Mouselow Quarry, Dinting Road, Glossop, Derbyshire, SK13 9EB.

Town and Country Planning (Environmental Impact Assessment) Regulations 2017 - Environmental Impact Assessment and Planning Application seeking approval to:

- **Extend the quarry extraction area.**
- **Relinquish planning permission to extract the deeper Lower Shales.**
- **Amend the approved restoration scheme.**

June 2018

Volume 2 Environmental Statement

Applicant:
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1.0 INTRODUCTION

1.1 Introduction to the proposals

1.1.1 This Environmental Statement accompanies a planning application submitted by Wienerberger Limited for the extension of Mouselow Quarry in a westerly direction. The extension area is identified for future quarrying as an extension to Mouselow Quarry in the emerging Derby and Derbyshire Minerals Local Plan. The quarry extension area lies to the immediate west of the existing quarry extraction area and within the existing planning permission boundary for the site.

1.1.2 The existing shale reserves at the quarry consist of Upper Shales, which make up the majority of the material extracted annually, and Lower Shales which have a higher sulphur and carbon content and have only been used in small quantities to blend with the better quality shales. Materials are taken to the Denton brickworks to produce a variety of high quality bricks.

1.1.3 There is less than 180,000 tonnes of Upper Shale material remaining in the existing quarry, sufficient for only four years supply to the Denton factory.

1.1.4 The current planning permission for the site allows for the extraction of over 1 million tonnes of Lower Shale at depth from the quarry floor and beneath the water table. This Lower Shale material is of poor quality for brickmaking due to high sulphur and carbon levels which effect the air emissions from the Denton factory kiln. It is the intention to relinquish the planning permission to extract the deeper Lower Shale material if planning permission is granted to develop the Upper Shales in the extension area and consequently there would be no extraction beneath the water table.

1.1.5 The quarry extension area contains approximately 850,000 tonnes of high quality Upper Shale, sufficient for almost 19 years supply, within an area of less than two hectares. The extension area would also release 200,000 tonnes of sandstone used as high quality building stone which is extracted by a third party.

1.1.6 The current approved restoration scheme for the site includes a large, deep, water body which would be created following the extraction of the deeper Lower Shale material below the water table. The restoration scheme would need to be amended if the Lower Shales were to remain unworked and the proposed restoration scheme includes grassland, woodland and a variety of nature conservation habitats instead of the large, deep, water body.

1.1.7 There are no proposals to alter the method of extraction or to change the operating hours or level of output from the site as a consequence of the quarry extension application.

1.1.8 The assessment of potential environmental effects arising from certain development projects is to be carried out as required under the Town and Country Planning (Environmental Impact Assessment) Regulations 2017. The Regulations require that prior to the grant of planning permission an Environmental Impact

Assessment (EIA) is to be undertaken on large scale developments or those located in sensitive areas. The responsibility for undertaking the EIA lies with the developer.

1.1.9 The planning application to extend Mouselow Quarry involves a level of activity and operations that warrant an EIA in accord with the 2017 EIA Regulations.

1.1.10 Derbyshire County Council (Derbyshire) set out the extent of the environmental aspects to be assessed within the EIA in Pre-Application Advice issued in September 2017.

1.1.11 In preparing the EIA Wienerberger and its technical specialists have liaised with Derbyshire staff including planning, landscape and cultural heritage officers as well as other planning consultees. Liaison has also been held with the local community.

1.2 Purpose of the Environmental Statement

1.2.1 The Environmental Statement (ES) is the collation of the results of the EIA following the evaluation of the significance of the predicted environmental effects arising from the proposed development. The ES aims to provide an objective report on the potential environmental effects and is considered in a number of stages:

- A description of the baseline environmental conditions against which changes can be assessed.
- A description of the details of the proposed development.
- The identification of the potential environmental effects.
- The design of measures able to mitigate the environmental effects.
- An analysis of the effectiveness of the mitigation measures.

1.2.2 The result of these stages is a detailed evaluation of the impacts of the development which should be sufficient to guide the decision maker in making the appropriate decision.

1.2.3 The matters for inclusion in an ES are outlined in the 2017 EIA Regulations and can include population, fauna, flora, soil, water, air, climatic factors, material assets including architectural and archaeological heritage, landscape and the inter-relationship between these factors.

1.2.4 A number of specific environmental aspects have been identified for in depth study in the Derbyshire Pre-Application Advice including landscape and visual impact, ecology, the water regime, cultural heritage, social and economic aspects.

1.3 Format of the Environmental Statement

1.3.1 The ES is designed to be a self-contained document. It is divided into three volumes:

- **Volume 1** is the Non–Technical Summary which is a simplified and shortened version of the ES. A limited number of plans are also included to explain the proposals.

- **Volume 2** is the main body of the ES **(this document)** and contains details of the site and existing environmental conditions together with plans and drawings referred to in the ES. The ES describes the proposed development, potential effects and the mitigation measures which would avoid unacceptable environmental impact.

- **Volume 3** is also part of the ES and contains the technical assessments of the key topic areas.

1.3.2 The ES has been prepared in accord with the advice contained within the government publication "Environmental impact assessment: guide to procedures".

1.3.3 The ES consists of the following sections:

- **Introduction** which establishes the background to the project and identifies the proposals, the Applicant and EIA process.

- **Project Description** provides details on the site and the nature of the proposals.

- **Geology** outlines the geological aspects of the site.

- **Stakeholder Engagement** explains the work carried out with the local community and other stakeholders.

- **Scope of the EIA** identifies the environmental aspects that have been chosen for detailed assessment and the specialists responsible for the assessment work.

- **Alternatives** outlines the various alternatives considered during the design of the development.

- **Individual Environmental Aspects** considers the development in detail in terms of a number of environmental aspects, the potential impacts and mitigating measures proposed.

- **Human Health** and **Climate Change** considers the implications of the development against health and climate change.

- **Cumulative Impacts** examines the possible cumulative impacts in relation to other developments.
- **Socio Economic** aspects are outlined in terms of employment and economic contribution.
- **Conclusion** sets out the overall conclusion of the work.

1.3.4 In addition a fourth volume has been prepared as part of the submission. **Volume 4** contains the formal planning application including a planning application statement summarising the main elements of the development, a consideration of the development against the context of national and local policies, the planning forms and certificates. Volume 4 should be considered in conjunction with the ES.

1.4 The Applicant

1.4.1 Mouselow Quarry is owned and operated by Wienerberger Limited, part of the global Wienerberger Group based in Vienna, Austria. Wienerberger are one of the largest producers of clay bricks, blocks and tiles in the world.

1.4.2 Mouselow Quarry first began working over 170 years ago and historically there was a brickworks on site. Currently shale from the quarry is transported to the Wienerberger brickworks in Denton, Manchester, 12 kilometres away to manufacture a range of high quality facing bricks.

1.4.3 The head office for Wienerberger in the UK is in Cheshire at Wienerberger House, Brooks Drive, Cheadle Royal Business Park, Cheadle, Cheshire, SK8 3SA.

1.4.4 Environmental, sustainability and health and safety matters are of significant importance to Wienerberger. All developments are considered in relation to overarching corporate policies in these areas. A number of corporate policies are included for information in **Appendix 1** at the rear of this document.

1.5 Agent

1.5.1 The planning application and EIA have been prepared by Quarryplan (GB) Limited on behalf of Wienerberger. Quarryplan (GB) Limited are a planning consultancy with extensive experience within the minerals and waste management industries.

1.6 Planning Context

1.6.1 Mouselow Quarry has been operational for many years, at least since 1840, and there have been a number of planning permissions for shale extraction and associated activities since 1949.

1.6.2 Modern planning conditions were established for the site in 2010 as a consequence of the planning review required under the Environment Act 1995 (Review of Mineral Permissions – ROMP). A full EIA was submitted to accompany the planning review in 2010.

1.6.3 The existing quarry operates in compliance with the current planning permission reference CM1/0214/162 granted by Derbyshire in December 2014 and which continued the modern planning conditions established in the 2010 planning review.

1.6.4 The current planning permission has an end date of 7 March 2042 for mineral extraction and restoration is to be completed by 7 March 2044. The permission has a total of 54 modern planning conditions which control the hours of operation, noise and dust emissions, landscaping and the restoration of the site. A copy of the permission is included in **Appendix 2.**

1.6.5 A larger quarry extension was previously promoted to Derbyshire during 2016 as part of the preparation for the new Derbyshire and Derby Mineral Local Plan. The large extension area was twice the size of the extension which is proposed now. The large extension area was reduced in size following an initial landscape assessment which suggested that a smaller extension area would limit the landscape and visual impact from surrounding viewpoints. The new Minerals Local Plan (being prepared jointly by Derbyshire County Council and Derby City Council) will replace the existing Minerals Local Plan. Public Consultation on the Draft Minerals Plan has been undertaken in Spring 2018. In accordance with the provisions of the National Planning Policy Framework (NPPF), the draft plan may be afforded some weight in the determination process.

1.6.6 The proposed extension area is included in the Draft Plan as a draft allocation for the extraction of minerals. Draft Policy SA3 states that further extraction of mineral will be permitted at the site provided that it would not result in an unacceptable impact upon highways and alternative phasing would result in significant benefits.

1.6.7 The ES demonstrates that the proposed development would not result in unacceptable highways impacts and would generate a range of significant benefits in terms of air quality, hydrogeology, ecology and restoration. Therefore the proposed development is considered to accord with the provisions of Draft Policy SA3.

2.0 PROJECT DESCRIPTION

2.1 Site description

2.1.1 Mouselow Quarry is located 1.5 kilometres (km) to the north-west of Glossop and 20km east of Manchester city centre in the High Peak District of Derbyshire. The Peak District National Park lies less than 2km to the east.

2.1.2 The Ordnance Survey grid reference for the site is SK 016 951 and the site location is shown on the accompanying **Location Plan** included in the Plans section of this document.

2.1.3 The site is bounded by an active railway line to the west, Dinting Road to the south and farmland to the north and east. Access to the site is directly from Dinting Road along a private, surfaced road. The main A57 road lies 1km to the west along Dinting Road and Shaw Lane. This route is used by vehicles travelling between the site and the Denton brickworks approximately 12km away.

2.1.4 The site lies in a rural area situated between the built-up areas of Glossop, Simmondley, Gamesley and Hadfield. The site is located on the west facing slope of Castlehill between elevations of 190 metres Above Ordnance Datum (mAOD) and 250mAOD. The surrounding land to the north, east and south consists of improved pasture fields with hedgerows, stonewalls and small woodland blocks.

2.1.5 The nearest residential properties are located to the south of the quarry at Higher Dinting, to the west of the railway line off Shaw Lane and to the east at Howard Park. There are also isolated farm properties close to the site to the north and east.

2.1.6 The extent of the land owned by Wienerberger amounts to 33.0 hectares (ha) in total and the current planning permission covers 26.5ha of this land as shown on the **Landholding Plan** included in the Plans section. The actual operational quarry area amounts to less than 15ha within the planning permission area.

2.1.7 An **Aerial Photograph** is also included with the plans and shows the quarry, nearby land uses and properties in more detail.

2.1.8 Wienerberger's non-operational land is used by local farmers for grazing purposes.

2.1.9 There are a number of public rights of way in the vicinity of the site, some of which cross the planning permission area although none cross the operational parts of the quarry or the proposed extension area. The rights of way are securely fenced off from the operational areas and warning signs are well distributed.

2.1.10 The extension area amounts to 1.5ha and consists of parts of pasture fields (1.1ha), a small area of woodland (0.4ha) and 110 metres of drystone walls. The land within the extension area rises from 190mAOD in the west to 205mAOD in the east.

2.2 Proposed Development

2.2.1 The quarry is shown in detail on the **Site Plan** which identifies different elements of the quarry including the planning permission boundary, existing quarry area and the proposed extension area.

2.2.2 The Upper Shales are currently the main source of brick making material. Below these Upper Shales lie high sulphur and carbon Lower Shales, a minor amount of which have historically been blended with the Upper Shales but it is increasingly difficult for the Denton brickworks to meet its strict air quality emission limits if the Lower Shales are used.

2.2.3 It would be impossible to use the Lower Shale on its own for brickmaking. It has therefore been decided that the Lower Shales should not be used and to seek planning approval for an extension into further Upper Shales to replace the Lower Shales.

2.2.4 The quarry extension area amounts to 1.5ha and contains 470,000 cubic metres (850,000 tonnes) of high quality Upper Shale suitable for brick manufacture at the Denton brickworks.

2.2.5 In addition a bed of sandstone occurs below the Upper Shale. The sandstone is used as a high quality building stone with a minor amount, which is not suitable for use as building stone, being used as a construction aggregate. Sandstone extraction is undertaken by a third party rather than Wienerberger. Sandstone has already been removed from the majority of the extraction area in the existing quarry. The extension area would also release an additional 200,000 tonnes of sandstone.

2.2.6 Shale extraction occurs after the overlying soils and overburden materials (poor quality clay and shales) are removed. The soils are approximately 300mm deep in the extension area and the overburden is between 1 metre and 2.5 metres deep. More detail is provided on the soil resource in **Section 7 Agriculture and Soils.** The underlying Upper Shale is 30 metres thick and the sandstone is an average of 6 metres thick.

2.2.7 Shale extraction is usually undertaken twice annually on a campaign basis which involves shale being extracted and stored in stockpiles on the quarry floor to weather. Material is then removed periodically throughout the year from the shale stockpiles and taken to the Denton brick factory by heavy goods vehicle (HGV).

2.2.8 Soil and overburden removal is normally carried out during the drier summer months using a 25 tonne hydraulic excavator and two 25 tonne dumptrucks. Shale extraction is undertaken using standard mobile equipment associated with small scale quarrying operations, namely hydraulic excavators, dump trucks and a bulldozer. Two 25 tonne capacity articulated dump trucks are usually employed together with a 50 tonne hydraulic excavator and a 40 tonne bulldozer.

2.2.9 Shale is loaded into HGVs for transport to the brick factory by a single 25 tonne hydraulic excavator.

2.2.10 There is no processing of shale carried out on site and no blasting is carried out.

2.2.11 Sandstone is also extracted by 50 tonne hydraulic excavator. There is no processing of the sandstone sold as building stone although a minor amount of stone which is unsuitable for use as building stone is crushed and screened for use as construction aggregate. A single hydraulic excavator is periodically used to remove sandstone blocks and load vehicles and a small mobile crushing and screening plant is used to produce the construction aggregate.

2.2.12 There is a small, secure compound and yard adjacent to the entrance road which contains an office, welfare facilities, storage and wheel cleaning equipment.

2.2.13 Output of shales from Mouselow is currently only 25,000 cubic metres per year (45,000 tonnes per year using a conversion factor of 1.8 tonnes /cubic metre). This is half the output which was proposed in the 2010 planning review (ROMP) and which formed the basis of an environmental assessment undertaken at the time.

2.2.14 There is no anticipated increase in output in the immediate future, however it is hoped that output may increase in the medium and long term as the economy improves. The future output is anticipated to be in the region of 30,000 cubic metres (54,000 tonnes) per year. This figure is still significantly below the anticipated output assessed in the 2010 EIA which was 50,000 cubic metres (90,000 tonnes) per year.

2.2.15 The remaining approved reserves at the site as at 1 January 2018 are less than 180,000 tonnes (100,000 cubic metres) of Upper Shale and 1,080,000 tonnes (600,000 cubic metres) of Lower Shale although it is no longer proposed to extract the 1,080,000 tonnes of Lower Shale.

2.2.16 The remaining Upper Shale reserves will last for less than four years at current output levels.

2.2.17 The extension area would provide 850,000 tonnes (470,000 cubic metres) of Upper Shale which would replace the Lower Shale reserves of 1,080,000 tonnes. Planning permission to extract the Lower Shales would be relinquished.

2.2.18 The Upper Shale in the extension area would be sufficient for almost 19 years at a rate of 45,000 tonnes (25,000 cubic metres) per year. The combination of the existing reserves of Upper Shale and the extension reserves would last for approximately 23 years in total (4 + 19 years). The Upper Shale is likely to be exhausted in 2040, slightly earlier than the current planning end date of 2042 although this would be dependent on the actual level of production at the site during this period.

2.2.19 The development of the extension area is shown in detail on the accompanying set of nine **Quarry Extension Phasing Plans** which show extraction progressing in a westerly and anticlockwise direction.

2.2.20 The phased working scheme would maintain the effective screening benefit afforded by the existing landform. Operations within the floor of the quarry would remain up to 30 metres below surrounding ground levels.

2.2.21 By not extracting the Lower Shales which lie below the water table there is no requirement for large scale dewatering and any potential impacts on the ground water regime as a result would be avoided.

2.2.22 There are no alterations proposed to the method of extraction, working hours, or associated activities at the site.

2.2.23 The current approved restoration scheme contains a large, deep, water body as a consequence of extracting the Lower Shales below the water table. The approved scheme would need to be amended as the water body would not be produced. The accompanying **Restoration Concept** plan shows the revised restoration scheme for the site which includes agricultural grassland on the quarry floor with woodland, hedgerows, nature conservation grassland and small field ponds. It is considered that the revised restoration scheme provides greater biodiversity potential than the approved scheme in a more practical and safer environment.

