



Bespoke Environmental Permit Application

Brice Aggregates Limited

Colemans Farm,
Little Braxted Lane,
Rivenhall,
Witham,
CM8 3EX.



PROVIDING SOLUTIONS, ENSURING COMPLIANCE

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Document Control Table

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Revision Table

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1. Introduction

- 1.1. Westbury Environmental Limited have been instructed to prepare this Environmental Permit Application on behalf Brice Aggregates Limited.
- 1.2. In line with recent Environment Agency guidance, we note that the planned works comprise enabling works for planned highway improvements to the A12 and request a timely determination of this permit application.

If your application is critical to maintain national resilience, national infrastructure or critical environmental protection, please highlight this to us immediately by email to NPSCentralisedServicesTeam@environment-agency.gov.uk.

- 1.3. This Environmental Permit application has been prepared for a new Bespoke Environmental Permit to allow the deposit of waste for recovery, including a front-end aggregate recycling facility at Colemans Farm Quarry, Little Braxted Lane, Rivenhall, Witham CM8 3EX.
- 1.4. The Environmental Permit application will authorise the deposition of materials to restore the current active quarry under a deposit of waste for recovery (DfR) permit.
- 1.5. It is estimated that the restoration will comprise the deposit of 1,827,000m³ of material, some 1,152,000m³ of which is expected to comprise of imported, suitable waste and the remainder of (675,000m³) is expected to be Site-won. It is projected that the proposed works will take an estimated 13-years to complete the infilling works.

Waste Recovery Plan

- 1.6. A Waste Recovery Plan for the development was submitted to the Environment Agency in February 2020. The Waste Recovery Plan evidenced that the development would be commercially worthwhile through financial gain if non-waste materials were used instead of waste.
- 1.7. The Environment Agency considered the proposed works to be a 'recovery' operation and approved the Waste Recovery Plan on 26 October 2020, see Appendix 2 Pre-Application Recovery vs Disposal Assessment Advice Letter.
- 1.8. Since approval of the Waste Recovery Plan, the route of the planned A12 improvement works was altered by Highways England. The change in design has had a knock-on impact to the restoration timescales and the restoration profile has been revised. The revised Waste Recovery Plan (V2) is provided as Appendix 1. Changes from the approved Waste Recovery Plan (V1) are highlighted for ease of reference,

Planning permission

- 1.9. Planning permission was granted for the excavation of an estimated 2.5 million tonnes of sand and gravel in 21 June 2016 under planning permission reference ESS/39/14/BTE. This permission was amended on 11 January 2019 to allow alternate phasing and increased HGV movements under planning reference ESS/10/18/BTE.
- 1.10. Since the agreement of the Consented Restoration, Highways England (HE) wish to carry out major improvement works to the A12 which include the construction of a new offline six lane motorway standard highway between Chelmsford and Colchester which will pass through the consented and operational quarry site. This work will mean a variation will be required to the existing planning permissions. This application is being prepared and will twin-track this permit application.

Pre-application

- 1.11. Basic pre-application advice was requested from the EA. A copy of the pre-application advice is provided as Appendix 3.



- 1.12. Pre-application advice listed that site-specific risk assessment should be produced in line with Environment Agency guidance. A copy of the site-specific Environmental Risk Assessment is provided as Appendix 4.
- 1.13. Risk to controlled waters has been prepared by Hafren Water Limited. A copy of their detailed, site-specific Hydrogeological Risk Assessment (HRA) is provided as Appendix 5 Hydrogeological Risk Assessment. The HRA concludes that the proposed waste operations will not pose an unacceptable risk to controlled waters, in particular to the superficial Secondary A aquifer or adjacent River Blackwater.
- 1.14. A Dust Management Plan was identified as being required in the basic pre-application advice. A copy of the Dust Management Plan is enclosed as Appendix 6 Dust Management Plan.
- 1.15. The basic pre-application advice form advised that if we think they operation is likely to cause pollution from noise and vibration that a Noise Impact Assessment and Noise Management Plan are prepared to support the application. The Environmental Risk Assessment concludes that the risk posed by noise is not likely to adversely impact nearby receptors. As such, it is considered that a Noise Impact Assessment and Noise Management Plan were not required to support this application.
- 1.16. Strict waste acceptance procedures will be applied on the Site to ensure that only the permitted waste types are accepted, see Appendix 7 Waste Acceptance Procedures.
- 1.17. A climate change risk assessment has been prepared for the site and is appended as Appendix 8.
- 1.18. The relevant Environment Agency forms for the bespoke Environmental Permit application (Part A, Part B2, Part B4 and Part F1) and other required information are included within this Environmental Permit application report. The application forms are enclosed with this application report.
- 1.19. An Environmental Setting and Site Design (ESSD) Report has been prepared by Hafren Water Limited. A copy of the ESSD report is provided as Appendix 9.



2. Non-technical summary

- 2.1. This permit application has been prepared for a new Bespoke Environmental Permit for a deposit for recovery operation and operation of an aggregates recycling facility at Colemans Farm Quarry, Little Braxted Lane, Rivenhall, Witham CM8 3EX.
- 2.2. The deposit for recovery activity is to allow restoration of Colemans Quarry following the sequential extraction of sand and gravel. The restoration will allow the widening/realignment of the adjacent A12 trunk road by Highways England, together with restoration of the remainder of the site to low level water-based habitat. The Waste Recovery Plan, which details the proposals requiring the importation of waste for restoration, was approved as waste recovery by the Environment Agency in October 2020. This Waste Recovery Plan has been revised to account for a change in the proposed highways works and thus restoration profile. It is considered that the proposals have not materially changed.
- 2.3. The accompanying aggregates recycling facility will act as a front-end waste treatment for the waste recovery operation. It is expected that up to 70% of the treated waste will reach end-of-waste status via the Quality Protocol: Aggregates from Inert Waste and be sold as a secondary aggregate (product). This rate of recycling and recovery will require a throughput of an estimated 425,000 tonnes per annum of waste to be treated. Treatment will comprise predominately washing but will also allow crushing and screening.
- 2.4. Basic pre-application advice was requested from the EA. A copy of the pre-application advice is provided as Appendix 3.
- 2.5. Pre-application advice listed that site-specific risk assessment should be produced in line with Environment Agency guidance. A copy of the site-specific Environmental Risk Assessment is provided as Appendix 4. In addition, a detailed, site-specific Hydrogeological Risk Assessment (HRA) has been prepared to support the deposit of waste for recovery activity. The HRA is provided as Appendix 5.
- 2.6. A Dust Management Plan was identified as being required in the basic pre-application advice. A copy of the Dust Management Plan is enclosed as Appendix 6 Dust Management Plan.
- 2.7. The basic pre-application advice form advised that if we think they operation is likely to cause pollution from noise and vibration that a Noise Impact Assessment and Noise Management Plan are prepared to support the application. The Environmental Risk Assessment concludes that the risk posed by noise is not likely to adversely impact nearby receptors. As such, it is considered that a Noise Impact Assessment and Noise Management Plan were not required to support this application.
- 2.8. Strict waste acceptance procedures will be applied on the Site to ensure that only the permitted waste types are accepted, see Appendix 7 Waste Acceptance Procedures.
- 2.9. A climate change risk assessment has been prepared for the site and is appended as Appendix 8.



3. Proposed waste operations

3.1. The proposed waste activities for the Site are presented in Table 3.1.

Table 3.1: Description and limits of the proposed waste operations

Description of activities	Limits of activities
<p>R13: Storage of wastes pending the operations numbered R3 and R5</p> <p>R3: recycling or reclamation of organic substances which are not used as solvents</p> <p>R5: Recycling or reclamation of other inorganic materials</p>	<p>Treatment of wastes listed in Table 3.2 consisting only of sorting, separation, screening, crushing, blending and washing of waste for recovery as a soil, soil substitute or aggregate.</p> <p>Secure storage of wastes listed in Table 3.2 pending treatment.</p> <p>Storage of wastes listed in Table 3.3 shall not exceed 10,000 tonnes in total at any one time.</p> <p>All other wastes stored shall not exceed 80,000 tonnes in total at any one time.</p> <p>No more than 425,000 tonnes of waste shall be treated per year. Treatment of slags and ashes for disposal shall not exceed 50 tonnes per day, or if for a mix of recovery and disposal shall not exceed 75 tonnes per day.</p>
<p>R13: Storage of wastes pending the operations numbered R3 and R5</p> <p>R3: recycling or reclamation of organic substances which are not used as solvents</p> <p>R10: Land treatment resulting in benefit to agriculture or ecological improvement</p>	<p>The use and associated secure storage of wastes listed in Table 3.4 for the purposes of the construction work and/or restoration, reclamation or improvement of land as detailed in the approved waste recovery plan.</p> <p>In any event the total quantity of waste used shall not exceed the amount needed to complete the recovery operation to the final levels in the approved waste recovery plan.</p> <p>Only the waste types specified in Table 3.4 that are specified in the approved waste recovery plan shall be accepted. Such wastes shall only be used as specified in the approved waste recovery plan.</p> <p>Restoration, reclamation and land improvement activities must only be carried out on land that has been previously subject to industrial or other manmade development.</p> <p>No waste shall be deposited into a water body.</p> <p>Top soils or peat (waste types coded 17 05 04 and 20 02 02) and soil from cleaning and washing beet (waste coded 02 04 01) shall only be used for R10 activities and be limited to use in the top 50cm of the recovery activity and shall only be used to provide a growing medium.</p> <p>Storage of waste prior to use in the recovery activity shall be limited to 12 months.</p>

3.2. Imported materials for both waste treatment and permanent deposit, will be subject to strict waste acceptance procedures to ensure that only suitable wastes are accepted and used in the restoration of the Site. A copy of the Waste Acceptance Procedures are presented as Appendix 7 Waste Acceptance Procedures.

3.3. Wastes requiring treatment will be directed to the waste treatment area for physical treatment. Materials meeting the requirements of the Quality Protocol: Aggregates from inert waste will be exported as a product and sold. Waste which does not meet the end of waste criteria under this protocol will be deposited in the void, provided they still meet the Waste Acceptance Criteria for the recovery activity.



- 3.4. A storage limit of 80,000 tonnes is proposed for the waste treatment operations. This is intended to allow the stockpiling of materials on a seasonal basis, i.e. over the winter months when treatment or deposit may be limited by weather conditions. This storage limit will not be required year-round and maximum storage times of 12 months will apply to all waste stored.
- 3.5. The proposed List of Waste codes to be accepted for the waste treatment activity are presented in Table 3.2.

Table 3.2: Proposed waste types – waste treatment

Waste Code	Description
01	Wastes resulting from exploration, mining, quarrying and physical and chemical treatment of minerals
01 04	Wastes from physical and chemical processing of non-metalliferous minerals
01 04 08	Waste gravel and crushed rocks other than those containing dangerous substances
01 04 09	Waste sand and clays
02	Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing, food preparation and processing
02 02	Waste from preparation and processing of meat, fish and other foods of animal origin
02 02 02	Shellfish shells from which the soft tissue or flesh has been removed only
10 11	Wastes from manufacture of glass and glass products
10 11 12	Clean glass other than those mentioned in 10 11 11
10 12	Wastes from manufacture of ceramic goods, bricks, tiles and construction products
10 12 08	Waste ceramics, bricks, tiles and construction products (after thermal processing)
10 13	Wastes from manufacture of cement, lime and plaster and articles and products made from them
10 13 14	Waste concrete only
15	Waste packaging, absorbents, wiping cloths, filter materials and protective clothing not otherwise specified
15 01	Packaging (including separately collected municipal packaging waste)
15 01 07	Clean glass only
17	Construction and demolition wastes (including excavated soil from contaminated sites)
17 01	Concrete, bricks, tiles and ceramics
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
17 02	Wood, glass and plastic
17 02 02	Clean glass only
17 03	Bituminous mixtures, coal tar and tarred products
17 03 02	Bituminous mixtures other than those mentioned in 17 03 01, including waste comprised of clean road stone swept from newly laid roads
17 05	Soil (including excavated soil from contaminated sites), stones and dredging spoil
17 05 04	Soils and stones other than those mentioned in 17 05 03, including waste comprised of clean road stone swept from newly laid roads
17 05 06	Dredging spoil other than those mentioned in 17 05 05
17 05 08	Track ballast other than those mentioned in 17 05 07



Waste Code	Description
19	Wastes from waste management facilities, off site waste water treatment plants and preparation of water intended for human consumption/industrial waste
19 05	Wastes from aerobic treatment of solid waste
19 05 03	Compost from source segregated biodegradable waste only
19 08	Wastes from waste water treatment plants not otherwise specified
19 08 02	Washed sewage grit (waste from desanding) free from sewage contamination only
19 08 99	Stone filter media free from sewage contamination only
19 09	Wastes from the preparation of water intended for human consumption or water for industrial use
19 09 02	Sludges from water clarification
19 12	Wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified
19 12 05	Clean glass only
19 12 09	Minerals (for example sand, stones)
19 12 12	Soil from treatment of construction/demolition waste only
19 13	Wastes from soil and groundwater remediation
19 13 02	Solid wastes from soil remediation other than those mentioned in 19 13 01
19 13 04	Sludges from soil remediation other than those mentioned in 19 13 03
20	Municipal wastes (household waste and similar commercial, industrial and institutional wastes) including separately collected fractions
20 01	Separately collected fractions (except 15 01)
20 01 02	Clean glass only
20 02	Garden and park wastes (including cemetery waste)
20 02 02	Soil and stones

Table 3.3: Waste types for treatment – limited to storage of 10,000 tonnes at any one time

Waste Code	Description
17 05 06	Dredging spoil other than those mentioned in 17 05 05
19 05 03	Compost from source segregated biodegradable waste only
19 09 02	Sludges from water clarification
19 12 12	Soil from treatment of construction/demolition waste only
19 13 02	Solid wastes from soil remediation other than those mentioned in 19 13 01
19 13 04	Sludges from soil remediation other than those mentioned in 19 13 03

- 3.6. The proposed List of Waste Codes to be accepted for the deposit of waste for recovery activity are presented in Table 3.4.



Table 3.4: Proposed waste types – waste recovery

Exclusions Wastes having any of the following characteristics shall not be accepted: <ul style="list-style-type: none"> • Consisting solely or mainly of dusts, powders or loose fibres • Wastes that are in a form which is either sludge or liquid 				
Source	Sub-source	Waste code	Description	Additional restrictions
01 Waste resulting from exploration, mining, quarrying and physical and chemical treatment of minerals	01 01 wastes from mineral excavation	01 01 02	Wastes from mineral non-metalliferous excavation	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 01 04 06	
		01 04 09	Waste sand and clays	
02 Waste from agriculture, horticulture, aquaculture, forestry, hunting and fishing, food preparation and processing	02 04 wastes from sugar processing	02 04 01	Soil from cleaning and washing beet	
10 Wastes from thermal processes	10 12 wastes from manufacture of ceramic goods, bricks, tiles and construction products	10 12 08	Waste ceramics, bricks, tiles and construction products (after thermal processing)	
	10 13 waste from manufacture of cement, lime and plaster and articles and products made from them	10 13 14	Waste concrete	
17 Construction and demolition wastes	17 01 concrete, bricks, tiles and ceramics	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	Metal from reinforced concrete must have been removed.
	17 03 bituminous mixtures	17 03 02	Bituminous mixtures other than those mentioned in 17 03 01	Road planings only.
	17 05 soil stones and dredging spoil	17 05 04	Soil and stones other than those mentioned in 17 05 03	Restricted to topsoil, peat, subsoil and stones only. Topsoil and peat will be restricted to the top 500m only.
19 Wastes from waste management	19 12 wastes from the mechanical treatment	19 12 09	Minerals (for example sand, stones) only	Restricted to wastes from treatment of waste aggregates that



Source	Sub-source	Waste code	Description	Additional restrictions
facilities	of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified			are otherwise naturally occurring minerals. Does not include fines from treatment of any non-hazardous waste or gypsum from recovered plasterboard
		19 12 12	Other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11	Including crushed bricks, tiles, concrete and ceramics. Including soils from the mechanical treatment of construction / demolition waste. Metal from reinforced concrete must be removed. Does not include 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	20 02 02	Soils and stones	Restricted to topsoil, peat, subsoil and stones only.



4. Operating techniques

Environmental Management System

- 4.1. Brice Aggregates Limited will operate under an Environmental Management System (EMS).
- 4.2. A hard copy of the EMS will be kept on the Site at all times.
- 4.3. The EMS folder shall include a copy of the Environmental Permit and will contain the following sections:

EMS Report: This report contains a description of the purpose and scope of the EMS, all Site details including the location of the Site, receptors located in close proximity to the Site boundary, waste storage, the plant and equipment that is used on the Site, the waste handling procedures carried out on Site, the Site security measures, information on the competence of the staff working on Site, roles and responsibilities for each member of staff and details for Site closure.

Appendix A.1 Site Condition Report: This is used to record the condition of land covered by the Environmental Permit at various stages during the life of the permit. Site Condition Report, Part 1 to record the condition of the land at the permit application stage is included as Appendix 10 in this application report.

Appendix A.2 Environmental Impacts and Controls Assessment: This assessment will provide information on the processes, activities and equipment on site, the potential emissions and impact that they may have on air, water, energy usage, waste disposal, land contamination, nuisance and resource consumption and how any identified impact may be controlled.

Appendix A.3 Environmental Accident Management Plan: This report will contain an assessment of the potential accidents that could occur on Site, details of the likelihood of each accident occurring, the preventative measures taken to reduce the risk of each accident occurring, actions to be taken in the case of an accident on Site and an explanation on how to record any accidents that occur on Site. The types of accident included in this report include.

- Leaks or Spillages.
- Fire.
- Flooding (increasing risk from climate change).
- Unauthorised entry.
- Failure of plant and equipment.
- Cross-contamination.
- Failure of Services.

Appendix A.4 Flood Management Plan: This report will contain a brief description of the Site, its size, the key contacts to contact in an emergency, whether there are staff employed with any special needs, the locations of any gas, water and / or electric cut off points of Site and ways to keep all plant and computers / files safe in the event of a flood.

Appendix A.5 Dust Management Plan: This report provides details on managing the potential causes of dust at the Site, the dust suppression measures and dust monitoring methods. It includes critical information on the storage requirements for the Site and managing dust emissions.

A copy of the Dust Management Plan is provided as Appendix 6.

Appendix B Authorisations: A copy of the permit and EA Registrations for the Site will be found in the EMS.

Appendix C Procedures & Forms: The EMS contains a number of procedures that cover its implementation, waste acceptance & storage, site management, environmental protection, environmental monitoring, emergency provisions and reporting. Records to be produced in accordance with these procedures are provided in the EMS as forms. These completed forms provide records that evidence the implementation of the EMS. The following list details procedures that are included in the EMS.



Implementation

- Environmental Training.
- Roles and Responsibilities.
- Reviewing & Auditing Documentation.
- Compliance with Legal & Other Requirements.

Waste Acceptance & Storage

- Waste Acceptance.
- Waste Classification.
- Waste Rejection.
- Waste Storage & Handling.

