

# Berkswell Quarry

## Environmental Permit Variation Application

### Environmental Setting and Site Design

H.D Ricketts Limited

February 2024

Prepared on Behalf of Tetra Tech Environment Planning Transport Limited.

Registered in England number: 03050297

# Document Control

<b>Document:</b>	Environmental Setting and Site Design
<b>Project:</b>	Berkswell Variation 2020
<b>Client:</b>	H.D Ricketts Limited
<b>Job Number:</b>	B031730
<b>File Origin:</b>	\\southampton14\Data\Projects\Cemex UK Operations (C05081)\B031730 (Berkswell Variation 2020)\Reports

<b>Version:</b>	1	<b>Status:</b>	Final to EA
<b>Date:</b>	June 2022		
<b>Prepared by:</b> Isabelle Mills	<b>Checked by:</b> Alice Shaw	<b>Approved by:</b> Andrew Bowker	
<b>Description of revision:</b>			

<b>Revision:</b>	2	<b>Status:</b>	Final to EA
<b>Date:</b>	February 2024		
<b>Prepared by:</b>	<b>Checked by:</b>	<b>Approved By:</b>	
<b>Description of revision: Updated to include NDM feedback from the EA Updates have been made to Sections 3.2, 3.3 &amp; 5.1</b>			

<b>Revision:</b>		<b>Status:</b>	
<b>Date:</b>			
<b>Prepared by:</b>	<b>Checked by:</b>	<b>Approved By:</b>	
<b>Description of revision:</b>			

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BER/B031730/PER/02 – Proposed Extension Areas

P2/928/13/2 – Illustrative Restoration Masterplan

BE 20/23A – Restoration Masterplan

BE 10/13B – Restoration Scheme

## 1.0 INTRODUCTION

### 1.1 REPORT CONTEXT

- 1.1.1 This document has been prepared by Tetra Tech on behalf of the Operator, H.D Ricketts Limited (H.D Ricketts) to support an environmental permit application for Berkswell Quarry (the site), Cornets End Lane, Meriden, Warwickshire, CV7 7LH.
- 1.1.2 H.D Ricketts are seeking to vary the Environmental Permit for the site (reference EPR/KB3203MT) to extend the permit boundary into the extension area, located to the southeast of the southern section of the site and the northwest of the northern section (as shown on Drawing Number BER/B031730/PER/02). Subsequently, H.D Ricketts seek to increase the quantity of waste permitted from 1,576,500 tonnes to 3,376,500 tonnes which will accommodate the extension areas, an increase of 1,800,000 tonnes (1 million m<sup>3</sup>).
- 1.1.3 This document corresponds to Question 1, Appendix 4 of Part C4 of the Environmental Permit application forms, which requires the provision of an Environmental Setting and Site Design (ESSD) report. According to the Environment Agency's (EA) 'What to include in your environmental setting and site design report' guidance (updated February 2022), an ESSD document is only required for an application that comprises a landfill for inert waste or a deposit for recovery operation.
- 1.1.4 The aim of this report is to describe the regulated facility in relation to the environmental setting, identifying the source terms, pathways and receptors that will be used as the basis for the Environmental Risk Assessment for this permit application.
- 1.1.5 This document has been prepared based on the ESSD report guide that's provided in the aforementioned guidance.

## 2.0 SITE DETAILS

### 2.1 SITE LOCATION

- 2.1.1 The site is located approximately 4km from the village of Balsall in the West Midlands and is centred at approximate National Grid Reference (NGR) SP 22909 80758 however H.D Ricketts are seeking to vary the environmental permit boundary to include an area of land to the north west of the site (NGR SP 22420 80934) and the south east of the site (NGR SP 23115 80186) as shown on Drawing Number BER/B031730/PER/02.
- 2.1.2 Access to the site will be achieved via Cornets End Lane which is located to the north of the site. The immediate surroundings of the proposed extension area largely comprise agricultural land with an area of deciduous woodland (Coronation Spinney) adjacent to the south boundary and woodland located approximately 210m south (Sixteen Acre Wood) of the proposed extension areas. The nearest residential dwelling is Park Farm House, located approximately 120m east of the proposed extension areas.
- 2.1.3 With reference to the Multi Agency's Geographic Information for the Countryside (MAGIC) website, there are two statutory designated sites located within 2km of the site. The closest of which is the Berkswell Marsh, located adjacent to the southern boundary of the proposed extension area. The marsh is designated as a Site of Special Scientific Interest (SSSI). The second site is the River Blythe which is located approximately 1km west of the site and is also designated as a SSSI.

