

Busta Triangle, Eversley Deposit for Recovery

784- B068370

Environmental Setting and Site Design

Environmental Permit Application

Collard Group Ltd

April 2025

Document prepared on behalf of Tetra Tech Limited. Registered in England number: 01959704



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COL/B068370/PER/01 – Permit Boundary Plan

1886-FPCR-XX-XX-DR-L-0001 – Site Layout and Phasing Plan

1886-FPCR-XX-XX-DR-L-0002 - Final Restoration Plan

COL/B068370/MON/01 – Borehole Monitoring Plan

Appendices

Appendix A - Flowchart for the Selection of Suitable Material for the Construction of an Attenuation Layer

1.0 Introduction

1.1 Report Context

- 1.1.1 This section of the Environmental Permit application corresponds to Appendix 2, Question 1 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.
- 1.1.2 This Environmental Permit application has been prepared by Tetra Tech on behalf of the Operator, Collard Group Ltd (Collard).
- 1.1.3 This document relates to Collard's site Eversley Quarry located at Coopers Hill, Eversley Common, Eversley, Hampshire, RG27 0QA, and is centred at approximate National Grid Reference (NGR) SU 78735 59566. The application site is detailed on Drawing Number COL/B068370/PER/01.
- 1.1.4 Collards are seeking an Environmental Permit for a deposit for recovery activity. Collards propose to import inert materials for the long-term restoration of Eversley Quarry, with the intention to eliminate and mitigate flooding issues at Busta Triangle. It is anticipated that a maximum of 55,000m³ per annum will be imported to the site for a three-year period, totalling a maximum of 165,000m³.
- 1.1.5 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.
- 1.1.6 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 Description

2.1 Site Location and Context

- 2.1.1 The site is located at Eversley Quarry located at Coopers Hill, Eversley Common, Eversley, Hampshire, RG27 0QA, and is centred at approximate National Grid Reference (NGR) SU 78735 59566. The site location is detailed on Drawing Number COL/B068370/PER/01.
- 2.1.2 The site forms part of the wider Eversley Quarry, which is a former sand and gravel quarry located approximately 2.5km south-east of Eversley and 1 km north-west of Blackbushe Airport in the County of Hampshire.
- 2.1.3 The triangle is formed by two roads the A327 along the western boundary and the B3016 Cooper's Hill along the eastern boundary with agricultural land to the north.
- 2.1.4 The site is separated into distinct areas located north and south of Bridleway no. 11 which runs east-west through the site.
- 2.1.5 Access to the site will be achieved via the existing Eversley Quarry access point off Coopers Hill (B3016).

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 COL/B068370/PER/01.
- 2.3.2 The site is bordered by the A327 to the west, the B3016 Cooper's Hill to the east and to the north agricultural land. The application site is surrounded by coniferous woodland to the north, south, east and west, which provides natural screening.
- 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 and fencing and lockable gates.
- 2.3.4 The site will be secure from public access by lockable gates at the site entrance.
- 2.3.5 Herras fence panels double clipped will be installed to the perimeter of the works area. The bridal way will also be segregated using Herras to allow access 24/7.

3.0 Source Term Characterisation

3.1 Historical Activity

- 3.1.1 Eversley Quarry is a sand and gravel quarry that first became operational in the 1980s. The wider site has a complex planning history with several modifications to conditions. The planning permissions referenced within this report are those which pertain to the Busta Triangle site (application site).
- 3.1.2 There have been extensions in two areas referred to as 'the Elvetham land' and 'Busta Triangle.'
- 3.1.3 Planning permission for the western extension to Eversley Quarry known 'Busta Triangle' was granted in February 2011 under planning permission 10/01971/CMA allowing for sand and gravel extraction with progressive restoration to heathland, mire and commercial forestry.
- 3.1.4 All sand and gravel reserves have been extracted at the quarry and with the exception of Busta Triangle itself, the quarry has been fully restored and is undergoing aftercare in accordance with requirements of the planning consents that control the quarry.
- 3.1.5 Since the completion of sand and gravel extraction at the site several years ago, the site has been affected by extensive flooding issues encountered both north and south of Bridleway No.11 ("the bridleway") following a failure of the drainage provisions put in place at the time and it has not been possible complete final restoration of the site in accordance with the approved scheme.

3.2 Proposed Development

- 3.2.1 In February 2024, planning permission (reference HCC/2024/0088) was submitted to Hampshire County Council for the following: -

"The importation of inert materials to deliver a long-term sustainable restoration landform to enable the establishment of high-quality nature conservation habitat and commercial forestry, including for the maintenance and use of existing points of access to and from Eversley Quarry and the establishment and use of ancillary facilities at Busta Triangle (Eversley Quarry), Cooper's Hill, Eversley Common, Hook Eversley RG27 0PZ (application number 24/00484/HCC)"

- 3.2.2 The proposal entails the importation of inert material to help restore the site, eliminate and mitigate flooding issues at Busta Triangle and create a restored landform which enable the establishment of high-quality nature conservation habitats and commercial forestry at the application site. Works will be completed in accordance with the final ground contours and restoration scheme (Drawing Number 1886-FPCR-XX-XX-DR-L-0002) as approved under planning permission reference HCC/2024/0088.

3.3 Waste Types

3.3.1 Waste is defined as 'Any substance or object the holder discards, intends to discard or is required to discard' under the Waste Framework Directive (European Directive 2006/12/EC), which repeals the European Directive 75/442/EC as amended.

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 19th December 2002 'establishing criteria and procedures for the acceptance of waste at landfills.'

3.3.3 Inert waste is defined in Article 2 of the Landfill Directive 1999/31/EC as follows: -

'Inert waste' means waste that does not undergo any significant physical, chemical or biological transformations. Inert waste will not dissolve, burn or otherwise physically or chemically react, biodegrade or adversely affect other matter with which it comes into contact in a way likely to give rise to environmental pollution or harm to human health. The total leachability and pollutant content and the ecotoxicity of its leachate are insignificant and, in particular, do not endanger the quality of any surface water and/or groundwater.

3.3.4 Table 1 lists those wastes that may be accepted at the site which do not require Waste Acceptance Criteria (WAC) testing under Council Decision (2003/33/EC), provided that they are inert and from a single source only (mixed loads from more than one site cannot be accepted without testing).

