Bleak Hill III

784-B031732

Environmental Setting and Site Design

Environmental Permit Application

CEMEX UK Materials Limited

December 2022

Document prepared on behalf of Tetra Tech Environment Planning Transport Limited.
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1.0 INTRODUCTION

1.1 REPORT CONTEXT

1.1.1 This document has been prepared by Tetra Tech on behalf of the Operator, CEMEX Materials UK Limited (CEMEX) to support an environmental permit application for the Bleak Hill III (the site) at Nea Road, Ringwood, Hampshire, BH24 3PL.

1.1.2 This document corresponds to Question 1, Appendix 4 of Part B4 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) 'Landfill operators: environmental permits' guidance, an ESSD document is only required for an application that comprises a landfill for inert waste or a deposit for recovery operation.

1.1.3 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.

1.1.4 This document has been prepared based on the ESSD report guide that's provided in the EA's 'Landfill operators: environmental permits' guidance (updated April 2021).

2.0 SITE DETAILS

2.1 SITE LOCATION AND CONTEXT

2.1.1 The site forms part of the wider Hamer Warren quarry site and is located approximately 1.5km southeast of Alderholt in Hampshire and is centred at approximate National Grid Reference (NGR) SU 13026 11339.

2.1.2 Access to the site is achieved via an unnamed access road off Harbridge Drove which is located to the south of the site. The immediate surroundings of the site comprise woodland to the west, south east and north east and undeveloped/agricultural land to the north, south and east. The site is also located approximately 1.3km west of the Avon Valley which is designated as a Site of Special Scientific Interest (SSSI), Special Protection Area (SPA) and Ramsar.

2.1.3 The site is located to the north of the Hamer Warren Quarry site which includes an active landfill site (known as Bleak Hill I and II) which is operated by CEMEX. The landfill is regulated under a separate environmental permit (reference EPR/FP3498SZ and EAWML 21000).

2.1.4 Topography across the Site is mostly level, at around 50 m AOD. To the north ground elevations rise to approximately 60 m AOD before decreasing again in the vicinity of Ashford Water, a tributary of the River Avon about 2.6 km north of the Site, which it joins from the west. Ground elevations drop fairly steeply to the east of the Site where the Avon valley dominates the landscape, and more gently to the south-west, decreasing to about 42 m AOD, before falling more steeply in the direction of Hamer Brook. This is due to the Site being located on the interfluve between the River Avon and its tributary, Hamer Brook.

2.2 SITE CLASSIFICATION

2.2.1 The regulated facility comprises a deposit for recovery activity.

2.3 APPLICATION BOUNDARY AND SITE SECURITY

2.3.1 The proposed application boundary is shown on Drawing Number CEM/B031732/PER/01. The north-eastern boundary is formed by Harbridge Drove Road, the northwest by the Drove End footpath which borders the Hamer Brook woodland, and the southern boundary comprises of the Hamer Warren Quarry and Landfill, alternatively known as Bleak Hill I and II, that is also operated by CEMEX.

2.3.2 Access to the site is achieved via an unnamed access road off Harbridge Drove which is located to the south of the site.

2.3.3 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 (as detailed on Drawing Number P6/206/5, Rev B (Plans I - XI) and fencing and lockable gates.

2.3.4 The site will be secure from public access by lockable gates at the site entrance.

3.0 SOURCE TERM CHARACTERISATION

3.1 HISTORICAL ACTIVITY

3.1.1 Mineral working has taken place in the vicinity of the application site, at and around Hamer Warren Quarry, since the 1930s. Hamer Warren Quarry, located to the south of the site, was granted planning permission in 1954 and has since been granted subsequent planning permissions in 1964, 1966, 1971 and 1983 for a series of extensions to workings. The original Hamer Warren Quarry has now been fully worked and restored and returned to the landowners.

3.1.2 Following the completion of works at the original Hamer Warren Quarry, planning permission was granted for two areas of land known as Bleak Hill I and II. These permissions and their references are set out below.

3.1.3 In April 1988 planning permission (reference 031987) was granted for Bleak Hill I, for the 'extraction of sand and gravel and selected infilling with imported materials with restoration to agriculture'. In November 1992 planning permission (reference 046239) was granted for Bleak Hill II, for the 'extraction of sand and gravel and selected infilling with imported materials with restoration to agriculture'.