### 2.2 SITE CLASSIFICATION

- 2.2.1 The regulated facility comprises the importation of inert waste for the purpose of recovery.

### 2.3 APPLICATION BOUNDARY AND SITE SECURITY

- 2.3.1 The proposed application boundary is shown on Drawing Number BER/B031730/PER/01.
- 2.3.2 As part of the mineral extraction and restoration operations, the site will benefit from barriers that satisfy the requirements of the Quarry Regulations 1999 to prevent unauthorised access to the site. Such barriers will comprise a combination of bunds and fencing to secure the weighbridge, site office, etc.
- 2.3.3 Site gates and perimeter fencing are inspected on a daily basis. Any identified damage to the fence or gates that could prejudice the site security is recorded and temporarily repaired as necessary before the end of that working day. Permanent repair or replacement will be undertaken as soon as practicable.

## 3.0 SOURCE TERM CHARACTERISATION

### 3.1 HISTORICAL ACTIVITY

#### Planning History

- 3.1.1 Sand and gravel extraction at the site has been ongoing since the late 1990s. The original planning permission between Cornets End Lane and Mercote Hall Lane in the northern part of the permit area (planning reference W10999/10) was granted by Solihull Metropolitan Borough Council in 1999.
- 3.1.2 In July 2003, a planning application (reference 2003/1480) was submitted Solihull Metropolitan Borough Council to extend mineral extraction activities in an area to the south of Mercote Hall Lane and restore the site back to agriculture and broadleaf woodland as detailed in the restoration scheme (Drawing Number BE 20/23A).
- 3.1.3 In addition to the above, Solihull's Metropolitan Borough Council's planning register indicates that the following applications have been submitted: -
- Application PL/2001/00320/FULL for the determination of conditions for mineral site under environment act 1995 - review of permission granted under ref. APP/5108/A/79/8037 and 92/0023' - A letter was issued in October 2016 for a postponement of the review date to 13<sup>th</sup> September 2022; and,
  - Application PL/2013/00070/FULM for the 'construction of a concrete pad and associated operational development and change of use of land to carry out wood chipping operations – permission was granted on 27<sup>th</sup> January 2014.

#### Permitting Context

- 3.1.4 The site was originally regulated under a Paragraph 9 exemption (reference number BD3/003094) to allow the importation of inert waste to infill the quarry void and restore the site to create agricultural land and woodland. Following changes to the exemption system under the Environmental Permitting (England and Wales) Regulations in 2010, an environmental permit (reference EPR/BB3333RH) was issued to CEMEX UK Materials Limited (CEMEX) in April 2012 for the site to allow the continued restoration activities.
- 3.1.5 In 2017, an environmental permit application (reference EPR/BB3333RH/V002) was submitted to the EA to extend the permit boundary to include the extension area located to the south of the site and increase the maximum throughput from 316,500 tonnes to 1,576,500 tonnes. The purpose of this application was to help facilitate the restoration of the extended quarry area as approved under planning

permission 2003/1480.

- 3.1.6 In May 2021, the environmental permit was transferred from CEMEX to H.D Ricketts and the reference number for the environmental permit was changed to EPR/KB3203MT.

## 3.2 PROPOSED ACTIVITY

- 3.2.1 As noted in Section 1, H.D Ricketts are seeking to vary the environmental permit for the site to extend the permit boundary to include an area of land to the north west and south east of the site (as shown on Drawing Number BER/B031730/PER/02). This extension will facilitate the complete restoration of the site in accordance with the restoration plans for the northern section of the site (Drawings P2/928/13/2 and BE 10/13B) and the southern section (Drawing Number BE 20/23A).

