during restoration to agriculture these areas will not be destroyed during the bird breeding season (March to August inclusive). Additionally the existing sand martin nest sites will not be destroyed until an artificial sand martin nest bank is provided.

Enhancement Measures

Although much of the quarried area will be returned to agriculture (approximately 55 ha) enhancements will be made within an area (approximately 37 ha) to the west which will be restored as lakes and wildlife habitat. The detailed design and location of restoration proposals for this area will be informed by a qualified ecologist. An outline sketch design is provided in Figure 7-6 (Section 7.10).

This area will retain areas of quarry habitat (at least 2 ha), with bare ground, pioneer species and cliff faces. This will be allowed to succeed naturally and provide habitat for a range of wildlife species including reptiles, amphibians and invertebrates. This area will offer greater potential than the current (baseline) quarry habitat, as it will be undisturbed, without risk of injury/death.
Three lakes are proposed within this area. Two will be stocked with fish, the third (Lords Lake) will not be purposefully stocked with fish. It is recommended that the other two lakes are not stocked with fish until vegetation has established. It is important that they are not overstocked with fish. These lakes will be designed so that they provide good habitat for wildlife species. They will be profiled so that they contain permanent water of varying depths (including some shallow marginal areas) which will allow colonisation by a diversity of aquatic and marginal plant species. If the quarry pit is deep with steep sides, inert material such as rubble and silt can be used for profiling (WWT 1994).

Marginal and aquatic planting will be undertaken (where necessary and as far as practical constraints allow) to create a mixture of well-vegetated and open water with a diversity of native plant species (locally sourced wherever possible). A general scheme to be followed is shown on the next page.

It is also recommended that at least three smaller ponds are created which will not be stocked with fish. These will range from 50 to 150 m² to provide a variety of habitats for amphibian and other wildlife species. These will be designed following the same scheme as the lakes, however the depth will be no deeper than 0.7 to 1 m at the deepest point.

Around the lake area patches of scrub habitat and tussocky grassland will be established providing additional habitat for reptiles and amphibians.

A reptile and amphibian hibernaculum will be provided following the specifications detailed earlier. This will be located close to one of the new ponds. Again this will provide greater hibernation potential than the existing quarries spoil heaps as it will be undisturbed.

Approximately 1014 m of species-rich hedgerows will be replanted within areas returned to agriculture which will provide an enhancement from the baseline where none of the hedgerows were classified as species rich (see Technical Appendix 3d). The following species mix will be used to do this and thus create species-rich hedgerows: 20% hawthorn, 20% blackthorn, 10% field maple, 10% elder and 40% mix of hazel, crab apple, dog-rose and guelder rose. The species should be planted so that the hedgerow contains at least five woody species per 30 m length creating a species-rich hedgerow.

Additionally approximately 2290 m of woodland belt and 1000 m of scrub is proposed along the margins of restored arable fields and within the area restored for wildlife. These lengths will connect the eastern landscaped area of the quarry with the proposed wildlife area, connecting ponds with great crested newts to the new wildlife ponds. Tree species planted will be native and will be planted with an understory of shrub species such as dogwood, hawthorn, guelder rose, dog rose and spindle to create a variety of structure for invertebrates. The woodland edges should be scalloped to provide sheltered areas, increasing the density of invertebrate prey for bats (Entwhistle et al., 2001).

The detailed design of the quarry restoration will need to be informed by a suitably qualified ecologist to achieve the objectives of the mitigation and enhancement strategy outlined above. The implementation of the ecological mitigation measures will be overseen by the Site Manager and subsequently verified by a suitably qualified ecologist as the works progress. Only then will there be the required impetus to ensure that the ecology of the site is disturbed as little as possible, and that the enhancements specified are implemented to good effect. To ensure that impacts are minimised mitigation and enhancement measures must be established as soon as possible during the phased operation. Taken together, the ecological mitigation measures outlined will help to reduce the impacts from the proposed developments.
15.4.2 LVIA

Impacts on Landscape

Once new planting defined on the restoration plan has been implemented the overall impact on vegetation will improve to slight beneficial. This includes planting for tussocky grassland, lake margins, individual tree planting, hedgerows, scrub and lowland deciduous woodland areas. The application site will benefit from an increase in native tree and shrub cover, and supplementary and replacement tree planting that will reinforce existing boundaries. In the medium-term, there should be an increase in the nature conservation value of the site. In the longer term, once vegetation defined on the restoration plan matures and establishes, the impact will be major beneficial.