3.1.4 In March 2011, planning permission (reference 11/96573) was granted by Hampshire County Council (HCC) for an extension of the lifetime of the aggregate recycling permission to 31 December 2018. This operation was originally permitted for Hamer Warren Quarry in 1993 and was relocated to Bleak Hill I under permission reference 70318. Permission 11/96573 renewed this.

3.1.5 In August 2010, planning permission (reference 09/94574) was granted by HCC for a variation to Condition 46 of planning permission 78402 and application to vary approved working scheme under condition 5 of planning permission 78402 for the retention of the existing aggregate processing plant and the working scheme varied for Bleak Hill I and II. The expiry date was set as 31 December 2018.

3.1.6 In June 2014, planning permission (reference 14/10309) was granted by HCC to allow 24-hour pumping for dewatering at Bleak Hill II. The end date was 31 December 2018.

3.1.7 On 7th December 2015, planning permission (reference 15/10539) was granted by HCC to revise the permitted working and restoration schemes. The end date was 31 December 2018.

3.1.8 In August 2016, planning permission (reference 16/10796) was granted by HCC for a new processing facility to enable improved mineral recovery. Condition 2 of this permission ensures that the processing plant in ancillary to the use of the land approved under planning permission 31987 and as varied by 09/94574 and 15/10539.

3.1.9 In December 2021, three planning permissions were granted by HCC which comprised the following: -

- Permission 19/11326 - Extension of mineral working at Hamer Warren Quarry, to extract some 600,000 tonnes of sand and gravel from Bleak Hill III, including works to create an extended haul road and back filling with inert material and progressive restoration to agriculture with increased nature;
- Permission 19/11324 - Variation of Condition 1 of Planning Permission 19/10015 to allow an extension of time for an aggregate recycling plant and operations at Bleak Hill I until 31 December 2025; and
- Permission 19/11325 - Variation of Condition 1 of Planning Permission 19/10014 to allow an extension of time for the working of minerals and the tipping of materials at Bleak Hill I and II until 31 December 2025.

3.2 PROPOSED DEVELOPMENT

3.2.1 The proposal entails the importation of inert waste for infilling of the quarry void that will be created following mineral extraction activities. Works will be completed in accordance with the final ground contours and restoration scheme (Drawing Number P6/206/7AA) as approved under planning permission reference 19/11326.

3.3 WASTE TYPES AND QUANTITIES

3.3.1 It is proposed that the site will accept only inert waste.

3.3.2 Permitted wastes accepted at the site will be strictly inert as classified under 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'.

3.3.3 Details regarding the proposed waste types including restrictions are provided in the Operating Techniques (Appendix C of the Environmental Permit Application).

3.3.4 The restoration of the site will require approximately 381,579m^3 of inert material. When using a bulk density conversion factor of 1.9 tonnes/m^3 this equates to approximately 725,000 tonnes.

3.4 PROPOSED OPERATIONAL PHASING

3.4.1 The proposed phasing plan for the proposed site is detailed on Drawing Number P6/206/5, Rev B (Plans I - XI). The area will comprise 5 phases (Phases 15-19) where extraction and progressive infilling and restoration will commence in Phase 15 located to the southwest of the site and will progress in a clockwise direction.

3.5 FINAL LANDFORM AND AFTER USE

3.5.1 As detailed in the restoration plan (Drawing Number P6/206/7A) the site will be restored to agriculture with a small pond in the southeast corner and with nature conservation provision and biodiversity enhancements around the boundaries. The restoration of the site would form part of the wider restoration proposals for the site.

3.5.2 Cross sections of the restoration are provided on Drawing Number P6/206/10A.

3.6 HYDROGEOLOGICAL RISK ASSESSMENT

3.6.1 A Hydrogeological Risk Assessment (HRA) has been prepared to provide the geological and hydrogeological setting of the site 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 G of the Environmental Permit Application.

4.0 PATHWAY AND RECEPTOR TERM CHARACTERISATION

4.0.1 Sections 4.1 – 4.4 are taken from the HRA that accompanies this application as Appendix G and therefore should be referred to for completeness.