Table 1: Proposed Waste Types

EWC Code	Description	Restriction
01	WASTE RESULTING FROM EXPLORATION, MINING, QUARRYING AND PHYSICAL AND CHEMICAL TREATMENT OF MINERALS	
01 01	Wastes from mineral excavation	
01 01 02	Waste glass-based fibrous materials	Restricted to waste overburden and interburden only
01 04	Wastes from physical and chemical processing of non-metalliferous minerals	
01 04 08	Waste gravel and crushed rocks other than those mentioned in 04 04 06	
01 04 09	Waste sand and clay	
10	WASTES FROM THERMAL PROCESSES	
10 12	Wastes from manufacture of ceramic goods, bricks, tiles and construction products	
10 12 08	Waste ceramics, brick, tiles and construction products (after thermal processing)	
17	CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)	
17 01	Concrete, bricks, tiles and ceramics	
17 01 01	Concrete	Selected C&D waste only

17 01 02	Bricks	Selected C&D waste only
17 01 03	Tiles and ceramics	Selected C&D waste only
17 01 07	Mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06	Selected C&D waste only. Metal from reinforced concrete must have been removed.
17 05	Soil (including excavated soil from contaminated sites), stones and dredging spoil	
17 05 04	Soil and stones other than those mentioned in 17 05 03	Excluding topsoil, peat; excluding soil and stones from contaminated sites
19	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	
19 12	Wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified	
19 12 09	Minerals only	Wastes from the treatment of waste aggregates that are otherwise naturally occurring minerals. Does not include fines from treatment of any non-hazardous waste or gypsum from recovered plasterboard.
20	MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS	
20 02	Garden and park wastes (including cemetery waste)	
20 02 02	Soil and stones	Only from garden and parks waste; excluding topsoil, peat.

3.3.5 In addition to the wastes that are listed in Table 1, Collard propose to accept the waste codes listed in Table 2 below and will be subject to WAC testing.

Table 2: Proposed Waste Types that Will Require WAC Testing

EWC Code	Description	Restriction
10	WASTES FROM THERMAL PROCESSES	
10 13	Wastes from manufacture of cement, lime and plaster and articles and products made from them	
10 13 14	Waste concrete	
19	WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTEWATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE	
19 12	Wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified	
19 12 12	Other wastes from mechanical treatment of wastes other than those mentioned in 19 12 12	Restricted to crushed bricks, tiles, concrete and ceramics

		only. Metal from reinforced concrete must be removed. Does not include fines from treatment of any non-hazardous waste or gypsum from recovered plasterboard.
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3.3.6 Waste types for the construction of the Attenuation Layer will be restricted to the following waste codes in Table 3 below. The attenuation layer will be constructed with a minimum thickness of 1m with a hydraulic permeability of $1 \times 10^{-7} \text{m/s}$.

Table 3: Permitted Waste Types in the Attenuation Layer Only

EWC Code	Description	Restriction
17	CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)	
17 05	Soil (including excavated soil from contaminated sites), stones and dredging spoil	
17 05 04	Soil and stones other than those mentioned in 17 05 03*	

* This specifically excludes excavated soil from contaminated sites.

3.4 Waste Quantities

3.4.1 The proposed deposit for recovery activity will have an annual throughput of 55,000m³ with the overall restoration scheme requiring a total of 165,000m³.

3.4.2 There will be no hazardous waste accepted on site.

3.5 Proposed Operational Phasing

3.5.1 All topsoil and overburden stripped from the areas to be excavated shall be removed and stored separately before operations commence for use in site restoration.

3.5.2 Once all topsoil and overburden has been removed and stored, works will commence with water being transferred from lagoon 1 (lower lagoon) into lagoon 2 (upper lagoon) by using a pump and silt buster.

3.5.3 The proposed phasing plan for the proposed site is detailed on Drawing Number 1886-FPCR-XX-XX-DR-L-0001. The works will take place over five phases as shown with Phases 1-3 located to the south of the bridleway and Phases 4-5 located to the north of this. The application site would be worked in a northerly direction, beginning with Phase 1 at the far south.

3.5.4 The importation, landscaping and restoration works in Phases 1-3 located to the south of the bridleway, would be completed within approximately two years and works in Phases 4-5 located to the north of the bridleway would be completed within one year.

3.6 Final Landform and After Use

- 3.6.1 As detailed in the restoration plan Drawing Number 1886-FPCR-XX-XX-DR-L-0002 the site will be restored to an appropriate balance of habitats and after-uses in accordance with the approved scheme of restoration under Planning Permission 10/01971/CMA dated 03/02/2011 (“the planning consent”), which are a combination of nature conservation and rotational commercial forestry.

3.7 Hydrogeological Risk Assessment

- 3.7.1 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 J of the Environmental Permit Application.

4.0 Pathway and Receptor Term Characterisation

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

4.2 Geology

Regional Geology

4.2.1 The bedrock geology, as mapped by the BGS 1:50k, indicates that the site is underlain by the Camberley Sand Formation (formerly known as the Barton Beds). This formation overlies the Windlesham Formation, both of which are part of the Bracklesham Group from the Paleogene age. Summary descriptions of the regional bedrock geological units, listed by depth, are provided in the Table below.

Table 4: Regional Bedrock Geology Summary

Geological Unit	Lithological Description*	Regional Thickness (m)	Upper Boundary	Lower Boundary
Camberly Sand Formation	A fairly uniform sequence of homogeneous, bioturbated, yellow-brown, sparsely to moderately glauconitic silty fine-grained sand or sandy silt, containing some ironstone concretions and masses of white sandstone. Sporadic flint gravel or a gravel bed is present near the base.	Up to 69m**	Youngest bedrock unit, so it is overlain, if at all, only by deposits of Quaternary age.	Windlesham Formation
Windlesham Formation	Bioturbated dark green to brown, fine- to medium-grained sands with sand-sized glauconite grains, silts, and white, yellow, or brown clay. This is overlain by organic dark grey clay with lenticles of fine sand, followed by glauconitic sand and sandy clayey silt. Occasional layers of flint gravel are present, with a prominent gravel bed at the top.	Up to 25m**	Camberly Sand Formation	Swinley Clay Member, or sands of the Bagshot Formation
Bagshot Formation	Most of the Bagshot Formation consists of pale yellow-brown to pale grey or white sand, which can be locally orange or crimson. This sand ranges from fine- to coarse-grained, is frequently micaceous, and can be locally clayey, with sparse glauconite and occasional seams of gravel. The sands are commonly cross-bedded. Thin beds and lenses of laminated pale grey to white sandy or silty clay, also known as 'pipe-clay,' occur sporadically and become thicker towards the top of the formation.	Up to 45m**	Windlesham Formation	Claygate Member (London Clay Formation)