Site Management

- Fuel & Oil Storage.
- Refuelling of Plant / Equipment
- Housekeeping, Litter, Pest & Vermin Control.
- Wheel Washing.
- Site Security.
- Removal of Waste.

Environmental Protection

- Dust, Fibres and Particulates.
- Mud and Debris.
- Noise Control.
- Odour Control.
- Surface Water Management.

Maintenance

- Maintenance – Planned Preventative Maintenance and Inspection Checklists.

Emergency Provisions

- Environmental Accidents / Incidents / Complaints.
- Near Miss Reporting.
- Spill Response.
- Flood Management.
- Utility / Equipment Failure.
- Fire Prevention.

Reporting

- Waste Returns.
- Notifications to the Environment Agency.

(This list is not exhaustive)



Drawings

The drawings included in the EMS include:

- Permit Boundary Plan – showing the boundary of the permitted area.
 - Site Layout Plan – showing waste storage and treatment areas, storage facilities for hazardous materials (fuel and oil), location of spill kits, and access for emergency services.
 - Sensitive Receptors Plan – showing nearby receptors including water courses, protected habitats, and residential, commercial and industrial premises.
- 4.4. The Waste Storage and Handling Procedure will include a Waste Storage Plan that will specify maximum storage times, maximum storage area capacities, and where different waste types will be stored on Site.
- 4.5. The Maintenance Procedure will ensure inspections of infrastructure, plant and equipment will be carried out on a daily, weekly and monthly basis. This procedure will also specify when planned preventative maintenance should be carried out on each item of plant and equipment located on the Site.
- 4.6. The EMS will include a Utility / Equipment Failure Procedure and Flood Management Procedure to ensure contingency measures are implemented in the event of a utility / equipment failure or a flood on the Site. The Flood Management Procedure will account for the potential increase in the risk of flooding at the Site due to climate change.
- 4.7. The Site will display a notice board at the site entrance which will include the following details:
- The permit holder's name – Brice Aggregates Limited.
 - An emergency contact name and telephone number.
 - A statement that the site is permitted by the Environment Agency.
 - The permit number.
 - Environment Agency telephone number and the incident hotline telephone number.
- 4.8. The EMS will include a Complaints Procedure that will provide details for recording, investigating and resolving complaints in regard to the permitted activities.
- 4.9. Each procedure within the EMS will specify who is responsible for implementing the required actions. The EMS will include a staff organogram which will show the roles and responsibilities of each staff member in relation to the activities covered by the permit.
- 4.10. An Environmental Training Procedure will be included in the EMS to ensure regular training on the EMS procedures is given to all site staff and is well documented.
- 4.11. Records required by the permit e.g. waste transfer notes, chemical analysis, hazardous waste assessments, maintenance records, staff training records etc. will be kept on file within the EMS.
- 4.12. The Reviewing & Auditing Documentation Procedure included within the EMS will ensure regular checks are carried on the EMS documentation in order to assess whether the EMS implements the requirements of the permit and relevant environmental legislation. Any changes to the permit or site operations will be recorded within the EMS and the relevant EMS documents will be updated accordingly.
- 4.13. Each member of staff at the Site will have access to the EMS.

Technically Competent Management

- 4.14. Oliver Brice will be the Technically Competent Manager for the Site. Evidence of Oliver's EPOC certificate is provided in Appendix 11. Oliver is also registered to complete WAMITAB Level 4 Certificate in Waste and Resource Management – VRQ qualification in February and March 2021. Evidence of Oliver's registration for these units is also provided in Appendix 11 – Evidence of Technically Competent Management.

**Site Condition**

- 4.15. Part 1 of a Site Condition Report has been produced for this Site as part of the Environmental Setting & Site Design (ESSD) Report. A copy of the Site Condition Report is provided in Appendix 10 - Site Condition Report, Part 1.

Environmental Risk

- 4.16. An Environmental Risk Assessment has been completed as part of this permit application, see Appendix 4 Environmental Risk Assessment.
- 4.17. The Environmental Risk Assessment considers the potential impacts of the proposed waste operations with regard to the local receptors; population, watercourses, protected sites etc.
- 4.18. The Environmental Risk Assessment concludes that, save for the Dust Management Plan (Appendix 6) no other management plans are considered to be required to mitigate risks from the proposed operations.
- 4.19. Risk to controlled waters has been prepared by Hafren Water Limited. A copy of their detailed, site-specific Hydrogeological Risk Assessment (HRA) is provided as Appendix 5 – Hydrogeological Risk Assessment. The HRA concludes that the proposed waste operations will not pose an unacceptable risk controlled waters, in particular to the superficial Secondary A aquifer or adjacent River Blackwater.
- 4.20. A schedule of groundwater and surface water (site discharge) monitoring is outlined in Section 3 of the HRA to confirm the conclusions of the HRA.
- 4.21. A Climate Change Risk Assessment has been completed for this permit application, see Appendix 8 Climate Change Risk Assessment.



Appendix 1

Waste Recovery Plan



Waste Recovery Plan

Brice Aggregates Limited

Colemans Farm,
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PROVIDING SOLUTIONS, ENSURING COMPLIANCE

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1	Original (approved 26 Oct 2020)	Kate Brady	Tracey Westbury	06 October 2020
2	Amendment to restoration design following change of planned Highways England road route. (Changes highlighted in yellow for ease of reference)	Kate Brady	Tracey Westbury	15 October 2021



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Drawings

Location Plan	Drawing No. 1666/HIA/01, Apr 2014	Scale: 1:50,000 @A4
Consented Restoration	Drawing No. 418/018, Apr 2016	Scale: 1:1,250
Proposed Restoration	Drawing No. C45/08/05A, Jul 2021	Scale: 1:5,000 @A3
Cross Sections	Drawing No. C45/08/06A, Jul 2021	Scale: 1:2,500 @A2

Appendices

Appendix 1	Section 106 Agreement
Appendix 2	Waste Acceptance Procedures



1. Introduction

1.1. Westbury Environmental Limited have been instructed by Brice Aggregates Limited (the Operator) to prepare this Waste Recovery Plan (WRP) in support of an Environmental Permit application for a deposit of waste for recovery operation at Land at Colemans Farm, Little Braxted Lane, Witham, Essex CM8 3EX (the Site).

1.2. In line with recent Environment Agency guidance we note that the planned works comprise enabling works for planned highway improvements to the A12 and request a timely review of this WRP.

“If your application is critical to maintain national resilience, national infrastructure or critical environmental protection, please highlight this to us immediately by email to NPSCentralisedServicesTeam@environment-agency.gov.uk.”

Background

1.3. Planning permission was granted for the excavation of an estimated 2.5 million tonnes of sand and gravel in 21 June 2016 under planning permission reference ESS/39/14/BTE.

1.4. This permission was amended on 11 January 2019 to allow alternate phasing and increased HGV movements under planning reference ESS/10/18/BTE.

1.5. Schedule 1 of the original permission (ESS/39/14/BTE) included a Section 106 Agreement (S106) which required the Site to provide the type and quantity of priority habitat approved in the original Biodiversity Enhancement Plan, which amounted to 20ha of mixed priority habitat.

1.6. This S106 was carried forward to permission reference ESS/10/18/BTE. The S106 provides a legal obligation on Brice Aggregates Ltd to provide the type and volume of habitat provided by the agreed restoration profile (hereinafter referred to as the Consented Restoration).

1.7. Since the agreement of the Consented Restoration, Highways England (HE) wish to carry out major improvement works to the A12 which include the construction of a new offline six lane motorway standard highway between Chelmsford and Colchester.

1.8. The Proposed Restoration scheme is fully funded under the Department for Transport's Road Investment Strategy (RIS) 2 funding package, with a targeted start date of highway construction of mid-2024. The existing A12 travels approximately from southwest to north east along the Site's western and northern boundaries. HE announced their 'preferred route', which envisages the construction of a new A12 carriageway across the current quarry void created post extraction. Funding for the 'preferred route' has been secured by HE and is currently undergoing the necessary steps to seek the necessary authorisations.

1.9. The 'preferred' A12 route crosses large bodies of open water and reedbed, as well as terrestrial habitats which are to be created as part of the Consented Restoration. With the Consented Restoration, HE would have to construct a bridge or landform across the restored quarry and priority habitat at significant cost.

1.10. In order to support construction of the road scheme, the Operator has been in discussions with HE regarding an alternative and expedited restoration of the quarry void to provide a suitable restoration including backfill to pre-existing levels underneath the proposed A12 route.

1.11. By amending the restoration profile to ground level, HE would save significant capital expenditure whilst substantially reducing the need to use primary fill materials to bridge the restored quarry.

1.12. The Operator will seek approval of the Proposed Restoration scheme from Essex County Council in a revised planning application, yet to be submitted. The Proposed Restoration scheme will fulfil the requirements of HE but also accord with the outstanding obligations regarding habitat creation as provided under the existing S106 agreement. The Proposed Restoration scheme includes an extension to the quarry. The extension reduces the compensation costs payable by HE to the Operator for the sterilisation of primary mineral resources as a direct result of the proposed highway works.



- 1.13. The extents of the Site to which the proposed material deposit and this WRP (v2) relates, is shown on Drawing No. C45/08/05A. The Site extends to an area of approximately 59ha. The mineral extraction area is smaller, covering approximately 39ha and the area to be filled with inert fill is approximately 30ha.
- 1.14. The WRP V1 was approved in October 2020. This version (V2) has been updated to reflect a change in the extents of HE's highway works. The knock-on effect of this has required the proposed restoration landform and phasing to be amended.
- 1.15. The volume of material required to achieve the Proposed Restoration has been calculated to be 1,827,000m³, see Section 3 for more detail.

Waste Recovery Plan

- 1.16. This WRP has been prepared in accordance with the Environment Agency's guidance 'Waste recovery plans and permits' published 18 October 2016 (hereinafter referred to as 'EA guidance').
- 1.17. This WRP provides information on the following:
- The purpose of the proposed works.
 - The proposed quantity of waste to be used.
 - The proposed works meeting quality standards.
 - Evidence that there is a financial gain to be made if using non-waste and/or,
 - There is an obligation to do the works.
- 1.18. The proposed restoration serves to facilitate two main objectives
- The restoration of the northern part of the site back to original ground level to provide foundations for the planned A12 highway improvement works and
 - The restoration of the southern part of the Site to provide priority habitat as committed to in Section 106 agreement associated with the existing planning permission.
- 1.19. It is important to note that the two objectives are intrinsically linked. HE requires the reinstatement of the site to original ground level to facilitate the highway improvements. In facilitating the highway improvements, the remainder of the Site, which was formerly to be restored to low level, will require the importation of materials, to provide the quantity of and bio-diverse habitat required by the Section 106 agreement.
- 1.20. It is anticipated that the Site will be operated under a bespoke deposit of waste for recovery Environmental Permit. The Site was assessed for its suitability for a Standard Rules Environmental Permit under SR2015 No.39 "use of waste in a deposit for recovery operation". The volume of waste required in the restoration of the Site alone, means that this Standard Rules is not suitable for the Site.
- 1.21. An application for planning permission to allow the scheme set out in this WRP will be submitted to Essex County Council, imminently.

Site Setting

- 1.22. The Site is located approximately 150m east of the town of Witham, Essex.
- 1.23. The Site is accessed off Little Braxted Lane, which connects with the A12 at Colemans Bridge.
- 1.24. The A12 highway travels from the south west to north east along the Site's western and northern boundaries. Further north is the Riverhall Oaks Golf Course, then farmland. To the east is farmland, the River Blackwater, then woodland. To the south, the River Blackwater then farmland.
- 1.25. The Whet Mead Local Nature Reserve is located approximately 1.5km to the southwest of the Site. The LNR reportedly consists of rough meadow with a wide range of flowering plants, bordered by some scrub and young woodland and containing three linked lagoons. It attracts a good range of the commoner butterflies and dragonflies, and seed-eating birds.



2. Purpose of the proposed works

- 2.1. The purpose of the Proposed Restoration is twofold, allowing:
 - Construction of the A12 improvement works without the need for a bridge or similar and
 - Restoration of the mineral working together with provision of the legally required 20ha of priority habitat in accordance with the S106 agreement and planning policy on habitat creation.
- 2.2. The Proposed Restoration allows construction of the proposed A12 improvement works to proceed without construction of a bridge or other heavily engineered solution, thus significantly reducing capital costs associated with the planned road improvement scheme and for the works to be achieved in an improved timeframe.
- 2.3. The Proposed Restoration also allows restoration of the existing quarry void to priority habitat as required under planning policy and in the planning permission and S106 agreement which regulates operations at the Site.
- 2.4. Under the Natural Environment and Rural Communities Act (2006), Essex County Council have an obligation to provide a minimum of 200ha of priority habitats. The granting of permission ESS/39/14/BTE was contingent on the provision of a minimum of 20ha of priority habitat, to help ECC to meet this objective.



3. Quantity of waste used

3.1. Environment Agency guidance requires that:

- waste material used will directly replace non-waste material
- the amount of waste used is needed to carry out the function that would otherwise be provided by non-waste
- consideration has been given to alternative proposals that could use a smaller amount of waste to achieve the same function.

Waste will directly replace non-waste material

3.2. There is a need to amend the Consented Restoration profile in order to allow cost-efficient improvement works to the A12 highway. The revised scheme (Proposed Restoration) requires the importation of additional material over that available from site-won overburden and over dig availability.

3.3. It is considered that the use of non-waste materials in this development would involve the use of virgin minerals or recycled aggregates that would be obtained from local sources. The use of such materials does not offer any advantage to the development over the proposed use of waste soils. The substitution of waste for a non-waste material in the development at the Site supports Recital 8 of the Waste Framework Directive which states that; -

"... the recovery of waste and the use of recovered materials should be encouraged in order to conserve natural resources".

3.4. The use of waste rather than non-waste materials is consistent with the European Court of Justice (ECJ) Abfall case which found that; -

"...the essential characteristic of a waste recovery operation is that its principal objective is that the waste serve a useful purpose in replacing other materials which would have had to be used for that purpose, thereby conserving natural resources." (paragraph 69).

3.5. The substitution of waste in this case for non-waste materials that would otherwise have to be used, demonstrates the substitution test and ensures the conservation of natural resources.

3.6. With further regard for the ECJ Abfall case; -

"a deposit constitutes a recovery if its principal objective is that the waste serve a useful purpose in replacing other materials which would have had to be used for that purpose." (paragraph 71).

Financial Assessment

3.7. A financial feasibility assessment has been provided to demonstrate that the development would be financially feasible if it were to be completed using a non-waste material.

3.8. The cost savings to HE on not having to construct a bridge are significant enough that the purchase of aggregate to complete the proposals would still yield a very significant cost saving. The estimated costs to HE for each of the Site restoration profiles, together with the anticipated cost savings for the Proposed Restoration profile, are given in Table 3.1.

**Table 3.1: Costs implications of road improvements to highways England per restoration option**

Option	Estimated cost to Highways England
Consented Restoration profile and viaduct to cross habitat	£30-40 million
Proposed Restoration profile, piled foundations and construction of raft	£5-10 million
Cost savings to Highways England as a result of the Proposed Restoration	£25 – 30 million

- 3.9. The calculated cost of using non-waste in creating the Proposed Restoration profile are given in Table 3.2.

Table 3.2: Cost of using non-waste to complete proposed restoration profile

Imported fill options	Estimated cost
Aggregate @£19 per m ³	£23 million

- 3.10. Based on HE's own estimated costs of highway improvements, an estimated cost saving of between £25 and £30 million is to be made by the implementation of the Proposed Restoration profile. Even if HE imported aggregate to complete the Proposed Restoration profile (Table 3.2), a cost saving of between £2 and £7 million would be realised.
- 3.11. It is considered that these cost savings clearly demonstrate that the non-waste material would be used to realise the development even if waste could not be used.
- 3.12. Consequently, the waste to be used in the development, directly replaces any non-waste which would be used to achieve the same benefit, freeing up natural resources.

Using the minimum amount of waste

- 3.13. It is estimated that a total of 479,000m³ of material would have been required to complete the Consented Restoration profile. This restoration profile was designed to be completed with the use of site-won materials only. The site won materials would comprise of overburden and interburden from the mineral workings (349,800m³) and from the over-digging of clays from beneath the mineral workings, within the proposed two large waterbodies.
- 3.14. Due to the need to import more material to bring the northern part of the site up to original ground level and the need to redesign the waterbodies on the site and inability to provide the same level of over dig, it will be necessary to import materials to compensate for this.
- 3.15. The total volume of material estimated to be required to achieve the Proposed Restoration is 1,827,000m³. An estimated 675,000m³ of this will be site-won material and a further 1,152,000m³ will be suitable imported fill material. The Site-won material will comprise topsoil, subsoil, overburden and silts from the processing of the excavated mineral.
- 3.16. These volumes have been calculated using LSS modelling from Drawing No. C45/08/05A.
- 3.17. The ground levels of both the consented and proposed restoration profiles are shown in Cross Sections Drawing No. C45/08/06A. The cross sections show that the ground levels proposed:
- Bring the northern part of the Site in line with surrounding existing ground levels to facilitate the A12 road improvement works; and
 - The southern part of the Site includes enough raised land to provide the 20ha of habitat required by the S106 Agreement.
- 3.18. The density of the waste soil will determine the ultimate tonnage to be used. A typical density of 1.6 tonnes per cubic metre has been used in the calculations. Therefore, it is estimated that approximately 1,844,000 tonnes of waste are required to complete the Site restoration.



Alternate proposals

- 3.19. It is a requirement of the road construction that the northern part of the Site is restored to original ground level to facilitate the future road improvement works. It is also a requirement to provide a diverse range of habitat as part of the S106 agreement. As such, the use of alternative proposals are limited and considered unlikely to significantly vary the amount of imported material required.
- 3.20. The amount of waste required has been calculated to meet the Proposed Restoration objectives and includes the use of as much site won material as possible. Therefore, it is considered that the Site could not be restored with less material whilst meeting its objectives and legal requirements.



4. Suitability of the recovered waste for the intended purpose

- 4.1. Environment Agency guidance requires that chemical and physical properties of the waste proposed to be used in this waste recovery operation are suitable for the intended purpose and will not cause pollution.
- 4.2. The assessment of the types of waste that will be suitable for use in this development has been made by Tracey Westbury, Director of Westbury Environmental Limited and is suitably qualified to make this assessment based on:
- Chartered status with the Chartered Institute of Waste Managers (CIWM).
 - A total of 30 years' work experience within the environmental industry including chemical industry waste, contaminated land, wastewater treatment and regulation.
 - Over 20 years' work experience acting as an environmental consultant dealing with both landfill and recovery permits.
- 4.3. The types of waste that will be used in the proposed development include soils, subsoils and minerals. These materials will not contain hazardous substances. These wastes will include the waste codes 17 05 04 "soils and stones from construction / demolition wastes not containing hazardous substances".
- 4.4. Table 4.1 includes the list of waste types that can be used in the proposed development.