4.1 GEOLOGY

Solid Geology

4.1.1 Current published geological mapping (BGS, 2022) indicates that the Site is underlain by bedrock of the Parkstone Sand Member. Locally, the overlying Parkstone Clay Member outcrops to the north-east. A wider outcrop of the Broadstone Clay Member, which underlies the Parkstone Sand Member, is also present to the east and northeast. All of these units are assigned to the Poole Formation. The Poole Formation (part of the Bracklesham Group) is underlain progressively by the London Clay Formation (Thames Group); the Reading Formation (Lambeth Group) and the Chalk Group which are present at outcrop approximately 2.5km to the north of the Site. These strata dip to the south-east with a regional dip of around 2° to 2.5°.

4.1.2 According to earlier geological mapping (BGS, 2004); the Parkstone Sand Member comprises fine to medium grained sand and is between 15 and 20m thick; the Parkstone Clay Member comprises a grey clay and is up to 5m thick; and the Broadstone Clay Member is a carbonaceous clay which is between 5 and 15m thick. The London Clay Formation is a sandy clay with some fine-grained sand layers and is between 85 and 115m thick. The geological mapping differentiates sandy beds within the London Clay towards its base. The Reading Formation is dominated by clays but also includes sands and is between 10 and 45m thick. The Chalk Group is typically around 500m thick in the Hampshire area.

Site Geology

4.1.3 CEMEX has historically undertaken various phases of site investigation and borehole drilling for the purposes of mineral exploration at the Site, as well as groundwater and ground gas monitoring. The information from these boreholes has allowed a detailed understanding of the geology at the Site to be developed.

4.1.4 The River Terrace Deposits are the mineral resource that has predominately been worked from within Bleak Hill, where they have been found to be present up to a thickness of between 4 and 10 m.

4.1.5 Within the site (Bleak Hill III), which lies to the north of the Site, the River Terrace Deposits tend to be around 5 m thick; apart from the south-eastern corner where a thickness 7m was locally observed. A similar thickness is expected within Phase 14 of Bleak Hill II. Generally, the unit is described as a sequence of slightly clayey sands and flint gravels.

4.1.6 A stiff sandy clay, sometimes with laminations, tends to be observed beneath the River Terrace Deposits, although a clayey sand overlying the sandy clay can also locally be present. The sand is distinct and is differentiated from the River Terrace Deposits by its clay content and lack of gravel. The sandy clay and clayey sand are the upper units of the Poole Formation (i.e. what was formerly known as the Bagshot Beds). It is assumed that the clayey sand found locally at the base of the River Terrace Deposits belongs to the Parkstone Sand Member; with the underlying sandy clay belonging to the Parkstone Clay Member.

4.1.7 The base of the Poole Formation has only been confirmed in three boreholes along the southern boundary of the site (Bleak Hill III) and to the north of Phase 14 of Bleak Hill II. These boreholes show that the sandy clay usually identified at the base of the River Terrace Deposits is in the order of 2m thick. The full thickness of the Poole Formation ranges in thickness from c. 2m in the west to over 7m in the east of the Site. It is understood, from the wider Site, that the thickening of the Poole Formation corresponds to the surface of the underlying London Clay being deeper to the east.

4.1.8 The boreholes that have penetrated the entire Poole Formation sequence indicate that it comprises a series of inter-bedded sandy clays and clayey sands. Individual beds are generally between 0.5m and 2m in thickness. This suggests that locally the sequence may be more variable than is suggested by the published geological mapping.

4.1.9 The London Clay is encountered beneath the Poole Formation; as described above it is present at a shallower depth (around 6m or 44m AOD) in the east of the Site than in the west (around 12m or 38m AOD). The London Clay is described as a stiff dark grey sandy clay with some fissuring and some sandy layers.

4.2 HYDROLOGY

River Avon

4.2.1 The Site lies on the interfluve between the River Avon (c 1.5 km to the east) and its tributary Hamer Brook (to the west). The Avon valley includes a broad flood plain (about 500 m wide) with numerous drainage ditches flowing into the River Avon. A tributary of Hamer Brook called Whitefield Brook flows along the western side of the Site with the spring source located 60 m to the west of Bleak Hill III. It joins Hamer Brook c. 500 m to the south-west of the Site.