### Permitted Waste Types

- 3.2.2 In order to achieve the restoration profiles provided on the approved restoration schemes (BE 20/23A and P2/928/13/2) a volume of 1 million m<sup>3</sup> of additional material will be required in order to achieve the proposed restoration profiles. When using a bulk density conversion factor of 1.8 tonnes/m<sup>3</sup> this equates to approximately 1,800,000 tonnes.
- 3.2.3 As such, H.D. Ricketts seek to increase the quantity of waste permitted by 1,800,000 tonnes. This is in addition to the 1,576,500 tonnes which is already permitted and would enable a total of 3,376,500 tonnes to be accepted at the site for recovery purposes.
- 3.2.4 It is proposed that the site will continue to use the waste types that are permitted under the current Environmental Permit (EPR/KB3203MT) for the proposed restoration works. These waste types are listed in Table 1 below.

**Table 1: Permitted Waste Types**

<b>EWG Code</b>	<b>Description</b>
<b>17</b>	<b>CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)</b>
<b>17 01</b>	<b>Concrete, bricks, tiles and ceramics</b>
17 01 01	Concrete
17 01 02	Bricks
17 01 03	Tiles and ceramics
17 01 07	Mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06
<b>17 05</b>	<b>Soil (including excavated soil from contaminated sites), stones and dredging spoil</b>
17 05 04	Soil and stones including chalk other than those mentioned in 17 05 03 (excluding topsoil and peat)
<b>20</b>	<b>MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS</b>

<b>20 02</b>	<b>Garden and park wastes (including cemetery waste)</b>
20 02 02	Soil and stones (excluding topsoil and peat)

3.2.5 In addition to the waste codes that are listed in Table 1, H.D Ricketts are also seeking to add the following waste codes to the environmental permit.

**Table 2: Proposed Waste Types**

<b>EWG Code</b>	<b>Description</b>	<b>Restriction</b>
<b>19</b>	<b>WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE</b>	
<b>19 12</b>	<b>Wastes from the mechanical treatment of waste (for example sorting, crushing, Compacting, pelletising) not otherwise specified</b>	
19 12 09	Minerals (such as sand and stones) from the treatment of waste aggregates that are otherwise naturally occurring minerals	<p>Restricted to wastes from the treatment of waste aggregates that are otherwise naturally occurring materials.</p> <p>Does not include fines from treatment of any non-hazardous waste or gypsum from recovered plasterboard.</p>
19 12 12	Crushed bricks, tiles, concrete and ceramics, including mixtures of materials	<p>Restricted to crushed bricks, tiles, concrete and ceramics only.</p> <p>Metal from reinforced concrete must be removed.</p> <p>Does not include fines from treatment of any non-hazardous waste or gypsum from recovered plasterboard.</p>

3.2.6 These waste codes will solely derive from the aggregate recycling facility that's located to the north of the site at NGR SP 22920 80890. The aggregate recycling facility is regulated under a separate environmental permit (reference EPR/WE3588AA and EAWML 120088) which allows the treatment of waste to produce soil, soil substitutes and aggregates in accordance with the standard rules set SR2010 No12. This permit is currently in the name of CEMEX UK Materials Limited; however a permit transfer application was submitted to the EA in October 2021 to transfer this permit to H.D Ricketts Limited.

3.2.7 Although the aggregate recycling facility is permitted to accept a variety of waste types (as specified under standard rules SR2010 No12), H.D Ricketts will only accept specific wastes that are classed as inert in accordance with the Landfill Directive (1999/31/EC) and Council Decision (2003/33/EC) of 19 December 2002 'establishing criteria and procedures for the acceptance of waste landfills'. This will include waste concrete, tiles and ceramics that are characterised under the following waste codes: -

- 17 01 01 – Concrete;



- 17 01 02 – Bricks;
- 17 01 03 – Tiles and Ceramics; and,
- 17 01 07 – Mixtures of concrete, bricks, tiles, and ceramics and other than those mentioned in 17 01 06.

3.2.8 In addition to the above, H.D Ricketts will also accept soil and stones that are characterised under the following waste codes: -

- 17 05 04 – Soil and stones other than those mentioned in 17 05 03; and,
- 20 02 02 – Soil and stones.

3.2.9 In accordance with the Council Decision 2003/33/EC, no topsoil or peat will be accepted under the above waste codes and no soil and stones will be accepted from contaminated sites.

3.2.10 Based on the nature of the wastes that will be accepted and treated at the aggregate recycling facility, it's considered that the resultant 19 12 wastes will meet the descriptions detailed in Table 2.