2.3 Denton Brickworks

2.3.1 Denton Brickworks is one of the major brick producers for Wienerberger in the UK and is one of the most efficient brickworks in the UK. The capacity of the brickworks is 64 million bricks per year although production is currently just over 50 million bricks per year.

2.3.2 Denton was the first brick factory in the world to be certified to the Environmental Management System standard BS EN ISO 14001 (then called BS 7750). This certification has been maintained continuously up to the present day.

2.3.3 Denton produces a range of high quality bricks which are distributed throughout the UK. There are 49 different product groups currently manufactured at Denton and 95% of the production is unique within Wienerberger with no other factory producing the same range of products.

2.3.4 Shale from Mouselow forms part of the raw material requirement for 35 out of the 49 product groups produced at Denton and is included in 80% of all the bricks manufactured.

2.3.5 Two years ago over £1.5 million was invested in improvements to the Denton factory operations and every year approximately £0.5 million is invested in further improvements.

2.3.6 Each year the expenditure at the Denton factory and Mouselow Quarry amounts to £7.5 million on purchases, wages, business rates and associated costs, some of which benefits the local community.

2.3.7 There are 53 full time employees at Denton and Mouselow with additional contractors and heavy goods vehicle (HGV) drivers and indirect workers within Wienerberger and associated companies.

2.3.8 Denton relies on shale from Mouselow and would not be able to remain open without the readily available resources of shale from Mouselow.

3.0 GEOLOGY

3.1 Introduction

3.1.1 The geology within and surrounding the site has been characterised by reference to the following data sources:

- British Geological Survey (BGS) publications.
- Borehole logs for piezometers.
- Exploratory drilling.
- Previous geological and hydrogeological reports

3.2 Regional Geology

3.2.1 The regional geology for the area encompassing the site is shown on **Figure 3.1 Geological Mapping** taken from the hydrogeological report. The stratigraphic sequence for the locality is presented in **Table 3.1** below.

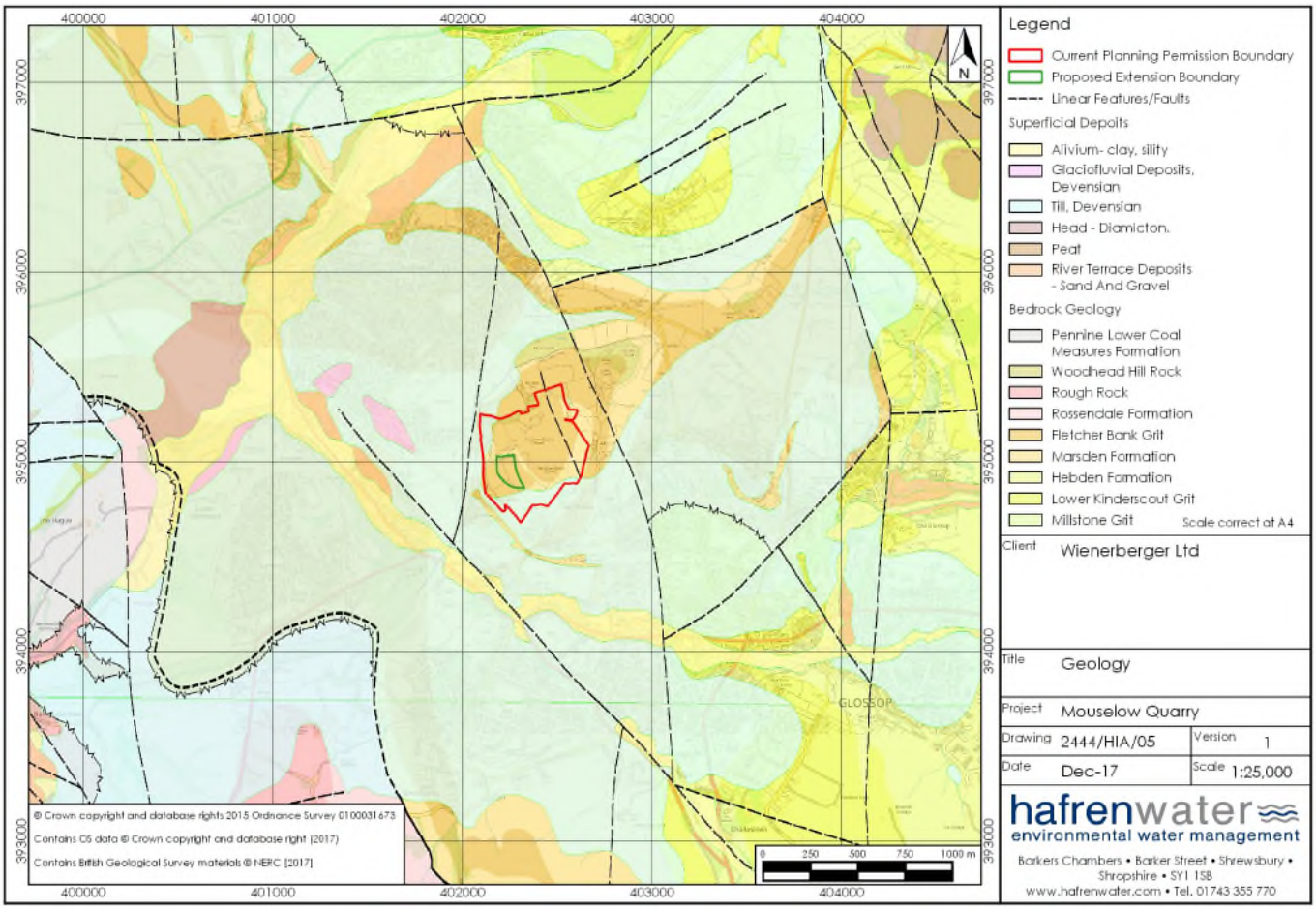

Figure 3.1 Geological Mapping

	Group	Formation		Lithology
Superficial	Quaternary Deposits		River Terrace deposits	Sand and Gravel
			Alluvium	Clay and silt
			Head	Gravels, Sands and Clay
			Glaciofluvial deposits	Sand and Gravel
			Till (Boulder Clay)	Clay
Solid	Pennine Coal Measures	Middle Coal Measures		Mudstone, siltstone and sandstone, with numerous coal seams and marine fossil bearing mudstone beds.
		Lower Coal Measures		Mudstone, siltstone and sandstone, with numerous coal seams.
	Millstone Grit	Rossendale Formation		Mudstone, siltstone and sandstone, locally pebbly.
		Marsden Formation		Mudstone, siltstone and named sandstone beds, including the Huddersfield White Rock and Fletcher Bank Grit sandstones.
		Hebden Formation		Mudstone, siltstone and sandstone, locally pebbly.

Table 3.1 Regional Geology

Superficial Deposits

3.2.2 The valley of the River Etherow to the west of the site and the gully of the Glossop Brook to the south contain River Terrace deposits of sands and gravels, overlain by Alluvium. These deposits lie between 50 metres and 250 metres either side of these river courses. Glacial deposits comprising mainly Till (Boulder Clay), with lesser areas of glaciofluvial and head deposits, generally crop out to the east and west of the River Terrace deposits.

Bedrock (solid) Geology

3.2.3 The regional bedrock geology of the area consists of the Millstone Grit. The Marsden Formation of the Millstone Grit underlies the site and its immediate environs and comprises a sequence of alternating grey mudstone, siltstone and sandstone beds, with less frequent seatearths, thin coal seams and marine bands. Mineral resources in the Marsden Formation comprise both the mudstone and

siltstone, and the sandstone beds. To the west of the site, the overlying Rossendale Formation outcrops, and to the east, the underlying Hebden Formation is mapped, with the Lower and Middle Pennine Coal Measures beyond this.

3.2.4 The regional geology is highly faulted, with most major faults aligned approximately north to south. The general site area lies within a downthrown fault block, with the main fault line located north of the site. This splits into two fault branches, aligned north to south-east, downthrown to the west, and aligned north to south-west, downthrown to the east. This causes a change in the angle of dip of the sandstone beds of the Marsden Formation.

3.3 Local Geology

3.3.1 The local geology comprises higher quality Upper Shales, above the Huddersfield White Rock sandstone bed, with poorer quality Lower Shales below. The shale is used for brickmaking at Denton brickworks, and the sandstone is removed as block stone for building purposes and crushed for aggregate. The Lower Shales are too high in sulphur and carbon and hence no longer form an economic mineral at the site. The sandstone bed is on average 6 metres in thickness within the quarry area and is highly jointed.

3.3.2 Superficial deposits are absent from the majority of the site and the extension area, except a small area of Till (Boulder Clay) towards the northeast and south of the worked quarry.

3.3.3 Based on a geotechnical assessment conducted by GWP Consultants in March 2016, the strata dips towards the west and south-west, outcropping up-dip in the eastern and down-dip in the western quarry faces.

3.3.4 The GWP Consultants report also notes that two further small scale faults are recorded to cross the main quarry workings within the downthrown fault block that the site is located in. The first fault is mapped on BGS resources and crosses the eastern extent of the quarry approximately parallel with the eastern quarry face. This fault is aligned approximately north to south-east and is downthrown to the west. The second fault is identified from mineral exploration boreholes and crosses the western extent of the quarry under the area to be worked within Phase I and Phase III of the quarry extension. This fault is aligned approximately north to south and is downthrown to the east.

3.3.5 The **Summary Borehole Plan** identifies the various boreholes that have been drilled at Mouselow historically. The logs for two boreholes drilled to the west of the extension area in 2014 are included in **Appendix 3.**

3.3.6 In sequential order by depth below ground surface, the geological sequence observed at Mouselow Quarry comprises thin superficial deposits, up to 2.5 metres thick, underlain by a thick 30 metre sequence of interbedded shale and mudstone, with occasional thin (<1.0 metre) sandstone beds. The upper shale and mudstone unit is underlain by a thick 'Main Sandstone' unit, observed with a 4 – 8 metre

thickness within the quarry and described as a strong, massive, medium to fine grained sandstone (The Huddersfield White Rock Sandstone) of the Millstone Grit group. Below the Main Sandstone unit, 6 metre of dark sulphide rich carbonaceous shales, followed by further sulphide poor grey carbonaceous shales for up to 50 metre (Lower Shales).

3.3.7 Bedding is generally thin to medium spaced. The dip is generally 9 to 12^{o} to the west-south-west on the eastern side of the quarry and 12 to 15^{o} to the west-south-west on the western side of the quarry. Consequently, strata are dipping out of the face on the up-dip eastern side of the quarry and into the face on the down-dip western side and the extension area making extraction operations in a westerly direction stable in geotechnical terms.

4.0 STAKEHOLDER ENGAGEMENT

4.1 General

4.1.1 Wienerberger has actively engaged with stakeholders during 2017 and 2018 to ensure there was a full and open understanding of the proposed development. The engagement work also allowed an opportunity for input into the development design and for refinements to be included prior to the submission being made.

4.1.2 The engagement exercise has included the following elements:

- Pre-Application Advice from Derbyshire.
- Direct contact with Derbyshire officers.
- Quarry liaison group.
- Public exhibition of the proposals.

Each of these elements is explained in more detail below.

Pre-Application Advice

4.1.3 A formal Pre-Application Advice Request was submitted to Derbyshire in June 2017 which set out the main elements of the development and sought clarification on the content of the EIA required to accompany the planning application to extend the quarry.

4.1.4 The Derbyshire Pre-Application Advice was issued in September 2017 and provided guidance on the technical assessments and planning policy issues that should be considered in the EIA. A number of stakeholders were consulted by Derbyshire in preparing the Advice.

4.1.5 Discussions were held with Derbyshire planners during this exercise.

Direct contact with Derbyshire officers

4.1.6 Following the issue of the Pre-Application Advice discussions have been held with a number of officers at Derbyshire to clarify or explain matters including planners (Development Management and Planning Policy), archaeology and landscape departments. Useful feedback about the proposals has been received and alterations made.

Quarry liaison group

4.1.7 The quarry has had a local liaison group for a number of years. The group consists of representatives from Derbyshire, High Peak Borough Council, local councillors and the local Heritage Society.

4.1.8 The liaison group meets annually to discuss activities at the quarry and discussions have previously been held on the extension development.

Public exhibition of the proposals

4.1.9 An exhibition of the extension proposals was held at Bradbury Community House on 17 April 2018. The purpose of the exhibition was to provide the general public with the opportunity to see the extension proposals and to seek comments on any aspect of the development prior to the application being finalised and submitted.

4.1.10 The exhibition attendance was very modest and no concerns were raised about the extension proposals or about the current quarry.

5.0 ENVIRONMENTAL IMPACT ASSESSMENT

5.1 Scope of the Environmental Impact Study

5.1.1 Establishing the extent of the scope of an EIA forms an integral part of the overall assessment process. In order to determine the scope of the EIA a formal Pre-Application Advice Request was submitted to Derbyshire in June 2017 and detailed Pre-Application Advice was issued in response in September 2017. The Pre-Application Advice Request and the subsequent Advice are included as **Appendix 4** and **Appendix 5.**

5.1.2 The aim of the exercise was to consider at the earliest opportunity all environmental elements that the proposed development may impact upon. In addition it is incumbent upon the assessment to give consideration to alternatives to the proposed development

5.1.3 The "matters for inclusion" in an EIA are outlined in PART 1 Schedule 4 of Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (the 2017 Regulations).

5.1.4 The Schedule requires:

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

5.1.5 This EIA considers the potential significant effects and consequences on the environment of the development and assesses whether such effects are:

- Direct or indirect
- Short, medium or long-term
- Reversible or irreversible
- Beneficial or adverse

5.1.6 Where significant adverse effects are identified a description of the measures necessary to avoid, reduce or remedy these effects is provided (mitigation measures).

5.1.7 To determine the environmental aspects that should be addressed within this EIA, each of the main activities within the development were examined in the Pre-Application Advice exercise undertaken with Derbyshire and potential impacts arising from those activities were identified.

5.2 Content of the Environmental Impact Study

5.2.1 The 2017 Regulations focus upon the "significant effects of a development"; these elements need to be assessed in detail whereas other issues, with less significance, may require a brief investigation.

5.2.2 The environmental elements chosen for the most detailed scrutiny are listed below together with the consultants who carried out the work:

- **Air Quality – Vibrock**
- **Cultural Heritage – Andrew Josephs Associates**
- **Ecology – Ecosurv**
- **Flood Risk – Hafren Water**
- **Hydrology – Hafren Water**
- **Landscape and Visual Impact – ESP**
- **Noise – Vibrock**

5.2.3 The specialist assessment reports prepared by the consultants are included in Volume 3. The reports consider the following:

- Baseline study
- Identifying potential impacts
- Predicting and evaluating the magnitude and significance of impacts
- Proposing mitigation measures
- Assessing the residual effects

5.2.4 In addition consideration has been given to the following environmental matters which are commented on in this document:

- Agriculture and Soils
- Highways
- Public Rights of Way
- Climate change
- Human health
- Socio economic aspects

5.2.5 The remit of the EIA is to consider all environmental aspects which could experience impact from the proposed development and to identify mitigation measures which could amend or reduce the level of impact to acceptable levels.

6.0 ASSESSMENT OF ALTERNATIVES

6.1 Introduction

6.1.1 The 2017 EIA Regulations state that an outline of the main alternatives studied by the applicant should be included within Environmental Statements. Government Circular DETR 02/99 makes clear that this is not a strict requirement of an ES, but that it is good practice.

6.1.2 Consideration of alternative sites, plant and equipment, operating practices and site layouts should be considered, where appropriate, including the main reasons for the choice, taking into account the environmental effects. The advantages and disadvantages of each option should be stated. The main reasons for the selection of the preferred option should be described in outline, taking into account the environmental effects. Other influencing factors should also be noted, including feasibility, cost effectiveness and reasonableness.

6.1.3 The Department of the Environment Transport and the Regions Environmental Assessment Good Practice Guide (Preparation of Environmental Statements for Planning Projects that require Environmental Assessment: GPG 24) recognises that for certain projects the issue of alternatives is restricted. This is the case at Mouselow Quarry.

6.1.4 There are a number of alternatives which have been considered during the preparation of the ES. The range of options are listed below and commented on in more detail subsequently:

- No development option.
- Alternatives to extraction in the western extension area.
- Alternative methods of extraction and processing.
- Alternative methods of transportation.
- Alternative restoration.

6.2 No Development Option

6.2.1 It is advised as good practice that the ‘no development’ option is taken into account and utilised as a comparable, in environmental impact terms, to the proposed development scheme.

6.2.2 The ‘no development’ option would result in no impacts on the local environment from extraction within the extension area, however there would be a number of economic, social and environmental impacts.

6.2.3 This would have a significant impact on Mouselow Quarry and on Denton Brickworks which would either close entirely once the remaining Upper Shale reserves had been worked out or would be operated at a much lower level of production. There would be a large number of job losses in either scenario and the

considerable level of financial contribution within the economy currently made would be reduced or stopped.

6.2.4 Other Wienerberger brickworks would not be able to replicate the Denton product range.

6.2.5 The reduction in brick production from Denton or its closure would not affect the level of demand for bricks. There would still be an ongoing demand for these vital materials and supplies would need to be provided from alternative sources. Similar comments can be made for the continuity of supply of high quality building stone as there are very few long-term alternative sources of comparable material.