4.2.2 The surface water quality of the River Avon is monitored by the EA in the reach from Woodgreen (NGR 417000, 117600) to the confluence with Ashford Water approximately 3.5 km northeast of the site. In 2019 the physio-chemical of quality of this reach was classified as “good”.

Hamer Brook and Whitefield Brook

4.2.3 Hamer Brook flows from north to south to the south-west of Bleak Hill II and III and then along the boundary of the Site to the south. Hamer Brook then joins Turmer Brook c. 1.5 km south of the Site which discharges into the River Avon about 2.2 km south-east. The main tributary of Hamer Brook is Sleep Brook, which becomes the Hamer Brook at the confluence with Whitefield Brook. Whitefield Brook has a catchment area of 2.06 km^2 to its confluence with Hamer Brook. Hamer Brook has a catchment area of 7.24 km^2 to its confluence with the Turmer Brook. Another smaller tributary of Turmer Brook, known locally as Lomer stream, is located on the eastern side of the Site. It rises from springs within Lomer Copse and flows eastwards towards Harbridge Green. It then flows southwards and discharges into Turmer Brook a few hundred metres downstream of its confluence with Hamer Brook. It passes c. 210 m from Bleak Hill III at its closest point in the south-eastern corner.

4.2.4 The location of relevant surface water features is shown on Figure 8 of the HRA.

Surface Water Quality

4.2.5 Surface water is monitored at the following locations:

- Two locations, HB1 and HB2, in the Hamer Brook stream to the west of the Site;
- LAKE1 – the restored lake in the Hamer Warren part of the Site;
- WB1 – a location on the stream known as Whitefield Bottom to the north-west of Bleak Hill; this stream is a tributary to the Hamer Brook and is up-stream of HB1;
- At three locations, S1, S2 and S3, in the small stream to the east of the Site, known locally as the Lomer Stream;
- HAMBL1DIS – the surface water discharge from the dewatering of the sand excavation into LAKE1; and
- BL2DIS – abstraction point for Bleak Hill II; water discharged may be to either on-site lagoons in Bleak Hill I or into LAKE1.

- WB1 and S1 are the upstream locations for the Bleak Hill I landfill on these two surface water systems.

4.2.6 Water quality is sampled at the surface water monitoring reports on a quarterly basis. A summary of surface water quality is provided in the HRA that accompanies this application.

4.3 HYDROGEOLOGY

Aquifer Designations

4.3.1 The superficial River Terrace Deposits and the Parkstone Sand Member bedrock present within the Site are classified by the EA as Secondary A Aquifers (i.e. permeable strata supporting local water supplies). The Parkstone Clay Member and the Broadstone Clay Member are classified as unproductive strata.

4.3.2 In the wider area, sandy units of the London Clay are classified as a Secondary A Aquifer; the non-sand units of the London Clay are classified as unproductive strata; and the Chalk Group is classified as a Principal Aquifer as it provides a major water source at a regional scale.

Aquifer Properties

4.3.3 There is little regional information available regarding the hydrogeological properties of the Secondary A aquifers in this area (BGS, 2000). However, water is thought to migrate through the more permeable units of the Poole Formation and discharge to rivers and springs at the contact with the underlying low permeability London Clay (and possibly the Parkstone and Broadstone Clay Members). A regional transmissivity value of 20 m^2/d and a storage coefficient of 1% are reported by BGS (2000).

4.3.4 Values of hydraulic conductivity were calculated from variable head tests performed on a number of boreholes across the wider Site during site investigations carried out in 1990 (Aspinwall & Company, 1990). These tests gave values of hydraulic conductivity for the Poole Formation, ranging between 0.05 and 9.7 m/d, with an average of 3 m/d.

Groundwater Source Protection Zones

4.3.5 The Site does not lie within a groundwater Source Protection Zone (SPZ). The closest SPZ is located approximately 2 km to the south. It is assumed that this abstraction takes water from the Chalk aquifer (i.e., beneath the London Clay). Given its distance from the Site, and the thickness of the London Clay confining the Chalk there is unlikely to be a hydraulic connection.