#### Final Landform and After Use

3.2.11 As detailed in the restoration plans (Drawings P2/928/13/2, BE 10/13B and BE 20/23A) the extension areas will be restored to agriculture and broadleaf woodland.

3.2.12 Where the mining waste permit (EPR/LB3007MN) overlaps with the proposed extension area, there are currently stilling basins that are used to support the minerals screening process, the effluent from this treatment activity is stored in settling lagoons. Whilst this activity will remain effectively separate for the purpose of waste deposition, the restoration masterplan (Drawing Number P2/928/13/2) shows that the silt lagoon will be restored to a freshwater lagoon to provide a feature high in nature conservation value. The other stilling basins will be dewatered and infilled in line with the restoration plan. This will be done following the cessation of operations under the mining waste permit so as to remain compliant with the permit conditions.

#### Hydrogeological Risk Assessment

3.2.13 A Hydrogeological Risk Assessment (HRA) has been prepared to provide the geological and hydrogeological setting of the proposed extension area allowing the development of a conceptual model to determine the risk that the facility will pose to underlying groundwater. A copy of the HRA is provided as Appendix F of the Environmental Permit Application.

### 3.3 OTHER PERMITTED ACTIVITIES WITHIN THE PERMIT BOUNDARY

3.3.1 The permit held by H.D Rickets (EPR/KB3203MT) allows for the importation of waste to infill the quarry void following mineral extraction. There are two permits registered adjacent to the existing site and one permit which overlaps with the proposed northwestern extension area. These permits are listed in the Table below and work in conjunction with the Berkswell Quarry site as a whole.

**Table 3: Registered Permits**

Permit Number	Permit Holder	Activity	Grid Reference
EPR/LB3007MN	CEMEX UK MATERIALS LIMITED	S0908 No 8: Management of inert or extractive waste at mine	SP2270080800 (Proposed Extension Area)
EPR/DB3508MA	BERKSWELL RECYCLING LIMITED	A22: Composting Facility	SP2289080540 (Adjacent to Current Area)
EPR/BB3709CC	BERKSWELL RECYCLING LIMITED	A16: Physical Treatment Facility	SP2289380547 (Adjacent to Current Area)

#### **Mining Waste Facility EPR/LB3007MN**

3.3.2 The standard rules mining waste permit (EPR/LB3007MN) is situated to the northwest of the site and partially overlaps the proposed extension area. This permit authorises the management of inert wastes and unpolluted soil resulting from the prospecting, extraction, treatment and storage of mineral resources and the working of quarries, at mines and quarries in accordance with the standard rules set S0908 No 8.

3.3.3 With regard to the standard rules permit it is noted that there are stilling basins within the proposed extension area which are used to support the minerals screening process and the effluent from this treatment activity is stored in settling lagoons. Following surrender of this permit, this area of land will subsequently become part of the restoration. Until such point of surrender these are acknowledged as two separate activities with regard to the deposition of waste and no deposition of waste materials under this waste recovery permit will be undertaken until such time as the mining waste permit is surrendered.

#### **Composting Facility EPR/DB3508MA**

3.3.4 The Composting Facility is located to the immediate west of the existing waste recovery permit boundary within a worked-out part of Berkswell Quarry. The facility is regulated under EPR/DB3508MA, which is an installation comprising the following listed activity: -

- S5.4 A(1) (b) (i) Recovery or a mix of recovery and disposal of non-hazardous waste with a capacity exceeding 75 tonnes per day involving biological treatment.

3.3.5 It is further noted that this activity has the following Directly Associated Activities: -

- Storage of waste pending recovery or disposal;
- Physical Treatment for the purpose of recycling;
- Raw material storage;
- Compost storage;
- Process water collection and storage; and,
- Surface water collection and storage.

3.3.6 The composting operation is run independently of mineral extraction and waste recovery operations at Berkswell Quarry. Upon cessation of work this area will be restored in accordance with the approved restoration scheme for Berkswell Quarry however this land is not subject to this waste recovery permit.