Following completion of restoration there will be a change from operational activities to a diverse area of restored agricultural land within a framework of retained tree lines, woodland and shallow ponds, tussocky grassland and woodland areas. There will also be recreational areas developed, which will create additional recreational amenity values for the area. This improved landscape amenity will have a moderate beneficial impact on the landscape character of the area.

Following restoration of the site the impact on the setting of residential properties would initially reduce to negligible, with the potential for improved areas of vegetation to provide a minor-moderate beneficial impact on the amenity of the properties as it matures.

The impact of the restoration proposal on the Green belt would initially be neutral. Over time as the restoration proposals mature, the areas of restored agricultural land retained tree lines, new woodland and shallow ponds, tussocky grassland and recreational areas will create additional recreational and amenity value for the Green Belt. This improved landscape amenity will have a minor beneficial impact on the wider setting of the Green Belt.

There would continue to be a negligible impact on other designated landscapes identified within the study area.

Impacts on Visual Amenity

The impact on visual amenity of the restoration to road and bridleway users, visitors to scheduled monuments and residential properties at the six studied viewpoints would largely be none or negligible, with some receptors experiencing minor beneficial impacts.

15.4.3 Agricultural Land

The impacts of the proposals will be that the soil and subsoils (overburden) will be disturbed in order to expose the sand and gravel underneath, and will remain in a bund while the resource is extracted. The area will be returned to agricultural land apart from the lake areas, shown in Figure 2-2.

The land will temporarily lose status as agricultural land whilst the minerals are removed. When the area is restored it will take time for the land to recover but the soil nutrients and components will not be lost. Soil formation and regeneration processes will be able to recover from displacement. The land will then be agricultural land and can be retested to Grade 2 / 3.

15.4.4 Airport Safeguarding

The creation of lakes as part of the restoration proposals, both extant and for the new restoration scheme, have the potential to attract wildlife. This could lead to a birdstrike issue for Coventry Airport by increasing the bird hazard risk. This is a design issue, where the restoration lakes can be designed not to attract air-strike species or designed to target mainly non-bird or small bird aquatic species.

Possible mitigation measures may include-
- Water should be deep as possible over 4m to minimise bottom growing vegetation: no development of islands:
- banks should be as steep as possible preferably vertical with vegetation only deployed to prevent wildlife from walking in and out of the water.
- There should be a vertical fence approximately 1 m high placed around the water edge to prevent wildlife such as Canada geese from walking in and out of the water.
- In addition wires suspended above the surface may deter wildlife that requires long take-off and landing runs e.g. swans and geese. The wires should be made visible with tags 10x 6 cm minimum to increase the visibility to wildlife.
- Dense vegetation, which provides nesting cover, should be avoided and the water should be surrounded with long grass or sterile substrate
- Water should not be stocked with fish
- Remove the island from the plans to deter large waterfowl nesting.
- Plant tall trees at each end of the lake to remove a landing/take off flight line for large waterfowl to/from the lake.
- Put a border around the lake where the contours would allow large waterfowl to walk in i.e. prevent them from accessing the lake by walking in/out of the water.
- Plant a 50 cm depth of thick water plants in open areas to prevent walk in access for large water fowl to/from the water

The restoration scheme was therefore adjusted to take into account T13 to safeguard Coventry Airport approaches.

### 15.5 Summary of Impacts from the Restoration Scheme

#### 15.5.1 Extension to Time

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecology</td>
<td>Lakes and recreational area</td>
<td>Medium</td>
<td>Large</td>
<td>Permanent</td>
<td>Beneficial</td>
<td>Moderate</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Landscape Impacts</td>
<td>Lakes and recreational area from PROW and residents</td>
<td>Medium</td>
<td>Small</td>
<td>Permanent</td>
<td>Beneficial</td>
<td>Small</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Visual Impacts</td>
<td>Land lost to lakes</td>
<td>Medium</td>
<td>Large</td>
<td>Permanent</td>
<td>Adverse</td>
<td>Moderate</td>
<td>Absolute</td>
</tr>
<tr>
<td>Agricultural Land Loss</td>
<td>Restoration scheme to be agreed with Coventry Airport and County Ecologist</td>
<td>High</td>
<td>Small</td>
<td>Long-term</td>
<td>Potentially adverse</td>
<td>Moderate</td>
<td>Reasonable</td>
</tr>
</tbody>
</table>
### 15.5.1 Extension to Area