Table 4.1: Waste types which can be used in the proposed development

Exclusions				
Wastes having any of the following characteristics shall not be accepted:				
<ul style="list-style-type: none"> • Consisting solely or mainly of dusts, powders or loose fibres • Wastes that are in a form which is either sludge or liquid 				
Source	Sub-source	Waste code	Description	Additional restrictions
01 Waste resulting from exploration, mining, quarrying and physical and chemical treatment of minerals	01 01 wastes from mineral excavation	01 01 02	Wastes from mineral non-metalliferous excavation	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 01 04 06	
		01 04 09	Waste sand and clays	
02 Waste from agriculture, horticulture, aquaculture, forestry, hunting and fishing, food preparation and processing	02 04 wastes from sugar processing	02 04 01	Soil from cleaning and washing beet	
10 Wastes from thermal processes	10 12 wastes from manufacture of ceramic goods, bricks, tiles and construction products	10 12 08	Waste ceramics, bricks, tiles and construction products (after thermal processing)	



Source	Sub-source	Waste code	Description	Additional restrictions
	10 13 waste from manufacture of cement, lime and plaster and articles and products made from them	10 13 14	Waste concrete	
17 Construction and demolition wastes	17 01 concrete, bricks, tiles and ceramics	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	Metal from reinforced concrete must have been removed.
	17 03 bituminous mixtures	17 03 02	Bituminous mixtures other than those mentioned in 17 03 01	Road planings only.
	17 05 soil stones and dredging spoil	17 05 04	Soil and stones other than those mentioned in 17 05 03	Restricted to topsoil, peat, subsoil and stones only.
19 Wastes from waste management facilities	19 12 wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified	19 12 09	Minerals (for example sand, stones) only	Restricted to wastes from 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
		19 12 12	Other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11	Restricted to crushed bricks, tiles, concrete and ceramics and soils from the mechanical treatment of construction / demolition waste. Metal from reinforced concrete must be removed. Does not include 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	20 02 02	Soils and stones	Restricted to topsoil, peat, subsoil and stones only.



- 4.5. The Operator will apply a strict Waste Acceptance Procedure (WAP) which will control how waste is accepted, ensuring that only suitable waste is deposited in the development.
- 4.6. The WAP will form part of the Environmental Management System (EMS) for the Site. An EMS is a requirement of all environmental permits and will be implemented in order to comply with the standard permit condition of the environmental permit issued for the Site.
- 4.7. A copy of the WAP is provided in Appendix 2 of this WRP.
- 4.8. The proposed waste materials will replace non-waste materials that would otherwise be used. These materials are predominately the same, despite one being defined as a waste and another not a waste. Were waste materials not available, aggregates produced under the *WRAP Quality Protocol: Aggregates from Inert Waste*, would be used to restore the Site. Recycled highways standard bulk-fill products produced in accordance with the WRAP Quality Protocol, have similar, if not identical, geotechnical properties to some types of sub-soils. Therefore, waste materials will have similar engineering properties as non-waste materials that would otherwise be used.



5. Meeting quality standards

- 5.1. Environment Agency guidance provide that the deposit of waste for recovery scheme should be:
- Designed and constructed and
 - Fit for purpose.
- 5.2. The finished scheme should not result in any environmental problems such as:
- Soil erosion
 - Pollution
 - Increased risk of flooding to the surrounding area.

Design

- 5.3. The proposed works will be completed in accordance with the planning permission, once permission has been obtained. The local planning authority (Essex County Council) will regulate the conditions of the planning permission.
- 5.4. A planning application for the development is currently being prepared.
- 5.5. An existing planning permission exists for the scheme which requires the preparation of a Biodiversity Enhancement plan, a Flood Risk Assessment to ensure that flooding to the area is not increased. These assessments will be updated to reflect the Proposed Restoration scheme.

Construction

- 5.6. The Operator has been contracted by HE to complete the proposed works.
- 5.7. Placement of materials within the footprint of the future highway improvements will be placed in accordance with the Series 600 Specification for Highways Works as required by HE.
- 5.8. All materials will be handled in accordance with the “Good practice guide for handling soils” (2000) produced by the Ministry of Agriculture, Fisheries and Food.
- 5.9. The imported waste will be deposited in accordance with best practice by experienced staff members. The construction materials will be handled and placed into the construction using bulldozers and excavators. Materials will not be handled when wet.
- 5.10. The restoration levels will be surveyed to ensure compliance with the approved design drawings which will form part of the planning permission for the Site.

Pollution controls

- 5.11. The risk of pollution will be controlled by the application for a deposit of waste for recovery Environmental Permit. The Environmental Permit application will be supported by the necessary Environmental Risk Assessments which will demonstrate the pollution controls to be employed.
- 5.12. The issued Permit will be supported by an Environmental Management System (EMS). A Waste Acceptance Procedure (WAP) will be included and implemented via the EMS. The WAP will control the acceptance of waste to the Site, ensuring that only suitable waste is accepted and deposited.
- 5.13. The Operator will be responsible for assessing and importing all of the waste to be deposited under the scheme. No third-party deliveries of waste will be accepted at the Site thus significantly reducing the risk of importing potentially contaminated soils.
- 5.14. Once the development has been completed, an Environmental Permit surrender application will be submitted to the Environment Agency. The surrender application will demonstrate that the works have been completed in accordance with the planning permission and the approved Waste Recovery Plan.



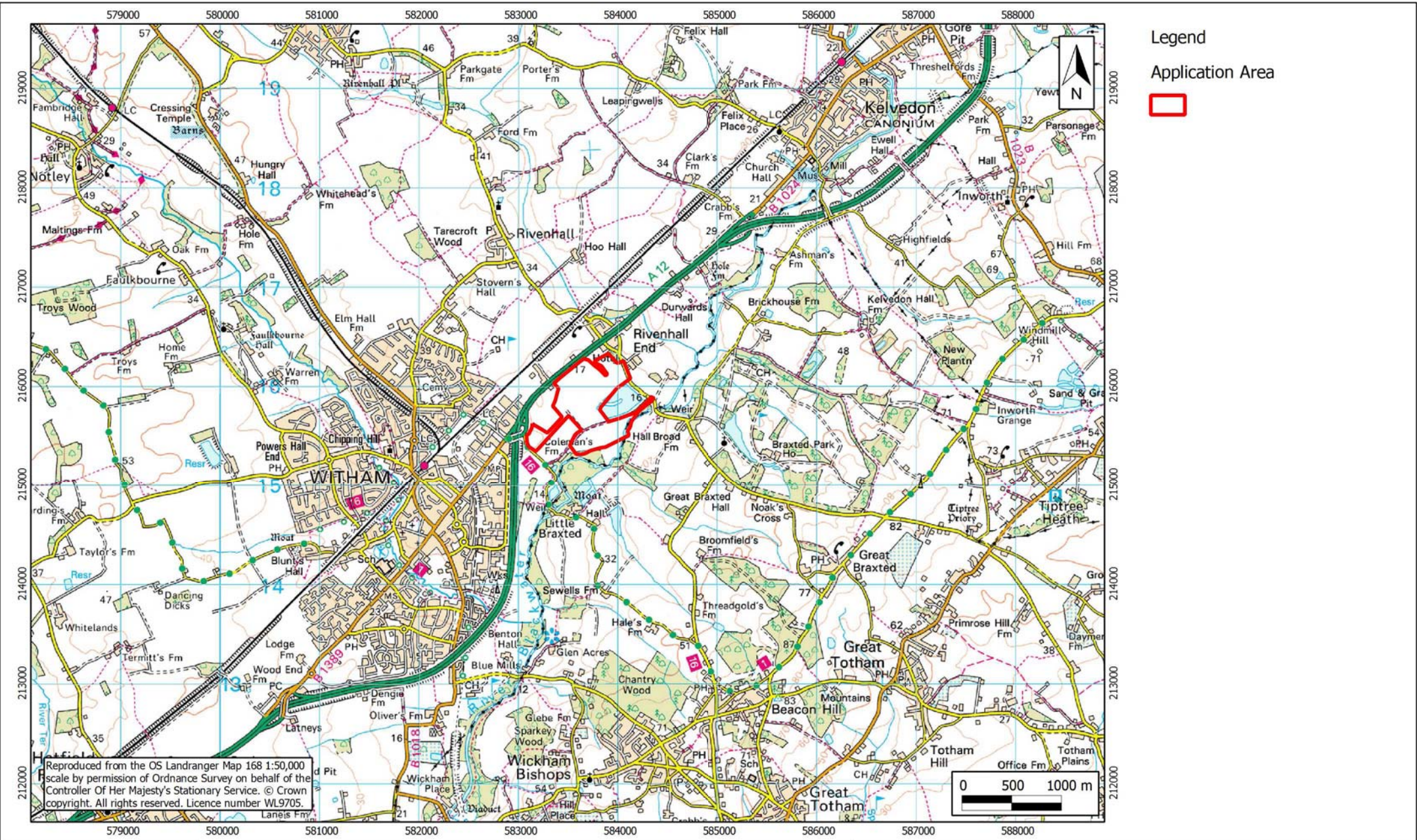
6. Conclusion

- 6.1. From the information provided within this Waste Recovery Plan, it has been demonstrated that:
- There is a genuine need and benefit from the Proposed Restoration
 - The waste directly replaces non-waste in the development
 - The volume of waste to be used is the minimum required to achieve the designed outcome
 - Alternate proposals using less waste are not an option
 - The Proposed Restoration will be carried out and maintained to an appropriate standard which will be enforced through the requirements of a planning permission (including S106 agreement), contracts, and an Environmental Permit.
- 6.2. It is considered that this Waste Recovery Plan demonstrates that there is a clear need to the re-design of the Site's restoration and that it is financially feasible. It is therefore requested that approval is provided on this Waste Recovery Plan to allow an Environmental Permit application to be made to the Environment Agency.
- 6.3. The Environmental Permit application will seek to allow a total of 895,000m³ of waste material to be deposited at the Site. The restoration will be completed in accordance with the plans included as part of the Site's forthcoming planning permission.




Drawings

Location Plan	Drawing No. 1666/HIA/01, Apr 2014	Scale: 1:50,000 @A4
Consented Restoration	Drawing No. 418/018, Apr 2016,	Scale: 1:1,250
Proposed Restoration	Drawing No. C45/08/05A, Jul 2021	Scale: 1:5,000 @A3
Cross Sections	Drawing No. C45/08/06A, Jul 2021	Scale: 1:2,500 @A2



Legend
Application Area




Barkers Chambers, Barker Street,
Shrewsbury, SY1 1SB

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Client **RA Brice & Partners**
Coleman's Farm
Little Braxted Lane
WITHAM
Essex, CM8 3EX

Title	Site location		
Project	Witham		
Drawing	1666/HIA/01	Date	Apr-2014
		Scale	1:50,000 @ A4

HEDGING SCHEDULE							
Mix A		Hedge A1	Hedge A2	Hedge A3	Hedge A4	Hedge A5	
Species	%	m lin	m lin	m lin	m lin	m lin	
<i>Crataegus monogyna</i>	Hawthorn	35	525	525	52	52	133
<i>Acer campestre</i>	Field Maple	15	225	225	23	23	57
<i>Prunus spinosa</i>	Blackthorn	15	225	225	23	23	57
<i>Ilex aquifolium</i>	Holly	10	150	150	15	15	38
<i>Ligustrum vulgare</i>	Wild Privet	8	120	120	11	11	25
<i>Rosa canina</i>	Dogrose	5	75	75	8	8	19
<i>Corylus avellana</i>	Hazel	5	75	75	8	8	19
<i>Euclyptus europaeus</i>	Spindle	5	75	75	7	7	19
<i>Rhamnus frangula</i>	Alder Buckthorn	2	30	30	3	3	8
	Total	100	1500	1500	150	150	375

Mix B		Hedge B1	Hedge B3	Hedge B4		
Species	%	80 m lin	along Burghley West of Lake 2	Gapping up 60m lin		
<i>Crataegus monogyna</i>	Hawthorn	40	192	264	88	72
<i>Acer campestre</i>	Field Maple	15	72	99	33	27
<i>Prunus spinosa</i>	Blackthorn	10	48	66	22	18
<i>Salix caprea</i>	Goat willow	10	48	66	22	18
<i>Corylus avellana</i>	Hazel	5	24	33	11	9
<i>Alnus glutinosa</i>	Common alder	8	38	53	17	14
<i>Rosa canina</i>	Dogrose	5	24	33	11	9
<i>Cornus sanguinea</i>	Dogwood	5	24	33	11	9
<i>Rhamnus frangula</i>	Alder buckthorn	2	10	13	5	4
	Total	100	480	660	220	180

Mix C (fruit hedge by orchard)			
Species	%	Hedge C1	170m
<i>Crataegus monogyna</i>	Hawthorn	40	130
<i>Prunus domestica institia</i>	Damson	15	50
<i>Prunus domestica institia var nigra</i>	Bullace	10	33
<i>Prunus cistena</i>	Cherry Plum	10	33
<i>Ligustrum vulgare</i>	Wild privet	10	33
<i>Sambucus nigra</i>	Elderberry	5	17
<i>Rosa canina</i>	Dogrose	5	17
<i>Malus domestica</i>	Crab apple	5	17
	Total	100	330

Hedge D1 (north boundary) which was planted in the winter of 2015/16 contains a mixture of hawthorn, hazel, field maple, dogwood and dog rose at 5 plants per metre staggered

Ground preparation prior to planting:
 Made up ground: Topsoil replaced at 300 and subsoil at 900 depth (schedule of restoration values given)
 Cultivations will not take place during heavy rain or when the soil is wet and waterlogged, to avoid damaging the soil structure.
 Before topsoil is placed, subsoil will if necessary be ripped with tines to break up any compaction.
Protection of existing trees and hedges
 Existing trees and hedges to be protected during construction in accordance with B.S. 5837 (2005)

SCHEDULE OF TREES WITHIN NEW HEDGE PLANTING									
	Hedge no.	A1	A2	A3	A4	A5	B1	B2	C1
<i>Acer campestre</i>	Field maple	6	3				3	2	2
<i>Quercus robur</i>	Petunculate oak	3	2				2		
<i>Quercus petraea</i>	sessile oak	2	3						
<i>Populus nigra ssp. italica</i>	Native black poplar						1		1
<i>Salix fragilis</i>	Crack willow							2	3
<i>Pinus commis</i>	Pear	2	4						3
<i>Sorbus tormalis</i>	Wild service tree	3	4						2
<i>Tilia cordata</i>	Small leaved lime	7	8				3	3	
<i>Ulmus spp.</i>	Elm	2	1					1	
	Total	25	25	0	0	0	6	7	10

- KEY**
- existing woodland
 - existing hedges
 - NW1-3** proposed woodland
 - A1,C1** proposed hedges
 - existing scrub (regenerating woodland)
 - existing reedbed
 - proposed reedbed establishment
 - proposed mosaic habitat for invertebrates
 - A** existing arable land retained
 - WG** proposed wet grassland
 - NG** proposed neutral grassland
 - A1,C1** proposed hedges
 - proposed permissive path and bridleway (hoggin)
 - Bird hide: two to be constructed at suitable locations for viewing birdlife on the reedbeds on completion

Plants
 Hedging plants to be 60-90cm tall bare rooted well grown 1+1 transplants with a good fibrous root system. Holly to be container grown in 3 pots.

Planting: New Hedges
 Hedging to be planted in a cultivated strip one metre wide at three plants per linear metre staggered in the central 60cms of the strip. Individual hedge plants to be protected with biodegradable rabbit spirals of height 90cms supported on bamboo canes, except for holly which will be protected by shrub shelters of height 75cms supported by a treated softwood stake of length 125cms of which 50cms is in the ground, attached to the shelter with 2 no. plastic ties. On completion the entire strip to be mulched with old straw to a depth of at least 300mm. Rabbit guards and canes to be removed after 2-3 years in late April/May.

Reinforcing existing hedges (planting into gaps) B3, B4
 In gaps between established shrubs and trees, cultivate a 2m wide strip and to a depth of 300mm. Plant 3 per metre as for hedging staggered into central 60cms strip. Holly to be container grown in 3 pots. On completion mulch with old straw.

Trees within hedges
 Trees within hedges to be feathered bare rooted or container grown stock of height 1.5-1.8m with a good fibrous root system except for oak and horsebeam which are to be container grown in 10 pots. Trees to be planted with 20t compost per tree incorporated into the backfill such as organic greenwaste. Each tree to be protected by a 1.5m long, tubular tree shelter supported by a treated softwood stake 25mm square and 1.5m long of which at least 50cms is in the ground, attached to the shelter with 2 plastic ties. All tree shelters to be removed after 2-3 years.

NEW WOODLAND PLANTING					
Damp woodland mix	%	NW1	NW2	NW3	
<i>Acer campestre</i>	Field maple	7	7	24	21
<i>Alnus glutinosa</i>	Common Alder	10	10	33	30
<i>Corylus avellana</i>	Hazel	10	10	33	30
<i>Crataegus monogyna</i>	Hawthorn	25	25	84	75
<i>Ilex aquifolium</i>	Holly	10	10	33	30
<i>Ligustrum vulgare</i>	Common privet	7	7	22	21
<i>Prunus spinosa</i>	Blackthorn	15	15	49	45
<i>Quercus robur</i>	Petunculate oak	3	3	10	9
<i>Rosa canina</i>	Dogrose	5	5	16	15
<i>Salix fragilis</i>	Crack willow	8	8	25	24
	Total number required	100	100	300	

NW1 is located north of the proposed car park area adjoining the new hedge B4 and ditch
 NW2 is north of Lake 2 and connected to hedge C1 south of proposed orchard
 NW3 is south of NW2 and the existing ditch with willows
 Trees are to be planted on a 2m grid with the taller growing trees (oak, alder, willow) spaced out throughout the planting. Trees to be well grown (ignoring bare root 1+1 transplants except for oak and holly) which will be container grown. All trees to have a staked tree shelter minimum diameter 150mm or 160mm for all holly, hazel and dogrose plants. Each tree to be planted with 10 compost such as organic greenwaste. The degradable mulch mats 90-100cms square to be fitted round each tree.
 All tree and shrub shelters to be removed after 2-3 years.

NOTES

For definition of terms see Biodiversity Enhancement Plan (B.E.P.)

Neutral grassland
 Areas when restored to be cultivated graded and sown with an approved grass and wildflower mix of native provenance such as Emorsgate EM2 or EM4 from Emorsgate seeds (see pp. 33,34 of B.E.P.)

Wet grassland
 This area when restored is to be cultivated graded and sown with a suitable wet meadow mix such as either EM4 or EM8 from Emorsgate seeds.