#### **Physical Treatment Facility EPR/BB3709CC**

3.3.7 The physical treatment facility permitted under EPR/BB3709CC allows the operation of a woodchipping facility which is operated independently of the mineral extraction and waste recovery operations at Berkswell Quarry. This operation is undertaken to the north of the Composting Facility. As with the composting facility, upon operations ceasing all buildings and structures including the concrete pad shall be removed, and the site restored in accordance with the approved restoration scheme for Berkswell Quarry however this land is not subject to this waste recovery permit.

3.3.8 The planning permission for the site requires that the three of the permits noted in Table 3 shall cease operations at the time which the mineral extraction and restoration operations at Berkswell Quarry come to an end. It is stated within the planning permissions and permit obligations for each of the three activities, that upon operations ending, all buildings, and structures, including the concrete surfacing, are to be removed. Further, these sites are to be restored in accordance with the approved Berkswell Quarry restoration scheme.

## 4.0 PATHWAY AND RECEPTOR TERM CHARACTERISATION

### 4.1 GEOLOGY

#### Bedrock Geology

- 4.1.1 According to the British Geological Survey's (BGS) 'Geology of Britain Viewer', the bedrock geology to the southeast comprises mudstone, siltstone and sandstone of the Tarporley Siltstone Formation. This bedrock was formed approximately 242 to 250 million years ago in the Triassic Period.
- 4.1.2 The bedrock geology to the northwest comprises mudstone of the Sidmouth Mudstone Formation. This bedrock was formed approximately 228 to 250 million years ago in the Triassic Period.

#### Superficial Deposits

- 4.1.3 In terms of the superficial deposits, BGS's 'Geology of Britain Viewer', indicates that the deposits comprise Mid-Pleistocene Glaciofluvial deposits, comprising glacial sand and gravel interbedded with glacial lake deposits (laminated clays and silty clay). The deposits were formed up to 2 million years ago in the Quaternary Period.

### 4.2 HYDROLOGY

#### Surface Water Features

- 4.2.1 There are two small streams located to the south of the proposed extension area that's located to the southeast of the site; one located on the southern boundary then second located approximately 95m southwest. There is also a stream located to the northwest of the proposed extension area that's located to the northwest of the site. These streams flow towards the River Blythe which is located approximately 775m west of the site.
- 4.2.2 A full list of surface water features located within 1km of the extension area are provided in the Environmental Risk Assessment (Appendix C of the main application).

#### Discharge Consents

- 4.2.3 According to the EA's Public Register, there are 8 water discharge permits within 1km of the site (Table 4 below).

**Table 4: Licenced Discharge Points to Water and Groundwater**

Permit No.	Grid Reference	Permit Holder
MI/WQ/72/29/001	SP2290081100	Tarmac Central Limited

MI/WQ/72/30/001	SP2295081150	Tarmac Central Limited
MI/EPREB3996NT/001	SP2300481268	NRS Saredon Aggregates Limited
MI/T/11/07079/T/001	SP2318081440	Tarmac Central Limited
MI/T/11/35904/T/001	SP2318081440	NRS Saredon Aggregates Limited
MI/T/11/09245/T/001	SP2238080980	CEMEX UK Materials Limited
MI/T/11/22685/T/001	SP2238080980	RMC Aggregates (Western) Limited
MI/T/11/35387/T/001	SP2335581355	NRS Waste Management Services Limited

### Flood Risk

- 4.2.4 According to the EA's flood maps, the extension area is located within a Flood Zone 1 which is defined as a low probability of flooding (less than 1 in 1000 annual probability of river or sea flooding in any year).

## 4.3 HYDROGEOLOGY

### Aquifer Properties

- 4.3.1 The site will be worked for the extraction of Glaciofluvial Deposits (sand and gravel deposits) to a maximum level of 84 metres Above Ordnance Datum (mAOD) which corresponds to the top of the Sidmouth Mudstone Formations (bedrock geology). The proposed inert material to restore the site is discussed in Section 2.2.1 and is considered to be similar in nature (i.e., material type and porosity) to the sand and gravels deposits which have been removed historically as part of the extraction process.
- 4.3.2 The Glaciofluvial Deposits are classified by the EA as a Secondary A Aquifer, which are defined as permeable layers that are capable of supplying water supplies and watercourses on a local scale. The underlying bedrock geology of the site is the Tarporley Siltstone Formation to the southeast and the Sidmouth Mudstone Formation to the northwest.
- 4.3.3 The Sidmouth Mudstone Formation is classified by the EA as a Secondary B Aquifer - predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons, and weathering. These are generally the water-bearing parts of the former non-aquifers. The Tarporley Siltstone Formation is classified by the EA as a Principal Aquifer. These are layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale.
- 4.3.4 Prior to the quarrying of the sand and gravel deposits, groundwater within the superficial Secondary A aquifer would have received recharge from effective rainfall hitting the ground on site and on land surrounding the site. The general pre-extraction direction of groundwater flow within the sand and gravel