6.2.6 Supplies of these materials would need to be provided from other sites which could result in greater transport distances, vehicle emissions and carbon footprint. It would also result in potential additional impacts as a result of increased output from other sites.

6.2.7 By not working the Upper Shale within the extension area a valuable resource of high quality brick making material would not be available to meet the demands for future construction materials necessary to maintain and develop the built environment in the area.

6.2.8 The development of the extension area also provides for overall improvements to be made to the restoration of the site and to local biodiversity.

6.3 Alternative Raw Materials

6.3.1 The Upper Shale makes up the largest proportion of brick making material used at Denton and is used in 80% of the brick clay mixes. The Upper Shale has good consistency, low sulphur, good potash and medium carbon levels in comparison to other materials.

6.3.2 A total of 49 different product types are produced at Denton and a mix of raw materials is needed to achieve specific chemical and physical consistencies and colours of the fired bricks.

6.3.3 Additional raw materials are supplied from various other sites at Bolton, Bradford and Leicestershire. The Bolton source of material is 30km (19 miles) away from Denton but cannot be used exclusively because of issues with colour and silica levels. The Bradford material is transported 65km (40 miles) to Denton and is again used as a blend to achieve the required mix. The Leicestershire material is transported 145km (90 miles) and consists of fireclay with specific refractory and colour properties. This fireclay material constitutes a small proportion of the brick making mix and is mixed with Mouselow material to produce 13 of the 49 products.

6.3.4 These materials cannot be used to the exclusion of the Mouselow Upper Shales.

6.3.5 Even if these alternative sources of raw material could replace Mouselow shales the increase in costs would result in the Denton factory becoming uneconomic. In

addition the increase in transport would result in more fuel usage, an increase in vehicle emissions and greenhouse gas production. This would not be a sustainable solution.

6.3.6 Furthermore the planning end dates and remaining reserves at some of these sites are not sufficient to provide long term supplies to Denton.

6.4 Alternative Quarry Locations

6.4.1 It is accepted within a wide range of planning guidance notes and at national, regional and local level that minerals are unusual in development terms, in that, they can only be worked where they naturally occur, so the usual criteria applied in site search exercises cannot be wholly adopted.

6.4.2 Shale from Mouselow is transported to the brickworks at Denton some 12km (8 miles) by road from the Mouselow site. The road access between the two locations is mainly motorway or trunk road.

6.4.3 There are very few other sources of brickmaking shale within 25km (16 miles) of the Denton factory. Wienerberger has searched for alternative supplies extensively over recent years as the Denton factory uses a blend of raw materials to produce its range of products.

6.4.4 Mouselow lies on the borders of several mineral planning authority areas. Mouselow lies within Derbyshire, whereas Denton is within Greater Manchester. The borders of West Yorkshire, South Yorkshire, Cheshire, Staffordshire and Lancashire are all within 25km of Denton. It is reasonable to consider the Mineral Plans for these areas to determine if alternative potential sources of brick making material may be available in terms of existing sites or allocated sites/preferred areas for future mineral extraction.

6.4.5 The development of an alternative Greenfield site which is currently unallocated in any of the local Mineral Plans is not considered reasonable or achievable in planning terms.

Derbyshire

6.4.6 The new Derbyshire Minerals Plan is currently in preparation and will replace the Derby and Derbyshire Minerals Local Plan adopted in 2000. Mouselow Quarry is specifically recognised as a unique outcrop of clay and sandstones and the proposed Mouselow Quarry extension is identified in the emerging Minerals Plan as a suitable site for the extraction of brick making material. There are four sources of brick clay identified in the emerging Minerals Local Plan (Spring 2018):

6.4.7 Mouselow Quarry – Brick clay from Mouselow Quarry, Glossop, operated by Wienerberger, is exported to the company's brick works at Denton, East Manchester. The Local Plan confirms that the Mouselow site provides a contribution of 6 years towards the landbank.

6.4.8 Waingroves Quarry – Brick clay from Waingroves Quarry, Ripley, in south Derbyshire, operated by Forterra Building Products Ltd, is exported to the Company's brickworks at Kirton in Nottinghamshire and Measham and Desford in Leicestershire. The Local Plan confirms that the site contributes 35 years towards the landbank.

6.4.9 Foxlow Quarry – Brick clay excavated from Foxlow, some 38km from Denton is stockpiled on site following closure of the brickworks at Barrow Hill. Its future use will depend upon the reopening of the Brickworks at Barrow Hill.

6.4.10 Lodge House Opencast – Fireclay extracted at Lodge House, Smalley, in south Derbyshire is used to supply the pottery manufacturers at Denby. The extraction of 50,000 tonnes of fireclay in association with Lodge House opencast coal operation has ended and the clay moved off site to Denby pottery in Derbyshire.

6.4.11 Of the above sites, Mouselow is the only site to be identified as a proposed allocation within the Draft Plan.

Greater Manchester

6.4.12 The Greater Manchester Minerals Plan 2013 covers the ten Greater Manchester council areas. With reference to brick clays the Plan recognises that just one quarry produces brick clay for use in engineering and facing bricks. This is Harwood Quarry near Bolton which is currently a supplier to Denton. The Plan highlights that Wienerberger operates a factory at Denton which is mainly supplied by Mouselow Quarry although the ability to supply materials for 25 years, as required by the National Planning Policy Framework, is questioned.

6.4.13 As part of the requirements of national policy, the Greater Manchester Combined Authority (GMCA) are undertaking a review of the plan 5 years after adoption. This will determine if there is a need for updates to be made.

Cheshire

6.4.14 The Cheshire Minerals Local Plan (1999) covers Cheshire East and Cheshire West and Chester Boroughs. East Cheshire is within 25km of Denton Works. The Plan remains silent on preferred options for the extraction of brick clay within Cheshire. It is stated that:

"Clay is a low value material and it is generally uneconomic to transport it more than a few miles. It is therefore extracted in close proximity to where it is used. Historically, clay workings have been associated with brick making but at present clay extracted in the County is used for general fill or a capping material at landfill sites."

6.4.15 The Cheshire Minerals Local Plan will be superseded partly by the Cheshire East Local Plan Strategy (adopted July 2017) and which states:

"Minerals currently worked in the borough include silica sand, sand and gravel, sandstone, salt and peat. Resources found but not worked include clay and coal with the potential for associated hydrocarbons."

6.4.16 Following on from the Local Plan Strategy and the Site Allocations and Development Policies document, the Minerals and Waste Development Plan Document (MWDPD) will form the third part of the Council's Local Plan. With regards to clay, the issue paper for the emerging MWDPD states:

"Clay and coal can also be found in the Borough but are no longer commercially worked."

6.4.17 Cheshire West and Chester Council (CWCC) Local Plan Part 1 (adopted 2015) makes only one reference to clay extraction at Kinderton Lodge, some 46km from Denton, stating:

"Kinderton Lodge has planning permission for clay extraction with restoration through the landfilling of waste."

6.4.18 The emerging CWCC Local Plan (Submission Version, March 2018) states that:

"brick clay – no Mineral Safeguarding Area (MSA) required as clay deposits in the area are small and very localised. No representations were received requesting a MSA for brick clay during the targeted consultation on safeguarding of minerals undertaken by the Council in 2011."

Lancashire

6.4.19 The Lancashire Core Strategy recognises the importance of Clay and Shale in the production of brick and emphasises the importance of maintaining a substantial land bank of these resources, typically 25 years. Lancashire has three existing brickworks, at Accrington (45km from Denton), Ravenhead near Skelmersdale (60km from Denton), and Claughton (88km from Denton).

6.4.20 The Core Strategy goes on to state that additional land will be made available during the Plan period for the extraction of minerals for cement or brick manufacturing, where it can be demonstrated that the land bank supplying the manufacturing plant will fall short of 25 years. Consideration will be given to the reasonable availability of supplies of an appropriate quality from elsewhere. The Core Strategy Proposals map does not identify any quarries or potential development sites within 25km of Denton.

6.4.21 The Joint Lancashire Minerals and Waste Local Plan (Site Allocation and Development Management Policies Part One) was adopted in September 2013. The Plan states that development will not be supported for any new extraction of sand and gravel, limestone, gritstone or brickshale. Policy M2 identifies safeguarding areas around all deposits of brickshale.

Yorkshire

6.4.22 West and South Yorkshire both lie within 25km of Denton Works. The Minerals and Waste Objectives 2012 for Calderdale Unitary Authority identifies three active clay quarries, Ashgrove Clay Works, Spaniards Hall, and Strangstry Wood. All three sites are in excess of 25km from Denton.

6.4.23 In addition to the above, the emerging plan (Local Plan Initial Draft, Oct 2017) identifies a site at Corporal Lane, Shelf as an active clay sites which is proposed for allocation. This site is directly opposite the Spaniard Hall site and therefore is in excess of 25km of the Denton Brickworks.

6.4.24 In Kirklees Borough clays are covered in the Development Plan which recognises that quality brick clay is a scarce resource. The only identified quarry within the Plan with is that of a "pipeclay" quarry some 37km from Denton. The emerging Local Plan (Publication Draft Local Plan, April 2017) describes how there are several clay and shale quarries located in the south east of the district. The sites are used to provide raw material for two of the Country's leading manufacturers of clay pipes which are located in the adjacent Barnsley local authority area. All the sites are in excess of 25km from the Denton Brickworks.

6.4.25 Brick clay is not identified in either the adopted Barnsley or Sheffield Mineral Plans. The emerging Barnsley Local Plan refers to four permitted clay quarries producing clay for bricks and pipes located at Middlecliff Quarry, Stairfoot Quarry, Bankswood Quarry and Greenley Carr Quarry. Clays and shales are extracted from an area to the east of Carlton Brick Works to produce bricks. All of the sites are in excess of 25km from the Denton Brickworks.

Staffordshire

6.4.26 There are currently eight operational clay quarries supplying five brick and tile works in Staffordshire which are located near to Newcastle under Lyme in north Staffordshire, near to Cannock in the south and Tamworth in the south-east of the county. There are no brick making shales within 25km of Denton identified in the adopted Staffordshire Minerals Local Plan 2017.

6.4.27 In conclusion, irrespective of the physical or chemical properties of alternative sources of raw materials there are no sites closer to Denton than Mouselow. Therefore the supply of shale from Mouselow is the most sustainable and deliverable raw material solution for the continued operation of the Denton brickworks.

6.5 Alternative Design Elements

6.5.1 It is recognised within a wide range of planning guidance notes, that through the design process development proposals could evolve in order to take account of and mitigate against, potential environmental impacts.

6.5.2 Quarrying differs from many forms of development as the usual scope for variations in design, layout and construction is limited. Nevertheless the alternatives that have been considered within the final quarry design, as a result of

the need to mitigate against particular environmental effects are summarised below in **Table 6.1**.

Design Issue	Potential Environmental Impact	Issues arising from alternative/alteration
Alternative Phasing	Landscape Noise Air Quality	The phasing of the quarry development has been designed to progress extraction gradually whilst maintaining the visual screening benefit afforded by the western facing slopes and maintaining geotechnical stability. The phasing also allows the sandstone building stone to be exposed and worked without any delays. Practically there is no other sequence of extraction within the extension area.
Change the "campaign" extraction of shales	Noise Air Quality	Shale needs to be extracted and stocked on site to weather before being transported to Denton. Campaign working is a cost effective and efficient balance of the extraction equipment used and the time taken to complete the works. A shorter campaign would require larger equipment and more potential for noise and dust, a longer campaign or continuous extraction would underutilize equipment (smaller equipment is not able to efficiently extract the shale) and prolong site operations.
Change type of extraction equipment used	Noise Air Quality	The use of larger equipment has the potential to increase emissions. Smaller equipment would not be able to extract the shale beds efficiently and blasting may be required to some extent.
Reintroduce blasting	Vibration Noise Air Quality	Blasting is not necessary as modern extraction equipment is capable of extracting the hard shale beds. Blasting would cause noise and vibration in an area unused to such activities. Blasting is a specialist operation and not within Wienerberger's current capabilities.
Change raw material mix at Denton to decrease % of Mouselow shale	Noise Air Quality Highways	The current raw material mix at Denton is determined by the range of brick products. The raw material mixes use Mouselow material in blends with other shales sourced from elsewhere. The physical and chemical characteristics of the mix are particularly important to produce a consistent brick product and colour. The mixes have been developed over a number of years to produce the range of brick products manufactured at Denton and cannot be changed without affecting the product range.
Change type of transport to Denton	Highways Noise Air Quality	There is no realistic alternative to road transport. There are no rail sidings to allow shale to be loaded into rail wagons at Mouselow or sidings at Denton to allow unloading. There is no space to construct sidings at either site. Rail transport is commonly used for transporting large tonnages over long distances, not for the small tonnages proposed or for the short distance involved. The capital costs of constructing sidings would be very considerable and could not be justified on the current level of operations.

Alternative restoration	Landscape Safety Ecology	The proposed change to the restoration scheme to replace the deep waterbody and provide grazing land, amenity grassland and woodland is more in keeping with the local landscape. The safety issues associated with public access near to a deep waterbody would also be avoided. Minor variations in terms of the extent of woodland or grassland creation could be achieved but the restoration scheme and habitats proposed are considered to be both valuable and appropriate for the local area. Any major alteration could result in a reduction of the habitats proposed.
Alternative restoration - infilling	Ecology Highways Noise Air Quality Water Regime	The potential environmental issues associated with infilling the site would be extensive. Millions of tonnes of material would be required over many years to achieve the complete infilling of the site and there is insufficient time to complete restoration within the planning end date.

Table 6.1 Alternative Design Elements

7.0 AGRICULTURE AND SOILS

7.1 Author of the Report

7.1.1 A soils and agricultural land assessment was prepared by [redacted], BA (Hons) Dip. LA, MALA, CMLI, a landscape architect with considerable experience in various aspects of landscape planning and environmental assessment and has focussed on the development and restoration of mineral sites for over 14 years post chartership.

7.1.2 [redacted] is an employee of ESP Ltd: an independent, multi-disciplinary consultancy undertaking Landscape Planning and Design, Estate Management, Environmental Impact Assessment and Environmental Management for the public and private sectors.

7.2 Agricultural Land

7.2.1 The agricultural land within the extension area amounts to approximately 1.1ha and comprises parts of south-west facing pasture fields, which are used for hay production and sheep or cattle grazing. This is typical of the locality, principally due to the local climate and steep gradients. The agricultural grade of the application area fields is Grade 3B or lower as for the land to be Grade 3A (best and most versatile) or above it would need to have a surface slope of 1 in 8 (7 degrees) or shallower, whereas these fields are steeper than 1 in 5 for the majority of the land.

7.2.2 This classification of Grade 3B or below also accords with the Provisional Agricultural Land Classification (ALC), published by Natural England, which places this site firmly within an area of Grade 4 land.

7.2.3 In the absence of approved methods for assessing significance criteria in respect of loss of Agricultural Land and impact on Farm Businesses, the criteria set out in the following tables are commonly used, noting that the criteria relate to the loss of agricultural land rather than temporary disturbance.

Significance	Evaluation criteria
Major Adverse	20 hectares or more of best and most versatile land (ie. grades 1, 2 and 3a)
Moderate Adverse	Between 10-19 hectares of best and most versatile land (ie. grades 1, 2 and 3a) and/or 50 ha or more of lower quality land (ie. 3b, 4 and 5).
Minor Adverse	Between 4-9 hectares of best and most versatile land (ie. grades 1, 2 and 3a) and/or 10-49 hectares or more of lower quality land (ie. grades 3b, 4 and 5)
Negligible	Less than 4 hectares of best and most versatile land (ie. grades 1, 2 and 3a) and/or less than 10 ha of lower quality land (ie. 3b, 4 and 5).

Table 7.1 Criteria for assessing the significance of Loss of Agricultural Land

Significance	Evaluation criteria
Major Adverse	Renders an existing full-time farm business unworkable in its current form. In such a case the farm business would not be able to continue in the same way as before the development, and the farmer would have to change the farm enterprise carried out on the remainder of the holding.
Moderate Adverse	A significant effect on the workability of a full-time farm business but where farming could continue in the same way as before the scheme. In such as a case, the farm business could largely continue in its present form, albeit the effects of the development are likely to reduce net farm income.
Minor Adverse	Limited effects on the workability and economic performance of a full-time farm unit, or the loss/significant effect on the viability of a part-time business. For the purpose of this assessment, where land is currently farmed through a tenancy arrangement where there is no legally binding, long-term security of tenure, then the impact on the enterprise is deemed to be Minor in all events; this is because the right of the tenant to farm the land could cease, with agreed notice, at any time.
Negligible	Where an adverse effect on the farm business is imperceptible.

Table 7.2 Criteria for assessing effects on Farm Businesses

7.2.4 The land is let on a short term agricultural grazing agreement to a local farmer and forms a small part of his farmed area. The loss of 1.1ha of grassland would not impact on the farm business. The proposed restoration scheme includes an increase in grazing land to 2.5ha.