Bridleway, restored bridleway, permissive footpath/bridleway.
 Hoggin make-up: dig out existing soils to a depth of 300mm or deeper to form a well compacted sub-base. Supply and lay hardcore to a minimum depth of 200mm to within 100mm of surrounding levels. Compact and ensure falls on top will shed water to either side. Supply and lay well consolidated hoggin in two layers to build up to 100mm when compacted. Hoggin is a naturally occurring material containing equal amounts of clay, sand and gravel equivalent to a self binding gravel. If not occurring on the site it is available elsewhere in Essex. Hoggin cannot be 'mixed' from other materials. No particle to be greater than 40mm. Compact the hoggin to falls to shed water either side. Supply and spread top layer of 20mm gravel on top of hoggin layer to be well rolled and bound into the surface. Surface to be at least 50mm proud of surrounding levels. This surface may need re-rolling and compacting at intervals during year 1 especially if used by horses.

Client
Brice Aggregates

Job Title **Job No. 418**

Land at Coleman's Farm, Witham, Essex

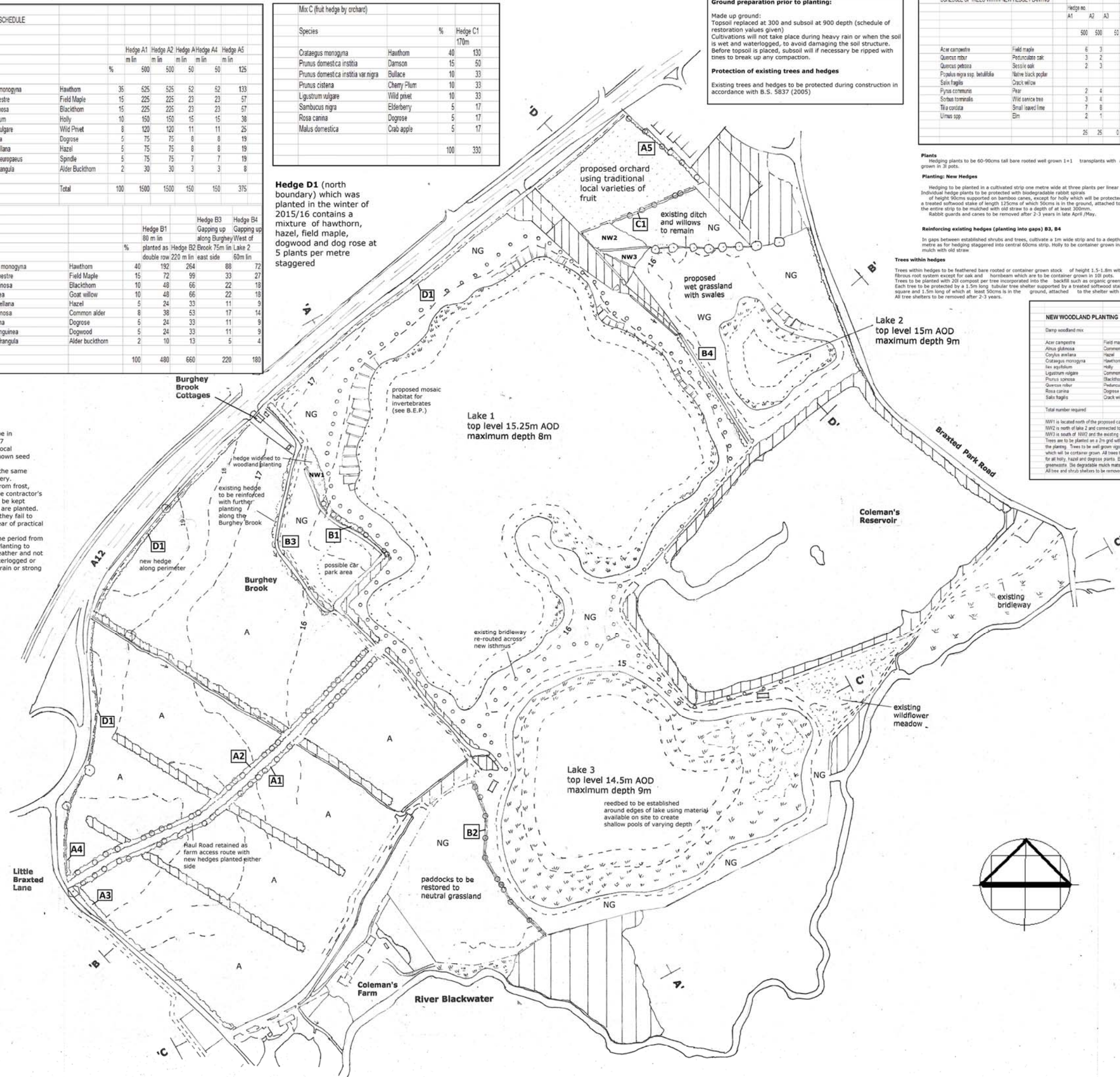
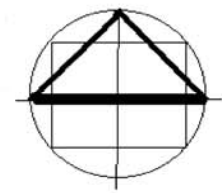
Drawing Title **Drawing No.418/01 B**

Proposed restoration scheme

Scale : 1:1250 **Date: April 2016**

Christine Fisher B.Sc. (Hons., London Imp.) Dip. L.A. (Edin.), C.M.L.I.
 2, Heath Cottages, Newbourne Road, Waldringfield, Woodbridge, Suffolk IP12 4PS

Telephone 01473-736384
 e-mail:cmf.landscape@btinternet.com



Plants and planting

- All tree and shrub planting to be in accordance with BS 3936 - 2007
- All hedging and trees to be of local provenance and grown from known seed sources of British origin.
- All plants are to be planted at the same depth as they were in the nursery.
- All plants are to be protected from frost, wind and drying out while in the contractor's care. Bare rooted plants are to be kept wrapped at all times until they are planted.
- All plants are to be replaced if they fail to survive and grow within one year of practical completion.
- Planting to take place during the period from mid November to mid March. Planting to take place during mild open weather and not when the ground is frozen, waterlogged or snowcovered, or during heavy rain or strong winds.

NOTES

HABITAT ESTABLISHMENT AND MAINTENANCE PRESCRIPTIONS TO BE AS PER APPROVED BEP AND LHMP. EXTENDED AFTERCARE FOR NATURE CONSERVATION HABITATS SECURED THROUGH A S106 AGREEMENT.

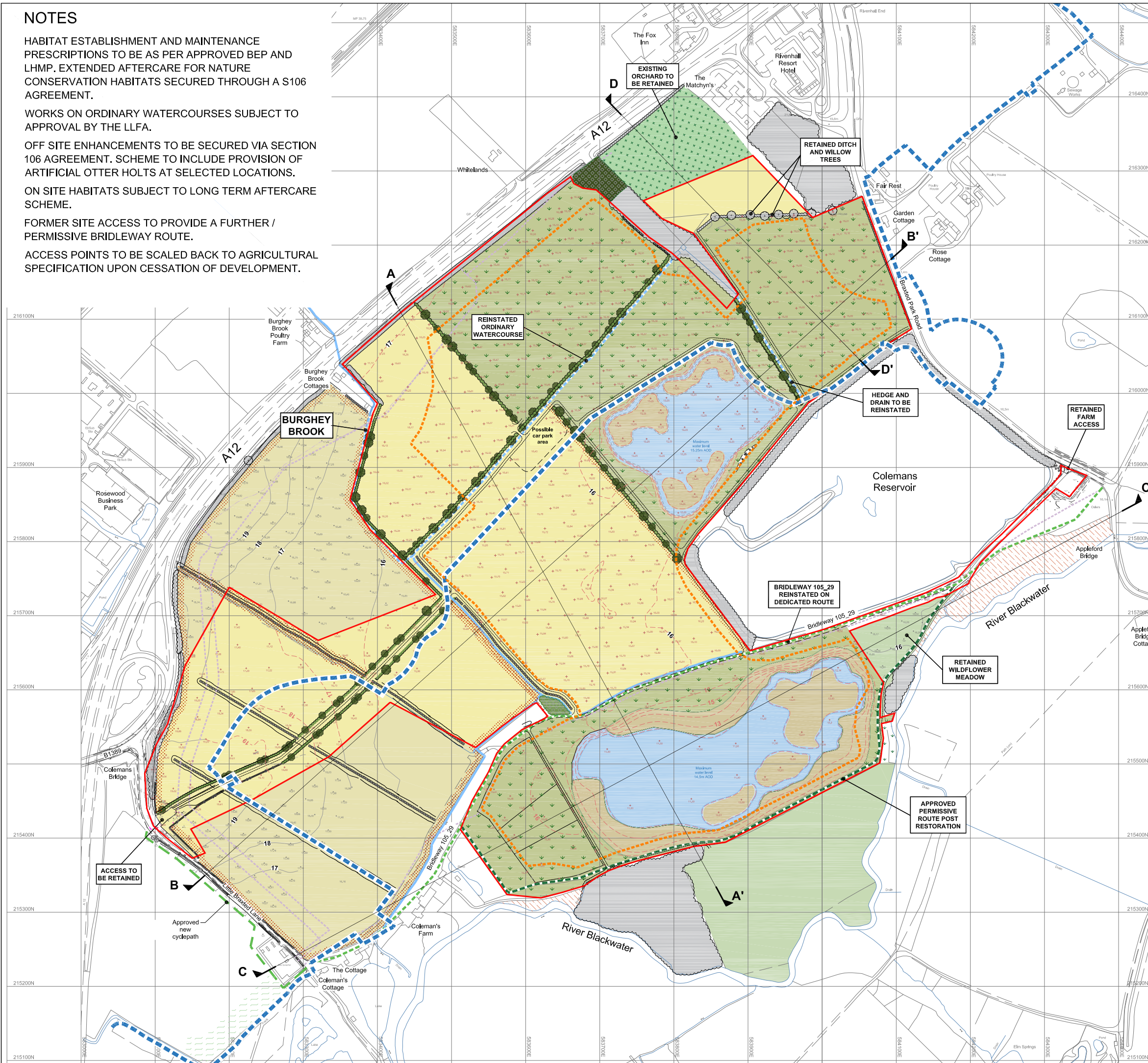
WORKS ON ORDINARY WATERCOURSES SUBJECT TO APPROVAL BY THE LLFA.

OFF SITE ENHANCEMENTS TO BE SECURED VIA SECTION 106 AGREEMENT. SCHEME TO INCLUDE PROVISION OF ARTIFICIAL OTTER HOLTS AT SELECTED LOCATIONS.

ON SITE HABITATS SUBJECT TO LONG TERM AFTERCARE SCHEME.

FORMER SITE ACCESS TO PROVIDE A FURTHER / PERMISSIVE BRIDLEWAY ROUTE.

ACCESS POINTS TO BE SCALED BACK TO AGRICULTURAL SPECIFICATION UPON CESSATION OF DEVELOPMENT.



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LEGEND

- PERMISSION SITE
- EXTENT OF A12 WORKS
- GAS MAINS
- BRIDLEWAY 105_29
- APPROVED PERMISSIVE ROUTE
- APPROVED NEW CYCLEPATH
- MAINTENANCE ACCESS TRACK
- RESTORATION CONTOURS AT 1m INTERVALS
- EXISTING VEGETATION TO BE RETAINED
- EXISTING ARABLE LAND TO BE RETAINED
- LAND REINSTATED TO ARABLE FARMLAND
- LAND RESTORED TO LOWLAND MEADOW
- LAND RESTORED TO REEDBED
- PROPOSED HEDGEROW
- LAND RESTORED TO WOODLAND
- EXISTING ORCHARD
- LAND RESTORED TO OPEN MOSAIC HABITAT
- LAND RESTORED TO OPEN WATER
- REINSTATED ORDINARY WATERCOURSES
- BURGHEY BROOK & OTHER ORDINARY WATERCOURSES WITHIN THE SITE
- PROPOSED CROSS SECTIONS (SEE PLAN C45/08/06)

OFF SITE ENHANCEMENT AREAS

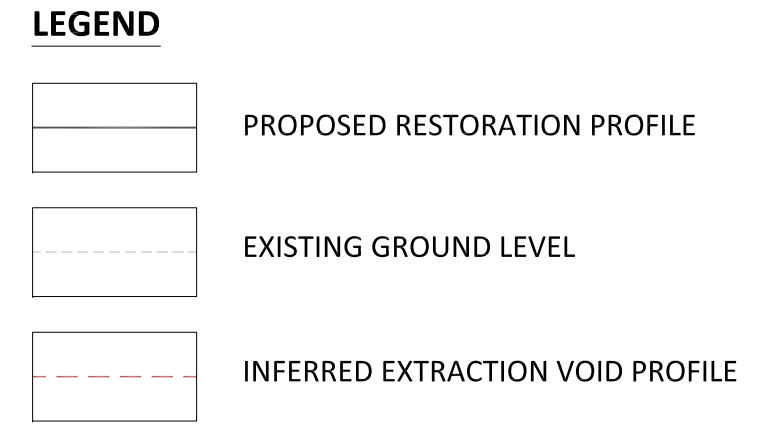
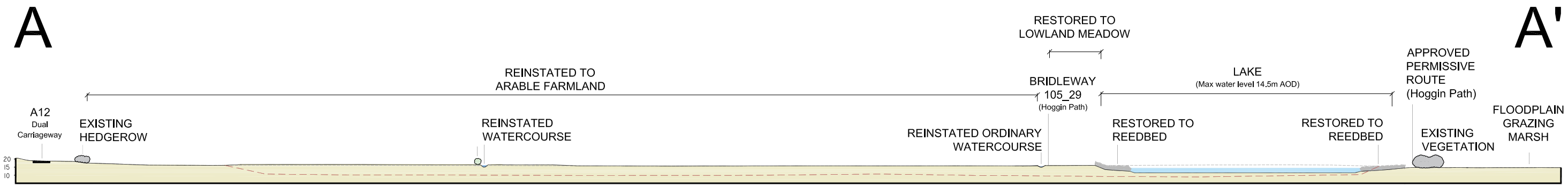
- AREA OF FLOODPLAIN GRAZING MARSH
- AREA OF REEDBED
- AREA OF LOWLAND MEADOW
- ARABLE MARGIN

0 100 200
Meters

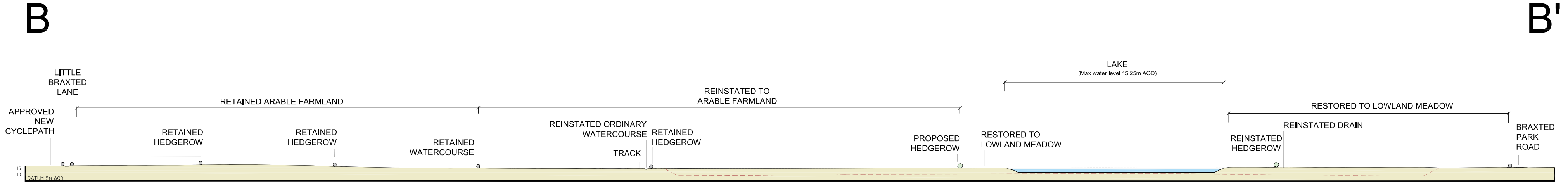
Project **COLEMAN'S FARM QUARRY WITHAM, ESSEX**

Title **REVISED RESTORATION PLAN**

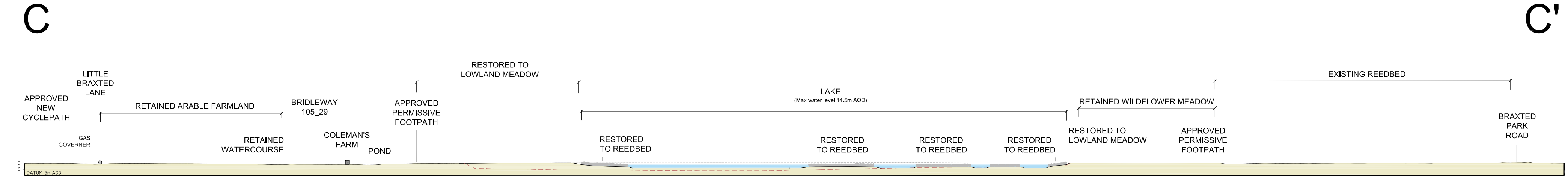
Scale 1:5000 @ A3	Date July 2021	Drawing No.
Drawn by DJA	Checked by OB	C45/08/05A



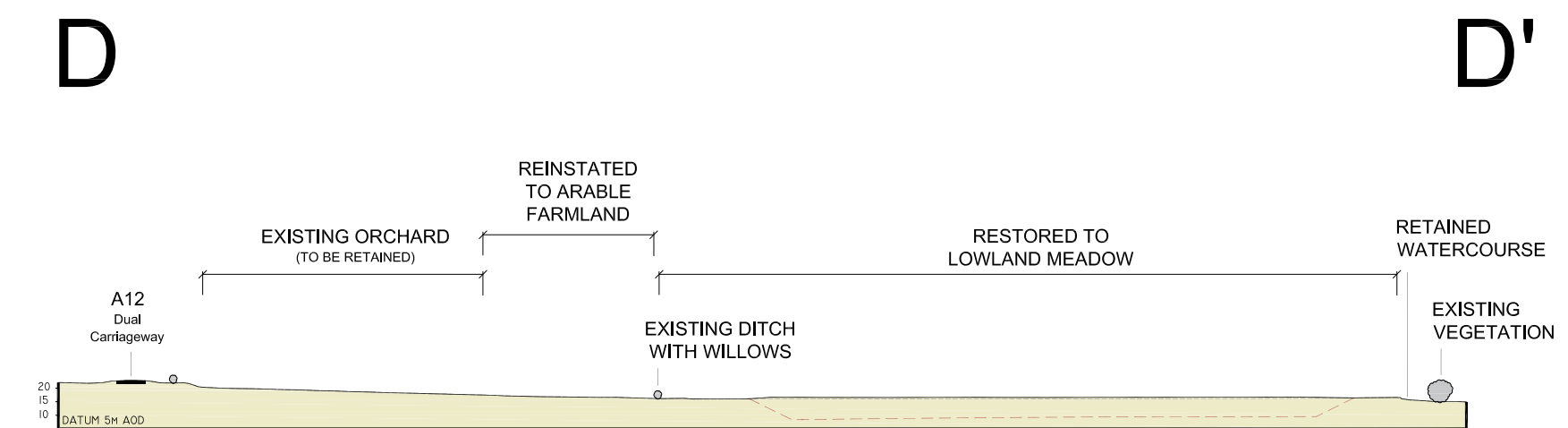
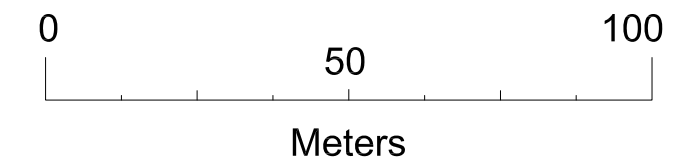
SECTION A - A'



SECTION B - B'



SECTION C - C'



SECTION D - D'

BRICE
AGGREGATES

Project: **COLEMAN'S FARM QUARRY WITHAM, ESSEX**

Title: **SITE CROSS SECTIONS**

Scale: 1:2500 @ A2	Date: July 2021	Drawing No.
Drawn by: DJA	Checked by: OB	C45/08/06A



Appendix 1

Section 106 Agreement

AGREEMENT

Under Section 106 of the Town and Country Planning Act 1990 as amended

BETWEEN

SIMON ROBERT BRICE (1)