deposits is known to be from west to east as shown in Figure 3 (Ref. SP2280\_CAW\_280510). This drawing provides a representation of the groundwater levels and flow direction following the capture of data in 2013 (pre-mineral extraction).

- 4.3.5 Groundwater flow during the pre- and post-extraction periods is expected to be towards a stream located approximately 150m to the south-west of the site. It is expected that the sand and gravel deposits located around the edge of the site and proposed restoration void will remain and that this material will act as a buffer between the site and the surface water feature located to the south-west. It is also expected that groundwater within the superficial deposits at the site is in hydraulic continuity with this surface water feature (150m southwest).
- 4.3.6 During the extraction process groundwater levels were controlled (lowered) within the site by dewatering (pumping) from a sump located at the base of the site as shown in Figure 4. This results in a change of the natural (pre-mineral extraction) groundwater flow direction. During the mineral extraction period (and at present) groundwater flows north, north-west, towards the sump. Following the cessation of pumping and recovery of the water table, it is expected that groundwater levels and flow direction will return to 'near pre-quarrying conditions.' Using the 2013 groundwater flow map (Figure 3) a hydraulic gradient of 0.012 has been calculated for the sand and gravel aquifer. Groundwater flow within the deposits is anticipated to be via intergranular flow (primary porosity). The hydraulic conductivity and porosity values for a sand and gravel aquifer have been estimated from literature sources such as Hiscock (2005) who report a range of  $1 \times 10^{-3} \text{m/s}$  to  $1 \times 10^{-7} \text{m/s}$ , and 0.25 to 0.50 for hydraulic conductivity and porosity, respectively.

## 4.4 AMENITY

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- 4.4.1 All receptors that may be affected by this proposal are identified in the Environmental Risk Assessment (ERA) that has been prepared as part of this Environmental Permit Application. A copy of the ERA is provided as Appendix C of the Environmental Permit Application.

## 4.5 COMPLIANCE POINTS

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- 4.5.1 The risk of impact on groundwater and surface water and the selection of relevant compliance points is detailed in the HRA (Appendix F of the Environmental Permit Application).

## 5.0 POLLUTION CONTROL MEASURES

### 5.1 SITE ENGINEERING

#### Attenuation Layer

- 5.1.1 A basal and sidewall attenuation layer will be provided around the perimeter of the site in each phase of the extension area only.
- 5.1.2 The attenuation layer will be constructed from selected imported wastes, which will have sufficient clay content capable of achieving the required properties for the attenuation layer. The physical suitability of the material will be assessed by the Site Manager in accordance with the flow chart provided in the Environment Agency's 'Standards and Measures for the Deposit of Inert Waste on Land'.
- 5.1.3 Materials selected for incorporation in the attenuation layer above water will be capable of being spread in thin layers using earthmoving plant and tracked in, without heavy compaction, to form a structure at least 1m wide. The HRA relies on an Attenuation Layer that is 1m thick and has a maximum hydraulic conductivity of  $1 \times 10^{-7} \text{m/s}$ .
- 5.1.4 Since all the inert restoration material required to form the Attenuation Layer must be placed prior to filling the remainder of the Site, the entire structure must effectively be constructed from selected inert restoration material which has suitable chemical and engineering properties for the Attenuation Layer. Thus, there will be no material difference between the 1m of inert restoration material relied upon by the HRA and the remainder of the perimeter structure.
- 5.1.5 The Attenuation Layer will be constructed from selected cohesive inert restoration material that is uncontaminated. Suitable European Waste Codes (EWC) for the Attenuation Layer material are given in Table 6 of the Operating Techniques document.
- 5.1.6 CQA of the attenuation layer will be achieved through a combination of the following: -
- Chemical suitability - review of site investigation information and Waste Information Form provided by the customer;
  - Physical suitability - review of site investigation information and Waste Information Form provided by the customer;
  - Physical suitability visual inspection including a field strength and plasticity test as per Chart 1;
  - Visual inspection of each load on tipping, prior to incorporation into the attenuation layer;
  - Area completed each week recorded via a GPS coordinate and source of material identified

and mapped on an attenuation layer location plan;