Groundwater Levels

4.3.6 The Site lies on a groundwater divide with groundwater on the western side flowing towards the Hamer Brook and Whitefield Bottom and groundwater on the eastern side towards the Lomer Stream and the River Avon beyond. This groundwater divide reflects the original topography of the Bleak Hill site and is controlled by the local watercourses.

4.3.7 Additional groundwater plots have been created from the most recent groundwater monitoring data from 2021, including dips taken from the monitoring boreholes WOB1, WOB2 and WOB3, installed to the west, north and east of the Bleak Hill III site, respectively. These plots demonstrate the groundwater flow direction and gradient across the Bleak Hill III site (and Bleak Hill I and 2) for January, March, June and December 2021. The plots can be viewed in the HRA (Appendix G of the Environmental Permit Application).

4.3.8 Groundwater levels seasonally vary across the site (Bleak Hill III). In March 2021, the levels ranged from 48.67mAOD at WOB2 in the north, down to around 45.00 to 45.87 m AOD in the boreholes located along the southern boundary of the site (W204P1, W203P2, W202).

4.3.9 In September 2021, groundwater levels ranged from 47.29 m AOD at WOB2 in the north, down to around 44.58 to 43.2 m AOD in the boreholes located along the southern boundary of the site. Overall, it appears that there is a seasonal variation of groundwater levels in the order of around 1.5m across the Bleak Hill III site.

4.3.10 Groundwater flow direction across the site (Bleak Hill III) is generally from north to south, with some component of east and westwards flow in the eastern and western margins of the site.

Groundwater Quality

4.3.11 Groundwater quality is monitored on a quarterly basis in 22 boreholes located around the wider Site as part of the environmental monitoring programme for the existing landfill site (Bleak Hill I). The boreholes monitored include those that are down-hydraulic gradient of Bleak Hill III; and boreholes that are down-hydraulic gradient of the previously worked and now restored areas of Bleak Hill I and II. A number of other boreholes are located down-gradient of other previously works and restored areas within the Hamer Warren quarry complex. Water quality is also monitored from the groundwater abstraction point, which is moved from phase to phase according to operational requirements.

4.3.12 Groundwater quality at the site is described in detail in the annual reports, and also within the most recent Hydrogeological Risk Assessment Review Report (Stantec, 2021). The report compares surface water and groundwater monitoring data from the current reporting period (December 2014 – February 2021) with the previous reporting period (September 2008 - November 2014).

4.3.13 A summary of the groundwater quality data review is presented below. Full table and graphs of key parameters can be viewed in the HRA Review, attached in the HRA.

4.3.14 Comparison of key groundwater quality parameters with compliance limits generated in previous HRAs produced for Bleak Hill I and II demonstrate few exceedances of the limits, with mean and 95th percentile concentrations remaining well below the limits (Table 1).

Table 1: Groundwater quality compared to Compliance Limits (Dec 2014 to Feb 2021), from the Stantec 2021 HRA Review

Determinand	Location	Unit	Compliance Limit	Count	Min	Max	Mean	95th Percentile
Ammoniacal Nitrogen	WP501P1, W103,M09, M02	mg/L	5	86	<0.06	15.2	0.547	2.06
Chloride		mg/L	100	85	11.9	181	30.6	49.9
Zinc		mg/L	1	85	<0.018	0.08	n.d.	n.d.
Ammoniacal Nitrogen	BL2DIS	mg/L	5	6	<0.06	0.06	0.035	0.0525

Chloride		mg/L	100	6	11.5	14.3	12.5	14.2
Zinc		mg/L	1	2	0.235	0.311	0.273	0.307

4.3.15 There have only been three breaches since the previous HRA review for Bleak Hill I that was completed in March 2021 by Stantec. Once of the ammoniacal nitrogen limit (M09 on 16/06/2020 at 20 mg/l) and twice of the chloride limit (W501P1 on 16/12/2014 and 20/01/2015 at 181 mg/l and 111 mg/l respectively). The compliance limits are consistent with background groundwater quality at the Site which has not significantly changed since the previous HRA review.

4.4 MAN MADE DEPOSITS

4.4.1 There are no Made Ground deposits shown on site.

4.5 AMENITY

4.5.1 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 E of the Environmental Permit Application.