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecology</td>
<td>Lakes and recreational area</td>
<td>Medium</td>
<td>Large</td>
<td>Permanent</td>
<td>Beneficial</td>
<td>Moderate</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Visual Impacts</td>
<td>Lakes and recreational area from PROW and residents</td>
<td>Medium</td>
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<td>Beneficial</td>
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<td>Reasonable</td>
</tr>
<tr>
<td>Agricultural Land Loss</td>
<td>Land lost to lakes.</td>
<td>Medium</td>
<td>Large</td>
<td>Permanent</td>
<td>Adverse</td>
<td>Moderate</td>
<td>Absolute</td>
</tr>
<tr>
<td>Risk of attracting birdstrike species</td>
<td>Restoration scheme to be agreed with Coventry Airport and County Ecologist</td>
<td>High</td>
<td>Small</td>
<td>Long-term</td>
<td>Potentially adverse</td>
<td>Moderate</td>
<td>Reasonable</td>
</tr>
</tbody>
</table>

### 15.5.2 Cumulative Impact

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecology</td>
<td>Lakes and recreational area</td>
<td>Medium</td>
<td>Large</td>
<td>Permanent</td>
<td>Beneficial</td>
<td>Moderate</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Visual Impacts</td>
<td>Lakes and recreational area from PROW and residents</td>
<td>Medium</td>
<td>Small</td>
<td>Permanent</td>
<td>Beneficial</td>
<td>Small</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Agricultural Land Loss</td>
<td>Land lost to lakes.</td>
<td>Medium</td>
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<td>Permanent</td>
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<td>Moderate</td>
<td>Absolute</td>
</tr>
<tr>
<td>Risk of attracting birdstrike species</td>
<td>Restoration scheme to be agreed with Coventry Airport and County Ecologist</td>
<td>High</td>
<td>Small</td>
<td>Long-term</td>
<td>Potentially adverse</td>
<td>Moderate</td>
<td>Reasonable</td>
</tr>
</tbody>
</table>

*Importance / Sensitivity of Receptor: High, Medium, Low, Negligible*

*Magnitude / Scale of Change: Large, Medium, Small, Negligible*

*Duration: Temporary, Short-term, Long-term, Permanent*

*Nature: Adverse, Beneficial*

*Significance: Very Substantial, Substantial, Moderate, Slight, None*

*Certainty: Absolute, Reasonable*
Summary

This section provides a summary of the final conclusions from the residual impacts of the project organised into the respective impact on ecology, landscape, etc. following the order presented in this Environmental Statement.

The following qualitative statements are made with regards to the outcomes of the assessments undertaken:

- Importance / Sensitivity of Receptor: High, Medium, Low, Negligible
- Magnitude / Scale of Change: Large, Medium, Small, Negligible
- Duration: Temporary, Short-term, Long-term, Permanent
- Nature: Adverse, Beneficial
- Significance: Very Substantial, Substantial, Moderate, Slight, None
- Certainty: Absolute, Reasonable

**These impacts apply to the extension of time and are when considered separately, and also the cumulative impact of both occurring.** Where these impacts are different, this is indicated with the use of multiple summary tables.

### 16.1 Impacts on Highways and Public Rights of Way – Chapter 5

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact of HVGs on local road network</td>
<td>Dust / dirt</td>
<td>Low</td>
<td>Negligible</td>
<td>Long-term</td>
<td>Adverse</td>
<td>Slight</td>
<td>Reasonable</td>
</tr>
</tbody>
</table>

### 16.2 Landscape and Visual Impact Assessment – Chapter 6

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
</table>
### Brinklow Quarry Environmental Statement