And

BRICE AGGREGATES LIMITED (2)

And

ESSEX COUNTY COUNCIL (3)

RE

Coleman's Farm, Little Braxted Lane, Rivenhall, Witham, Essex, CM8 3EX

Angela Hutchings

Interim Director for Essex Legal Services

Seax House

Victoria Road South

Chelmsford

Essex

CM1 1QH

(Ref: JPC/DEV/3644)

DATE

21 June

2016

PARTIES

- (1) SIMON ROBERT BRICE of Rose Cottage Braxted Road, Rivenhall End, Witham Essex CM8 3EZ ("the Owner") and
- (2) BRICE AGGREGATES LIMITED (Company No. 08443424) of Coleman's Farm Little Braxted Lane Rivenhall Witham Essex CM8 3EX ("the Developer") and
- (3) ESSEX COUNTY COUNCIL of County Hall Market Road Chelmsford Essex CM1 1QH ("the County Council")

WHEREAS

- (1) The County Council is the local minerals and waste planning authority for the purposes of the Town and Country Planning Act 1990 for the area within which the Application Site is situated and are the authorities entitled to enforce the obligations contained in this Agreement
- (2) The County Council is the local highway authority for the area within which the Application Site is situated
- (3) The Owner is the owner of the Application Site which forms the land registered at HM Land Registry with Freehold Title Absolute under Title Number EX810840 and has an interest in the Application Site within the meaning of Section 106 (9) (b) of the 1990 Act
- (4) A Planning Application Reference No. ESS/39/14/BTE has been made to the County Council for planning permission for the Development on the Application Site
- (5) The County Council considers it expedient that provision should be made for regulating or facilitating the development or use of the Application Site in the manner hereinafter appearing and the County Council consider that entering into this Agreement will be of benefit to the public
- (6) The parties have agreed to enter into this Agreement with the intention that the obligations contained in this Agreement may be enforced by the County Council against the Owner and its successors in title
- (7) In order to satisfy the tests in Regulation 122 (2) of the Community Infrastructure Levy Regulations 2010 the Developer and the Owner and the County Council are satisfied that the planning obligations contained in this Agreement are necessary to make the Development acceptable in planning terms, are directly related to the Development and fairly and reasonably relate in scale and kind to the Development

1. OPERATIVE POWERS

1.1 THIS AGREEMENT is made pursuant to Section 106 of the 1990 Act as amended by the 1991 Act and 2004 Act and 2008 Act and 2011 Act to the intent that it shall bind the Owner and its successors in title and assigns and the persons claiming under or through it subject to clause 6.18 of this Agreement

1.2 The covenants, restrictions and requirements imposed upon the Developer under this Deed create planning obligations pursuant to Section 106 of the Act and are enforceable by the County Council as local planning authority against the Owner

1.3 This Agreement is conditional on the grant of the Planning Permission

1.4 Nothing in this Agreement is intended to confer any benefit on any party other than the parties executing this Agreement

1.5 To the extent that any of the obligations contained in this Agreement are not planning obligations within the meaning of the 1990 Act they are entered into pursuant to the powers contained in Section 111 of the 1972 Act and Section 1 of the Localism Act 2011 all other enabling powers

2. INTERPRETATION

2.1 In this Agreement the following expressions shall have the following meanings:-

"the 1972 Act" shall mean the Local Government Act 1972

"the 1980 Act" shall mean the Highways Act 1980

"the 1990 Act" shall mean the Town and Country Planning Act 1990

"the 1991 Act" shall mean the Planning and Compensation Act 1991

"the 2004 Act" shall mean the Planning and Compulsory Purchase Act 2004

"the 2008 Act" shall mean the Planning Act 2008

"the 2011 Act" shall mean the Localism Act 2011

"the Application Site" shall mean the land known as Coleman's Farm, Little Braxted Lane, Rivenhall, Witham, Essex, CM8 3EX and identified on the Site Plan annexed hereto and thereon edged red

"Commencement Date" shall mean subject to clause 7.2 the date on which the Development commences by the carrying out on the Application Site pursuant to the Planning Permission of a material operation as specified in section 56(4) (a-d) of the 1990 Act PROVIDED ALWAYS for the purposes of this Agreement demolition of existing structures trial holes site investigations and surveys, preparation and remediation the removal of services or the erection of fences or hoardings shall not be a material operation

“Commencement of Development” subject to clause 7.2 the carrying out on the Application Site pursuant to the Planning Permission of a material operation as specified in section 56(4) of the 1990 Act and **“Commence the Development”** and **“Commence”** and **“Commenced”** shall be construed accordingly

“the Development” shall mean the extraction of an estimated 2.5 million tonnes of sand and gravel together with the provision of a new access from Little Braxted Lane; and the installation/construction and operation of primary processing and ancillary facilities comprising washing and bagging plant, silt lagoons, weighbridge, site management office, mess room and maintenance workshop; with restoration to agriculture and water based nature conservation habitats

“Notice of Commencement” shall mean the written notice advising of the proposed Commencement Date

“Occupation” shall mean permanent occupation of the Development for the purposes permitted by the Planning Permission other than the construction of the Development and shall not include day time occupation by workmen involved in the construction of the Development or in so far as such uses are ancillary to the construction of the Development the use of finished buildings for sales purposes for use as temporary offices or for the storage of plant and materials and **“Occupy”** and **“Occupied”** shall mutatis mutandis be construed accordingly

“Phase” shall mean the subdivision of the Application Site into discrete areas or tranches to facilitate or prioritise the carrying out of the Development in accordance with the Planning Permission as shown on Drawing No. C/45/01/03B ‘Indicative Working Scheme’

“the Planning Application” shall mean the application for planning permission for the carrying out of the Development carrying the reference ESS/39/14/BTE and for the avoidance of doubt for the purposes of this Agreement the term **“Planning Application”** shall subject to the written confirmation of the Council to be given prior to the determination of any planning applications that may follow include any application(s) to vary a condition on the Planning Permission or any application(s) for reserved matters approval

“the Planning Permission” shall mean the planning permission granted for the Development subject to conditions pursuant to the Planning Application

“Seven Day LIBID Rate” shall mean an assessment of the rate of interest the County can expect to earn on investments through the money market, the rate used being the average interest rate at which banks are willing to borrow eurocurrency deposits

“Working Days” shall mean any day(s) upon which banks in the City of London are open to the general public

2.2 Where in this Agreement reference is made to a Clause Paragraph Schedule Plan or Recital such reference (unless the context otherwise requires) is a reference to a clause paragraph schedule plan or recital of or (in the case of a plan) attached to this Agreement

2.3 Where in any Schedule or Part of a Schedule reference is made to a Paragraph such reference shall (unless the context otherwise requires) be to a paragraph of that Schedule or (if relevant) Part of a Schedule

2.4 References in this Agreement to the Developer and the Owner and the County Council shall include reference to their respective successors in title and to persons claiming through or under them

2.5 Words importing the singular meaning where the context so admits include the plural meaning and vice versa

2.6 Words of the masculine gender include the feminine and neuter genders and words denoting natural persons include companies corporations and firms and all such words shall be construed interchangeably in that manner

2.7 Words denoting an obligation on a party to do any act matter or thing include an obligation to procure that it be done and words placing a party under a restriction include an obligation not to cause permit or allow infringement of the restriction

2.8 Any reference to a statute a provision thereof a statutory instrument or such Specification Code of Practice or General Direction as is issued under statutory authority or by a Secretary of State shall include any modification extension consolidation or re-enactment thereof for the time being in force and shall include all instruments orders plans regulations permissions and directions for the time being made issued or given thereunder or deriving validity therefrom

2.9 Clause headings and table of contents contained in this Agreement are for reference purposes only and should not be incorporated into this Agreement and shall not be deemed to be any indication of the meaning of the parts of this Agreement to which they relate

2.10 The word "including" shall mean "including without limitation or prejudice to the generality of any description defining term or phrase preceding that word" and the word "include" and its derivatives shall be construed accordingly

3. OBLIGATIONS OF THE PARTIES

3.1 The Developer and the Owner so as to bind the Application Site covenants with the Council and the County Council to comply with the obligations set out in the Schedules to this Agreement

3.2 The County Council covenants with the Developer and the Owner to comply with the obligations set out in the Schedules to this Agreement

3.3 The County Council covenants with the Developer and the Owner to act reasonably, properly and diligently in exercising its discretion and discharging its functions under this Agreement and FURTHERMORE where any notice or consent or approval or authorisation or agreement or other similar affirmation is required under the terms of the Agreement then under those circumstances the County Council will not unreasonably withhold or delay such notice or consent or approval or authorisation or agreement or other similar affirmation

3.4 Representatives of the County Council may enter upon the Application Site at any reasonable time (and in the case of an emergency immediately) to ascertain whether the terms of this Agreement and of the Planning Permission are or have been complied with subject to complying with all health and safety requirements required by the Developer

3.5 The Developer shall notify the County Council in writing not later than FIVE (5) Working Days prior to the Commencement of Development of the date on which the Developer intends to Commence Development and FURTHERMORE the date on which Development was Commenced shall be taken as the date in the Developer's notification or if earlier the actual date of Commencement of Development

4. TRANSFER OF INTERESTS

4.1 The Owner shall upon parting with its interest in the Application Site be released from all obligations rights and duties (save for liability in respect of any antecedent breach) under the terms of this Agreement Provided That if the Owner shall retain an interest in any part of the Application Site the Owner shall remain liable insofar as such liability relates to such retained interest

4.2 The Developer or the Owner shall give to the County Council within one month of the Owner disposing of any part of the land comprised in the Application Site written notice of the name and address of the person to whom the land has been transferred

4.3 the provisions of Clauses 4.1 and 4.2 shall apply in relation to any successor in title of the Owner as the owner of the Application Site or any part thereof mutatis mutandis

5. NOTICES

5.1 The address for any notice or other written communication is as specified above in the case of each party hereto or (at the option of the recipient) such address as may be specified for service from time to time provided that the same is within the United Kingdom or (at the option of the party giving notice or other communication) the last-known place of abode or business in the United Kingdom of the recipient

5.2 Any notice or other written communication to be served or given by one party upon or to any other under the terms of this Agreement shall be deemed to have been validly served or given if received by electronic mail by facsimile delivered by hand or sent by first class post or by pre-paid or recorded delivery post to the party upon whom it is to be served or to whom it is to be given or as otherwise notified for the purpose by notice in writing provided that the notice or other written communication is marked as follows for each recipient:

5.2.1 for the Developer it shall be marked for the attention of Mr S Brice.

5.2.2 except as stated at sub clause 5.2 for the County Council relating to a highway or transportation matter it shall be marked for the attention of the s106 Officer, Strategic Development (EGD), County Hall Chelmsford CM1 1QH

5.2.3 except as stated at sub clause 5.2 for the County Council relating to a waste planning matter it shall be marked for the attention of the Director for Planning, County Hall Chelmsford CM1 1QH

5.2.4 for the Owner it shall be marked for the attention of Mr S Brice

Unless the time of actual receipt is proved, a notice, demand or communication sent by the following means is to be treated as having been served:

5.3.1 if delivered by hand, at the time of delivery;

5.3.2 if sent by post, on the second working day after posting; or

5.3.3 if sent by recorded delivery, at the time delivery was signed for

5.4 If a notice, demand or any other communication is served after 4.00 pm on a working day, or on a day that is not a working day, it is to be treated as having been served on the next Working Day

5.5 Any bond to be deposited or payment to be made direct to the County Council by the Developer under the terms of this Agreement shall be addressed to the s106 officer (EGD) of the County Council at the aforementioned address

6. GENERAL

6.1 Unless otherwise specified where any agreement certificate consent permission expression of satisfaction or other approval is to be given by any party or any person on behalf of any party hereto under this Agreement the same shall not be unreasonably

withheld or delayed or imposed (as the case may be) but may only be given in writing and may be validly obtained only prior to the act or event to which it applies and the party giving such agreement certificate consent permission expression of satisfaction or other approval shall at all times act reasonably and the agreement or requirement shall be given or imposed (in the case of the County Council) by the Director for Planning depending on which service department is responsible for the matter and where any payment of costs or other payments are to be made by the Developer to the County Council such costs and other payments shall be deemed to be reasonable and proper

6.2 Any covenant by the Developer not to do an act or thing shall be deemed to include an obligation to use reasonable endeavours not to permit or suffer such act or thing to be done by another person where knowledge of the actions of the other person is reasonably to be inferred

6.3 No compensation shall be payable by the Council or the County Council to any party to this Agreement or their successors in title arising from the terms of this Agreement and assigns arising from the terms of this Agreement and unless specified otherwise in this Agreement all works and activities to be executed hereunder (including such as are of a preparatory ancillary or maintenance nature) are (save where expressly provided otherwise) to be at the sole expense of the Developer and at no cost to the County Council

6.4 All consideration given in accordance with the terms of this Deed shall be exclusive of any value added tax ("VAT") properly payable PROVIDED ALWAYS THAT if at any time VAT is or becomes chargeable in respect of any supply made in accordance with the provisions of this Agreement then to the extent that VAT had not previously been charged in respect of that supply the person making the supply shall issue a VAT invoice to the person to whom the supply was made and the VAT shall be paid accordingly

6.5 Nothing in this Agreement shall prejudice or affect the rights powers duties and obligations of the County Council in the exercise of its functions in any capacity and the rights powers duties and obligations of the County Council under private public or subordinate legislation may be effectively exercised as if it were not a party to this Agreement (and in particular it shall not be precluded from entering into any agreement under the 1980 Act and/or the 1990 Act with any other party and shall not be deemed to be in breach of this Agreement by so doing)

6.6 Any agreement obligation covenant or undertaking contained herein by any of the parties which comprise more than one person or entity shall be joint and several and where any agreement obligation covenant or undertaking is made with or undertaken

towards more than one person it shall be construed as having been made with or undertaken towards each such person separately and where the Developer and the Owner are different persons agreements obligations covenants and undertakings given by either shall be deemed to be given jointly and severally by both

6.7 If any provision of this Agreement is declared by any judicial or other competent authority to be void voidable illegal or otherwise unenforceable the remaining provisions of this Agreement shall continue in full force and effect and the parties shall amend that provision in such reasonable manner as achieves the intention of the parties without illegality provided that any party may seek the consent of the other or others to the termination of this Agreement on such terms as may in all the circumstances be reasonable if the effect of the foregoing provisions would be to defeat the original intention of the parties

6.8 No variation to this Agreement shall be effective unless made by Deed or pursuant to the determination of an application made under Section 106A of the 1990 Act or an appeal under section 106B of the 1990 Act

6.9 The failure by any party to enforce at any time or for any period any one or more of the terms or conditions of this Agreement shall not be a waiver of them or of the right at any time subsequently to enforce all terms and conditions of this Agreement

6.10 Any payment which is due to the County Council under the terms of this Agreement that is made later than the date such payment is due shall attract interest at the Seven Day LIBID Rate from the date payment was due until the date payment is received by the County Council as appropriate or in the event that the rate is no longer published or the calculation method is substantially altered then an appropriate alternative rate nominated by the County Council

6.11 The Developer hereby agrees to pay forthwith the County Council's reasonable legal costs of and incidental to the preparation negotiation and entering into of this Agreement

6.12 This Agreement shall be enforceable as a local land charge and shall be registered as such immediately by the County Council and the County Council covenants with the Developer and the Owner it will note the local land charges register and the planning register following the occurrence of the compliance performance and satisfaction of all of the said obligations

6.13 This Agreement is governed by the laws of England and Wales and is subject to the exclusive jurisdiction of the English and Welsh Courts

6.14 It is hereby agreed and declared that a person who is not a party to this Agreement shall not be entitled in his own right to enforce any term of this Agreement pursuant to the Contracts (Rights of Third Parties) Act 1999

6.15 This Agreement may be executed in any number of counterparts and by different parties hereto on separate counterparts and each of those counterparts when executed and delivered shall constitute an original but all the counterparts together shall constitute one and the same instrument

6.16 The provisions of this Agreement (other than those of this Clause which shall be of immediate effect) shall be of no effect until this Agreement has been dated

6.17.1 This Agreement will come to an end if:

6.17.1.1 the Planning Permission is quashed, revoked or otherwise withdrawn or otherwise modified without the consent of the Developer before the Commencement Date so as to render this Agreement or any part of it irrelevant, impractical or unviable; or

6.17.1.2 the Planning Permission expires;

6.17.2 Where the Agreement comes to an end under clause 6.17.1 the County Council is, on the written request of the Developer, to vacate or cancel the entry made in the Local Land Charges register in relation to this Agreement or otherwise to record the fact that it has come to an end and no longer affects the Application Site

6.18 This Agreement shall not be enforceable against:

6.18.1 Owner-occupiers or tenants of dwellings or other buildings constructed neither pursuant to the Planning Permission nor against those deriving title from them,

6.18.2 Any statutory undertaker or other person who acquires any part of the Application Site or any interest in it for the purposes of the supply of electricity gas water drainage telecommunication services or public transport services

6.19 Nothing in this Deed shall prohibit or limit the right to develop any part of the Application Site in accordance with a planning permission (other than the Planning Permission) granted (whether or not on appeal) after the date of this Deed

7. COMMENCEMENT

7.1 Save in respect of those clauses which will become operative on the date of this Agreement and in respect of obligations expressly in this Agreement requiring compliance prior to Commencement Date and which will become operative on the issue

of the Planning Permission this Agreement will come into effect on the Commencement Date

7.2 The Commencement Date and Commencement of Development will not be triggered by any of the following operations:

7.2.1 site investigations or surveys;

7.2.2 site decontamination;

7.2.3 the clearance of the Application Site;

7.2.4 works connected with infilling; or

7.2.5 works for the provision of drainage or mains services to prepare the Application Site for development.

7.2.6 erection of fencing or boarding; and

7.2.7 erection of boards advertising the Development

7.2.8 advanced planting

8. DETERMINATION OF DISPUTES

8.1 Subject to clause 8.7 if any dispute arises relating to or arising out of the terms of this Agreement, either party may give to the other written notice requiring the dispute to be determined under this clause 8. The notice is to propose an appropriate Specialist and specify the nature and substance of the dispute and the relief sought in relation to the dispute

8.2 For the purposes of this clause 8 a “**Specialist**” is a person qualified to act as an expert in relation to the dispute having not less than ten years’ professional experience in relation to developments in the nature of the Development and property in the same locality as the Application Site

8.3 Any dispute over the type of Specialist appropriate to resolve the dispute may be referred at the request of either party to the President for the time being of the Chartered Institute of Arbitrators (or other appropriate President of a professional institute with expertise in the relevant discipline as agreed between the parties in dispute) who will have the power, with the right to take such further advice as he may require, to

determine the appropriate type of Specialist and to arrange his nomination under clause 8.4

8.4 Any dispute over the identity of the Specialist is to be referred at the request of either party to the President or other most senior available officer of the organisation generally recognised as being responsible for the relevant type of Specialist who will have the power, with the right to take such further advice as he may require, to determine and nominate the appropriate Specialist or to arrange his nomination. If no such organisation exists, or the parties cannot agree the identity of the organisation, then the Specialist is to be nominated by the President for the time being of the Chartered Institute of Arbitrators (or other appropriate President of a professional institute with expertise in the relevant discipline as agreed between the parties in dispute)

8.5 The Specialist is to act as an independent expert and:

8.5.1 each party may make written representations within ten (10) Working Days of his appointment and will copy the written representations to the other party;

8.5.2 each party is to have a further ten (10) Working Days to make written comments on the other's representations and will copy the written comments to the other party;

8.5.3 the Specialist is to be at liberty to call for such written evidence from the parties and to seek such legal or other expert assistance as he or she may reasonably require;

8.5.4 the Specialist is not to take oral representations from the parties without giving both parties the opportunity to be present and to give evidence and to cross-examine each other;

8.5.5 the Specialist is to have regard to all representations and evidence before him when making his decision, which is to be in writing, and is to give reasons for his decision; and

8.5.6 the Specialist is to use all reasonable endeavours to publish his decision within thirty (30) Working Days of his appointment.