7.3 Soils

7.3.1 The soils within the site have been measured as part of the site investigation exercise (boreholes and a trial pit). The site investigation indicates approximate depths as follows:

- Topsoil: 300mm
- Subsoil and overburden: 1000 - 2500mm

7.3.2 This is consistent with the previous soil stripping depths. No significant differentiation between the soil types is expected based on previous soil stripping and the consistent growth pattern and colouring of the pasture. The quarry

manager has indicated that the lower reaches of the subsoil layer is a clay/shale overburden which could be classed as a lower subsoil.

7.3.3 The topsoil is a soft massive crumbly dark brown, slightly sandy, silty clay topsoil. The subsoil is a soft, massive, yellow brown, slightly sandy silty clay subsoil.

7.3.4 Following stripping all the soils and overburden would be stored within the quarry void to be used in restoration. The top soils and sub soils would then be used to restore the quarry floor with a locally characteristic scheme of small-medium sized fields with dry stone walls and hedgerow boundaries.

7.4 Soil Handling Methodology

Timing

7.4.1 Handling of soils would normally take place during the period April to September (unless otherwise agreed with Derbyshire). During this period the soils are more likely to be in a dry and friable condition and the ground is likely to be firm enough to carry the weight of extraction plant without undue risk of structural damage to the soil. In any event, topsoil would only be handled when it is in a sufficiently dry and friable state. Soil handling operations would be suspended if the weather or ground conditions deteriorate.

Stripping method and machinery

7.4.2 The soils would be stripped using a small hydraulic excavator and transported by articulated dumptrucks. Alternatively, depending upon plant availability, the topsoil may be stripped using low ground pressure (LGP) dozers to form 'windrows' of soil which can then be lifted by the hydraulic excavator into the dump-trucks for transport to the storage mounds. All plant would run on the lowest available horizon at all times. All vehicle movements over soils would be minimised.

Soil storage

7.4.3 Topsoil, subsoil and overburden would be stored according to their quality in separate mounds. Topsoil storage mounds would be restricted to a maximum of 3 metre whilst subsoil and overburden would be stored in mounds up to a height of 5 metre. All storage would be within the existing quarry void to minimise visual impact.

7.4.4 A LGP dozer and small hydraulic excavator would be used to grade the soil storage mounds and to shape the side slopes to 1 in 2.5 or shallower. Soil mounds would be grass-seeded with a rapid-growing amenity grass seed to minimise loss of material and to prevent weeds.

Soil Restoration Approach

7.4.5 It is suggested that a materials movements plan and schedule are produced following soil stripping when all the volumes of available restoration resources can be accurately quantified. The following placement depths are given as a guide.

7.4.6 The site would be restored to nature conservation and agriculture.

7.4.7 The soil for the nature conservation areas would consist of a mixture of the existing on-site stored topsoil with sandstone scalpings placed on an overburden of high sulphur shales. This would form a soil profile which has been tested on-site in a previous trial and proven to be capable of supporting naturally regenerating scrub and woodland. Further details of this trial are included in the *Revised submission to comply with Conditions 37 and 48* of Planning Consent CM1/0310/24 *dated August 2015.*

7.4.8 There are two main areas of grassland with different surface gradients that would require different approaches. The first comprises the quarry excavation side-slopes with gradients mostly between 1 in 2 and 1 in 4. The second is the gently sloping areas including the operations yard and storage areas.

7.4.9 The side slopes would be built up in layers from the base and the growing medium placed progressively from above the slope. The width of each section would be determined by the reach of the excavator to place the growing medium. Once the shales have been dozed into place the surface would be ripped by tines attached to a dozer to a depth of 0.5 metres. Ripping would be undertaken as close as possible to the line of the contours creating an uneven, possibly undulating surface. The soils and sandstone scalpings would be mixed by a loading shovel to form a growing medium comprising approximately 45% soils/55% scalpings. The mix would then be hauled by dumptruck and tipped above the slope area to be treated. A hydraulic excavator would then spread the mix over the slope below, leaving it roughly cultivated with the teeth of the bucket.

7.4.10 The shale formation levels in the gently sloping areas would be deep cultivated in 4 metre wide strips to a depth of 0.5 metres. Each cultivated strip would follow the final contours as close as possible. The scalpings would be tipped and dozed into place over the ripped strip and then disc harrowed. The soil mix would be treated in the same manner using a low ground pressure tractor unit to harrow the soils into the underlying material.

7.4.11 For the reinstatement of agricultural land the topsoil would be 0.17m deep and the combined thickness of the topsoil and subsoil would be 0.75m. This would use the total volume of soils from the proposed extension area, assuming the minimum depth of 1.3 metre overall is stripped. Any excess subsoil/overburden stripped can be used to supplement this restored profile to a 1 metre overall depth, and thereafter can supplement the nature conservation areas. The formation levels onto which the overburden and soils profile would be placed, would be formed by high sulphur shales. Prior to the placement of the subsoil the surface of the shales would be scarified to improve the interface and to form a ‘key’ between the layers.

Soil Restoration Method and Machinery

7.4.12 Topsoil and subsoil would be replaced using hydraulic excavator, dozer and dump trucks to a uniform average thickness over the designated areas. The type of plant employed would be determined by the soil quality, ground conditions and operational efficiency and would be selected to avoid damage to the soil or compaction to the soil profile.

7.4.13 Subsoil and topsoil would be spread sequentially over the prepared overburden surface. As the soil is replaced, the reinstated subsoil would form an outer margin to the reinstated topsoil in order to prevent any losses of this valuable resource.

7.4.14 Plant and vehicles would not cross any area of replaced subsoil or topsoil, except where essential and unavoidable for the purpose of spreading soils or beneficially treating such areas. All plant would run on the lowest available horizon at all times through the stripping and re-instatement of the soils.

7.4.15 Prior to the placement of the topsoil the reinstated subsoil would be ripped to the full depth of each layer, where placed in two layers, or to its full depth, where placed in one layer, and picked to remove stone or other foreign objects capable of impeding normal agricultural and land drainage operations. Any stone larger than 225mm in any dimension, as well as any other foreign object would be removed from the loosened surface. These materials would be removed and would either be buried within the overburden or stockpiled for future use. The subsoil surface would then be graded to the required landform and scarified to improve the interface landform a 'key' between the subsoil and the topsoil.

7.4.16 Once the topsoil has been restored, it would then be harrowed or disced, and prepared for agricultural cultivation by removing stones larger than 100mm in any direction. This stone would either be buried within the overburden or stockpiled for future use.

7.5 Conclusions

7.5.1 The development of the quarry extension area would result in a negligible impact on agricultural land, soil resources and the farm business. The proposed restoration scheme would create additional grazing land which would have a minor beneficial effect.

8.0 CULTURAL HERITAGE ASSESSMENT

The full-length version of the Cultural Heritage Assessment is included in the Environmental Statement (Technical Studies) in Volume 3.

8.1 Author of the Report

8.1.1 The Cultural Heritage Assessment was prepared by Andrew Josephs Associates, a consultancy with extensive experience within all development sectors, and in particular mineral schemes.

8.1.2 [redacted], the author of this report, has over 25 years' experience in the assessment of cultural heritage under the EIA Regulations. This has included the assessment of over 300 mineral extraction planning applications and impact assessments.

8.2 Introduction

8.2.1 The report considers all aspects of cultural heritage, and the potential effects of the proposed scheme upon them, including both direct and indirect effects. Direct effects are those that physically affect or damage an archaeological site, historic structure or landscape. Indirect effects can occur as a result of significant changes to the setting of an historic asset or landscape, whether permanent or temporary. This is particularly relevant to designated features such as Scheduled Monuments, Listed Buildings, Conservation Areas, Registered Parks and Gardens and Historic Battlefields.

8.2.2 After analysis of topography and the screening effects of vegetation, a study area of 500m from the boundary of the quarry was considered an appropriate distance to assess potential effects upon the setting of designated heritage assets.

8.3 Baseline Conditions

Designated Assets

8.3.1 The *scheduled monument* remains of Mouselow Castle[1] (as it is commonly known) are situated approximately 300 metres north-east of the quarry and 700 metres north-east of the proposed extraction area on elevated ground with far-reaching panoramic views of the surrounding moorland and overlooks the confluence of Dinting Vale and the valley of the River Etherow.

8.3.2 Due to topography there are no views to the quarry. The setting is further divorced by a telecommunications mast that sits on the western end of the high ground between the monument and the quarry.

[1] Officially 'Ringwork in Castlehill Wood', list entry 1011431

8.3.3 Although elsewhere recorded as a motte, this monument is in fact a ringwork- a medieval fortification built and occupied from the late Anglo-Saxon period to the later 12th century.

8.3.4 One Grade II *listed building* is situated within 500 metres of the quarry. Higher Dinting Farmhouse dates from 1728 with 20th century alterations. The house is on private land, but indications are that due to rising topography behind the house, and intervening woodland, there are no views of the extension area. The house also faces away from the quarry.

8.3.5 Howard Park is a Grade II *Registered Park and Garden*, opened in 1888, with its integral Baths and Hospital.

8.3.6 The park is contained within mature planting. There are no views towards the quarry, or the extension area (identified as **PEA**, Proposed Extension Area, on **Figure 8.1**), due to topography.

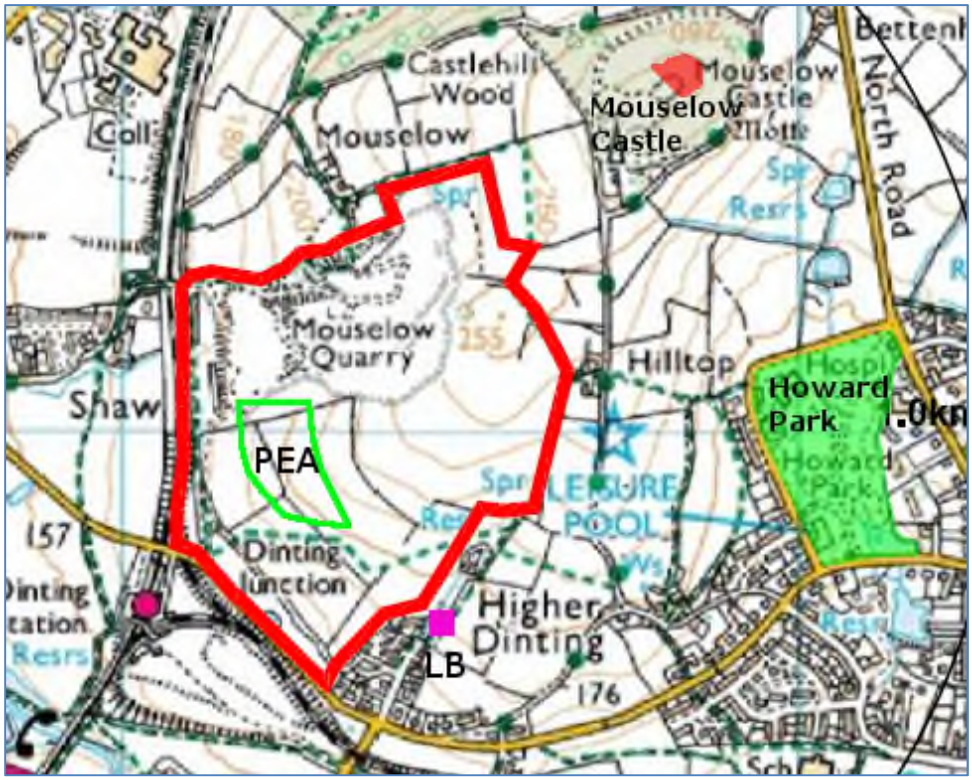

Figure 8.1 Designated Assets within 500 metres

Archaeology

8.3.7 Details of investigations, sites and finds lying within a study area of 1km from the centre of the extension area were provided by the Derbyshire Historic Environment Record (HER).

8.3.8 The HER records no early prehistoric finds. The Iron Age is only represented by two finds of slightly questionable date. The 19th century recovery of a hoard of Roman coins in a stone quarry in Hooley Wood was poorly recorded and by 1886 nothing

was known about the location of the coins. The probable find spot lies just to the north of the present quarry.

8.3.9 Some stones now in Buxton Museum, reportedly removed from the Mouselow Castle area in the 1840s, include some pieces of carving perhaps from a Roman shrine. The only other Roman activity in the area is the course of a Roman road, reputedly the road between Brough and Melandra, which runs northwest to southeast about 700 metres southwest of the present quarry.

8.3.10 The Medieval period is represented by Mouselow Castle and a poorly located chance find of a spearhead recovered during ploughing in the eighteenth century.

8.3.11 The majority of activity within the study area is of post medieval date and is largely industrial and either nineteenth or twentieth century in date.

8.3.12 The extension area lies within the *Dark Peak Area* (Character Area 51) in the Derbyshire Landscape Characterisation. This area is further characterised as '*Settled Valley Pastures*: *a settled, pastoral farming landscape on gently sloping lower valley sides, dissected by stream valleys. Dense watercourse trees, scattered boundary trees and tree groups around settlement contribute to a strongly wooded character'.*

8.3.13 The area around the extension area contains several fields that appear, on the western side, to owe part of the field walls shape to the rise and fall of the contours. Examination of the Ordnance Survey from the 1880s to the present shows only slight changes in the land parcels, in particular the addition and removal of some minor boundaries to the south of the present quarry reflecting a fairly static agricultural regime. A magazine is marked on the OS 1954 and this explains an area of high magnetism located in the centre of the extension area in the geophysical survey.

8.3.14 In addition, the mapping records both the expansion of the quarry and other now defunct quarry pits, such as one to the northeast of Higher Dinting that appears at the end of the nineteenth century and by the twentieth century has been re-used as a reservoir.

8.3.15 Detailed *geophysical survey* prospecting for buried structures of archaeological interest was carried out by Tigergeo in October 2017. The survey was undertaken using an All-Terrain Vehicle towed multi-sensor system, mounted with caesium vapour magnetometers arranged in non-gradiometric mode.

8.3.16 Ridge and furrow cultivation was evident in various locations (see Figure 8.1 below) items 1, 4 and 6. A ditch fill may be a boundary removed prior to the 1890s OS mapping. Its association with a possible small enclosure item 10 is perhaps significant as this appears to be parallel to it. However, the angle these anomalies make with the ridge and furrow cultivation imply them to be of different date.

8.3.17 Likewise possible ditch fill item 11 is aligned parallel to item 7 and item 10 and while this might suggest that item 11 could also be a drain, it could also be another

element of a series of enclosure ditches. If this is the case then item 13, more obviously a ditch fill, is presumably associated.

8.3.18 Although items 12 and 14 are considered more likely to be natural than not, it is not possible to be sure and they are referenced here in case they are areas of fill or perhaps burnt ground.

Figure 8.2 Geophysical Survey Interpretation

8.3.19 Satellite imagery was examined to determine whether cropmarks additional to the anomalies plotted by the geophysical survey could be identified. Five high quality

images dating from 2003-2017 were examined on Google Earth. No crop or soilmarks of archaeological interest were identified.

8.4 Potential and Predicted Environmental Impacts

8.4.1 In accordance with the Town and Country (Environmental Impact Assessment) Regulations 2017 the significance of an effect has to be identified. This is achieved using a combination of published guidance and professional judgement. Four criteria have been considered in evaluating the significance of the predicted effects of the proposed development: type of effect; probability of effect occurring; sensitivity and magnitude.

Direct Effects

8.4.2 The nature of mineral extraction results in the total loss of the archaeological resource wherever extraction takes place, and the potential loss or damage in other areas associated with infrastructure and landscaping.

8.4.3 The extension area would appear to lie within an area of low archaeological potential based upon the Derbyshire HER. This may however be a reflection of a lack of development in the vicinity requiring archaeological intervention.

8.4.4 The geophysical survey performed well and successfully detected linear anomalies

8.4.5 There is clear evidence from the geophysical survey that the extension area has been ploughed. Remnant ridge and furrow was only identifiable by geophysical survey and not surviving as earthworks. Any archaeological remains will have been degraded to some extent.

8.4.6 The effects are assessed as not significant.

Indirect Effects

8.4.7 The potential indirect effects of the proposed development have been assessed based upon field survey and visits to surrounding assets of cultural heritage importance. One scheduled monument, a Grade II listed house and a Grade II Registered Park and Garden lie within 500m of the quarry.

8.4.8 A combination of distance, topography and woodland will ensure that there would be no effects upon the setting of any designated assets from the development of the extension area.

8.4.9 The effect of the proposed development upon designated assets is therefore neutral.

8.5 Mitigation of Direct Effects

8.5.1 In accordance with planning policy, loss of archaeology needs to be offset by a programme of mitigation. NPPF and local planning policy recognise that an appropriate approach to mitigation is to ensure preservation by record through

archaeological excavation, recording, analysis and publication appropriate to significance of the archaeological resource.

8.5.2 In discussion with Derbyshire it has been agreed a tiered watching brief/Strip Map and Sample would be adopted as follows:

Tier 1
Low-level monitoring would involve one archaeologist observing soil stripping (by flat-bladed excavator) within the extension area. This would be an appropriate approach where isolated archaeological sites are being occasionally exposed. If archaeology is apparent s/he can intervene and request a change of machining methodology to avoid archaeology until it can be dealt with or adopt a tier 2 approach, below. If no archaeology is showing up and with the agreement of Derbyshire County Council, the watching brief would become more intermittent or terminated.
Tier 2
Continuous monitoring would involve two archaeologists per machine - one watching, one cleaning and marking. This would be an appropriate approach where archaeological features are being regularly exposed. When/if there is more archaeology than two archaeologists can deal with, a team would be brought in to excavate (Tier 3, below).
Tier 3
Set piece archaeological excavation of areas containing a density of features using a team of archaeologists.