4.6 COMPLIANCE POINTS (GROUNDWATER AND SURFACE WATER)

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

5.0 POLLUTION CONTROL MEASURES

5.1 SITE ENGINEERING

Attenuation Layer

5.1.1 The site will benefit from an attenuation layer which will be constructed from selected imported wastes, which will have sufficient clay content capable of achieving the required properties for the attenuation layer.

5.1.2 The waste will be deposited within a site, which has an engineered 1 m thick attenuation layer around the base and sides with a hydraulic conductivity of $1x10^{-7}$ m/s.

5.1.3 According to the EA's 'Engineering Construction Proposals for Deposit for Recovery' guidance, if waste is going to be used for the construction of the attenuation layer, the operator must confirm that the material is chemically and physically suitable. The chemical suitability will be achieved by implementing strict waste acceptance procedures which are outlined in the Operating Techniques document (Appendix C of the Environmental Permit Application). Physical suitability of the material will be assessed by the Site Manager in accordance with the measures outlined in Section 5.1.5 and Appendix A.

5.1.4 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 (prior to import) using Chart 1 (Appendix A) - review of site investigation information and Waste Information Form provided by the customer;
- Physical suitability (prior to import) using Chart 1 (Appendix A) - 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

5.1.5 Full details of the arrangements for the CQA of the attenuation layer will be provided in advance of the commencement of construction in line with the anticipated permit conditions.

5.2 RESTORATION

5.2.1 The application site is presently in agricultural use and it is the intention of CEMEX to restore the site back to Grade 3 agricultural land, including nature conservation and biodiversity enhancements for the application site including a waterbody to the southeast of the site as shown on Drawing Number P6/206/7A.

5.2.2 Prior to mineral extraction, the soils on site will be stripped to expose the underlying gravel and used to create a series of bunds (as shown on Drawing Number P6/206/5, Rev B (Plans I – XI)). The soil from these bunds will subsequently be used to facilitate the restoration of the site.

5.2.3 With reference to the Environment Agency's guidance notes for the Part B4 application form, an agricultural and ecological benefit statement is only required if the proposed activity involves the deposit of waste to provide a growing medium and/or nutrients to support plant growth. This is characterised in the guidance notes as recovery code R10 'Land treatment resulting in benefit to agriculture or ecological improvement'.

5.2.4 In light of the above, the growing medium works will not comprise the use of waste and therefore will not comprise a waste recovery activity. As such, it is considered that an agricultural and ecological benefit statement will not be required to support this application.

5.3 LEACHATE MANAGEMENT AND MONITORING

Leachate Generation

5.3.1 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.

5.4 GAS MANAGEMENT AND MONITORING INFRASTRUCTURE

Gas Generation and Management & Monitoring Infrastructure

5.4.1 A Gas Risk Assessment (GRA) has not been prepared for the site, as the Landfill Technical Guidance Note LFTGN03 indicates that new inert landfills do not pose a landfill gas hazard. Although the proposed activity comprises a recovery operation (using inert waste) as opposed to a disposal operation, it is considered that the principle is still applicable.

5.4.2 Nevertheless, a gas screening report has been prepared which has been submitted with the Environmental Permit application as Appendix H.

5.4.3 Gas monitoring boreholes have been installed around the site (reference WOB1, WOB2 and WOB3), as shown on Drawing Number CEM/B031732/BH/01. The gas screening report recommends that these boreholes are monitored for concentrations of methane, carbon dioxide, oxygen, atmospheric pressure, differential pressure and temperature.

5.4.4 In addition, the Environment Agency's 'Waste recovery plans and deposit for recovery permits' guidance, notes that if an operator intends to deposit waste more than 2 metres below the surrounding ground surface, they must monitor the waste for methane, carbon dioxide and oxygen. As such, in-waste monitoring boreholes will be installed in areas where waste deposits exceed 2m below the surrounding ground surface. The location of in-waste boreholes will be confirmed through the completion of site surveys which will confirm areas that comprise waste deposits that exceed 2m. The requirement for in-waste monitoring boreholes will be discussed with the Environment Agency.

5.4.5 Further details regarding the monitoring of gas are provided in the Environmental Management and Monitoring Plan (Appendix I of the Environmental Permit Application).