8.6. Responsibility for the costs of referring a dispute to a Specialist under this clause 8, including costs connected with the appointment of the Specialist and the Specialist's own costs, but not the legal and other professional costs of any party in relation to a dispute, will be decided by the Specialist.

8.7 This clause 8 does not apply to disputes in relation to matters of law or the construction or interpretation of this Agreement which will be subject to the jurisdiction of the courts of England.

9. OWNER'S CONSENT

9.1. The Owner consents to the giving by the Developer of the covenants in this Agreement and agrees that its interest in the Application Site shall be bound by them

IN WITNESS whereof this document has been executed as a Deed and delivered the day and year first before written

SCHEDULE 1
Biodiversity Enhancement Plan

In this Schedule unless the context requires otherwise the following words and expressions shall have the following meaning:

“Biodiversity Enhancement Plan (BEP)” means a plan to cover all operational Phases of the restoration of the Application Site for the duration of at least twenty five (25) years beyond the completion of each Phase. The BEP shall consist of the following:

- a** Consistent with the requirements of the Essex Biodiversity Validation Checklist (a copy of which is annexed to this Agreement),
an appraisal of the site’s existing ecological value prior to extraction, and description of any necessary mitigation measures that will be incorporated in to the restoration scheme to address unavoidable significant impacts to biodiversity features (such as to legally protected species) arising from the construction or operation of the quarry;
- b** Consistent with the requirements of the Essex Biodiversity Validation Checklist, a Biodiversity Offsetting Metric Calculation that expresses habitat losses and gains in Biodiversity Units;
- c** A description of the Priority Habitats (and associated Priority Species) targeted for enhancement and appropriate to the site with reference to conservation priorities set out in local spatial plans such as Nature Improvement Areas or Living Landscapes;
- d** A description of the specific techniques and practices for establishing each Priority Habitat;
- e** . A description of the sources and provenance of seeds or other plant material to be used;
- f** Plans and tables that clearly show the extent, timing and location of proposed Priority Habitat creation works;
- g** A description of the specific management techniques and practices for maintaining each Priority Habitat;
- h** Plans and tables that clearly show the extent, timing and location of proposed Priority Habitat management operations;
- i** A description of the personnel or management body responsible for carrying out the establishment and maintenance (Inc. monitoring) of the Priority Habitats during the lifetime of the BEP;

j A full breakdown of costs for implementing the BEP; and

k A monitoring framework that clearly describes the proposed approach to ecological monitoring during the lifetime of the BEP, and allows for the plan to be amended, where necessary, in light of the findings of Ecological Monitoring Reports (The monitoring framework may need to include any features identified at for example requiring long-term mitigation or compensation measures)

“Biodiversity Offsetting Metric Calculation” shall mean a biodiversity impact calculation to calculate the Biodiversity Units of a development site both before and after development which uses the DEFRA metric to assess Development losses (requiring compensation measures) and gains (biodiversity sustainable development)

“Biodiversity Unit” shall mean the basic currency of diversity being the number of species in a given habitat, or ‘species richness’

“Ecological Monitoring Reports” shall mean reports detailing the assessment and review of ecosystems against national standards and which are used to develop strategies to mitigate adapt and respond to ecosystem changes

“Nature Improvement Areas or Living Landscapes” shall mean urban or rural areas of natural habitat that are created restored or preserved through nationwide initiatives and which provide a sanctuary for wildlife to thrive and areas for the public to enjoy

“Priority Habitats” shall mean habitats of principal importance in England

“Priority Species” shall mean species of principal importance in England

“Restoration” shall mean the restoration of the Application Site in accordance with Drawing C/45/01/05a indicative Restoration plan annexed to this Agreement

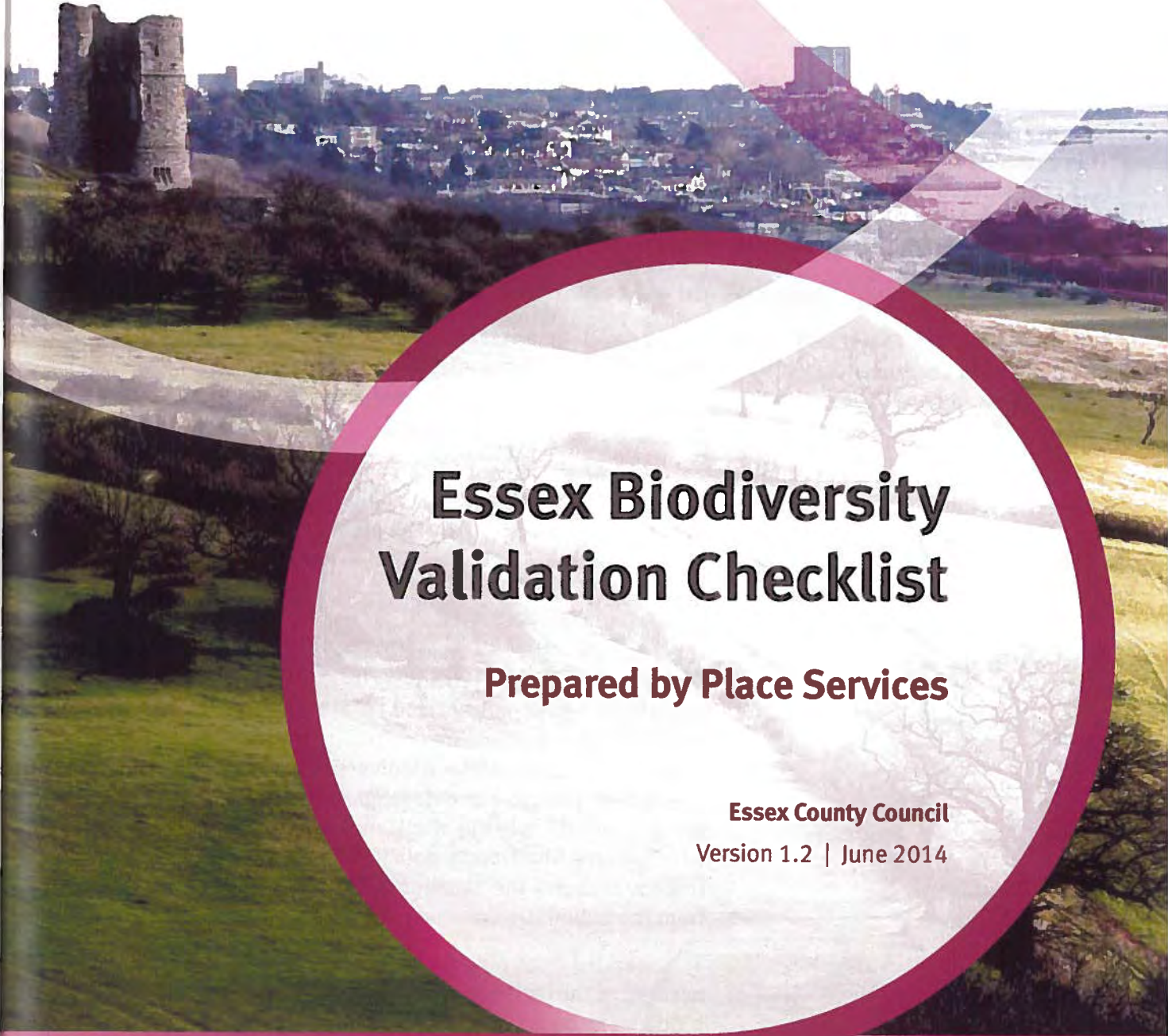
1. DEVELOPER'S COVENANTS

1.1 The Developer shall submit a Biodiversity Enhancement Plan (BEP) to the County Council for approval in writing before Commencement of Development takes place and the Developer shall not Commence until a Biodiversity Enhancement Plan (BEP) has been submitted to and approved in writing by the County Council

1.2 The Developer shall ensure that the Development is carried out in accordance with the approved BEP and shall not carry out the Development other than in accordance with the Biodiversity Enhancement Plan

2. THE COUNTY COUNCIL COVENANTS

2.1 To agree the terms of the Biodiversity Enhancement Plan (BEP) as submitted from the Developer and agree the terms as soon as practicable upon receipt acting reasonably and in any event to provide recommendations on the said plan within fifteen (15) Working Days of submission of the BEP by the Developer



Essex Biodiversity Validation Checklist

Prepared by Place Services

Essex County Council
Version 1.2 | June 2014

Introduction

This checklist is a requirement for all planning applications to Essex County Council (ECC) considered a major development as defined by Article 8(7) of The Town and Country Planning (General Development Procedure) Order 1995. ECC is the determining planning authority for mineral, waste and Regulation 3 applications.

The assistance of a professional ecologist will be necessary to complete the checklist.

For other applications not defined as a major development, applicants are strongly encouraged to use the checklist where there may be adverse effects on the natural environment. It should be noted that applications not considered a major development will still be reviewed by a planning authority ecologist.

For some developments an Environmental Impact Assessment (EIA) maybe required. In these cases this checklist can be used to inform the content of the Ecology Chapter of the Environment Statement subject to any Scoping Opinion issued by the planning authority.

This checklist aims to provide a clear, transparent process for both applicant and Local Planning Authority (LPA) and ensure conformity with **British Standard 42020:2013 for Biodiversity (Code of practice for planning and development)**. Its correct application will help the applicant and LPA comply with national biodiversity policy and legislation; thereby reducing the likelihood of delays resulting from the submission of inadequate information.

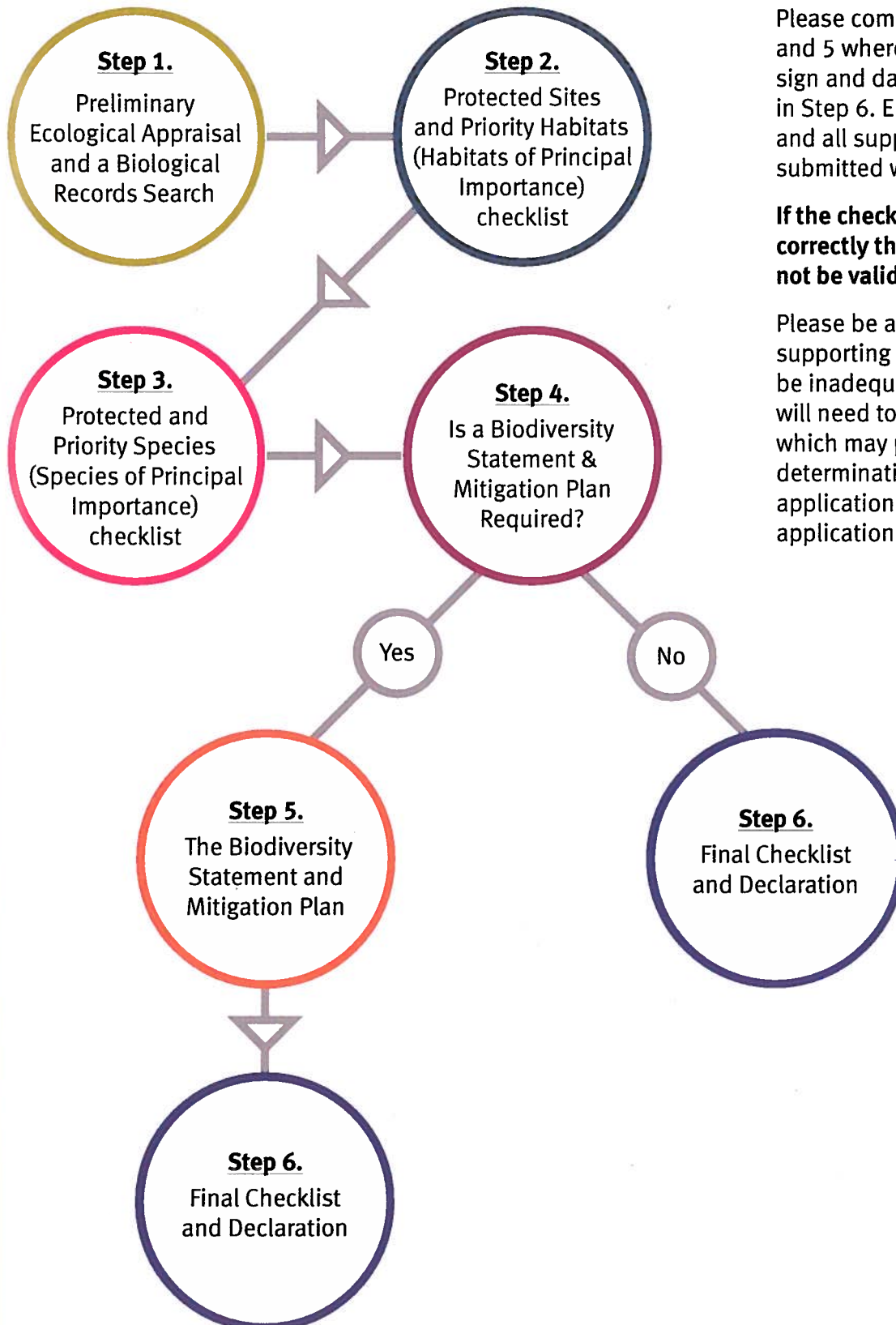
The checklist does not attempt to provide a detailed account of the legislation and policy that underpin biodiversity conservation in England. Further information can be obtained from **Natural England** and links have been provided in the text to external sources of information where appropriate. **A glossary** is also included at the end of the checklist.

The checklist is supported by Natural England's local Land Use Operations team and endorsed by the **Essex Biodiversity Project**.

The checklist is a component of Essex County Council's Supplementary Guidance for the Submission of Planning Applications. It has been produced as part of the 'Essex Biodiversity Toolkit for Planners' funded by Natural England.

The Six Steps

The checklist comprises 6 steps:



Please complete steps 1 to 4 - and 5 where necessary - then sign and date the declaration in Step 6. Ensure the checklist and all supporting information is submitted with your application.

If the checklist is not completed correctly the application may not be valid.

Please be aware that if the supporting information proves to be inadequate further evidence will need to be provided, which may potentially **delay** determination of the planning application or lead to the application being **refused**.

Step 1.

Preliminary Ecological Appraisal and Biological Records Search

A Preliminary Ecological Appraisal (PEA) of the application site must be completed in a format consistent with the '[Guidelines for Preliminary Ecological Appraisal](#)' published by the Chartered Institute of Ecology and Environmental Management (CIEEM).

The PEA and any subsequent Biodiversity Statement & Mitigation Plan should be prepared by a competent and qualified Ecologist. To find a suitable Ecological Consultant please contact [CIEEM](#) in the first instance.

The PEA must include a description of any recent works, such as vegetation clearance, that have been undertaken at the application site prior to the ecological appraisal that may affect its findings.

The PEA must include a biological records search of the application site and a 2 kilometre area extending from the sites boundary. It should encompass the following biodiversity features as a minimum:

Protected Sites

- Special Areas of Conservation (SAC), Special Protection Areas (SPA) & Ramsar sites
- Sites of Special Scientific Interest (SSSI)
- Local Sites (i.e. Local Wildlife Sites – LoWS and Special Roadside Verges)

European Protected Species

- Species protected under the Conservation of Habitats and Species Regulations 2010 (as amended)

National Protected Species

- Species protected under the Wildlife & Countryside Act 1981 (as amended)
- Badgers (The Protection of Badgers Act 1992)

Priority Habitats and Species

- Habitats of Principal Importance in England (Priority Habitats)
- Species of Principal Importance in England (Priority Species)

Relevant data can be obtained from the following sources:

- Natural England www.magic.gov.uk
Interactive map displaying information about SPA, SAC, Ramsar, SSSI and Ancient Woodland sites
- Essex Field Club www.essexfieldclub.org.uk/portal/p/Datasearch
Main source of species records
- Essex Wildlife Trust www.essexwt.org.uk
Holds site, habitat and species records
- Essex Local Wildlife Sites Project www.localwildlifesites.org.uk
Map-based register of LoWS including individual citations
- Essex Biodiversity Project www.essexbiodiversity.org.uk
The Essex Biodiversity Action Plan can be viewed at this site

Using the results of the Preliminary Ecological Appraisal and Biological Records Search please complete **Steps 2 - 5** which will determine whether further survey and assessment work is required.

Step 2.

Protected Sites and Priority Habitats (Habitats of Principal Importance) Checklist

Please complete Column 2 of Table 2.1 below. Links to more information have been provided for each site or habitat in column 1.

Table 2.1 - Sites and Habitats Checklist

1. Question	2. Please tick as appropriate
Is your development within 10km of a Special Area of Conservation (SAC) , Special Protection Area (SPA) or Ramsar Site ?	*Yes <input checked="" type="checkbox"/> No
Is your development within 2km of a Site of Special Scientific Interest (SSSI) ?	Yes No <input checked="" type="checkbox"/>
Is your development within 250m of any Habitats of Principal Importance; Ancient Woodland and/or Local Site ?	Yes No <input checked="" type="checkbox"/>

**If you answer yes to this question additional detail maybe required by the LPA and Natural England to enable the completion of a Habitat Regulations Assessment (HRA). It is strongly recommended that you seek advice from Natural England prior to submitting your application.*

If you have answered '**yes**' to any of the questions above please complete **Table 2.2 (Sites and Habitat Evaluation)**

If you have answered '**no**' to all of the questions above please proceed to **Step 3**.

Please complete Column 2 of Table 2.2 below, followed by Column 3 as appropriate.

Table 2.2 – Sites and Habitats Evaluation

1.	2.	3.
Site/habitat	<p>Is there a 'reasonable likelihood' that the development will affect (either directly or indirectly) a site or habitat in column 1 prior to applying mitigation?</p> <p>(Tick as appropriate)</p>	<p>Where you have answered 'yes' name the site(s) or habitat(s) and summarise any possible direct or indirect effects that may occur during construction or operation. For SPA's this includes 'qualifying species' occurring outside of the designated site boundary.</p> <p>Where you have answered 'no' please provide a concise statement to support your answer.</p>
SAC/SPA/Ramsar site	<p>Yes No <input checked="" type="checkbox"/></p>	<p>HRA Assessment outlines the evaluation.</p>

1.	2.	3.
SSSI*	Yes No ✓	None within 2km of the site.
Priority Habitats	Yes ✓ No	The development will cause the loss of hedgerows. A HEGS assessment is included within the Phase I Habitat Survey Report.