#### Summary - Ecology – Chapter 7

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landscape amenity</td>
<td>Reduced landscape amenity</td>
<td>Medium – public rights of way and residents Low - roads</td>
<td>Large onsite. Small to negligible further from site</td>
<td>Long-term</td>
<td>Adverse during operation Beneficial following restoration</td>
<td>Moderate to none, depending on distance of receptor from quarry</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Designations</td>
<td>Reduced landscape amenity in Green Belt</td>
<td>Medium</td>
<td>Small</td>
<td>Long-term</td>
<td>Adverse during operation Beneficial following restoration</td>
<td>Slight</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Visual Amenity</td>
<td>Reduced visual amenity</td>
<td>Medium – designated sites and footpaths Low - roads</td>
<td>Small to negligible</td>
<td>Long-term</td>
<td>Adverse during operation Beneficial following restoration</td>
<td>Minor to slight</td>
<td>Reasonable</td>
</tr>
</tbody>
</table>

### 16.3 Ecology – Chapter 7

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combe Pool SSSI</td>
<td>None</td>
<td>High</td>
<td>Negligible</td>
<td>-</td>
<td>-</td>
<td>None</td>
<td>Reasonable</td>
</tr>
<tr>
<td>LWS, pLWS and Ecosites</td>
<td>None</td>
<td>Medium</td>
<td>Negligible</td>
<td>-</td>
<td>-</td>
<td>None</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Ancient woodland and BAP deciduous woodland</td>
<td>None</td>
<td>Medium</td>
<td>Negligible</td>
<td>-</td>
<td>-</td>
<td>None</td>
<td>Reasonable</td>
</tr>
</tbody>
</table>
### Waterbodies
- **Significant Residual Effects**: Loss of lake and/or two field ponds during operation compensated for by creation of three lakes and ponds during decommissioning.
- **Importance of Receptor**: Medium
- **Magnitude of Change**: Small
- **Duration**: Long-term
- **Nature**: Benefit
- **Significance**: Moderate
- **Level of Certainty**: Reasonable

### Hazel dormouse
- **Significant Residual Effects**: Dormouse population disturbed but maintained and baseline habitat enhanced.
- **Importance of Receptor**: Medium
- **Magnitude of Change**: Small
- **Duration**: Long-term
- **Nature**: Benefit
- **Significance**: Moderate
- **Level of Certainty**: Reasonable

### Reptiles
- **Significant Residual Effects**: Reptile population disturbed but maintained and undisturbed habitat with greater potential than the baseline created.
- **Importance of Receptor**: Medium
- **Magnitude of Change**: Small
- **Duration**: Long-term
- **Nature**: Benefit
- **Significance**: Moderate
- **Level of Certainty**: Reasonable

### Bats
- **Significant Residual Effects**: Bat population protected and baseline habitat enhanced. Connectivity restored.
- **Importance of Receptor**: Medium
- **Magnitude of Change**: Small
- **Duration**: Long-term
- **Nature**: Benefit
- **Significance**: Moderate
- **Level of Certainty**: Reasonable

### Great crested newts
- **Significant Residual Effects**: Great crested newt population maintained and undisturbed habitat with greater potential than the baseline created.
- **Importance of Receptor**: Low
- **Magnitude of Change**: Small
- **Duration**: Long-term
- **Nature**: Benefit
- **Significance**: Small
- **Level of Certainty**: Reasonable
### 16.4 Cultural Heritage – Chapter 8

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultural Heritage</td>
<td>Abnormal or emergency noise or dust creation</td>
<td>Medium</td>
<td>Negligible</td>
<td>Short term</td>
<td>Adverse</td>
<td>None</td>
<td>Reasonable</td>
</tr>
</tbody>
</table>

### 16.5 Noise – Chapter 9

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact of noise of operations</td>
<td>None</td>
<td>Medium</td>
<td>Small</td>
<td>Long-term</td>
<td>Adverse</td>
<td>Slight – within PPG guidance</td>
<td>Reasonable</td>
</tr>
</tbody>
</table>
### 16.6 Air Quality – Chapter 10

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dust emission and potential for soiling</td>
<td>With management in place this should be low</td>
<td>High</td>
<td>Negligible</td>
<td>Long-term</td>
<td>Adverse</td>
<td>Slight</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Traffic related emissions</td>
<td>With management in place this should be low</td>
<td>High</td>
<td>Negligible</td>
<td>Long-term</td>
<td>Adverse</td>
<td>Slight</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Impact on Coventry AQMA from Traffic related emissions</td>
<td>With management in place this should be low</td>
<td>High</td>
<td>Negligible</td>
<td>Long-term</td>
<td>Adverse</td>
<td>Slight</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Impact on Combe Pool SSSI</td>
<td>From dust or traffic emissions</td>
<td>High</td>
<td>Negligible</td>
<td>Long-term</td>
<td>Adverse</td>
<td>Slight</td>
<td>Reasonable</td>
</tr>
</tbody>
</table>