5.5 SURFACE WATER MANAGEMENT AND MONITORING

5.5.1 To ensure that the site is worked dry, dewatering may be required where the water table is high or if there are operational issues with extracting the mineral wet. If required, dewatering would be carried out by pumping water from the excavation void. The abstracted water will be used for processing and any surplus water discharged to the surface water body to the south of Bleak Hill I which is the Site's consented discharge point. As noted in Section 4.3.4, the water quality in the lake is monitored in accordance with the requirements of the environmental permit for the inert landfill operation (reference EPR/FP3498SZ).

5.5.2 Following completion and restoration of the landfills, dewatering will cease entirely and surface water discharge to the lake will no longer occur.

5.5.3 As detailed in the restoration plan (Drawing Number P6/206/7A) the site will be restored to agriculture with a small pond in the southeast corner. This pond will contribute towards the storm water attenuation capacity across the wider site.

5.5.4 The HRA recommends that surface water monitoring is undertaken. Further details regarding the monitoring of surface water are provided in the Environmental Management and Monitoring Plan (Appendix I of the Environmental Permit Application).

5.6 GROUNDWATER MANAGEMENT AND MONITORING

5.6.1 The HRA concludes that active groundwater management is not required for the site but recommends that monitoring is undertaken.

5.6.2 Further details regarding the monitoring of groundwater are provided in the Environmental Management and Monitoring Plan (Appendix I of the Environmental Permit Application).

5.7 AMENITY

5.7.1 An ERA (Appendix E of the Environmental Permit Application) has been prepared to consider the potential impact of the proposed site. 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.

5.8 POST CLOSURE CONTROLS (AFTERCARE)

5.8.1 The Environment Agency's Guidance 'Landfill (EPR 5.02) and other permanent deposits of waste: how to surrender your environmental permit' details that where records demonstrate that a recovery site has accepted Landfill Directive compliance inert wastes during its lifetime, the site is applicable for a low-risk surrender based on records alone. As such, no further closure and aftercare plan has been prepared in support of this Environmental Permit Application.

5.8.2 However, as a function of the planning permission, a 5-year aftercare scheme will be implemented to manage and maintain the landscaped areas. This will ensure the successful establishment and continued thriving of the landscape proposals.

6.0 MONITORING

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

7.0 SITE CONDITION REPORT

7.0.1 The Environmental Permitting Regulations – Site Condition Report (H5) guidance indicates that a Site Condition Report (SCR) is not applicable to those parts of a permitted site that have permanent deposits of wastes. However, in accordance with the EA's Regulatory Guidance Note RGN 9 – Surrender, a SCR is required for areas within a permitted facility that will not be used for the permanent deposit of waste.

7.0.2 According to the phasing plan (Drawing Number P6/206/5, Rev B (Plans I – XI)), there will be no areas within the application site that will not be used for the permanent deposit of waste. This includes the plant site area which will subsequently be used for extraction and infilling. As such, it's considered that a SCR is not required to support this application.

8.0 CLOSURE

8.0.1 The Environment Agency's Guidance 'Landfill (EPR 5.02) and other permanent deposits of waste: how to surrender your environmental permit' details that where records demonstrate that a recovery site has accepted Landfill Directive compliance 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.

8.0.2 However, as a function of the planning permission, a 5-year aftercare scheme will be implemented to manage and maintain the landscaped areas. This will ensure the successful establishment and continued thriving of the landscape proposals.