Superficial Geology

- 4.2.2 The BGS 1:50k Superficial deposits map indicates that the site is underlain and surrounded by River Terrace deposits, consisting of sand and gravel with localized lenses of silt and clay. It is expected that any superficial deposits within the worked area have been removed, and the void partially backfilled to meet the restoration scheme. The exact materials used for backfilling are unknown but likely include silty or clayey overburden from quarrying, or fines from mineral washing processes.
- 4.2.3 Remaining in-situ superficial deposits are limited to the site's perimeter, outside the previously worked areas. Site investigations in 2023 show these deposits at depths of 3.4 to 5.5 meters below ground level (mbgl) along the perimeter. LIDAR data and survey elevations suggest basal superficial deposit elevations of 89.6m AOD at the northwestern perimeter, 90.4m AOD at the northeastern section, and 90.3m AOD at the southern perimeter.
- 4.2.4 A historical plan (Appendix C of the HRA) indicates the base of mineral deposits (sand and gravel) at approximately 91m AOD in the southern and central parts of the site, and 92m AOD in the northern part. These elevations are similar to the 2023 site investigation depths at the perimeter where deposits remain in-situ.

4.3 Hydrology

Catchment

- 4.3.1 The site is located within the catchment of the River Blackwater (Hawley to Whitewater confluence at Bramshill sub catchment). The River Blackwater is a tributary of the Loddon and sub-tributary of the Thames. It rises at two springs in Rowhill Nature Reserve between Aldershot, Hampshire and Farnham, Surrey. It curves a course north then west to join the Loddon in Swallowfield civil parish. The Blackwater is located 2.7km north of the site.
- 4.3.2 There are several small watercourses locally that either flow north/northeast towards the River Blackwater or southwest towards the River Hart. Observations from a site walkover noted in the Hydrological and Hydrogeological Assessment undertaken as part of the original quarry extension identify a small channel adjacent to the northern site boundary, which conveys flow east towards a tributary of the River Blackwater. This channel was largely dry, suggesting it is not in continuity with groundwater and would only receive runoff during storm events.
- 4.3.3 A tributary of the River Blackwater, sourced from Camberly Kart Club, is located approximately 850 m east of the site and is designated by the Environment Agency as a Main River. The watercourse flows north past the site, draining an upstream catchment area of approximately 2.1 km².
- 4.3.4 There are no further Main Rivers within 1km of the site.

Rainfall

- 4.3.5 The Met Office climate summary (1991 – 2020) for Odiham1, situated approximately 11 km southwest of the site, indicates that the average annual rainfall for the area is around 780 mm.

Surface Water Abstraction

- 4.3.6 The Environment Agency were contacted on 05/11/2024 and asked for details of surface water abstractions local to the site; no additional abstractions within 2km of the site were noted.

4.4 Hydrogeology

Aquifer Designation and Characteristics

- 4.4.1 The Environment Agency (EA) classifies the underlying bedrock aquifer unit as Secondary A, described as:

“permeable strata capable of supporting water supplies at a local rather than strategic scale and in some cases forming an important source of base flow to rivers, lakes or wetlands.”

- 4.4.2 The superficial deposits mapped at and near the site also have a Secondary A aquifer designation.
- 4.4.3 The superficial deposits and strata of the Bracklesham group are considered to form a series of semi-discrete minor aquifers, aquitards, and aquicludes. The sandy/gravel-rich, more permeable strata form minor aquifers, while the clay-dominated, likely discontinuous strata act as aquitards and aquicludes.

Source Protection Zone

- 4.4.4 The site is not within a groundwater Source Protection Zone (SPZ). The nearest SPZ, an Outer Protection Zone II, is approximately 8 km southwest of the site.

Groundwater Abstraction

- 4.4.5 The Environment Agency were contacted on 05/11/2024 and asked for details of groundwater abstractions local to the site; no additional abstractions within 2km of the site were noted.

Groundwater Levels and Flow

- 4.4.6 Groundwater flow is thought to be broadly to the north. Groundwater flow within the Bracklesham Group is via intergranular flow (primary flow) within the sandier sequences.
- 4.4.7 Measured groundwater levels within boreholes indicate that the saturated thickness of the Bracklesham Group at the site ranges from around 87.57mOAD (5.56m bgl) in the north-west, to

around 89.77mAOD (5.6m bgl) in the south. Additionally, groundwater levels and flows at site fluctuate during seasonal variations

- 4.4.8 Groundwater level monitoring data is available for the three boreholes (BH01, BH02, and BH03) installed at the application site in October-November 2023. Water strike and level data were recorded during these site investigations and are summarized in **Error! Reference source not found.**the Table below.

Table 5: Summary of Water Strike and Level Data During 2023 Site Investigations

Borehole ID	Water Strike / Level Info.	Relevant Geological Unit
BH01	5.3 mbgl	Bracklesham Group
	6.5 rising to 6.3 mbgl	
	8.0 rising to 7.5 mbgl	
	Standing water level of 5.3 mbgl the day after drilling completion (01/11/2023)	
BH02	7.2 mbgl	
	10.3 rising to 9 mbgl	
	Standing water level of 7.2 mbgl the day after drilling completion (02/11/2023)	
BH03	6.5 mbgl	
	9.8 rising to 8.5 mbgl	
	10.5 mbgl	
	Standing water level of 6.55 mbgl the day after drilling completion (31/10/2023)	

- 4.4.9 The water strike data indicates that the shallowest groundwater encounter is over 5 meters below ground level. Updated assessments of borehole elevations show groundwater levels of approximately 87.5-88 meters Above Ordnance Datum (mAOD) in the north of the site and 89.3 mAOD in the south.
- 4.4.10 Groundwater levels within the three monitoring boreholes have been dipped on a monthly basis, with level measurements available for ten rounds from January 2024 to October 2024.
- 4.4.11 Groundwater level measurements in metres below ground level (mbgl) and metres above ordnance datum (mAOD) are summarised in the Tables below. A groundwater hydrograph of measurements to date is presented in Figure 1.