- Topographic surveys in accordance with the environmental permit;
- Periodic independent CQA visual inspection and site record check throughout construction period;
- In-situ permeability testing to demonstrate equivalence;
- Identification of works or procedures that do not comply with the requirements of the CQA Plan – ‘Non-Conformances’;
- Recording of remedial works undertaken to rectify ‘Non-Conformances’; and,
- Provision of CQA Completion Reports including full records of all inspections, checks and testing carried out including records demonstrating the compliance of the works and records of any or outstanding ‘non-conformances’ as appropriate.

5.1.7 It is considered that the CQA method described above in combination with the following processes is sufficient for CQA of the attenuation layer, above and below the water table: -

- Minimum 1m thickness of the attenuation layer;
- Source evaluation;
- Waste acceptance procedures;
- Duty of care testing; and,
- HRA.

#### Capping

5.1.8 The development comprises the importation of inert waste for the purpose of recovery. As such, an engineered cap is not required for the site.

#### Restoration

5.1.9 The application site currently comprises a quarry void which has been created following mineral extraction activities under the approved planning permission. There are also a series of silt lagoons within the permit boundary which have been developed to benefit the sand washing process. Following mineral extraction, H.D Ricketts seek to restore the site to agricultural and broadleaf woodland in accordance with the approved restoration plans (Drawings P2/928/13/2, BE 10/13B and BE 20/23A).



- 5.1.10 For the purposes of the 3 permits that lie within the larger Berkswell Quarry site, these remain effectively separate for the purpose of waste deposition. As per the conditions of their planning and permit conditions, these 3 sites will be restored in line with the obligations of their permits and the wider Berkswell Quarry restoration scheme.
- 5.1.11 With regard to the surface water features on site, the illustrative site restoration masterplan indicates that the silt lagoon associated with the mining waste permit (EPR/LB3007MN) will be restored as a freshwater lagoon for the purpose of adding high nature conservation value to the site. The remainder of the settling ponds will be restored to agricultural land as shown on Drawing Numbers. P2/928/13/2. As a result, it is proposed these will be drained and restored in line with the requirements of this waste recovery permit.

## **5.2 LEACHATE MANAGEMENT AND MONITORING**

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### Leachate Generation

- 5.2.1 Leachate would be generated by rainfall infiltrating through areas of open inert restoration materials and through capped and restored areas. Due to the inert nature of the proposed waste types, there will be no polluting leachate generated at the site and therefore no leachate management or monitoring is needed.

## **5.3 GAS MANAGEMENT AND MONITORING INFRASTRUCTURE**

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- 5.3.1 A Gas Risk Assessment (GRA) has not been prepared for the site, as the Technical Guidance Note LFTGN03 indicates that sites that accept inert waste for disposal/recovery do not pose a gas hazard.
- 5.3.2 A Gas Screening Report has been prepared which has been submitted with the Environmental Permit application as Appendix I. This report concludes that active gas management is not required for the site but recommends that monitoring is undertaken. Details regarding gas monitoring are provided in the Environmental Management and Monitoring Plan (Appendix G of the Environmental Permit Application).