DRAWINGS

CEM/B031732/PER/01 - Environmental Permit Boundary

CEM/B031732/REC/01 – Receptor Plan

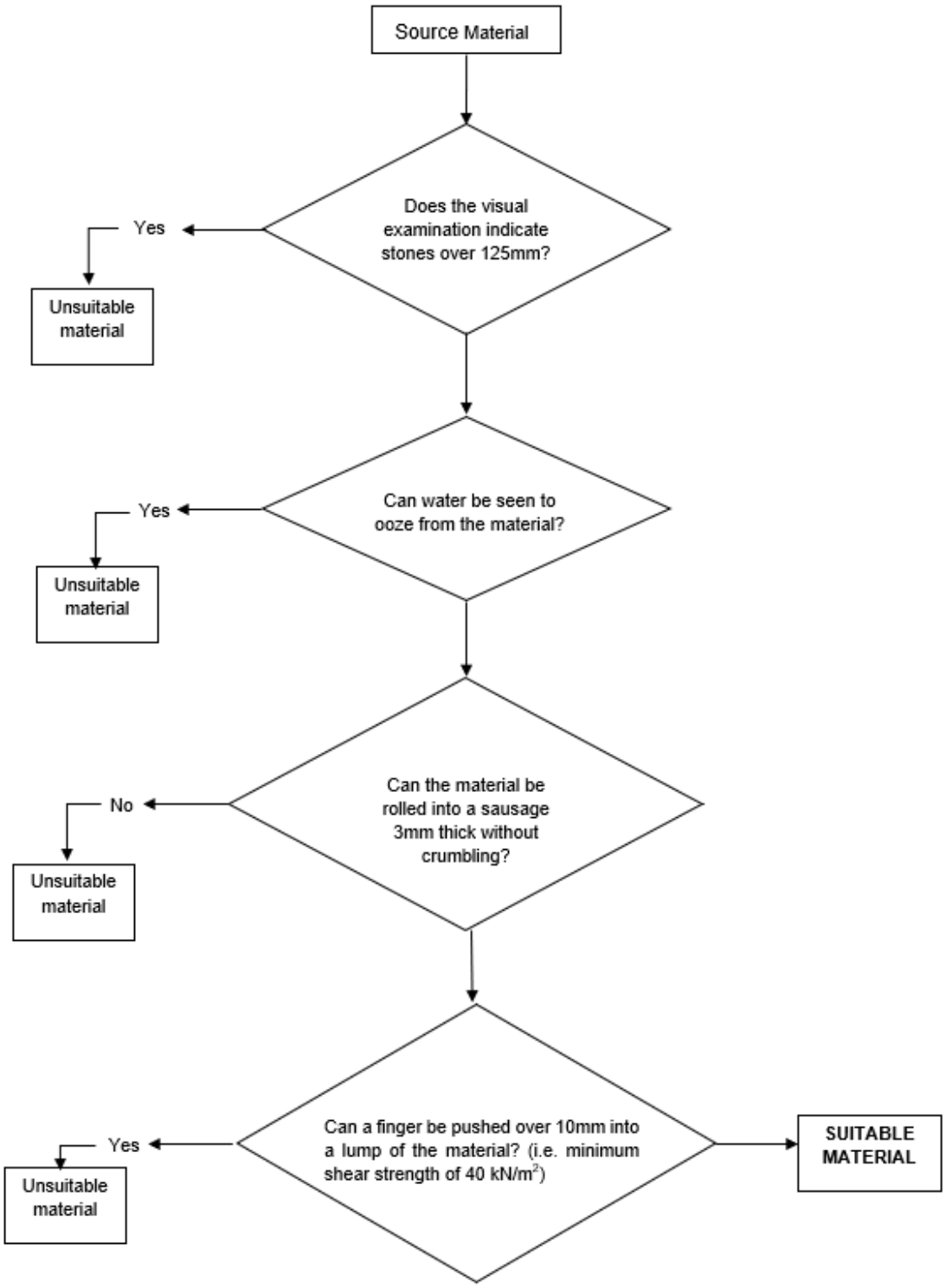
P6/206/7AA – Restoration Proposals

P6/206/5, Rev B (Plans I – XI) – Phasing Plans

P6/206/10A – Restoration Sections

CEM/B031732/BH/01 – Borehole Plan

APPENDIX A - FLOWCHART FOR THE SELECTION OF SUITABLE MATERIAL FOR THE CONSTRUCTION OF AN ATTENUATION LAYER


Source Material
Does the visual examination indicate stones over 125mm?
Yes
Unsuitable material
Can water be seen to ooze from the material?
Yes
Unsuitable material
Can the material be rolled into a sausage 3mm thick without crumbling?
No
Unsuitable material
Can a finger be pushed over 10mm into a lump of the material? (i.e. minimum shear strength of 40 kN/m²)
Yes
Unsuitable material
SUITABLE MATERIAL