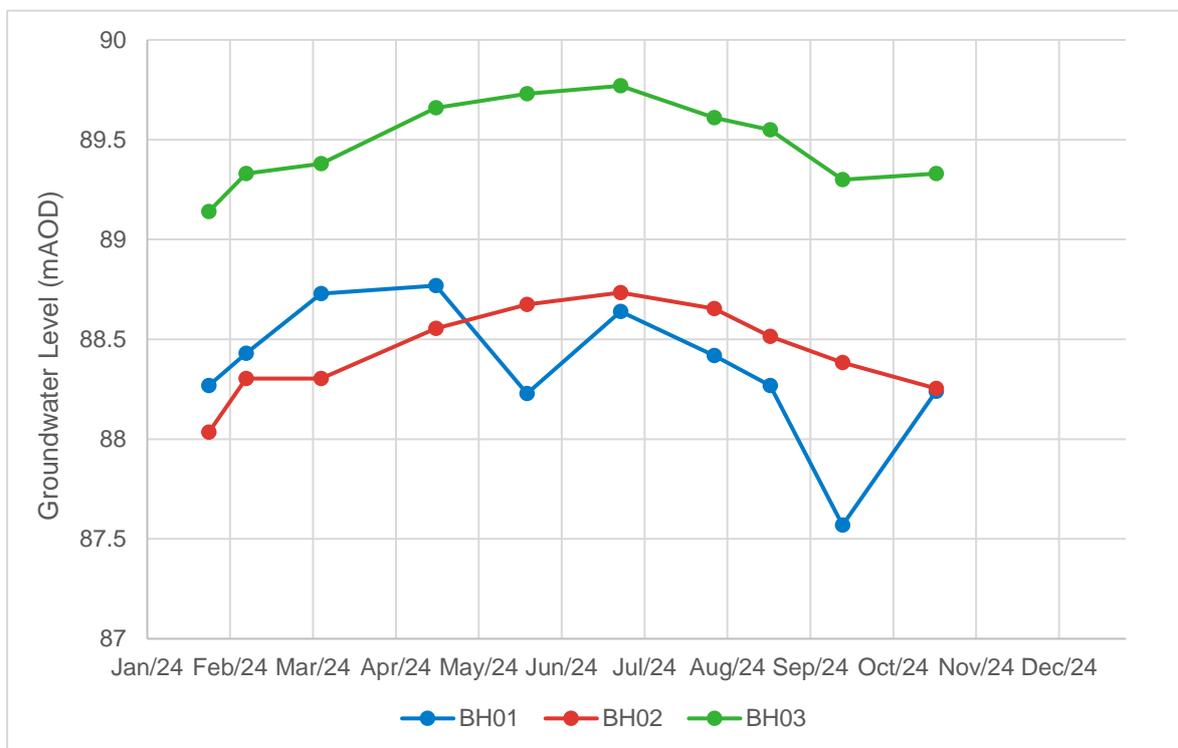
Table 6: Groundwater levels in mbgl, Jan to Oct 2024

Date	BH01, DTW (mbgl)	BH02, DTW (mbgl)	BH03, DTW (mbgl)
24/01/2024	5.22	6.71	6.68
07/02/2024	5.00	6.44	6.49
06/03/2024	4.76	6.42	6.44
18/04/2024	4.71	6.17	6.16
22/05/2024	5.26	6.06	6.10
26/06/2024	4.85	6.00	6.05
31/07/2024	5.06	6.08	6.21
21/08/2024	5.22	6.22	6.27

Table 7: Groundwater levels in mAOD, Jan to Oct 2024

Date	BH01, GWL (mAOD)	BH02, GWL (mAOD)	BH03, GWL (mAOD)
24/01/2024	88.269	88.034	89.14
07/02/2024	88.429	88.304	89.33
06/03/2024	88.729	88.304	89.38
18/04/2024	88.769	88.554	89.66
22/05/2024	88.229	88.674	89.73
26/06/2024	88.639	88.734	89.77
31/07/2024	88.419	88.654	89.61
21/08/2024	88.269	88.514	89.55

Figure 1: Groundwater Hydrograph, Jan to Oct 2024



- 4.4.12 Groundwater levels display seasonal variation during the monitoring period. Water levels in the boreholes increased by approximately 0.5 metres from the beginning of the year, peaking in the early summer months in June. Following this peak, by October water levels gradually declined to similar levels to those recorded in February.
- 4.4.13 Up until April, groundwater levels in BH01 are higher than those recorded in BH02. However, after April, groundwater levels in BH02 are higher.
- 4.4.14 Groundwater levels are shown to flow towards the northeast in March, and towards the northwest in September. The reason for the change in flow direction is due to the variability in which of BH01 or BH02 demonstrates higher groundwater levels, noted above. However, generally a northwards regional flow direction is assumed, based upon the local topography, and the presence of the River Blackwater 2.7km to the north.
- 4.4.15 Based on the groundwater levels discussed above, the ponds on the site are not in hydraulic connectivity with the regional groundwater table. Water within the on-site ponds results from direct rainfall and surface water runoff entering the depressions left by former quarry workings. The base of the excavations comprises finer grained material than the extracted River Terrace Deposits, leading to ponding of water.