8.5.3 Details of methodologies will be formalised in a Written Scheme of Investigation, agreed with Derbyshire, prior to development commencing and its implementation secured by a planning condition.

8.6 Potential Residual Impacts

8.6.1 It is considered that there would be no residual adverse effects of the proposed development.

8.7 Conclusion

8.7.1 Having regard to the baseline conditions, the nature of the proposed development and the proposed measures that would be effective in mitigating the impacts of the scheme, there would be no significant residual effects upon known cultural heritage assets. The proposed development therefore fully accords with both local and national cultural heritage policy, and in particular the EIA Regulations 2017 and NPPF 2012.

9.0 LANDSCAPE CHARACTER AND VISUAL IMPACT ASSESSMENT

The full-length version of the Landscape and Visual Impact Assessment is included in the Environmental Statement (Technical Studies) in Volume 3.

The full-length version of the Cultural Heritage Assessment is included in the Environmental Statement (Technical Studies) in Volume 3.

9.1 Author of the Report

9.1.1 The Landscape and Visual Impact Assessment (LVIA) was prepared by [redacted], BA (Hons) Dip. LA, MALA, CMLI and [redacted] BA (Hons), B.LD, CMLI. [redacted] is a landscape architect with considerable experience in various aspects of landscape planning and environmental assessment and has focussed on minerals sites for over 14 years post chartership. [redacted] is a landscape architect with 26 years post chartership experience, 15 of which has been at senior management level.

9.1.2 [redacted] is an employee and [redacted] is an associate consultant of ESP Ltd: an independent, multi-disciplinary consultancy undertaking Landscape Planning and Design, Estate Management, Environmental Impact Assessment and Environmental Management for the public and private sectors.

9.2 Introduction

9.2.1 The LVIA presents an assessment of the potential landscape and visual impacts of the proposed quarry extension at Mouselow Quarry.

9.2.2 There are no statutory criteria or standards laid down for the assessment of landscape and visual impacts. However, the assessment has been undertaken in general conformity with the 'Guidelines for Landscape and Visual Impact Assessment' 3nd Edition (GLVIA3), published by the Institute of Environmental Management and Assessment and the Landscape Institute in 2013. The methodology and scope of the assessment were agreed in consultation with Derbyshire.

9.2.3 GLVIA3 defines landscape effects as follows:

An assessment of landscape effects deals with the effects of change and development on landscape as a resource. The concern here is with how the proposal will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character.

9.2.4 Visual effects are defined in GLVIA3 as:

An assessment of visual effects deals with the effects of change and development on the views available to people and their visual amenity. The concern here is with assessing how the surroundings of individuals or groups of people may be

specifically affected by changes in the content and character of views as a result of the change or loss of existing elements of the landscape and/or introduction of new elements.

9.2.5 The methodology employed for assessing landscape and visual effects is detailed in the report.

9.2.6 The assessment has been used as part of an iterative process to inform the design of the development and restoration schemes, which includes a landscape and visual impact appraisal undertaken in 2016 to inform the proposed extraction limit within the extension area.

9.2.7 A provisional study area of up to 3km surrounding the site was adopted for both the landscape and visual assessments, based on previous assessments.

9.3 Baseline Conditions

9.3.1 The planning permission area of Mouselow Quarry comprises:

- A broadly oval shaped central quarry void of approximately 8 hectares between elevations of approximately 230mAOD above the east face and 184mAOD within the base of the Quarry.
- A rectangular site management area on the northwest corner of the void of approximately 3 hectares.
- Steeply sloping restored heath grassland slopes on the east side of the void of approximately 1.5 hectares which reach a maximum elevation of approximately 250mAOD.
- An area of original pasture to the west of the void identified as the potential lateral extension area.
- The dedicated quarry access road that approaches the west side of the site management area from Dinting Road to the south over a distance of 350 metres.
- An encircling buffer of woodland plantations, natural scrub and regenerated woodland on restored land and retained pastures bounded by hedges, fences and dry walls of approximately 15.5 hectares.

9.3.2 The planning permission area lies between elevations of approximately 250mAOD on the northeast border rising to Mouselow Castle and approximately 175mAOD on the southwest border adjacent to Dinting Road.

9.3.3 The planning permission area as identified on the drawings includes the current operational area and also includes land which is not permitted for mineral extraction and is currently undisturbed. It is part of this undisturbed land, to the

west of the planning permission area, which is now proposed for mineral extraction, forming a lateral extension of the existing void.

9.3.4 The site is located within National Character Area NCA 54 (as defined by Natural England) entitled Manchester Pennine Fringe which occupies the transitional zone between the open moorlands of the Dark Peak and the densely populated urban conurbation of Manchester.

9.3.5 Derbyshire County Council published 'The Landscape Character of Derbyshire' in 2003. This document attaches the 'Manchester Pennine Fringe' area within Derbyshire to the 'Dark Peak Landscape Character Area'. Character Areas are divided at County level into Landscape Character Types (LCTs) which are generic tracts of landscape that have a unity of character. The quarry and its setting are located well within the 'Settled Valley Pasture LCT'. The key characteristics are listed in the assessment.

9.3.6 The permission area is located within the North West Regional Green Belt, pockets of which have been designated on upland pastures that surround Glossop. There are a few local heritage assets around the site which are identified in the assessment.

9.3.7 The setting is not designated as a nationally or regionally important landscape. There are no known value judgements assigned to the local landscape. These rural hills at the urban fringe are likely to be valued at a community level. The landscape is generally intact and in good condition in places but includes detracting areas of disturbed land associated with the urban fringe. It has a scenic quality valued locally but its features are not particularly rare. Recreational value to the local setting is limited to walking and horse-riding. It is not perceived as a wild or tranquil landscape, nor does it have known associations with particular people or historic events. The value attached to this landscape is therefore considered to be low-medium.

9.3.8 The landscape receptors are considered to be the following key characteristics of the Settled Valley Pasture LCT: long distance views; the low hill landform; pastures enclosed by hedges, walls and deciduous woodland; and small farmsteads connected by winding lanes.

9.3.9 The Approximate Zone of Visual Influence and viewpoint locations are identified in the report. The 14 viewpoints chosen represent the clearest or 'worst case' views of the proposed extension within a moderate sized zone of visual influence, and include 11 viewpoints used in previous assessments of Mouselow Quarry.

9.3.10 It is important to note that these worst-case views tend to be from land above the settlements or within their upper fringes; lower down, within the residential areas, publicly accessible views would be difficult to gain because of the intervening buildings and associated vegetation, and the woodland surrounding the site itself.

9.4 Potential and Predicted Environmental Impacts

9.4.1 In relation to the proposed development, the material changes from what is currently consented which could give rise to landscape effects are:

- Planting woodland to the west of the site.
- Moving the drystone walls.
- Removing a block of mature woodland.
- Gradually removing pasture fields and the woodland area and replacing them with quarry void within the extension area.
- Restoration to fields in the quarry floor instead of water.

9.4.2 In relation to the proposed development, the material changes from what is currently consented which could give rise to visual effects are:

- Planting woodland to the west of the site.
- Moving the drystone walls.
- Soil stripping – use of moving plant for under 3 weeks to remove the soils and take down to quarry floor.
- Mineral extraction – use of excavators and dump trucks to win and transport the mineral from the extension area. The gradual change from pasture fields to exposed rocks and clays.
- Restoration to fields in the quarry floor instead of water – although the visibility of the floor would be limited.

9.5 Mitigation of Impacts

9.5.1 The proposed development is a result of an iterative process, which was undertaken in consultation with Derbyshire, as detailed in the report. The resulting scheme incorporates the following mitigation measures into the design:

- Limit of extraction to retain the foreground field on the south and west sides to limit visual impact.
- Retention of significant sections of the peripheral woodland to limit landscape and visual impact. Advance woodland planting to the foreground field to link with the retained woodland to provide landscape and visual benefits.
- Increase in woodland planting within the quarry to provide long-term landscape and visual benefits.

- Restoration of the quarry floor with a locally characteristic scheme through the provision of dry stone walls, hedgerow boundaries around regularly shaped fields of small-medium size.

9.6 Potential Residual Impacts

9.6.1 As detailed above the value attached to this landscape is considered to be low-medium. The landscape receptors are generally considered to be of medium to high susceptibility to change; some would be directly affected by this type of development but they are not all irreplaceable. The susceptibility of the landscape is therefore considered to be medium - high. Therefore the overall sensitivity of the local landscape is considered to be medium.

9.6.2 The landscape effects as a result of the proposed development are:

- The adverse effects of removing a number of landscape elements typical of the LCT within which the site lies. These are considered to be medium magnitude, as they are relatively small in scale but the duration is permanent.

- The beneficial effects of permanently restoring the site, via a locally characteristic restoration scheme to a more gently undulating landform, increasing acid grassland, woodland and pasture and introducing new dry stone wall boundaries. This would replace the consented restoration scheme which includes a large water body, which is not characteristic. This is considered to be of medium magnitude, as again it is relatively small in scale but the duration is permanent.

9.6.3 Of the 14 viewpoints, the significance of visual effects after mitigation was considered to be moderate from one viewpoint, minor from two viewpoints, negligible from six and not significant from five viewpoints. In general, apart from the public footpath which directly adjoins the site, the main visual effects relate to elevated viewpoints around the site rather than from locations lower down within the valley bottom, where landform, buildings and vegetation act to screen views of the site.

- Moderate adverse effects after mitigation are predicted from the application boundary on public footpath 102, as a result of the proximity of the viewpoint to the site and the nature of the change in topography which would not only make a change to the view itself but would also open up new views to the existing and new quarry workings.

- Minor adverse effects after mitigation are predicted from 2 viewpoints; on the application boundary on public footpath 133, where the change in topography would be compensated by increased visual interest created by restored landscape; and the public footpath off Kingfisher Way, where woodland clearance and exposed existing faces would be visible but would

form a limited element of a wider landscape which is already subject to visible quarrying activity.

- Negligible effects after mitigation are predicted from six viewpoints and not significant from five, as a result of the proposals forming a very limited element of a wider landscape which is already subject to visible quarrying activity; the partial screening effect of existing vegetation or the proposal site not being visible due to topography and/or existing vegetation, and the beneficial effect of the proposed mitigation measures.

9.6.4 The overall visual effects are therefore not considered to be significant.

9.7 Conclusions

9.7.1 A provisional study area of up to 3km surrounding the site was adopted for both the landscape and visual assessments, based on the 2009 and 2016 LVIAs undertaken by ESP Ltd.

9.7.2 In relation to cumulative effects there are no other known developments proposed within this study area from which cumulative effects might arise.

9.7.3 The site setting is not designated as a nationally or regionally important landscape. It is located within National Character Area (Manchester Pennine Fringe) which occupies the transitional zone between the open moorlands of the Dark Peak and the densely populated urban conurbation of Manchester. It falls within the Landscape Character of Derbyshire typology Settled Valley Pasture LCT.

9.7.4 The landscape is generally intact and in good condition in places but includes detracting areas of disturbed land associated with the urban fringe. It has a scenic quality valued locally but its features are not particularly rare. Recreational value to the local setting is limited to walking and horse-riding. It is not perceived as a wild or tranquil landscape, nor does it have known associations with particular people or historic events. The value attached to this landscape is therefore considered to be low-medium, and its overall sensitivity is therefore considered to be medium.

9.7.5 The landscape effects as a result of the proposed development are:

- The adverse effects of removing a locally characteristic piece of landscape.

- The beneficial effects of restoring the site with a new restoration scheme which would have more ecological opportunities and increased woodland planting when compared with the previous restoration scheme for the site and would be more in keeping with the local landscape.

9.7.6 The views of the quarry and the proposed extension are relatively limited. A total of 14 viewpoints were visited to understand the impacts in more detail; these viewpoints were picked to represent the overall views and the worst-case views of the site. None of the 14 viewpoints would have significant visual effects. In general, apart from the public footpath which directly adjoins the site, the main

visual effects would be from the higher ground at the edges of settlement or on the hills further away from the site. The views from main settlements in the valley bottom are screened or filtered by landform, buildings and vegetation.

9.7.7 The overall landscape and visual effects are not considered to be significant. Taking the above matters into account, it is concluded that the Mouselow Quarry proposed extension accords with planning policies that deal with landscape and visual impact matters.

10.0 ECOLOGICAL IMPACT ASSESSMENT

The full-length version of the Ecological Impact Assessment is included in the Environmental Statement (Technical Studies) in Volume 3.

10.1 Author of the Report

10.1.1 The Ecological Impact Assessment report has been prepared by [redacted] a director of Ecosurv Limited. EcoSurv is an independent ecological consultancy with a reputation for providing sustainable ecological services and ecological products of the highest quality.

10.1.2 EcoSurv offer a complete service from species and habitat survey through habitat management plans and the development of mitigation strategies to project implementation.

10.1.3 Established in 2003 EcoSurv has grown into one of the leading ecological consultancies with particular experience in mineral development and restoration.

10.2 Introduction

10.2.1 Mouselow Quarry is centred on Grid Reference SK022949 and the current land use is an existing quarry and proposed extension within an area of deciduous woodland and pastureland.

10.2.2 This quarry has been operational for well over 100 years.

10.3 Baseline Situation

10.3.1 A Preliminary Ecological Appraisal Survey was undertaken of the site the existing quarry and to lands beyond the site boundary where accessible in October 2017.

10.3.2 As part of this site visit observations were made for the presence of protected flora and fauna likely to occur within the site. Detailed notes were made with regard to the site visit and incorporated within a subsequent report.

10.3.3 Based upon this visit the potential presence of other protected together with Biodiversity Action Plan species both nationally and locally were considered as part of the site evaluation.

10.3.4 The current operational quarry has been worked from the north-east in a south-westerly direction. Evidence is present of habitat reinstatement to the original working area with the earlier quarry face now re-vegetated and an ongoing three planting scheme to the northern area.

10.3.5 The proposed area for the quarry extension is small and extends to approximately 1.5 hectares overall, as such it can be separated into two distinct habitat types as follows:

- An area of 0.5 hectares of deciduous plantation woodland of between 20 – 30 years old comprising of ash, hazel, sycamore, and oak with an understorey of nettle, bramble and coarse grass species such as cocksfoot. Previous site images show that this area of woodland was somewhat sparse in nature as recently as 2003.

- An area of improved pasture of approximately 1 hectare with limited number of herb species present comprising of Ragwort, Broad leaved dock, Common nettle plus Bramble and some self-sown Blackthorns.

10.3.6 There is considered to be a negligible potential for reptiles within the site, [redacted].

10.3.7 Within the quarry are a number of ephemeral water bodies, beyond the quarry is a single pond located to the edge of Dinting Road to the south of the quarry entrance and a small reservoir to the south east. There are no records for Great Crested Newt in the surrounding landscape, however a local BAP species of common toad could potentially use these water bodies for breeding.

10.3.8 The area of deciduous plantation woodland provides some limited potential for common nesting bird species.

10.4 Potential Environmental Impacts

10.4.1 Potential environmental impacts would be as follows:

- Noise from operational activities including vehicular movements within, together with other vehicles travelling to and from the site.

- Dust and other airborne discharge from the site as a result of operations.

- Vibration as a result of quarry operations.

- Light pollution from within the quarry.

10.5 Predicted Environmental Impacts

10.5.1 Predicted environmental impacts would be as follows:

- Loss of habitat in the form of the identified area of deciduous woodland and pasture.

- Reduction of the number of breeding birds in the local area during operations.

- Minor deposition of airborne dust and other pollutants.

- Mud and other debris from vehicles exiting the quarry.

10.6 Mitigation of Impacts

10.6.1 Environmental impacts can be mitigated by adoption of the following measures:

- Minimise the number of operational vehicles within the site.
- Use of dust suppression equipment and operational protocols during dry conditions.
- Consideration given to the use of water spray equipment.
- Working times to be restricted to daylight hours only.
- Retention and treatment of water within the confines of the quarry before discharge.
- Ensure all heavy goods vehicles exiting the site use the wheel wash present within the site.
- Restoration of pasture land to the quarry on completion of extraction works.
- Provision of new areas of deciduous woodland as part of the site restoration programme.
- Provision of additional habitat types within the site providing areas for colonisation for flora and fauna. Such areas would include ponds, ephemeral water bodies, areas of bare earth, scrub vegetation.

10.6.2 The mitigation measures should provide the following benefits:

- Provide new green infrastructure and improve ecological connectivity across the site.
- Provide replacement woodland, amenity grassland and pasture habitats within the restoration scheme.
- Increase the amount of shelter and foraging habitat for a variety of wildlife, including birds, bats and invertebrates.
- Contain native species tolerant of a wide range of climatic conditions, to ensure longevity and resilience of the habitat.

10.7 Potential Residual Impacts

10.7.1 Provided the above mitigation measures are implemented there should be a net gain in habitat types present within the site with a resultant potential gain in biodiversity within the sit and to surrounding areas.