### 16.7 Flood Risk Assessment – Chapter 11

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk to the development from flooding</td>
<td>None</td>
<td>Negligible</td>
<td>Negligible</td>
<td>Long-term</td>
<td>Beneficial</td>
<td>None</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Risk to local hydrogeology from the site</td>
<td>None</td>
<td>Negligible</td>
<td>Negligible</td>
<td>Long-term</td>
<td>Beneficial</td>
<td>None</td>
<td>Reasonable</td>
</tr>
</tbody>
</table>

### 16.8 Socioeconomic Impact Assessment – Chapter 12

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economy of the locality studied</td>
<td>A number of employment opportunities will be created</td>
<td>N/A</td>
<td>Small</td>
<td>Long-term</td>
<td>Beneficial</td>
<td>Slight</td>
<td>Reasonable</td>
</tr>
</tbody>
</table>
### Economy of the locality studied

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>material supply will support the local economy</td>
<td>N/A</td>
<td>Small</td>
<td>Long-term</td>
<td>Beneficial</td>
<td>Moderate</td>
<td>Reasonable</td>
<td></td>
</tr>
</tbody>
</table>

#### 16.9 Agricultural Land Assessment – Chapter 13

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>soil processes</td>
<td>Interrupted but not lost</td>
<td>Grade 2 land – high</td>
<td>Large</td>
<td>Short Term</td>
<td>Adverse</td>
<td>Moderate</td>
<td>Reasonable</td>
</tr>
<tr>
<td>agricultural land loss</td>
<td>Interrupted but not lost</td>
<td>Grade 2 land – high</td>
<td>Small</td>
<td>Long Term</td>
<td>-</td>
<td>Moderate</td>
<td>Reasonable</td>
</tr>
<tr>
<td>restoring to agricultural land</td>
<td>Long term agricultural land returned.</td>
<td>Grade 2 land – high</td>
<td>Small</td>
<td>Permanent</td>
<td>Beneficial</td>
<td>Substantial</td>
<td>Absolute</td>
</tr>
</tbody>
</table>

#### 16.10 Airport Safeguarding – Chapter 14

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
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<td>risk of attracting birdstrike species</td>
<td>Restoration scheme to be agreed with Coventry Airport and County Ecologist</td>
<td>High</td>
<td>Small</td>
<td>Long-term</td>
<td>Potentially adverse</td>
<td>Moderate</td>
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#### 16.11 Restoration – Chapter 15

<table>
<thead>
<tr>
<th>Topic</th>
<th>Significant Residual Effects</th>
<th>Importance of Receptor</th>
<th>Magnitude of Change</th>
<th>Duration</th>
<th>Nature</th>
<th>Significance</th>
<th>Level of Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>ecology</td>
<td>Lakes and recreational area</td>
<td>Medium</td>
<td>Large</td>
<td>Permanent</td>
<td>Beneficial</td>
<td>Moderate</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Topic</td>
<td>Significant Residual Effects</td>
<td>Importance of Receptor</td>
<td>Magnitude of Change</td>
<td>Duration</td>
<td>Nature</td>
<td>Significance</td>
<td>Level of Certainty</td>
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<td>-------------</td>
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<td>-------------------</td>
</tr>
<tr>
<td>Visual Impacts</td>
<td>Lakes and recreational area from PROW and residents</td>
<td>Medium</td>
<td>Small</td>
<td>Permanent</td>
<td>Beneficial</td>
<td>Small</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Agricultural Land Loss</td>
<td>Land lost to lakes.</td>
<td>Medium</td>
<td>Large</td>
<td>Permanent</td>
<td>Adverse</td>
<td>Moderate</td>
<td>Absolute</td>
</tr>
<tr>
<td>Risk of attracting birdstrike species</td>
<td>Restoration scheme to be agreed with Coventry Airport and County Ecologist</td>
<td>High</td>
<td>Small</td>
<td>Long-term</td>
<td>Potentially adverse</td>
<td>Moderate</td>
<td>Reasonable</td>
</tr>
</tbody>
</table>