Groundwater Quality

- 4.4.16 Between January 2024 and October 2024, ten monthly groundwater sampling rounds have been conducted to provide a baseline dataset of groundwater quality data for the site.
- 4.4.17 Resultant samples have been screened against Threshold Screening Values (TSV), which comprise the minimum of the UK Drinking Water Standard (DWS) or Environmental Quality Standard (EQS) for the substance. For the substances cadmium, lead and mercury, the Minimum Reporting Value (MRV) as defined by the Environment Agency has been set as the TSV.
- 4.4.18 Potential outliers within the dataset have been noted: -
- Average electrical conductivity values across all groundwater samples was 546 us/cm, excluding a reading of 6100 us/cm in BH01 during the April round which is assumed to be an outlier; and,
 - High concentrations were noted for calcium (713.2 mg/l), Potassium (90.3mg/l) and Magnesium (74mg/l) for June at BH03. These concentrations are much higher than in previous rounds with BH03 (and BH01 and BH02) and are therefore considered to be outliers.
- 4.4.19 The following exceedances of the TSVs were noted: -
- All samples (21 no.) exceeded the TSV for nickel, which is based upon the DWS of 0.02 mg/l. The average recorded concentration was 0.0087mg/l, and the maximum was 0.013mg/L. Note that the freshwater annual average EQS for Nickel is 0.02mg/l, meaning that none of the samples exceeded the EQS; and,
 - Fifteen of 21 samples exceeded the 0.0129 mg/l TSV for Zinc, which is based upon the freshwater EQS . The average recorded concentration was 0.0239 mg/l, and the maximum was 0.0570mg/l.
- 4.4.20 Elevated naturally occurring nickel is known to occur within some groundwater of the Bracklesham Group within the Thames Basin, due to oxidation of pyrite within the sands of the aquifer; concentrations can occur with a 5th to 95th percentile range of a 0.007 to 0.0374 mg/l
- 4.4.21 With the exception of the exceedances for nickel and zinc noted above, groundwater within the Bracklesham Group at the site is of fairly good quality: -
- Cadmium, mercury and lead were below the limit of detection in all boreholes in all rounds. However, it should be noted that the LOD for the testing carried out to date is above the Minimum Reporting Values presented by UKTAG;
 - Arsenic was detected just above the limit of detection (0.0025 mg/l) on two occasions. During the June round 0.0026 mg/l was recorded in BH01, and during the October round 0.0028 mg/l was recorded in BH03. Both of these detections were below the TSV of 0.01mg/l, which is based on the DWS;

- Chloride and Sulphate levels were generally low, respectively averaging 20.5 mg/l and 61.8mg/l across all samples;
- Concentrations of Ammoniacal Nitrogen were also generally low, with four samples below the LOD, and the remaining samples averaging 0.065 mg/l, well below the TSV of 0.30mg/l; and,
- Analysis for an extended suite including PCBs, Speciated PAHS, Phenol and Mineral Oils and BTEX was scheduled during the June monitoring round. All of these substances were below their respective limits of detection.

4.4.22 A summary table of the groundwater analysis conducted to date is presented in the Table below.

Table 8: Average Groundwater Quality Data, BH01, BH02 and BH03, Jan to Oct '24

Substance	Average (mg/l)
Dissolved Antimony	-
Dissolved Arsenic	0.0027
Dissolved Barium	0.025
Dissolved Cadmium	-
Dissolved Calcium	43.8
Dissolved Chromium (Total)	-
Dissolved Copper	-
Dissolved Iron (Total)	0.067
Dissolved Lead	-
Dissolved Magnesium	5.887
Dissolved Mercury	-
Dissolved Molybdenum	-
Dissolved Nickel	0.0087
Dissolved Potassium	6.16
Dissolved Selenium	-
Dissolved Vanadium	0.0018
Dissolved Zinc	0.0239

pH	6.32
Total Alkalinity as CaCO ₃	93.6
Electrical Conductivity @25C	546.4
Chloride	20.5
Sulphate as SO ₄	61.8
Ammoniacal Nitrogen as N	0.065

Surface Water Quality

- 4.4.23 Surface water quality sampling has been undertaken on the northern pond on a monthly basis for a range of parameters. The sample location (Grid reference: SU 78728 59603) for surface water sampling is along the southern bank of the northern of the two on-site ponds.
- 4.4.24 The surface water samples have been screened against Threshold Screening Values (TSV), based upon the lowest of DWS, EQS or MRV. The following exceedances were noted: -
- The average recorded concentration was 0.455mg/l, and the maximum 0.89mg/L. All samples were below the EQS for iron, at 2 mg/l; and,
 - One exceedance against the TSV for zinc, with a maximum of 0.017 mg/l recorded against a TSV of 0.0129 mg/l.
- 4.4.25 With the exception of these exceedances, surface water within the ponds is generally of good quality: -
- The average electrical conductivity value across all samples was 123 us/cm, lower than the values measured within the monitoring boreholes;
 - No detections above the LOD were noted for cadmium, arsenic or lead; and,
 - Analysis for an extended suite including PCBs, Speciated PAHS, Phenol and Mineral Oils and BTEX was scheduled during the June monitoring round. Several PAH's were detected above the limit of detection, but below their respective TSVs, where available. No PCBs, mineral oils or BTEX were detected.

Table 9: Average Surface Water Quality Data, SW01 (Northern Pond), Jan to Oct '24

Substance	Average (mg/l)
Dissolved Antimony	-
Dissolved Arsenic	-
Dissolved Barium	0.006
Dissolved Cadmium	-
Dissolved Calcium	4.09
Dissolved Chromium (Total)	-
Dissolved Copper	-
Dissolved Iron (Total)	0.455
Dissolved Lead	-
Dissolved Magnesium	0.87
Dissolved Mercury	-
Dissolved Molybdenum	-
Dissolved Nickel	-
Dissolved Potassium	1.79
Dissolved Selenium	-
Dissolved Vanadium	-
Dissolved Zinc	0.0077
pH	6.24
Total Alkalinity as CaCO ₃	34.57
Electrical Conductivity @25C	123.86
Chloride	7.79
Sulphate as SO ₄	1.47
Ammoniacal Nitrogen as N	0.0733

4.5 Man made deposits

- 4.5.1 It is expected that any superficial deposits within the worked area have been removed, and the void partially backfilled to meet the restoration scheme. The exact materials used for backfilling are unknown but likely include silty or clayey overburden from quarrying, or fines from mineral washing processes.

4.6 Amenity

- 4.6.1 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 D of the Environmental Permit Application.

4.7 Compliance points (Groundwater and Surface Water)

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

5.0 Pollution Control Measures

5.1 Site Engineering

- 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 less than 1×10^{-7} m/s (or equivalent).
- 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 5.1.4 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 proposal entails the importation of inert material to help restore the site, eliminate and mitigate flooding issues at Busta Triangle and create a restored landform which enable the establishment of high-quality nature conservation habitats and commercial forestry at the application site. Works will be completed in accordance with the final ground contours and restoration scheme (Drawing Number 1886-FPCR-XX-XX-DR-L-0002) as approved under planning permission reference HCC/2024/0088.
- 5.2.2 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'.
- 5.2.3 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

- 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

- 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 G.
- 5.4.3 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.