**If you have answered 'yes' please seek advice from Natural England.*

1.	2.	3.
Ancient Woodland	Yes No ✓	
Local Wildlife Sites	Yes No ✓	

Step 3. Protected and Priority Species (Species of Principal Importance) Checklist

Please complete Column 2 in Table 3.1 below. Where 'Yes' is answered a tick in the corresponding row indicates those species with a 'reasonable likelihood' of being present, and for which further surveys may be required. The table has been adapted from the [Natural England Standing Advice for Protected Species](#).

1.	2. (Yes/No)	European Protected Species				Nationally Protected Species (for species groups links to the relevant legislation are provided)				Priority Species (Link to national List)									
		Bats	Dormouse	Great Crested Newt	Otter	Badger	Barn Owl	Breeding Birds	Invertebrates	Native crayfish	Other Protected Birds	Plants (inc. fungi, ferns and bryophytes)	Reptiles	Water Vole	Birds	Fungi	Invertebrates	Mammals	Plants (inc. ferns and bryophytes)
Does the application involve modification, conversion, demolition or removal of any of the following features or types of building: <ul style="list-style-type: none"> • loft space • any roof with gaps or cracks e.g. through uneven tiling • weather boarding • hanging tiles • gable ends • slate roof • clay-tiled pitched roof • wooden cladding • dense climbing plants • Underground structures including but not limited to cellars, tunnels, mines, kilns, ice-houses, air-raid shelters, all bridge structures, aqueducts and viaducts especially over water and wet ground • Agricultural building particularly but not exclusively those of traditional brick, stone or timber construction? • Buildings of pre-20th or early 20th Century construction 	Yes	●				●	●			●				●					
	No ✓																		

1.	2. (Yes/No)	European Protected Species			Nationally Protected Species (for species groups links to the relevant legislation are provided)							Priority Species (Link to national List)							
		Bats	Dormouse	Great Crested Newt	Other	Badger	Barn Owl	Breeding Birds	Invertebrates	Native crayfish	Other Protected Birds	Plants (inc. fungi, ferns and bryophytes)	Reptiles	Water Vole	Birds	Fungi	Invertebrates	Mammals	Plants (inc. ferns and bryophytes)
Does the application site contain or is it adjacent to: a lake; river; canal; stream; ditch; marsh; or reedbed?	Yes ✓ No	●		●	●				●	●			●						
Does the application involve new lighting of a building/structure with features suitable for bats or barn owl (e.g. described in row 1 above); or lighting of green space within 50m of woodland, water, hedgerows or tree lines?	Yes No ✓	●					●												
Does the application site contain or is it within 200m of: semi-natural woodland; scrub thicket; or is it bounded by or adjacent to hedgerows of predominantly native species that are greater than 1m tall and 0.5m wide?	Yes ✓ No	●	●	●		●		●	●		●		●		●		●	●	
Does the application site contain or is it adjacent to a tree/woodland plantation, including of conifers?	Yes No ✓	●	●	●		●		●			●		●		●				●
Does the application site contain trees that are older than 100 years; trees with obvious holes, cracks, cavities, rot, loose bark, woodpecker holes; or trees with a girth greater than 1m at chest height?	Yes No ✓	●					●	●	●		●				●	●	●		

1.	2. (Yes/No)	European Protected Species				Nationally Protected Species (for species groups links to the relevant legislation are provided)					Priority Species (Link to national List)								
		Bats	Dormouse	Great Crested Newt	Otter	Badger	Barn Owl	Breeding Birds	Invertebrates	Native crayfish	Other Protected Birds	Plants (inc. fungi, ferns and bryophytes)	Reptiles	Water Vole	Birds	Fungi	Invertebrates	Mammals	Plants (inc. ferns and bryophytes)
Does the application site involve disturbance, modification, demolition or construction on/in: gravel pits; quarries; natural cliff faces; or rock outcrops?	Yes No ✓	●		●		●		●	●	●	●	●	●	●	●	●	●	●	●
Does the application site contain or is it within 100m of a pond or other water-body (500m for major developments)? It can be permanent or ephemeral (sometimes dries out)	Yes ✓ No			●					●							●		●	
Does the application site contain or is it adjacent to grassland such as meadows, parkland or pasture?	Yes No ✓	●		●		●			●		●	●			●	●	●	●	●
Does the application site contain previously-developed, derelict or brownfield land; or railway land?	Yes No ✓	●		●		●	●	●	●		●	●			●		●		
Does the application involve the modification, disturbance or removal of: mature or over-grown gardens; rough grassland; scrubland or allotments?	Yes No ✓	●	●	●		●		●		●	●	●			●		●	●	●
Does the application involve disturbance or removal of a compost heap?	Yes No ✓													●					

1.	2. (Yes/No)	European Protected Species										Nationally Protected Species (for species groups links to the relevant legislation are provided)				Priority Species (Link to national List)				
		Bats	Dormouse	Great Crested Newt	Otter	Badger	Barn Owl	Breeding Birds	Invertebrates	Native crayfish	Other Protected Birds	Plants (inc. fungi, ferns and bryophytes)	Reptiles	Water Vole	Birds	Fungi	Invertebrates	Mammals	Plants (inc. ferns and bryophytes)	
Does the application involve the modification, disturbance or removal of arable field(s) with hedgerow and/or grass margin?	Yes ✓ No							●												●
Does the application site contain or is it within 50m of coastal habitats including estuary, rocky shore, sand dunes and saltmarsh, grazing marsh?	Yes No ✓				●			●						●			●			
Does the application site contain or is it adjacent to heathland?	Yes No ✓	●	●		●		●	●		●	●	●		●	●	●	●	●	●	●

If you have answered 'yes' to any of the questions above please complete [Table 3.2 \(Species Evaluation\)](#) on the following page.

If you have answered 'no' to all of the questions above please proceed to [Step 4](#).

Please complete column 2 of Table 3.2 below followed by column 3 as appropriate.

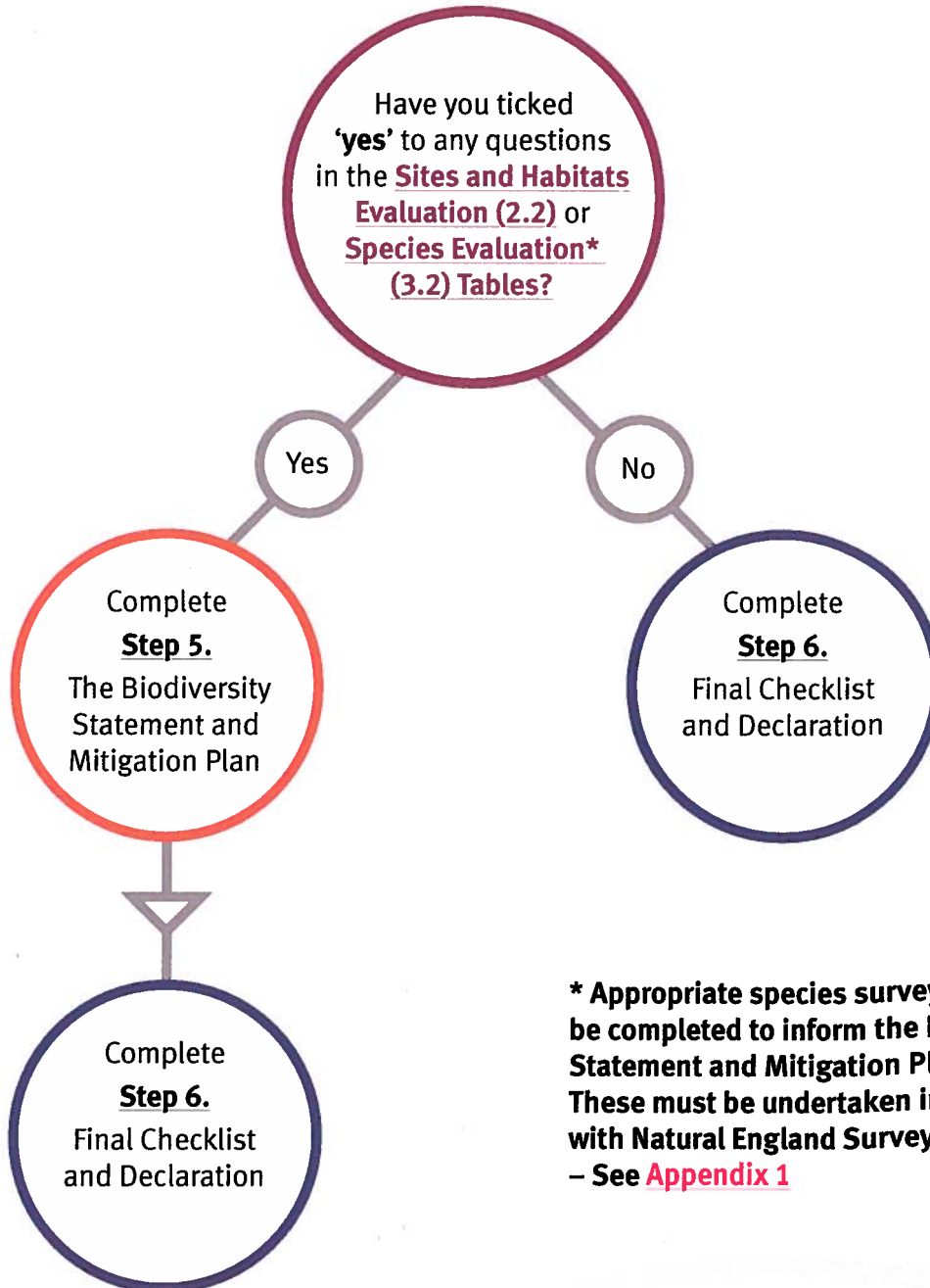
Table 3.2 – Species Evaluation

1.	2.	3.
<p>Species (Identified following the completion of Table 3.1)</p>	<p>Is there a 'reasonable likelihood' that the development will affect a species in column 1 prior to applying mitigation? (Tick as appropriate)</p>	<p>Where you have answered 'yes' name the species and summarise any possible direct or indirect effects that may occur during construction or operation.</p> <p>Appropriate species surveys will need to be completed to inform the Biodiversity Statement and Mitigation Plan (Step 5). These must be undertaken in accordance with Natural England Survey Requirements – See Appendix 1</p> <p>Where you have answered 'no' please provide a concise statement to support your answer.</p>
<p>European Protected Species</p>	<p>Yes No <input checked="" type="checkbox"/></p>	<p>Great crested newt surveys have shown there are none present in ponds within 500m of the site.</p> <p>There are no potential bat roosts within the site boundaries.</p>

1.	2.	3.
Nationally Protected Species	Yes No ✓	
Priority Species	Yes No ✓	

Step 4.

Is a Biodiversity Statement and Mitigation Plan Required?



*** Appropriate species surveys will need to be completed to inform the Biodiversity Statement and Mitigation Plan (Step 5). These must be undertaken in accordance with Natural England Survey Requirements – See [Appendix 1](#)**

Step 5.

Biodiversity Statement and Mitigation Plan

If you have answered 'yes' to any questions in the **Sites and Habitats Evaluation (2.2)** or **Species Evaluation (3.2) Tables** you must submit a Biodiversity Statement and Mitigation Plan incorporating the findings of the Preliminary Ecological Appraisal.

The Biodiversity Statement and Mitigation Plan must include the following:

1. A map showing the location of protected sites on or within 2km of the application site boundary (see **Appendix 2**).
2. An Extended **Phase 1 Habitat Survey** which shows the location and extent of habitats that could be affected by the proposals; together with the features associated with Protected or Priority species.
3. Relevant Protected and/or Priority Species Surveys including results and methods* in accordance with Natural England's Standing Advice for Protected Species Survey Requirements (See **Appendix 1**).
4. A qualitative evaluation of the value and likely impacts/effects upon each biodiversity feature (habitat, species or, where appropriate, species assemblage). This should adopt the same approach to the evaluation and identification of impacts as recommended by the Chartered Institute of Ecology and Environmental Management (CIEEM) in their **Ecological Impact Assessment (EclA) Guidelines**.
5. A quantitative evaluation of the application site's habitats using Defra's **Biodiversity Offsetting Metric** i.e. a calculation showing the level of impacts in Biodiversity Units before and after development.
6. For each biodiversity feature that will be adversely affected a Mitigation Plan detailing:
 - a. How adverse impacts will be avoided**, reduced and/or mitigated***.
 - b. How any residual impacts that cannot be avoided and/or mitigated will be compensated*** for off-site.
 - c. Where appropriate, how mitigation or compensation measures will be managed and monitored post-permission.
7. Proposals for biodiversity enhancements. This is strongly encouraged for all developments, but especially for applications that occur within recognised local ecological networks such as a **Living Landscape Area** or the **Greater Thames Marshes Nature Improvement Area (NIA)**.

(Any habitat creation or restoration measures should be focussed upon local conservation priorities as defined by the **Essex Biodiversity Action Plan**.)

**This should clearly describe the survey work undertaken. Simply stating national survey guidelines were followed is not sufficient.*

***where the final location or design of the development is not necessarily the least harmful to biodiversity, the overriding technical reasons for this choice must be clearly evidenced.*

****Habitat mitigation and/or compensation measures must be expressed in Biodiversity Units (See Defra's Biodiversity Offsetting Metric).*

Supporting Notes

BS 42020 – a code of practice for biodiversity in planning and development

BS 42020 is a standard developed by the British Standards Institution (BSI) in association with biodiversity experts and stakeholders from across all sectors. The standard provides clear recommendations and guidance to ensure that actions and decisions taken at each stage of the planning process are informed by sufficient and appropriate ecological information. The BSI has produced a smart guide that provides an introduction to the benefits of BS 42020. <http://www.bsigroup.com/LocalFiles/en-GB/biodiversity/BS-42020-Smart-Guide.pdf>

European Protected Species

Please note that for European Protected Species a mitigation licence may be required – post planning permission - in order to carry out the development should permission be granted. It is important that you refer directly to Natural England the licensing body for further guidance, and submit any relevant correspondence with this checklist.

However, The Conservation of Habitats and Species Regulations 2010 requires the Local Planning Authority (LPA) to consider ‘Three Tests’ when determining a planning application that may affect a European Protected Species. These ‘tests’ can be summarised as follows:

- Is there a genuine need and ‘purpose’ for the proposed development?
- Are there any satisfactory alternatives to delivering and meeting the need in the way proposed?
- Will there be any adverse effect on the conservation status of the species concerned?

If there is a risk of European Protected Species being impacted by the development the applicant must submit sufficient evidence to enable these tests to be satisfactorily addressed by the LPA.

Further guidance is provided in the Natural England publication ‘[European Protected Species and the Planning Process](#)’.

European Protected Species are those animals listed under Schedule 2 or plants listed under Schedule 5 of the Conservation of Habitats and Species Regulations 2010. The term European Protected has **not** been used for ‘Nationally Protected Species’ with no protection under the Regulations, but which are listed under Schedule II and/or V of the European Habitats Directive. For example the native crayfish.

Environmental Impact Assessment (EIA)

Where a formal Environmental Impact Assessment (EIA) is required under the [EIA Regulations](#) the Biodiversity Statement & Mitigation Plan should be incorporated in to the Ecology chapter of the Environmental Statement subject to any Scoping Opinion issued by the Planning Authority.

Biodiversity Offsetting

The Biodiversity Offsetting Metric provides a standardised and transparent approach to ensuring mitigation and compensation measures are sufficient to secure no-net-loss of biodiversity. The metric is a stand-alone tool – its use does **not** assume a need for off-site compensation. Indeed, it can be used to quantify the positive benefits of onsite mitigation or enhancement measures.

Natural England Discretionary Advice Service.

Natural England has a Discretionary Advice Service (DAS) which operates to provide advice for applications prior to submission. This service includes a limited amount of free Initial Advice, followed by Charged Advice for more complex requests. It is strongly recommended that you contact them to discuss the advice you require prior to submitting your application. Further details are available on their [website](#).

Please go to **Step 6**.

Step 6.

Final Checklist and Declaration

This must be submitted along with every application to ECC, if the checklist is not completed correctly the application may not be valid.

Applicant Only			Office Only	
Step	Item	Tick if Included	Required	Included
Step 1	Preliminary Ecological Appraisal*	✓	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Biological Records Search *	✓	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Step 2	Table 2.1 Sites & Habitats checklist	✓	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Table 2.2 Sites & Habitats evaluation	✓	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Step 3	Table 3.1 Species checklist	✓	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Table 3.2 Species evaluation	✓	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Step 5	Biodiversity Statement & Mitigation Plan **		<input type="checkbox"/>	<input type="checkbox"/>
	Correspondence from Natural England/Environment Agency/ Other Conservation Body		<input type="checkbox"/>	<input type="checkbox"/>

*Can be incorporated in to the Biodiversity Statement & Mitigation Plan where one is required.

**Should be incorporated in to the Ecology chapter of an ES if an EIA is required.

7th July 2014.

Signed:

Date:

Applicant/Agent (please delete as appropriate)

Name: Derek Whitcher

Address: Cliff Edge, Cliff Road, Darfield, Barnsley, S73 9HR.

Please note that in all circumstances legislation pertaining to protected species still applies and it is the responsibility of the developer to ensure that protected species and sites are not adversely affected as a result of development.

Thank you for completing this checklist. Please submit it, along with all supporting information, with your application.

Appendix 1 – Guidelines for Surveys

Links to Natural England’s Standing Advice for Protected Species (Survey Requirements):

- What should detailed survey reports for protected species include?
- Great Crested Newt
- Badger
- Bats
- Barn Owl
- Birds
- Dormouse
- Invertebrates
- Native crayfish
- Otter
- Reptiles
- Water Vole
- Plants

Guidance for Priority Species:

Natural England has produced **Standing Advice for Ancient Woodland** and this should be referred to in the preparation of the Biodiversity Statement where Ancient Woodland is likely to be affected.

The Chartered Institute of Ecology and Environmental Management ‘**Sources of Survey Methods**’ (SoSM) should be referred to for survey methodologies for Priority Species not covered by Natural England’s Standing Advice.

Appendix 2 – Biodiversity features that must be shown on an Ordnance Survey base map at an appropriate scale

- Special Protection Area (SPA)
- Special Area of Conservation (SAC)
- Ramsar Site
- Site of Special Scientific Interest (SSSI)
- National Nature Reserve (NNR)
- Ancient Woodland
- Local Wildlife Site (LoWS)
- Special Roadside Verge

Glossary

Ancient or veteran tree: A tree which, because of its great age, size or condition is of exceptional value for wildlife, in the landscape, or culturally.

Ancient woodland: An area that has been wooded continuously since at least 1600 AD.