## 5.4 SURFACE WATER MANAGEMENT SYSTEM

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- 5.4.1 The current site water management plan for the quarry includes a sump which is located in the south of the quarry, within the quarry void where water is pumped from. Some of this water is pumped to the freshwater lagoon in the north which is located close to the processing plant, with the balance being used to compensate flows and levels in Berkswell Marsh SSSI as described below.
- 5.4.2 Some of the water from the freshwater lagoon is used in the processing plant area (mineral washing, dust suppression and wheel washing). The water used in the processing plant is abstracted under licences 03/28/11/0132/G and 03/28/11/0133/G.
- 5.4.3 Some water flows from the freshwater lagoon through an overflow to the off-site discharge point. The water is discharged off-site via discharge consent T/11/09245/T to the adjacent to the processing plant area (which flows to the north-west) at an approximate elevation of 88 mAOD.
- 5.4.4 Silty water is recirculated from the processing plant area to the silt lagoon where suspended solids are allowed to settle out of suspension. Finally, there is some recirculation of water from the silt lagoon to the east, back to the sump.
- 5.4.5 Due to the proximity of Berkswell Marsh SSSI to the site, the Environment Agency (EA) and Natural England (NE) expressed concerns that dewatering of the extension could impact on these protected features.
- 5.4.6 Based on predictions of the extent of the radius of influence of dewatering, it was concluded that the SSSI and SSSI should remain unaffected by dewatering in the initial phases but with the commencement of the final phase, mitigation measures may be required. To mitigate this impact, multiple measures have been put in place including: -
- A low permeability clay cut-off wall;
  - Recharge wells; and,
  - Discharging directly to the ditch which feeds the watercourse in the SSSI.

- 5.4.7 A clay barrier was installed in June – July 2019 along the southern face of the quarry, keyed into a new silt lagoon as shown on Figure 3B to reduce the recirculation of water recharging Berkswell Marsh SSSI from Park Farm. The clay seal was extended to the east in 2021, and 2023 which covers the extent of the permitted area which this application relates to.
- 5.4.8 Six recharge wells were installed along the boundary between Park Farm and Berkswell Marsh SSSI to maintain groundwater levels within the SSSI during dewatering by injecting clean dewatering discharge water into the SSSI. These were effective at recharging the SSSI from July to September 2018 and from May 2019 onwards (pumping at a rate of 500 – 1,500 m<sup>3</sup>/d). The recharge wells have since clogged up and to counteract this, dewatering water is now discharged from the sump to the marsh via the ditch at the south-western site boundary to maintain groundwater levels within Berkswell Marsh SSSI.
- 5.4.9 A discharge permit application is currently under preparation to support the compensatory flows, but the flows have been agreed in principle with both the EA and Natural England. These activities have been addressed through the planning regime.
- 5.4.10 The HRA concludes that the proposed activity does not pose a potential hazard to surface water quality and therefore long-term management will not be required. However, the HRA does propose compliance limits for surface water monitoring.
- 5.4.11 Details regarding surface water monitoring are provided in the Environmental Management and Monitoring Plan (Appendix G of the Environmental Permit Application).

## **5.5 GROUNDWATER MANAGEMENT AND MONITORING**

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- 5.5.1 An HRA has been prepared to assess the potential risk of significant impacts on groundwater quality as a result of the proposed development. A copy of the HRA is provided as Appendix F of the Environmental Permit Application.
- 5.5.2 The HRA concludes that the proposed activity does not pose a potential hazard to groundwater quality and therefore long-term management will not be required. However, the HRA does propose compliance limits for groundwater monitoring.
- 5.5.3 Details regarding groundwater monitoring are provided in the Environmental Management and Monitoring Plan (Appendix G of the Environmental Permit Application).

## **5.6 AMENITY**

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- 5.6.1 An ERA (Appendix C of the Environmental Permit Application) has been prepared to consider the

potential impact of the proposed extension. The ERA indicates that the proposed changes will have no significant impacts in terms of odour, noise and vibration, and fugitive emissions. This is based on the control measures that are detailed in the ERA.

## **5.7 POST CLOSURE CONTROLS**

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- 5.7.1 EA Guidance 'Landfill and deposit for recovery: aftercare and permit surrender' indicates that where records demonstrate that a recovery site has accepted inert wastes during its lifetime, the site is applicable for a low-risk surrender based on records alone. As such no further monitoring or post closure monitoring is deemed necessary. As such, no further closure and aftercare plan has been prepared in support of this Environmental Permit Application.

## 6.0 MONITORING

- 6.0.1 The Environmental Management and Monitoring Plan (Appendix G of the Environmental Permit Application) provides details regarding the proposed monitoring schedule for the site.

## DRAWINGS

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BER/B031730/PER/01 - Site Location and Permit Boundary

BER/B031730/PER/02 – Proposed Extension Areas

P2/928/13/2 – Restoration Plan

BE 20/23A – Restoration Masterplan

BE 10/13B – Restoration Scheme