5.5 Surface Water Management and Monitoring

5.5.1 Surface water quality sampling has been undertaken on the northern pond on a monthly basis for a range of parameters. The sample location (Grid reference: SU 78728 59603) for surface water sampling is along the southern bank of the northern of the two on-site ponds.

5.5.2 The surface water samples have been screened against Threshold Screening Values (TSV), based upon the lowest of DWS, EQS or MRV (see Section 2.7.7). The following exceedances were noted:

-

- Eight exceedances from ten samples against the TSV for iron of 0.2mg/l, which is based upon the DWS. The average recorded concentration was 0.455mg/l, and the maximum 0.89mg/L. All samples were below the EQS for iron, at 2 mg/l; and,
- One exceedance against the TSV for zinc, with a maximum of 0.017 mg/l recorded against a TSV of 0.0129 mg/l.

5.5.3 With the exception of these exceedances, surface water within the ponds is generally of good quality: -

- The average electrical conductivity value across all samples was 123 us/cm, lower than the values measured within the monitoring boreholes;
- No detections above the LOD were noted for cadmium, arsenic or lead; and,
- Analysis for an extended suite including PCBs, Speciated PAHS, Phenol and Mineral Oils and BTEX was scheduled during the June monitoring round. Several PAH's were detected above the limit of detection, but below their respective TSVs, where available. No PCBs, mineral oils or BTEX were detected.

5.5.4 During restoration surface water will be pumped through a culvert from the southern Lagoon to the northern lagoon, once the southern lagoon has been infilled, the temporary culvert will be removed and the bridal way fully re-instated. Pumps will pump the water from the norther lagoon through siltbusters and into the existing swale creating an area of wet heathland at the northwestern corner, as detailed in the restoration plan (Drawing Number 1886-FPCR-XX-XX-DR-L-0002). Pumping will continue until the lagoon has been completely infilled with clean inert material.

5.5.5 The ponds present on site will be dewatered and infilled as part of the site restoration. There are no other perennial surface water features in the immediate vicinity of the quarry which are thought to be in hydraulic continuity with groundwater, and therefore surface water monitoring is not proposed.

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 Three monitoring boreholes were installed within the application site in October-November 2023 (BH01, BH02 and BH03), Drawing Number COL/B068370/MON/01.
- 5.6.3 The monitoring boreholes BH01 and BH02 are present downgradient to the proposed source areas and are screened within the Bracklesham Group They are proposed as downgradient monitoring boreholes for the site. BH03 is located upgradient of the source area and should also be monitored to detect any potential changes in background groundwater quality flowing on to the site.
- 5.6.4 The proposed groundwater monitoring schedule is presented in the following Table.

Table 10: Proposed Groundwater Monitoring Schedule

Monitoring Location	Parameter	Frequency
Downgradient Boreholes BH01 and BH02	Groundwater level and dip to base, in mbgl and mAOD.	Quarterly
Upgradient Borehole BH03	pH, Electrical Conductivity, Alkalinity	
	Ammoniacal Nitrogen, Cadmium, Chloride, Chromium, Copper, Nickel, Sulphate, Zinc, Phenol	
	Arsenic Low Level, Lead Low Level, Mercury Low Level	

5.7 Amenity

- 5.7.1 An ERA (Appendix D 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 bring each phase of the land restored to the required standard for use for forestry, amenity and nature conservation.

6.0 Monitoring

6.1 Historic Monitoring

- 6.1.1 Groundwater has been historically monitored at the site with annual monitoring occurring since 1999.
- 6.1.2 Groundwater and surface water quality monitoring has indicated that, in previous years, the water quality may have been affected, with high chloride recorded within the two streams (suggesting a possible influence from road run-off) along with evidence of high alkalinity within the Eastern Stream (although data would also indicate that this improved between 1999 and 2010).

6.2 Groundwater Level

- 6.2.1 Three on-site monitoring boreholes were installed in 2023 (BH01, BH02 and BH03). On the 24th of January 2024, groundwater levels were taken from each of the three boreholes. These are summarised in the table below. Groundwater level monitoring is ongoing on a monthly basis and will be used to support any future applications.

Table 11: Groundwater Levels

Borehole	Screened Strata	BH Ground Elevation (mAOD)*	Water Level (mbgl)	Water Level Elevation* (mAOD)
BH01	Bracklesham Group	93.0	4.86	88.14
BH02		94.6	6.21	88.39
BH03		95.8	6.23	89.57

Note: *Boreholes not been precision surveyed for elevations, borehole levels estimated using site plans and LIDAR datasets.

- 6.2.2 The groundwater level monitoring from January 2024 is considered to be representative of a seasonal high-water level, having followed a very wet November and December.
- 6.2.3 The monitoring data indicates that groundwater flow direction follows the local topography and is in a generally northern direction across the Site

6.3 Groundwater Quality Monitoring

- 6.1.1 Groundwater quality is currently being monitored onsite on both a monthly and six-month basis.
- 6.1.2 The monthly monitoring parameters at all three boreholes are shown in the table below.

Table 12: Monthly Monitoring Parameters for Groundwater

Symbol	Monitoring Parameter
Amm N - N	Ammoniacal Nitrogen as N
Cl	Chloride
F	Fluoride
SO4	Sulphate
Earth Metals	Ca(0.2), Mg(0.1), K(0.1),
pH	pH
EC	Electrical Conductivity
Alk	Total Alkalinity as CaCO ₃
COD	COD
DO	Dissolved Oxygen - should be analysed within 6 hours
TDS	Total Dissolved Solids
TOxN	Total Oxidised Nitrogen as N
TOC	Total Organic Carbon
Non Ionic Surf	Non-ionic surfactants

6.1.3 Every 6 months, groundwater is monitored at all three boreholes for the additional parameters listed in the Table below.