10.7.2 Therefore, at worst we believe the residual impact of the proposed extension would be negligible.

10.8 Conclusions

10.8.1 The surveys identified a number of different habitats at the Site, which ranged from 'Site' to 'Local' levels of ecological value.

10.8.2 The faunal surveys identified the potential for breeding birds and foraging bats utilising the proposed quarry extension area. The proposed extension was also considered suitable for limited number of invertebrate species, and badger for foraging and sett building.

10.8.3 The single pond adjacent to the site, on Dinting Road is considered to be a potential breeding area for common toad however its proximity to the highway is likely to have a negative impact on water quality and for breeding.

10.8.4 No other protected species were identified and overall the protected species recorded and suitability of the habitat present indicates that the proposed extension areas are at a 'Site level' of Ecological Value.

10.8.5 Given the design constraints of the final restoration from the nature of mineral extraction operations, much of the existing habitat of the proposed extension area and associated features would be changed.

10.8.6 Habitat change was considered to be the largest direct impact from the proposed development. This impact was of a Certain Negative (Not Significant) nature.

10.8.7 The restoration scheme will enhance habitats within the local area and there will be a positive gain in the local area progressively over the life of the development.

10.8.8 The residual effects are considered to be Neutral after habitat creation in the restoration.

10.8.9 The embedded mitigation provided within the scheme, in accordance with the aims of the NPPF has minimised the impacts on biodiversity within its design and will promote the re- creation and restoration of high quality priority habitats which in turn will provide biodiversity gain within the priority habitats and for species.

10.8.10 Overall there will be positive gains within priority habitat types as a result of the final restoration across the whole site, including woodland and grassland areas.

11.0 WATER REGIME

The full-length version of the Water Regime Assessment is included in the Environmental Statement (Technical Studies) in Volume 3.

11.1 Author of the Report

11.1.1 The assessment of the water environment at Mouselow Quarry was prepared by Hafren Water Limited, hydrogeological consultants based in Shrewsbury, Shropshire. The company specialises in assessment of the water environment relating to environmental planning and the minerals and waste industries.

11.2 Introduction

11.2.1 Wienerberger wishes to extend the existing quarry void laterally, into the Upper Shale deposits and underlying sandstone bed. They no longer wish to deepen the quarry to work the Lower Shales at the site as these are of poorer quality and lead to emissions failures at the nearby brickworks. The Company therefore intends to relinquish existing planning permission to extract from within the Lower Shales below the watertable if the planning permission is granted for a lateral extension.

11.2.2 The assessment of the water environment has been informed by the collation and assessment of data from a wide range of sources, including discussion with site personnel and a site visit in September 2017.

11.2.3 The report provides information relating to the effects of the proposed future mineral extraction upon the extant water environment and on identified receptors within the area.

11.3 Baseline conditions

11.3.1 The site is located within the Goyt, Etherow and Tame Surface Water Operational Catchment and the Upper Mersey Management Catchment. The largest watercourse within the vicinity of the site extension is the River Etherow, which lies to the north-west and west, with its closest point at 1.2km from the site. The majority of the drainage within the regional area flows into the River Etherow which drains towards the south-west. The main tributary to the Etherow within the vicinity of the site is the Glossop Brook which drains the area to the south-east. The Glossop Brook passes within 440m of the site extension to the south and converges with the River Etherow approximately 1.25km to the west.

11.3.2 One surface water abstraction licence is located within 1km radius of the site extension. The abstraction is for industrial purposes and is located upstream, approximately 800m south-east of the site extension.

11.3.3 The two largest waterbodies of note within vicinity of the site are Bottoms Reservoir and Swineshaw Reservoir, located 1.8km from the site to the north and 2km to the east respectively. There are no waterbodies within the site extension

area boundary. A number of smaller waterbodies were observed within the vicinity of the site during the site visit, within the existing planning permission boundary. The majority of these waterbodies form part of systems of springs, issues and spring-fed reservoirs.

11.3.4 Within the quarry void, there are two smaller waterbodies in the eastern and western extents of the existing quarry void. These form part of the existing water management system; further detail on water management is included below.

11.3.5 Geologically the site is located on the regional bedrock of the Millstone Grit. The Marsden Formation of the Millstone Grit underlies the site and its immediate environs and comprises a sequence of alternating grey mudstone, siltstone and named sandstone beds, with less frequent seatearths, thin coal seams and marine bands.

11.3.6 The local geology comprises higher quality Upper Shales, above the Huddersfield White Rock sandstone bed, with poorer quality Lower Shales below. The strata dips towards the west and southwest, outcropping up-dip in the eastern and down-dip in the western quarry faces.

11.3.7 The general site area lies within a downthrown fault block, with the main fault line located north of the site. This splits into two fault branches, between which the site is located. These fault branches are aligned north to southeast, downthrown to the west, and aligned north to southwest, downthrown to the east.

11.3.8 Hydrogeologically, the Millstone Grit is classed as a Secondary 'A' Aquifer due to the presence of permeable sandstone layers in the predominantly shale lithology. One licensed groundwater abstraction has been identified within 2 km of the site, thought to permit abstraction from within the Millstone Grit bedrock.

11.3.9 No water-dependent statutory sites of ecological interest are located within 1 km radius of the site extension.

11.4 Water management

Existing water management

11.4.1 Extraction of shale takes place in dry conditions on a campaign basis two or three times per year. No dewatering or active pumped movement of water takes place on-site. There are also no consents for off-site discharge of water. The only discharges off-site are from surface water run-off through drainage channels and culverts.

11.4.2 Inflow of groundwater to the existing quarry void from emerging springs and incident rainfall is channelled either towards the north to the point of discharge from land drains and culverts which converge at approximate NGR: SK 02114 95115, or, to the main quarry sumps. Site experience indicates that both sumps drain fairly rapidly, with only the western sump observed to be holding water during the site walkover despite prior rainfall events.

11.4.3 A wheelwash is located on-site, adjacent to the main compound, in the northwest of the site. The wheelwash operates a closed system and water is recirculated via an enclosed tank, allowing any suspended silt to settle out. The system is topped up by mains supply and is regularly maintained.

Water management during mineral extraction

11.4.4 Within the proposed extension area, mineral extraction of the Upper Shale and sandstone would continue westwards down-dip slope, and down-hydraulic gradient, to the existing quarry void. Therefore, it is considered that water management of the limited groundwater ingress from the eastern quarry face, together with surface water run-off, would continue with inflow directed into the sumps within the quarry void as under current conditions. No other ingress of water is expected until extension Phase 6, and therefore there would continue to be no active dewatering at the site or additional water management proposed.

11.4.5 Ingress of water is expected during extension Phase 6 as the top of the sandstone is exposed below approximately 175mAOD. Passive water management can continue, and the location of the sump should progress westward with the removal of the sandstone bed. Water ingress may become more significant as the site extension progresses towards the southwest. However, as it is intended to continue extraction of shale during seasonal campaigns, work would only continue during the dry summer months when the groundwater levels are low. Thus it is not intended to actively manage water on site.

Post-restoration water management

11.4.6 A low-level restoration has been proposed for Mouselow Quarry, inclusive of the proposed extension. No on-going active water management is proposed during or after restoration. Rainfall and groundwater ingress would drain down-dip to the west and feed into the proposed seasonal wetland area. The sandstone at the base of the western quarry face is fully saturated, and therefore the waterbody within the seasonal wetland area would be permanent, increasing in size during high rainfall seasons. The level of the waterbody would be mediated through gradual infiltration through the sandstone beds that remain exposed in the western quarry face.

11.5 Summary of sensitivity assessment, impacts and mitigation

Background

11.5.1 An assessment of impacts from the proposed extension has been made with consideration of groundwater and surface water flows, levels, and quality. Impacts have been assessed against the current conditions around the site, while impacts following restoration have been assessed against the pre-development condition.

11.5.2 The characterisation of the baseline water environment has involved the review of data and identification of sensitivities. The characterisation of the catchment

sensitivity has been guided by a series of matrices presented within the full hydrogeological report, which lists indicative criteria.

11.5.3 The criteria for sensitivity are based on a hierarchy of factors relating to the quality of the aquatic environment. The criteria have been used to guide the analysis of the sensitivity of the baseline hydrological, hydrogeological and water quality environment.

Sensitivity assessment

11.5.4 Working methods in the proposed Mouselow Quarry extension would be similar to those employed currently. The existing passive water management, settlement pond mitigation for suspended solids, and 'best practice' pollution control and prevention measures would be applied to the quarry extension.

11.5.5 Based on the hydrological, hydrogeological and environmental factors identified, it is considered that the baseline catchment sensitivity for surface water is Low and for groundwater is Medium.

Potential impacts during mineral extraction

11.5.6 During mineral extraction, potential impacts to all the identified receptors are assessed as Negligible to Moderate in magnitude. Therefore, the significance of potential impact on the receiving watercourses and the groundwater regime is classed as None or Minor.

11.5.7 There are no other proposed quarries in the vicinity to be considered in assessing any cumulative effects on the water environment.

11.5.8 An assessment of the potential impacts to the current or future status of the relevant waterbodies defined under the Water Framework Directive has found that impacts would be negligible.

Proposed mitigation during mineral extraction

11.5.9 Considering the low significance and magnitude of potential impacts during mineral extraction within the proposed extension area, no mitigation is required. However, further comment is provided on management of water quality.

11.5.10 The site employs pollution control measures in compliance with their planning conditions. However, some minor residual risks remain from spills of hydrocarbons from mobile equipment used in the quarry due to the absence of a system to temporarily suspend the flow through drainage and culvert systems to surface watercourses until clean-up was achieved.

11.5.11 Adherence to best practise as detailed on the Government website (https://www.gov.uk/ guidance/storing-oil-at-a-home-or-business) and training of staff in the deployment of sorbent booms would ensure that residual risk from hydrocarbon spills can be considered to be of Negligible magnitude.

Potential impacts post-restoration

11.5.12 Following the restoration of Mouselow, passive surface water management would continue and a seasonal wet area, with perennial pond would exist. The magnitude of impact on long term surface water and groundwater flows, levels and quality are considered to be Negligible to Low therefore the significance of potential impact is classed as None or Minor.

Proposed mitigation post-restoration

11.5.13 Mitigation measures are not proposed following restoration other than those designed into the restoration scheme to manage surface water.

11.6 Conclusions

11.6.1 The understanding of the water environment gained from the investigation has allowed the identification of potential impacts. These have been assessed in a systematic manner to ensure objectivity. The potential impacts upon the local water environment, both during mineral extraction and after the completion of restoration, are considered to be benign. The application of standard methods of good working practices would ensure that the effects are extremely small and not injurious.

11.6.2 Consideration of the effects of the proposals on the Water Framework Directive status of both the local surface and groundwater bodies has been undertaken. It is concluded that there would not be any substantive changes to the status of either waterbody and consequently specific mitigation measures are not proposed.

12.0 FLOOD RISK ASSESSMENT

The full-length version of the Flood Risk Assessment is included in the Environmental Statement (Technical Studies) in Volume 3.

12.1 Author of the Report

12.1.1 The assessment of the water environment at Mouselow Quarry was prepared by Hafren Water Limited, hydrogeological consultants based in Shrewsbury, Shropshire. The company specialises in assessment of the water environment relating to environmental planning and the minerals and waste industries.

12.2 Introduction

12.2.1 The Flood Risk Assessment (FRA) has been prepared in respect of a planning application for a lateral extension immediately to the west of an existing shale quarry. The proposed extension lies within the current planning permission boundary.

12.2.2 Wienerberger is seeking to extend the existing quarry into the Upper Shale and sandstone bed only. The Lower Shales at the site are of poorer quality and lead to emissions failures at the nearby brickworks. As such Wienerberger no longer wish to work the Lower Shales and intend to relinquish existing planning permission to extract below the sandstone if a new planning permission is granted for a lateral extension.

12.2.3 Mouselow Quarry is located entirely within Flood Zone 1 on the Environment Agency's Indicative Flood Map, which has an annual probability of fluvial flooding less than 1 in 1000 (<0.1%). The development is over 1ha in area, therefore a FRA has been prepared in accordance with the National Planning Policy Framework (NPPF) and Planning Policy Guidance (PPG).

12.2.4 Flood risk posed to and from the site has been assessed and quantified. Potential impacts have been identified and mitigation measures proposed, where necessary.

12.3 Baseline conditions

12.3.1 The existing quarry has been cut into the lower western hillslope. The quarry margin reaches an approximate maximum elevation of 250mAOD on the northeastern site boundary. Elevations at the quarry edge decrease from 230mAOD in the east to 210mAOD in the south. To the west, the top of the quarry face has an approximate elevation of 205mAOD. The deepest part of the quarry workings are in the southwestern corner, where the sandstone is at approximately 181mAOD. The existing landform within the proposed site extension slopes gently to the west to an elevation of 170mAOD at Dinting Road.

12.3.2 The largest watercourse within the vicinity of the site is the River Etherow which flows in a generally south-west direction to the north-west and west of the site. It is 1.2km west of the site at its closest approach.

12.3.3 Waterbodies are absent within the proposed extension area, however four ponds are located within the existing planning permission boundary. The majority of these waterbodies form part of systems of springs, issues and spring-fed reservoirs. Of note are two sumps located within the eastern and western extents of the existing quarry void; these form part of the existing water management system at the site.

12.3.4 The regional bedrock geology consists of the Millstone Grit. The Marsden Formation of the Millstone Grit underlies the site and its immediate environs and comprises a sequence of alternating grey mudstone, siltstone and named sandstone beds, with less frequent seatearths, thin coal seams and marine bands. Mineral resources in the Marsden Formation comprise both the mudstone and siltstone, and the sandstone beds.

12.3.5 The local geology comprises of higher quality Upper Shales, above the Huddersfield White Rock sandstone bed, with poorer quality Lower Shales below. The sandstone bed is highly jointed and dips towards the west and south-west, outcropping up-dip in the eastern and down-dip in the western quarry faces.

12.3.6 Superficial deposits are absent from the majority of the site and the site extension, with the exception of a small area of Till (Boulder Clay) towards the northeast and southern areas of the worked quarry. The soils on-site are described as free-draining, slightly acidic and loamy.

12.3.7 Hydrogeologically, the Millstone Grit is classed as a Secondary 'A' Aquifer due to the presence of permeable sandstone layers in the predominantly shale lithology.

12.4 Flood Risk Assessment Approach

12.4.1 The FRA considers the likelihood of flooding, associated hazards and the vulnerability of the flood receptor. Requirements for assessment of flood risk are addressed by due consideration of the National Planning Policy Framework (NPPF) and Planning Policy Guidance (PPG). The return period of the fluvial and rainfall events considered is 100 years and the effect of climate change has been factored in.

12.4.2 Precautionary sensitivity ranges for peak rainfall intensities and peak river flows are outlined in the Environment Agency document, Adapting to Climate Change: Advice for Flood and Coastal Erosion Risk Management Authorities (April 2016). The proposed lifetime of the quarry is 23 years, therefore a sensitivity for peak rainfall intensities of 10% for climate change has been used to calculate run-off rates and volumes for the operational site. Given that the restored site would exist in perpetuity, a sensitivity range for peak rainfall intensities of 20% has been used.

Receptors internal to the site

12.4.3 Mineral extraction and processing are currently undertaken within the existing quarry site. The flood vulnerability class of these activities, as defined in PPG, is 'less vulnerable'. The restoration plan for the site includes agricultural grassland,

woodland and a variety of nature conservation habitats; all defined as 'less vulnerable', with the exception of nature conservation which is 'water compatible'.

Receptors external to the site

12.4.4 The closest residential areas to the site are the village of Shaw and Higher Dinting Farm which form 'highly vulnerable' receptors within the locality of the site. This level of vulnerability increases the potential severity of the consequences of flooding for these receptors. Other receptors outside the site, comprising roads and agricultural fields, are all classed as 'less vulnerable'.

12.5 Flood risk to the site

Fluvial flooding

12.5.1 The site is located within Flood Zone 1 on the Environment Agency's flood map. This is classified as Very Low flood risk, with a 1 in 1000-year or less (<0.1%) annual probability of fluvial flooding. Therefore the likelihood of fluvial flooding on-site is considered to be Very Low, as is the overall flood risk.

Surface water flooding

12.5.2 The Environment Agency's Risk of Flooding from Surface Water map indicates that the entire extension area is at 'very low' risk of surface water flooding, meaning it has less than a 1 in 1,000 (<0.1% AEP) chance of flooding. There are several small localised areas of Low (0.1–1%) annual risk, Medium (1–3.3%) annual risk and High (>3.3%) annual risk within the existing quarry void that can be attributed to exposed quarry surfaces associated with the existing void in the operational scenario.

12.5.3 Watercourses within the vicinity of the quarry have areas of High risk associated with them, but the lateral extent of surface water flooding appears to be constrained to within the immediate vicinity of the channel.

12.5.4 The proposed development would cause some changes to the run-off characteristics of the site due to the proposed increase in impermeable surfaces. Surface water run-off within each extraction phase would collect in the base of the void. It is considered that in each phase, the void would have more than adequate capacity to retain run-off volumes generated in a significant rainfall event.

12.5.5 Based on the above, current surface water flood risk to the site is considered to be Very Low. Mitigation measures are not proposed for either the operational or restored scenario.