Table 13: Additional Groundwater Monitoring Parameters

Symbol	Monitoring Parameter
PAH 16	PAH 16 by GCMS
BTEX MS	BTEX/MTBE by GCMS - Benzene (0.5), Toluene (5), Ethyl Benzene (1), m/p Xylene (2), o Xylene (1), MTBE (0.1)
Phenol	Total monohydric phenols - HPLC
PCB 7	PCB 7 congeners
Min Oil	Mineral Oil Fraction (aliphatics) by GCFID (C10-C40)

7.0 Site Condition Report

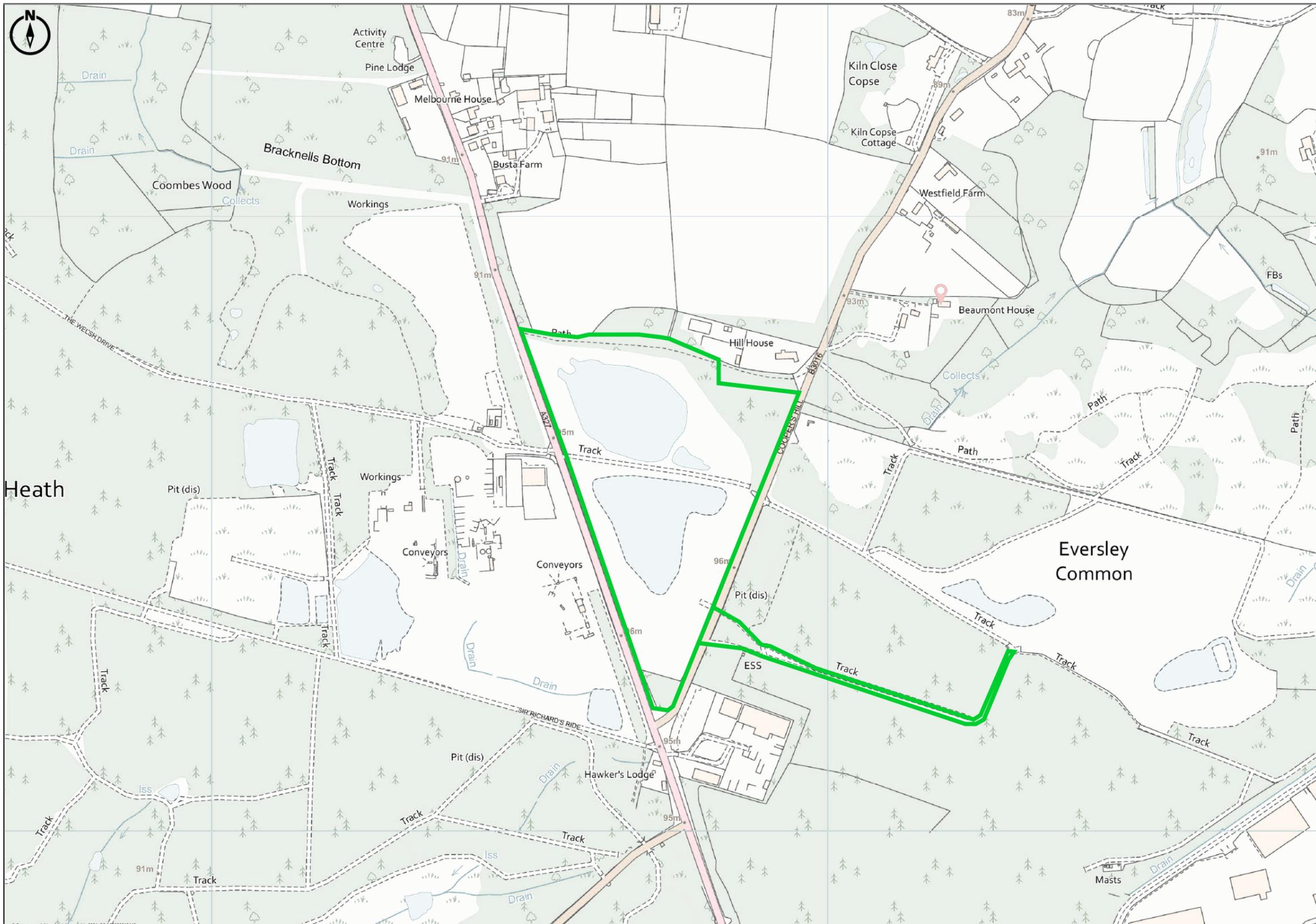
- 7.0.1 A Site Condition Report has been prepared as per the Environmental Permitting Regulations – Site Condition Report (H5) guidance. This can be viewed in Appendix I.

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

COL/B068370/PER/01 – Permit Boundary Plan
1886-FPCR-XX-XX-DR-L-0001 – Site Layout and Phasing Plan
1886-FPCR-XX-XX-DR-L-0002 - Final Restoration Plan
COL/B068370/MON/01 – Borehole Monitoring Plan



Client:
Collard Group Ltd

Project: Busta Triangle, Eversley Deposit for Recovery

Title: Environmental Permit Boundary Drawing

Drawing No: COL/B068370/PER/01

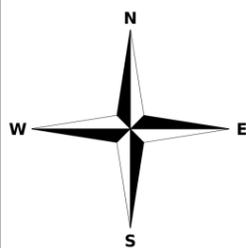
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Checked: AB

Date: 24/09/2024

Version: 1

Scale: 1:6,500



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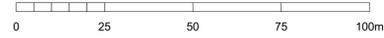
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I886-FPCR-XX-XX-DR-L-000 I
Phasing Plan

NOTES
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- KEY**
- Site Boundary 12.04h
 - Public Right of Way
 - Retained Woodland & Vegetation
 - Existing Lagoons
 - Existing Swale
 - Restoration Area (Phases 1 to 5)
 - ↑ Directions of Works (Phases 1 to 5)
 - Heras Fencing
 - Proposed Bunding
Proposed 2m high temporary bunding with wild flower meadow mix on top, bunding to hug redline boundary
 - Proposed Wild Flower Meadow Mixture
 - ↑ Site Access - Vehicles
 - ⊙ Site Access - Pedestrian
 - Temporary Crossing
 - Proposed Site Buildings (Indicative Locations)
 - 1 Site Office (two storey stacked cabin)
 - 2 Vehicle Car Parking Area
 - 3 Weigh Bridge + Wheel Wash
 - 4 Quarantine Area



rev	date	description	dm	chk
P06	06/02/2024	Direction of works arrows added	SDO	TCM
P05	05/02/2024	Red Line Area added.	SDO	TCM
P04	11/12/2023	Amendments to red line.	SDO	TCM

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client
Collard Group LTD

project
Busta Triangle Restoration, Hampshire

drawing title
OPERATIONAL PLAN

scale
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dm chk
 SDO TCM

date created
 11 AUGUST 2023

project number
 1886

status
 STATUS

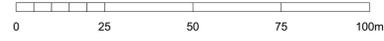
issue
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document number
1886-FPCR-XX-XX-DR-L-0001

Project Code - Original - Zone - Level - Type - Risk - Drawing Number

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I886-FPCR-XX-XX-DR-L-0002
Restoration Plan



- KEY**
- Site Boundary 12.04ha
 - Public Right of Way
 - Retained Woodland
 - Proposed Coniferous Forestry Plantation 62% of site
 - Proposed Lowland Heathland 18% of site
 - Proposed Wet Heathland
 - Site Access - Maintenance
 - Site Access - Pedestrian PROW
- Other land use including wetland and walk through path 20% of site



P06	05/02/2024	Red Line Area added.	SDO	TCM
P05	30/01/2024	Spot heights added.	SDO	TCM
P04	11/12/2023	Amendments to red line.	SDO	TCM

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client
 Collard Group LTD

project
 Busta Triangle Restoration, Hampshire

drawing title
 RESTORATION PLAN

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dm chk
 SDO TCM

date created
 11 AUGUST 2023

project number
 1886

status
 STATUS

issue
 P06

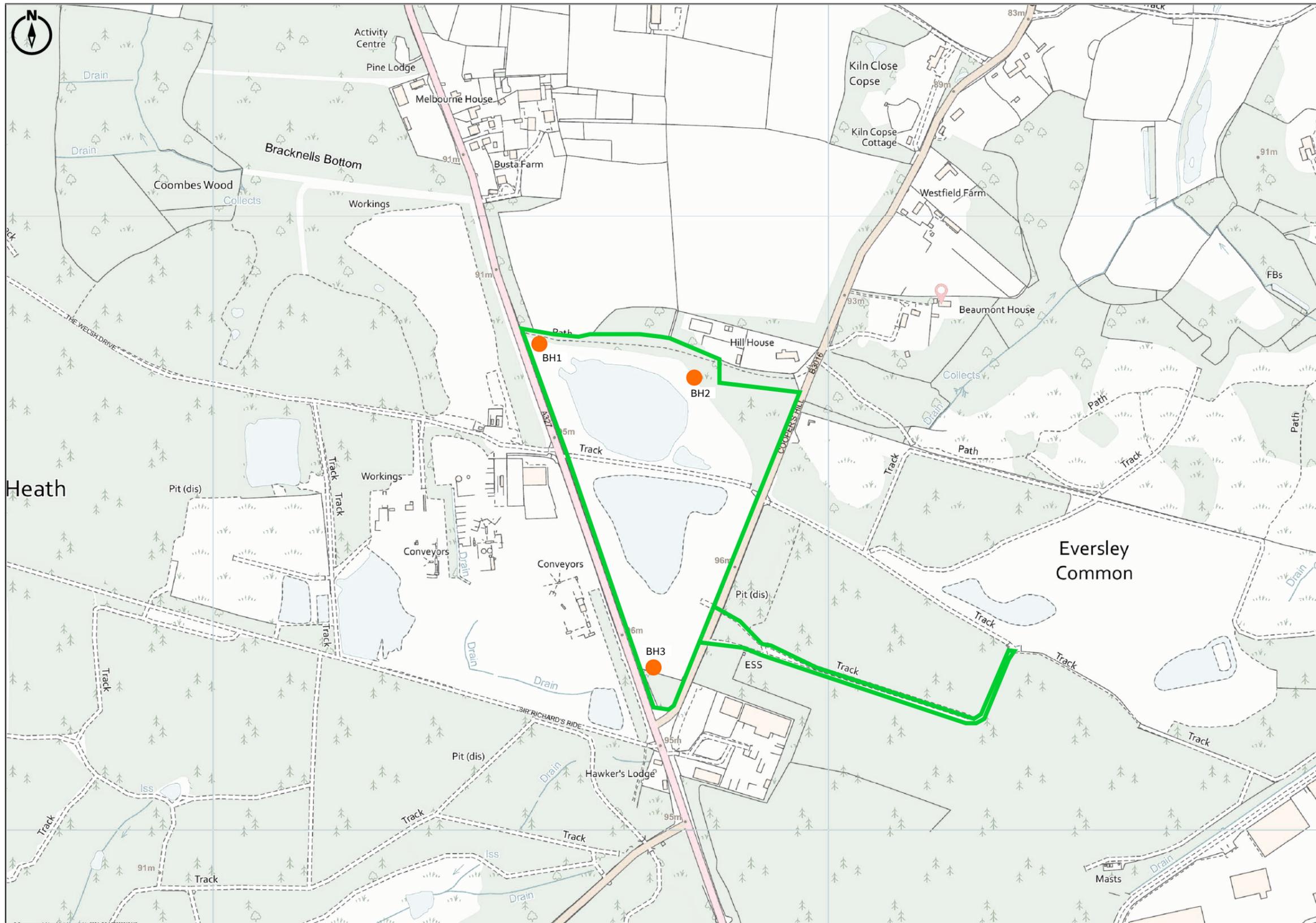
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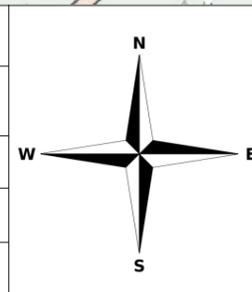
EXISTING EVERSLEY QUARRY
 ACCESS POINT

EXISTING EVERSLEY
 HAULAGE PARK



Client: Collard Group Ltd	Created: GA
	Checked: AB
Project: Busta Triangle, Eversley Deposit for Recovery	Date: 24/09/2024
Title: Borehole Monitoring Plan	Version: 1
Drawing No: COL/B068370/MON/01	Scale: 1:6,500

Created: GA
Checked: AB
Date: 24/09/2024
Version: 1
Scale: 1:6,500



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Environmental Permit Boundary

Borehole

Scale Bar:

Appendix A - Flowchart for the Selection of Suitable Material for the Construction of an Attenuation Layer