Groundwater flooding

12.5.6 The Environment Agency classifies the Marsden Formation of the Millstone Grit as a Secondary A aquifer. Site experience demonstrates that although some groundwater is likely to be derived from springs within the sandstone the volumes

are not large. It is anticipated that groundwater would not be encountered during extraction until Phase 6. If inflow occurs at this time, it is considered that groundwater inflow would be minimal. This is due to extraction being carried out in seasonal campaigns during the drier months of the year.

12.5.7 Given the current water management measures in place at the existing site, flood risk posed by site interaction with groundwater is considered Very Low for any internal receptors.

Flooding from sewers and water mains

12.5.8 Flood risk posed by site interaction with sewers and water mains within the areas of permitted and proposed mineral extraction is not considered significant for any internal receptors in the operational or restored scenario.

12.6 Flood risk from the site

Fluvial flooding

12.6.1 The area surrounding the site is located within Flood Zone 1 on the Environment Agency's indicative flood map. Under normal working conditions minimal water would drain off-site as it would be retained in the working void and subsequent restored areas. Given the current and proposed water management systems in place, the likelihood of fluvial flooding to external receptors is considered to be Very Low and the overall risk is Very Low.

Surface water flooding

12.6.2 The proposed development would cause changes to the run-off characteristics of the extension site due to the proposed increase in quarry surfaces. Run-off rates and volumes from the site would be modified, therefore potentially increasing flood risk to external receptors. All surface waters flowing into the operational site would be captured by the void within the working area.

12.6.3 Post-restoration, the seasonal wetland area would provide additional storage capacity for run-off, thereby reducing the risk of flooding to external receptors. This provides betterment on the pre-development conditions at the site.

12.6.4 Given the current water management measures in place, it is considered that the restored site would not increase the risk of flooding to external receptors.

12.7 Mitigation measures

12.7.1 The increase in storm run-off rates is estimated by evaluating the run-off rates from the greenfield site and then from the proposed development. Under the NPPF, the maximum relevant storm for design purposes is that with a return period of 100 years plus an allowance for climate change.

12.7.2 Proposed development at the site would be carried out in a phased manner, however to provide a conservative approach run-off volume has been calculated for the maximum extent of working (ie at the end of Phase 7).

12.7.3 The peak run-off rate from the greenfield extension area of the site and entire post-restoration site (extension plus restored site to the east, since this area is returning to the greenfield condition) have been estimated using the IH124 method (equation 7.1, Institute for Hydrology Report No 124, 1994).

12.7.4 Peak run-off rates for the operational quarry plus extension area in Phase 7 have been estimated for the 1 in 100-year event, for a storm duration of 6 hours, using the Rational Method. This scenario is considered to represent the maximum area of quarry surfaces, and thus represents the most conservative estimate of surface water run-off volume.

12.7.5 A summary of results from the run-off calculations is given in **Table 12.1** below.

Phase of development	**Method**	**Return period**	**Run-off rate (l/s)**	**Run-off volume (cubic metres)**
Greenfield extension area	IH124	1 in 2 year	8	-
		1 in 100 year	17	-
<u>Current scenario:</u> Existing quarry	Rational	1 in 100 year	42	**912**
<u>Phase 7:</u> Operational quarry maximum extent	Rational	1 in 100 year (+CC 10%)	107	**2,319**
<u>Restoration:</u> Entire site restored to greenfield	IH124	1 in 100 year (+CC 20%)	48	-
		1 in 100 year (+CC 40%)	56	-
For a critical storm duration of 6 hours				

Table 12.1 Run-off Volumes

12.7.6 As summarised above, run-off increases over the lifetime of mineral extraction (from the current scenario to the end of Phase 7) due to the increase in quarry surfaces in the proposed extension.

12.7.7 In Phase 7 for the 1 in 100-year (+10% climate change) design rainfall event, run-off for the existing site plus extension area is approximately 2,319 m^3. This is an increase of approximately 1,407 m^3 from the current scenario. The increase in surface water run-off would be accommodated through creation of the quarry void within each phase. The resultant void areas would have adequate storage capacity to provide sufficient attenuation storage for run-off from the site.

12.7.8 The majority of the site is currently at Very Low risk of surface water flooding with localised areas of Low, Medium and High risk associated with features of the existing quarry. It is not anticipated that this would change as mineral extraction progresses at the site, since future working would represent a continuation of the current operation. Therefore the proposed extension would not increase the risk of flooding to the surrounding area.

12.7.9 Safe egress routes from the quarry area for personnel and mobile plant would be maintained during all stages of working. The lowest parts of the quarry void would not contain any buildings and potential depths of inundation are not considered to represent a risk to personnel or plant. If surface water was to accumulate to a depth where working became unsafe then operations in the affected area would cease temporarily until water levels decreased.

12.7.10 When mineral extraction is at the maximum depth, extra vigilance would be required to maintain access and egress routes from the void. During working safe egress would always be maintained allowing evacuation if surface water flooding was to occur rapidly.

12.7.11 For the post-restoration site, the run-off rate for a 1 in 100-year event + 20% climate change is approximately 48 litres per second (l/s). It is not necessary to provide additional storage attenuation for the volume of water generated in the design event, since run-off from the restored site would be captured within the waterbody in the seasonal wetland area and would infiltrate naturally into the underlying sandstone. This waterbody is considered to possess more than adequate capacity to accommodate the run-off for a 1 in 100-year event + 20% climate change event. The run-off rate for a 1 in 100-year event + 40% climate change is approximately 56 l/s. This waterbody is considered to possess more than adequate capacity to accommodate the run-off for a 1 in 100-year event + 40% climate change event.

12.8 Conclusions

12.8.1 The risk from flooding from fluvial (Very Low), groundwater (Very Low), surface water (generally Low) and sewage/water mains (Negligible) at Mouselow Quarry has been considered. Maintaining access and egress routes from the base of the quarry void and storage of water in the void during times of extreme rainfall would

ensure that any risks from potential surface water flooding are mitigated. Surface water is currently managed effectively in the existing quarry.

12.8.2 On completion of mineral extraction it is proposed to restore the site to agricultural grassland, woodland and a variety of nature conservation habitats. The existing site infrastructure would be removed.

12.8.3 The restored landscape would contain four small waterbody features comprising three clay-lined, field ponds and a waterbody adjacent to the final quarry face at the western extent of the quarry void. It is intended that the larger waterbody would fluctuate in size seasonally, referred to as a seasonal wetland area. The post-restoration landform would drain directly to the seasonal wetland area, which would exist in perpetuity.

12.8.4 The post-restoration landform is considered to possess adequate capacity to accommodate the anticipated volume of water ingress, thereby reducing the risk of surface water flooding to external receptors.

12.8.5 It is considered that the proposed quarry extension at Mouselow would not increase flood risk to either the existing site or the surrounding area. As such, the development satisfies the flood risk requirements of the NPPF, associated technical guidance and local policy.

13.0 NOISE IMPACT ASSESSMENT

The full-length version of the Noise Impact Assessment is included in the Environmental Statement (Technical Studies) in Volume 3.

13.1 Author of the Report

13.1.1 The assessment of the environmental impact of noise has been carried out by Vibrock Limited, who are Members of The Association of Noise Consultants and are a leading independent environmental consultancy with significant experience in the monitoring and assessment of noise around mineral extraction sites and assessments for inclusion in Environmental Impact Assessments.

13.1.2 [redacted], the author of this report, works within the consultancy section and has 7 years of experience with the company. This has included the assessment of mineral extraction planning applications.

13.2 Introduction

13.2.1 This report presents an assessment of the potential impacts from the proposed development in terms of noise at properties surrounding the site, the local noise sensitive receptors are identified and mitigation measures proposed to minimise any noise impact.

13.3 Baseline Conditions

13.3.1 Existing ambient sound levels have been measured at locations around the proposed mineral extraction area. Measurements were made in terms of the L_{Aeq} and L_{A90} thus enabling the existing acoustic environment to be characterised.

13.3.2 The closest residential receptors to the development have been considered in the assessment: Meadowfield Close to the north-west and Dinting Lane to the south-east of the proposed extension area. These locations have been chosen to be representative of the nearby villages of Shaw and High Dinting respectively.

13.3.3 A series of noise predictions based upon BS 5228 methodologies and including assumptions regarding the working of the site have been made for the noise sensitive locations near the quarry.

13.4 Potential and Predicted Environmental Impacts

13.4.1 Operations and activities within the proposed extension area have the potential to generate noise. A number of activities are discussed within the report including site preparation and restoration, mineral extraction and stockpile build, mineral processing and movement of material.

13.5 Mitigation of Impacts

13.5.1 Mitigation measures are discussed within the report for the potential sources of noise identified. The mitigation measures are summarised in **Table 13.1** below.

Site Operation	Noise Control Measures
Soil Stripping/Site Restoration	Duration of activity will be restricted
Mineral Extraction/Movement Mineral Processing	All construction plant and equipment should comply with EU noise emission limits Material stockpiles to be located on the quarry floor Minimise drop heights of materials Processing plant to be located on the quarry floor Audible reversing warning systems on mobile plant and vehicles should be of a type which have a minimum noise impact on persons outside sites All plant to be regularly maintained Switch off or throttle-down equipment when not required Keep internal haul routes clear and well maintained Avoid steep gradients where possible Site speed limit of 10 mph to be adhered to

Table 13.1 Noise Mitigation Measures

13.6 Conclusions

13.6.1 With the noise control recommendations implemented and the exercise of reasonable engineering control over general site operations, the proposed mineral extraction and processing at Mouselow Quarry should be able to be implemented in line with current planning practice guidance for mineral sites.

14.0 AIR QUALITY ASSESSMENT

The full-length version of the Air Quality Assessment is included in the Environmental Statement (Technical Studies) in Volume 3.

14.1 Author of the Report

14.1.1 The assessment of air quality has been prepared by Vibrock Limited. Vibrock is a leading independent environmental consultancy with the environmental impacts of mineral extraction. Vibrock provide monitoring services for air quality around mineral extraction site and assessments for inclusion in Environmental Impact Assessments.

14.1.2 [redacted], the author of this report, works within the consultancy section and has 7 years of experience with the company. This has included the assessment of mineral extraction planning applications.

14.2 Introduction

14.2.1 The report presents an assessment of the air quality impacts from the proposed development in terms of dust and fine particles (PM_{10} and $PM_{2.5}$) at properties surrounding the site. Meteorological data and air quality data local to the site has been assessed, the local dust sensitive receptors identified and mitigation measures proposed to minimise any dust impact.

14.3 Baseline Conditions

14.3.1 The closest residential receptors to the proposed extraction area have been considered in the assessment: Meadowfield Close to the north-west and Dinting Lane to the south-east of the proposed extraction area; these locations have been chosen to be representative of the nearby villages of Shaw and High Dinting respectively.

14.3.2 Meteorological data from Leek Thorncliffe (Staffordshire) has been assessed in terms of windspeed and rainfall data. The predominant wind was from the south west quadrant and the total number of days with rainfall < 0.2mm was 112.3 per annum (accepted as the level of rainfall that effectively suppresses windblown dust). Air quality data has been accessed from the DEFRA website. Environmental dust levels have been monitored at the closest residential properties and were found to be well below the generally accepted nuisance criterion.

14.4 Potential and Predicted Environmental Impacts

14.4.1 Many of the operations and activities within and around the proposed extraction area have the potential to generate dust. The following activities are discussed within the report: site preparation and restoration, mineral extraction, handling and on-site transportation, mineral processing and off-site transportation.

14.4.2 The Meteorological data from Leek Thorncliffe has been analysed in order to establish the number of dry windy working days when dust could be blown from the site towards surrounding receptors in the absence of mitigation measures. The calculated number of dry windy working days are as follows:

- Meadowfield Close (Shaw) 12 days per annum
- Dinting Lane (High Dinting) 8.6 days per annum

14.4.3 Consideration is given in the report to the potential loading of PM_{10} from the development, the distance between the dust generating source and the receptor and the mitigation measures required in order to minimise the possibility of a dust event. With regard to PM_{10} and $PM_{2.5}$ dust levels from the site, analysis has been made of the air quality data. These results show that the Air Quality Objectives would not be exceeded and therefore the air quality would not be significantly affected by this development.

14.5 Mitigation of Impacts

14.5.1 Mitigation measures are discussed within the report for the potential sources of dust identified. The mitigation measures are summarised in **Table 14.1** below.

Operation	Dust Control Measures
Soil/overburden removal, storage and replacement	Minimise the duration of activity Avoid soil handling during adverse weather Soil bunds graded to minimise wind-blown dust and seeded Progressive restoration to minimise the exposed mineral area Restrict access to restored areas Temporary cessation of activities in the event of unacceptable dust emissions in the vicinity of receptor properties Minimise drop heights for loading and tipping Siting of storage mounds to take advantage of shelter from wind Retain boundary vegetation where possible

	All vehicles checked for overloading to reduce spillages
Mineral Extraction and Processing	Drop heights to be minimised at all times Temporary cessation of activities in the event of unacceptable dust emissions in the vicinity of receptor properties Mineral stockpiles to be located on the quarry floor Mobile crushing/screening plant to be located on the quarry floor Dust suppression system to be used on the crushing/screening plant
Haul roads and access roads	All HGVs leaving site to be securely sheeted as necessary Controlled use of fixed haul routes Haul routes to be regularly maintained by grading to minimise dust generation Optimise separation distances to receptors Site speed limit of 10mph to be adhered to Water bowsers to be used as required Vehicle exhausts to be angled upwards Regular maintenance of plant and equipment Regular sweeping of access road and surfaced areas

Table 15.1 Dust Mitigation Measures

14.6 Potential Residual Impacts

14.6.1 The dust mitigation measures identified within the report would be implemented together with the procedures within the dust management section of the report in order to minimise the possibility of a dust event occurring.

14.7 Conclusions

14.7.1 The assessment concludes that it is unlikely that any significant decrease in local air quality would occur due to the proposed operations at Mouselow Quarry. Any dust occurrence event would be limited and of short duration and would be minimised

by implementation of the dust control recommendations. The operation of the site would have a negligible impact on adjacent residential properties.

14.7.2 With regard to PM_{10} levels from the site, analysis has been made of the air quality data. This has been combined with the extra burden of 1 µg/m³ for the quarry. These results show that the Air Quality Objectives would not be exceeded and therefore the air quality would not be significantly affected by this development.

14.7.3 The continued operation of the site would have a negligible impact on adjacent residential properties. The likelihood of a short-term dust event occurring is very low.

15.0 HIGHWAYS AND PUBLIC RIGHTS OF WAY

15.1 Introduction

15.1.1 Mouselow Quarry is located of Dinting Road between Glossop and Hadfield, the site is accessed directly off Dinting Road which connects with the A57 main road via Shaw Lane to the west. The A57 connects to the M67 motorway approximately 4.5km north west of the site.

15.1.2 There is limited space available at Denton brickworks to store the brickmaking shale and consequently shale is excavated on a campaign basis and stockpiled at the quarry to weather. Weathered shale is subsequently transported on a regular basis throughout the year from the stockpile approximately 12km (8 miles) to the Denton brickworks for use in the brick making process. This spreads the amount of lorries on the road throughout the year, rather than a large amount of vehicle movement being concentrated in a short period of time when the shale is extracted on a campaign basis. Shale transportation amounts to 45,000 tonnes per year, an average of nine loads (18 vehicle movements) per working day.

15.1.3 A relatively small volume of sandstone from the site is used as building stone or construction aggregate as and when required. Sales of sandstone amount to approximately 12,000 tonnes per year, an average of two to three loads (four to six vehicle movements) per working day.

15.1.4 There are additional light vehicle/car movements associated with the site workforce and occasional visiting staff. This would vary between four vehicles (eight movements) per day during shale export and sandstone working and up to 10 vehicles (20 movements) per day when shale extraction is also being undertaken.

15.1.5 Soils, overburden materials and any shales which are unsuitable for use in brick making are retained on site and are not exported onto the highway network.

15.1.6 A rail line is located to the immediate west of the site although it is not used in the transportation of material from the site. This is due to the lack of rail sidings at the site and at the Denton brickworks and the costs and impracticality of transporting material a short distance on a rail line.

15.1.7 The operation of Mouselow Quarry until 2042 has been accepted in planning terms when planning permission was granted in 2014. There are no proposals to alter the level of HGV movement, operating hours or types of HGV used from those considered in previous EIAs. The highways aspects would remain unchanged as a consequence of developing into the extension area.

15.2 2010 EIA

15.2.1 A transport assessment was carried out for the 2010 EIA. The level of output assessed in 2010 was 90,000 tonnes per year, twice the current level of output.

15.2.2 The salient points from the 2010 EIA are set out below.

15.2.3 Mouselow Quarry is located on Dinting Road which varies in width between 6 and 7 meters approaching the site access. Vehicles leaving the site travel a distance of 750 metres along Dinting Road to the junction with Shaw Lane, which is a simple T junction design, where vehicles turn left to access the A57. Vehicles then travel 250 metres along Shaw Lane to the junction with the A57. The width of Shaw Lane reduces towards the junction with the A57 although the centre line markings remain. Two vehicles are not be able to pass at this point due to on street parking and if vehicles meet driver courtesy is required to allow access.

15.2.4 The Shaw Lane/A57 junction is a T junction controlled by traffic lights, a right turn lane is provided onto Shaw Lane for traffic approaching from Glossop. The A57 is a busy highway with extensive industrial and residential frontage.

15.2.5 Three manual classified counts and one automatic traffic count were carried out as part of the transport statement in 2009 at the following locations:

- Shaw Lane/Dinting Road Junction to identify traffic flow and capacity,
- A57/Shaw Lane Junction to identify traffic flow and capacity,
- Dinting Road/Quarry Access Junction to identify the existing quantity of arrivals/departures at the quarry and to identify traffic speed and volumetric flow.

15.2.6 At the Dinting Road/Quarry Access Junction 10 vehicles entered the site and 10 left the site. Eight of the vehicles leaving the site were HGVs transporting material from the site.

15.2.7 The performance of the Shaw Lane/Dinting Road junction was assessed using the industry standard Priority Capacity and Delay (PICADY) modelling which showed that the junction operated well within capacity and is expected to remain so into the future as queues were short.

15.2.8 The performance of the A57/Shaw Lane junction was assessed using the industry standard LINSIG tool for measuring the signalised junction, the results of the survey showed that the junction operates with a Degree of Saturation of below 90% and, as such, was within operating capacity and this could be expected to continue in the future.

15.2.9 The automated traffic count of Dinting Road, west of the Dinting Road/Quarry Access Junction showed that Dinting Road is very lightly trafficked with 3,800 2 way vehicle movements over a 24 hour period and with the proportion of HGV's averaging only 1.3% during a five day working week period. The capacity of Dinting Road is considerably greater than the actual usage.

15.2.10 The survey also captured speed data during the survey which showed that speeds on the local network are within the speed limit at the quarry access, with average speeds being below 40 mph.

15.2.11 The visibility at the quarry access was 125 meters to the north-west and over 150 meters to the south-east. Average vehicle speeds were below 40 mph (60 kph) and the Design Manual for Roads and Bridges states that for speeds below 60 kph visibility of at least 90 meters is required.

15.2.12 The transport impact assessment also investigated accidents along the HGV route from the quarry access to the A57 over a five year period. Information obtained from Derbyshire showed that 14 accidents had occurred and all were classified as slight apart from one accident that was classified as serious. The accidents occurred at various locations and were not concentrated in any particular location. None of the accidents involved an HGV. It was concluded that there is not an accident problem and there does not appear to be any road safety issues associated with the existing or proposed operation of the quarry.

15.2.13 The EIA concluded that in highway terms there were no problems with highway capacity, routing, access design or safety.

15.3 Highway Review

15.3.1 The 2010 EIA and current highway aspects were reviewed as part of the current EIA.

15.3.2 Shale and sandstone extraction remain at considerably reduced levels to those assessed in the 2010 EIA and are only predicted to increase slightly in the future. The tonnage of material in the extension area is comparable to the tonnage of Lower Shale to be relinquished therefore there would be no increase in materials exported from the site.

15.3.3 There are no proposals to change the type of haulage vehicle used, to alter the site access or the working hours at the site

15.3.4 The use of HGVs was considered to be the only practical means of transporting shale to the Denton brickworks.

15.3.5 Dinting Road and Shaw Lane was found to be the only practical route for HGVs leaving the site to access the A57. The roads were unaltered in terms of width and alignment.

15.3.6 The junctions of Dinting Road/Shaw Lane and Shaw Lane/A57 remain as they were in the 2010 EIA and visibility at the site access is unaltered.

15.3.7 The general level of use of the highway network is likely to be broadly the same as in the 2010 EIA and there are limited additional industrial and residential properties between the site access and the M67.

15.3.8 The continued operation of the site is highly likely to generate lower levels of vehicle movements than previously envisaged as the site activity and output are reduced.

15.3.9 It is considered the existing planning conditions concerning access, traffic, protection of the public highway and working hours are appropriate for the future operation of the site and should be retained.

15.4 Public Rights of Way

15.4.1 There are a number of rights of way in the vicinity of the quarry as shown on the **Site Plan.** One footpath (Glossop no. 101/170) runs through the site adjacent to the western boundary and footpath Glossop no. 102 runs through the south of the site although neither footpath crosses the operational quarry area. A further two footpaths run along the site boundaries, Glossop no. 143/97 to the north of the site, and Glossop no. 100/133 to the east.

15.4.2 The quarry is securely fenced from inadvertent access as required under Health and Safety legislation and is clearly signed around the site boundaries. Footpath no. 102 crosses the site access road and the route is delineated and signed appropriately to make footpath users aware of quarry activities. These measures would be maintained during the continued operation of the site.

15.4.3 The existing quarry operations have a limited impact on footpath users and the continued operation of the site would not create any new impact.

15.4.4 The quarry extension would result in extraction progressing closer to footpath no. 102 although the footpath would not be interrupted or diverted. Secure fencing would be installed around the operational area and warning signs provided.

15.4.5 The proposed restoration scheme includes the creation of new footpaths within and through the site to allow access once restoration works have been completed. Interpretive signage would be provided along the new footpaths to explain the site history, the use made of the brick making shales and building stones and the restoration works. The new footpaths would have a positive impact on the footpath network and the amenity of the immediate area.

15.4.6 The current controls contained within the planning conditions relating to site boundaries and security are regarded as adequate.

16.0 CLIMATE CHANGE

16.1.1 Planning permission already exists for a continuation of extraction operations and transport movements at the site until 2042. The environmental acceptability of this was previously demonstrated in the 2014 EIA and was accepted by Derbyshire.

16.1.2 The Mouselow quarrying activities are relatively minor in comparison to the level of industrial and manufacturing activities carried out in the general area. Similarly the level of continued traffic movement from the site to the Denton factory is minor in comparison to existing traffic levels on the local highway network. Consequently emissions from combustion engines associated with Mouselow Quarry, which could contribute to the production of greenhouse gases and ultimately climate change, would constitute a minute proportion of the overall emissions in the area.

16.1.3 There are no proposals to increase the amount of material being extracted from the site and there should be no implications for climate change as a consequence.

16.1.4 It is also considered that the extraction of low carbon, low sulphur Upper Shales rather than the high carbon, high sulphur Lower Shales is sustainable development and reduces the release of carbon and sulphur during the brick making process.

16.1.5 It is considered that Mouselow Quarry is a sustainable location, being the closest available resource of brick making material to the Denton brickworks. The supply of material from Mouselow to Denton is preferable to the supply from further afield as there would be a greater level of vehicle movements, fuel use and engine emissions involved which would not be beneficial for climate change.

16.1.6 There would be no implications for the existing flood regime as a consequence of the quarry extension.

16.1.7 The restoration scheme includes woodland and grassland which would not impact negatively on climate change.

16.1.8 The potential impact on the local climate due to the quarry extension is considered negligible.

17.0 HUMAN HEALTH

17.1.1 Schedule 4 of the 2017 EIA Regulations refers to the potential impacts on human health arising from a development and that such impacts should be considered within the EIA where relevant.

17.1.2 Planning permission already exists for mineral extraction at Mouselow until 2042. The environmental acceptability of this was previously demonstrated in the 2014 EIA and was accepted by Derbyshire.

17.1.3 The tonnage of material to be extracted and removed from the site as a consequence of the extension area development is comparable with the 2014 approved scheme because the poor quality Lower Shales are to remain unworked.

17.1.4 There are considered to be less potential for impact on human health by working the Upper Shales which have lower sulphur and carbon levels than the Lower Shales and which result in higher emissions from the Denton brickworks during brick manufacture.

17.1.5 In addition the changes to the restoration scheme to avoid the large deep water body are also considered to be beneficial.

18.0 CUMULATIVE IMPACTS

18.1.1 The ES demonstrates that the environmental impacts of the extraction area development are understood and can be mitigated where necessary to ensure there are no unacceptable impacts, subject to compliance with operational practices and planning conditions.

18.1.2 The alteration of the restoration scheme has positive beneficial impacts and is unlikely to have any cumulative impacts.

18.1.3 The High Peak Local Plan (2016) has been considered to identify potential new developments that may take place in proximity to the site which may contribute to cumulative impacts or potentially be subject to impacts from the quarry extension. The Local Plan controls non-mineral and waste development until 2028.

18.1.4 There are several strategic development sites and specific housing allocations within 1000 metres of the quarry extension area.

18.1.5 The Local Plan was adopted after the quarry end date was extended to 2042 in 2014 and consequently the Local Plan would have had consideration of the continued presence of the quarry when identifying various development allocations.

18.1.6 The housing allocations are shown on the **High Peak Local Plan Housing Allocations** plan and the closest allocations are located to the south of the extension area on areas of existing agricultural land and previously developed land. Industrial development is also shown.

18.1.7 All of the housing allocations lie further away than the existing closest residential receptors. There are several housing allocation sites within the visual study area adopted for the Landscape and Visual Impact Assessment carried out for the quarry extension area.

18.1.8 Any housing allocation to the north, east and south-east of the site would have no view of the site due to the intervening topography of Mouselow Hill. This is illustrated by the Approximate Zone of Visual Influence on the Visual Analysis Plan in the landscape assessment and includes housing allocation G19 Dinting Road to the south-east, G6 North Road to the east and the sites in and around Glossop to the east and Hadfield to the north.

18.1.9 Any housing allocation within the valley bottom, Dinting Vale, would have no views because of their low elevation in relation to the site and the high proportions of woodland within the valley bottom and along the site's western and southern boundaries. This includes housing allocation G23 Dinting Railway Museum, G20 Dinting Lane and G32 Adderley Place.

18.1.10 There are only two housing allocations on the rising ground to the west or south-west which have the potential for views of the site. These are on either side of Glossop Road (A628) as it runs through Gamesley approximately 1500 metres

distant: allocation G26 Gamesley Sidings and G25 Melandra Castle Road. The significance of the visual effects arising from the quarry extension area are considered to be minor adverse during working and restoration, and negligible at 15 years post final restoration.

18.1.11 If the allocated sites were to be developed there would be a loss of some grassland areas and potential implications for soil resources and drainage. The proposals to extend the quarry would not have any unacceptable impacts on agriculture, soils or drainage.

18.1.12 The loss of additional agricultural land as a consequence of a housing development is a factor to be considered in any housing application although the allocations are primarily small parcels of isolated, fragmented grazing land rather than high quality land (best and most versatile).

18.1.13 Soil resources and drainage are issues to likely to be dealt with in individual planning applications and it is assumed that measures would be put in place to ensure any housing development did not result in unacceptable impacts. Cumulative impacts are unlikely.

18.1.14 Quarry operations are carefully managed by adherence to site rules, best practice protocols and controlled by planning conditions to ensure that there are no unacceptable environmental impacts on existing housing. Consequently the development of additional housing in the vicinity would not experience any unacceptable environmental impacts as it would be further away than existing receptors.

18.1.15 The additional housing would result in extra traffic on local roads, some of which would be used by quarry traffic. The housing traffic would include HGVs during the construction period and then primarily cars/light vehicles once the properties were occupied.

18.1.16 The local roads between the site and the A57 include Shaw Lane and Dinting Road which vary in width between 6.1m and 7.3m. Their character also varies in that in some places two-way traffic movements are restricted by on-street parking, whereas in others traffic may pass freely.

18.1.17 The 2010 EIA identified a daily traffic flow of approximately 3800 movements per day on Dinting Road. Assuming all the closest housing allocations were to be developed there is likely to be an increase in traffic using Dinting Road. There are additional housing allocations further away from the site in the eastern parts of Glossop although the use of Dinting Road is less likely. The allocation of these housing sites would have been made in the knowledge of the continued operation of Mouselow Quarry until 2042.

18.1.18 Typical residential trip rates vary between 0.5 trips and 1 trip per dwelling during the peak hours and between 4 and 10 movements per day, depending upon the size, tenure and occupation of the units. Taking the higher flows of the range to represent a worst-case scenario, albeit unlikely due to the mixed dwelling types

normally provided, the development of 353 dwellings in housing allocations G6, G19, G20 and G21, those most likely to use Dinting Road, could generate up to 353 movements in the peak hour and up to 3530 movements per day. Again assuming a worst case scenario with every vehicle movement being along Dinting Road this would result in a total of 7330 movements (3800 + 3530) per day when added to the existing traffic on Dinting Road.

18.1.19 The quarry generates approximately 22 to 24 heavy goods vehicle movements spread over the working day and up to 20 light vehicle movements per day, an insignificant amount when compared with the levels of existing and potential future traffic.

18.1.20 To place this in context, TA 79/99 "Traffic Capacity of Urban Roads" identifies hourly design flows ranging from 1250 movements per hour (for a busy high street with unrestricted on street parking, unlimited access to houses, shops & businesses, frequent at grade crossings, etc.) to 1700 movements per hour for a carriageway carrying predominantly through traffic with limited access. These design flows further increase to between 1500 and 2200 vehicles per hour respectively for a carriageway width of 6.75m and 1900 and 2650 vehicles per hour respectively for a carriageway width of 7.3m.

18.1.21 When considering a daily (i.e. 24 hour) flow capacity based on the hourly design capacities, it is apparent that in the worst-case scenario of 7330 vehicles per day, this equates to just 5.86 hours of the lowest hourly capacity of 1250 movements. It is therefore concluded that the link capacity of Shaw Lane and Dinting Road would not be breached with the cumulative traffic flows associated with the continued quarry operation and the development of the closest housing allocations in the vicinity.

18.1.22 The other roads used by vehicles travelling between Mouselow and Denton are the A57 and M67 both of which accommodate substantial volumes of traffic. The addition of additional traffic from new housing development is unlikely to create highway issues on these roads.

19.0 SOCIO ECONOMIC

19.1.1 The Glossop area has a long history of industrial and manufacturing activities. Quarrying has been carried out at Mouselow since 1840 and there was a brick factory on site previously before brick making transferred to Denton.

19.1.2 The continued operation of Mouselow Quarry would not be an alien activity in the area and would have a number of positive socio-economic effects including the continuation of significant employment levels and financial expenditure within the local economy.

19.1.3 The Denton factory is a substantial modern facility with the ability to produce over 60 million high quality bricks per year which are used in building work throughout the UK. The factory is one of the most efficient brickworks in the UK. Denton was the first brick factory in the world to be certified to the Environmental Management System standard BS EN ISO 14001 (then called BS 7750). This certification has been maintained continuously up to the present day.

19.1.4 Denton relies on shale from Mouselow and would not be able to remain open without the readily available resources of shale.

19.1.5 Mouselow Quarry and the Denton factory support over 50 direct employees as well as additional indirect employees. The two sites contribute over £7.5 million every year to the economy in terms of purchases, wages, rates, and other expenditure, a significant amount of which provides a local economic benefit.

19.1.6 Sandstone is also produced at Mouselow as high quality building stone and a minor amount of construction aggregates. The building stone comes from the Huddersfield White Rock formation which is an important source of high quality building stone used in renovation work and new building both locally to support built heritage and further afield.

19.1.7 The EIA has considered the continued operation of the site and has concluded that there would be no unacceptable environmental impacts. It is considered that there would be no unacceptable socio-economic impacts from the continued operation of the site subject to compliance with operational controls and planning conditions.

19.1.8 The continued operation of the site is highly likely to generate a long term, positive financial impact for the economy.

20.0 CONCLUSIONS

20.1.1 The Environmental Statement accompanies a planning application by Wienerberger for the extension of Mouselow Quarry in a westerly direction. The extension area is identified for potential future mineral extraction in the emerging Derbyshire Mineral Plan.

20.1.2 Mouselow Quarry is the main source of raw materials for the major Denton Brickworks. The remaining reserves of high quality Upper Shale material are very limited and are only sufficient for four years supply.

20.1.3 There are extensive reserves of lower quality Lower Shale material which can no longer be reliably used at Denton because of the high sulphur and carbon emissions and the strict air quality controls at the site. It is proposed to relinquish the planning permission for the lower quality Lower Shale material and extend into further high quality Upper Shale material to keep the brickworks supplied for a further 19 years. This would allow the brickworks to continue with its associated economic and social benefits.

20.1.4 Additional high quality building stone would also be released.

20.1.5 Retaining the Lower Shales would avoid extracting beneath the water table and the extensive dewatering necessary to achieve this. A major change to the approved restoration for the site would be possible by removing the large deep water body. Instead the restoration would provide grazing land, amenity grassland and woodland which would be more in keeping with the local area. The safety concerns of the deep water body would also be avoided.

20.1.6 There are no proposals to alter the end date of the site, the method of working, the operational hours or the site access.

20.1.7 The proposed development has been subject to a thorough assessment as required by the Environmental Impact Regulations to determine the potential impacts on the environment and on local amenity.

20.1.8 It is considered that there would be no unacceptable environmental or amenity impacts on the local area as a consequence of the development.

List of Plans

Location Plan
Landholding Plan
Aerial Photograph
Site Plan
Quarry Extension Phasing Plans (set of nine plans)
Restoration Concept
Summary Borehole Plan
High Peak Local Plan Housing Allocations

Appendices

1 Wienerberger Corporate Policies
2 Current Planning Permission (reference CM1/0214/162)
3 Borehole Logs
4 Pre-Application Advice Request
5 Pre-Application Advice