Biodiversity Action Plan (BAP): Biodiversity Action Plans (BAPs) arose from the signing of the Convention on Biological Diversity in 1992, an international treaty signed by 150 nations including the UK, pledging to conserve biodiversity. BAPS are broken down into Species Action Plans (SAPs) and Habitat Action Plans (HAPs) and cover species and habitats considered threatened. These are known as 'Priority' species and habitats. Each Plan contains a definition of the habitat or species, describes the threats they face and the objectives and targets need to be met to conserve them. BAPS currently cover 1149 Priority species and 65 Priority habitats.

Ecological networks: These link sites of biodiversity importance.

Environmental Impact Assessment (EIA): A procedure to be followed for certain types of project to ensure that decisions are made in full knowledge of any likely significant effects on the environment.

European Protected Site: This includes candidate Special Areas of Conservation, Sites of Community Importance, Special Areas of Conservation and potential Special Protection Areas, and is defined in regulation 8 of the Conservation of Habitats and Species Regulations 2010.

International, national and locally designated sites of importance for biodiversity: All international sites (Special Areas of Conservation, Special Protection Areas, and Ramsar sites), national sites (Sites of Special Scientific Interest) and locally designated sites including Local Wildlife Sites.

Living Landscapes: Living Landscapes are large landscape-scale areas of the countryside, such as river valleys, estuaries, forested ridges, and grass and heath mosaics, which form ecological networks. The networks allow wildlife to move through them and increase their resilience to threats such as climate change, floods, drought, sea-level rise and development pressure. There are 80 Living Landscapes within Essex.

Local planning authority: The public authority whose duty it is to carry out specific planning functions for a particular area. All references to local planning authority apply to the district council, borough council and county council to the extent appropriate to their responsibilities.

Nature Improvement Area: Inter-connected network of wildlife habitats intended to re-establish thriving wildlife populations and help species respond to the challenges of climate change.

NPPF: National Planning Policy Framework. This document sets out the government's planning policies for England and how they are expected to be applied. It provides guidance for local planning authorities and decision-takers, both in drawing up plans and making decisions about planning applications.

Previously developed land: Land which is or was occupied by a permanent structure, including the curtilage of the developed land (although it should not be assumed that the whole of the curtilage should be developed) and any associated fixed surface infrastructure. This excludes: land that is or has been occupied by agricultural or forestry buildings; land that has been developed for minerals extraction or waste disposal by landfill purposes where provision for restoration has been made through development control procedures; land in built-up areas such as private residential gardens, parks, recreation grounds and allotments; and land that was previously-developed but where the remains of the permanent structure or fixed surface structure have blended into the landscape in the process of time.

Priority habitats and species: Species and Habitats of Principal Importance included in the England Biodiversity List published by the Secretary of State under section 41 of the Natural Environment and Rural Communities Act 2006.

Qualifying species: Those plants or animals found on the legal list of qualifying species for which a Special Area of Conservation, Special Protection Area or Ramsar site has been selected and is managed.

Ramsar sites: Wetlands of international importance, designated under the 1971 Ramsar Convention.

Special Areas of Conservation: Areas given special protection under the European Union's Habitats Directive, which is transposed into UK law by the Habitats and Conservation of Species Regulations 2010.

Special Protection Areas: Areas which have been identified as being of international importance for the breeding, feeding, wintering or the migration of rare and vulnerable species of birds found within European Union countries. They are European designated sites, classified under the Birds Directive.

Site of Special Scientific Interest: Sites designated by Natural England under the Wildlife and Countryside Act 1981.

Stepping stones: Pockets of habitat that, while not necessarily connected, facilitate the movement of species across otherwise inhospitable landscapes.

Wildlife corridor: Areas of habitat connecting wildlife populations.

This information is issued by
Essex County Council, Place Services.

You can contact us in the following ways:

By email:

ecology.placeservices@essex.gov.uk

Visit our website:

<http://www.placeservices.co.uk>

By telephone:

03330 136840

By post:

**Essex County Council, Place Services
PO Box 11, County Hall, Chelmsford, Essex CM1 1QH**

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The information contained in this document can be translated, and/
or made available in alternative formats, on request.

Published July 2014

CDS 100727



SCHEDULE 3

Traffic Routeing Management Scheme

In this Schedule unless the context requires otherwise the following words and expressions shall have the following meaning:

"HGV" any vehicle with a gross combination mass in excess of 3.5 tonnes

"Local Deliveries" shall mean those deliveries that would require a right turn only out of the Application Site access off Braxted Road (exiting in a south east bound direction along Braxted Road) and left turn only into the Application Site access off Braxted Road (approaching from a north west bound direction along Braxted Road)

"Traffic Routeing Management Scheme" shall mean a scheme produced in accordance with the provisions of the this Schedule 3

1. DEVELOPER'S COVENANTS

1.1 Prior to Commencement of Development to submit to the County Council for prior approval the Traffic Routeing Management Scheme

1.2 To implement the Traffic Routeing Management Scheme in the form as agreed with the County Council

2. TRAFFIC ROUTEING MANAGEMENT SCHEME MEASURES

2.1 The Developer hereby covenants that:

2.1.1 All HGVs taking access to/from the Application Site via the primary site access on Little Braxted Lane shall only enter the site by a left turn into the Application Site access (approaching from a southbound direction along Little Braxted Lane) and exit by a right turn out of the site access (exiting in a northbound direction along Little Braxted Lane)

2.1.2 All HGVs taking access to/from the Application Site via the secondary Application Site access on Braxted Road shall do so for Local Deliveries only

2.1.3 Leaflets are given to all HGV drivers when they first visit the Application Site setting out the requirements of 2.1.1 and 2.1.2 of this Schedule 3 and the disciplinary action that will be taken if they fail to comply

2.1.4 Notices are displayed at prominent locations on the Application Site advising drivers of the requirements of the provisions 2.1.1 and 2.1.2 above and that disciplinary action will be taken if they fail to comply

2.1.5 When entering into any contract in connection with the Development or ancillary uses the Developer shall where relevant to such contract include such obligations as necessary to ensure (a) that the contracting party shall require the HGV drivers that they use to service the Application Site to comply with the requirements of Paragraphs 2.1.1 and 2.1.2 above and (b) that the contracting party takes disciplinary action for failure to comply with such provisions

2.1.6 For the avoidance of doubt the disciplinary action referred to in this Schedule 3 shall involve preliminary warnings and ultimately result in drivers being banned from the Application Site

3.1 The County Council hereby covenants:

3.1.1 To agree the terms of the Traffic Routeing Management Scheme as submitted from the Developer and agree the terms as soon as practicable acting reasonably upon receipt acting reasonably and in any event to provide recommendations on the said plan within fifteen (15) Working Days of submission of the Traffic Routeing Management Scheme by the Developer

SCHEDULE 4

Local Liaison Group

In this Schedule unless the context requires otherwise the following words and expressions shall have the following meaning:

"Local Liaison Group" means a group meeting to achieve the following aims:

- a** To maintain liaison between the Developer, the County Council (as Minerals Planning Authority), Rivenhall Parish Council, Braxted Parish Council (and the local community via the Parish Councils) and the Environment Agency;
- b** To develop lines of communication between the parties mentioned above so that majority of issues and concern can be resolved directly;
- c** To provide a forum for discussions and, where possible, a resolution of problems;
- d** To provide a means of communicating progress on site through site visits;
- e** To provide a forum to discuss compliance with planning control;
- f** To provide a forum to inform of proposed amendments or variations to the approved scheme/s;
- g** To provide a forum to discuss particular aspects of the operation and where appropriate invite specialist comment for discussion at later progress meetings.

1. DEVELOPER'S COVENANTS

1.1 The Developer shall arrange a venue for the Local Liaison Group and if so required by the County Council to meet twice per year from the Commencement Date and for the duration of the Development and beyond if agreed by the parties to this Agreement

1.2 The Local Liaison Group to be managed, administered and funded solely by the Developer and shall furthermore the Developer shall provide written reports resulting from each meeting to the County Council

1.3 The Local Liaison Group shall operate so that only matters relating directly to the Application Site shall be discussed.

1.4 The timescale for meetings of the Local Liaison Group shall not be varied unless with the prior agreement of the County Council.

1.5 Minutes of meetings of the Local Liaison Group shall be kept by a **secretary to be appointed from membership of the Local Liaison Group and subsequently approved by the Local Liaison Group**

1.6 Minutes shall be circulated within 2 weeks following the meeting that they relate to and agenda to be circulated at least 1 week before the next meeting.

1.7 The Local Liaison Group shall not take executive decisions or vote on any items.

1.8 The Local Liaison Group shall be chaired by the local County Council member or such other person as shall be agreed by the members of the Local Liaison Group from time to time.

1.9 Membership of the Local Liaison Group shall comprise representatives of the Developer, the County Council (Mineral Planning Authority), Rivenhall Parish Council, Braxted Parish Council the Environment Agency and any other interested or relevant party as agreed by the local Liaison Group.

SCHEDULE 5
Habitat Management Group

In this Schedule unless the context requires otherwise the following words and expressions shall have the following meaning:

"Habitat Management Group" shall mean an advisory group to oversee the progress and management of the restoration and should include invitees from a range of wildlife interest stakeholders (including Natural England, RSPB Nature After Minerals, Essex Wildlife Trust, Environment Agency, the landowner and the County Council)

1. DEVELOPER'S COVENANTS

1.1 Not to Commence until the Developer has invited the prospective members of the Habitat Management Group to join the Habitat Management Group and established it in accordance with details that have previously been submitted to and approved in writing by the County Council such details to include terms of reference and frequency of meetings of the Habitat Management Group

1.2 The Group shall meet at the Developer's expense and in accordance with the approved details agreed in accordance with paragraph 1.1 above

SCHEDULE 6
Highway Matters

In this Schedule unless the context requires otherwise the following words and expressions shall have the following meaning:

“Existing Condition Report” shall mean a report prepared by the Developer to assess the condition of the highway including surface water drainage between the Application Site access on Little Braxted Lane and the junction with Coleman’s Bridge (B1029)

“the Highway Works” shall mean improvements to signage on Coleman’s Bridge (B1029) and between the B1029 and proposed Little Braxted Lane such works to include any necessary alterations to and reinstatements of existing highways and statutory undertakers equipment to the provision of or alteration to street lighting road signs drainage structures traffic signals related accommodation and any other works normally associated with the construction of a highway or required as a result of the County Council’s Inspections

“Highway Works Agreement” means an agreement entered into pursuant to all powers enabling the parties and in particular to Sections 38, 72 and 278 of the 1980 Act Section 33 of the 1982 Act to regulate the carrying out of the Highway Works and the agreement shall include but not be limited to:

- (a) the securing of a bond to ensure that third party funds are available to complete the Highway Works to the satisfaction of the local highway authority
- (b) the payment of the local highway authority’s works inspection fees, maintenance fees, special orders fees, supervision fees and any other such fees as the local highway authority shall require
- (c) payment of the local highway authority’s legal and other fees associated with the drafting negotiating and completion of the Highway Works Agreement
- (d) the preparation and advance approval of works drawings and traffic management measures
- (e) the certification and maintenance of the Highway Works
- (f) the regulating of the issue of the Works Licence to enable the Highway Works to be carried out
- (g) [the securing of a bond relating to both Land Compensation Act 1973 matters and Noise Insulation Regulations 1975 as amended by the Noise Insulation (Amendment)

Regulations 1988 (SI 1988/2000) and any other indemnity and bonds for liability issues as the local highway authority shall require]

(h) clauses dealing with dedication of land as public highway

(i) the standards and procedures for carrying out the Highway Works

“Monitoring Regime” shall mean a methodology to be commissioned by the Developer and agreed by the County Council to assess and monitor the condition of the highway including surface water drainage between the Application Site access on Little Braxted Lane and the junction with Coleman’s Bridge (B1029) at reasonable intervals throughout the Development

“Permissive Cycletrack” shall mean a permissive right of way no less than three (3) metres in width along its entire length and constructed with a compacted hoggin surface and with appropriate signage commensurate with a publicly maintainable highway for the public to use freely for the duration of the Development (subject to obtaining any prior approval or express planning permission) such right of way to be limited to use by pedal cycles and pedestrians

“Subsequent Condition Report” shall mean a report to assess the condition of the highway between the Application Site access on Little Braxted Lane and the junction with Coleman’s Bridge (B1029) following the completion of the Development such report to be on the same terms of reference as the Existing Condition Report

1. The Developer hereby covenants with the County Council:

1.1 Prior to Commencement of Development to enter into a Highway Works Agreement with the County Council in relation to the Highway Works

1.2 Prior to Commencement of Development, the Developer shall review the existing signage and any accompanying traffic orders on Coleman’s Bridge (B1029) and between the B1029 and the Application Site access and submit a scheme to include any necessary amendments, additional warning/advisory signs, cycleway signs (for Sustrane route 16) and relocation of/or provision of new signs relating to the width and weight restriction on Little Braxted Lane to the County Council for approval and the approved scheme shall be completed to the County Council’s satisfaction prior to Commencement of Development under the Highway Works Agreement

1.3.1 Prior to the Commencement of the Development to prepare the Existing Condition Report to be approved by the County Council

1.3.2 To undertake such works as and when necessary as identified

in accordance with the results of the Monitoring Regime and the Subsequent Condition Report so as to repair and make good the highway including surface water drainage due to damage caused by HGV and other vehicles accessing the Application Site from Coleman's Bridge (B1029) for purposes directly connected with the Development and to restore the highway to a condition equal to that immediately before the Development is Commenced AND FOR THE AVOIDANCE OF DOUBT the Developer is not liable for any deterioration or damage caused by fair wear and tear resulting from normal usage of the relevant sections of roads specified in this clause where appropriate using the Existing Condition Report for guidance

1.3.3 To reimburse the County Council for all costs incurred by the County Council in carrying out any emergency or repair works to the highway that are the responsibility of the Developer under 1.3.2 above

1.3.4 On the date of completion of the Development to commission the preparation of the Subsequent Condition Report such report to be prepared by an independent consultant as agreed between the County Council and the Developer

1.5 Prior to Commencement of the Development and following completion of a road safety audit if necessary, to provide at its own expense the Permissive Cycletrack as indicated on drawing No. C45/01/02A and C45/01/08 (or such other drawing as approved by the County Council) for the duration of the Development

1.6 To carry out appropriate maintenance works to ensure that the Permissive Cycletrack is not obstructed by vegetation or other materials that impede passage and that the Cycletrack construction remains compacted and consolidated commensurate with providing safe and convenient passage on foot or by cycle

1.7 Prior to Commencement of development to enter into a Highway Works Agreement with Highways England requiring the clearance of vegetation and then subsequent maintenance for the duration of the Development to ensure visibility splays

of at least 160m forward visibility splay in accordance with the details shown on Drawing No. 15057-12

EXECUTED as a deed by
~~THE COMMON SEAL~~ of BRICE AGGREGATES LIMITED)
acting by its director)
was hereunto affixed in the presence of:-)

Director STR _____
Paul Warren

Director/Secretary
Executed as a Deed by affixing)
the common seal of)
ESSEX COUNTY COUNCIL)
in the presence of:

TOLHURST FISHER LLP
Marlborough House
Victoria Road South
Chelmsford
Essex
CM1 1LN

GILLES _____
Attesting Officer
GILLES & GILBERT

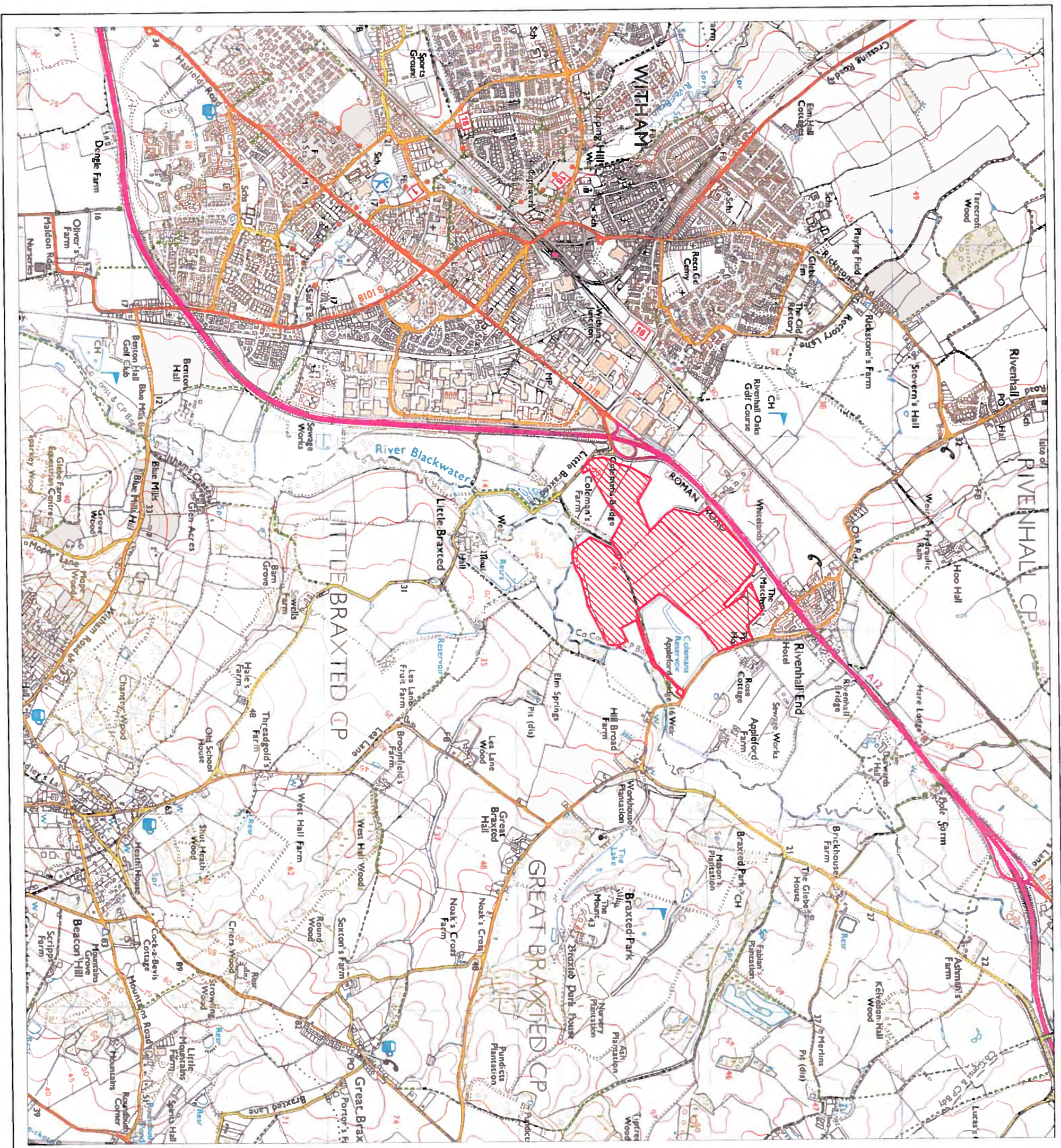


35581

EXECUTED as a deed by
~~THE COMMON SEAL~~ of)
SIMON ROBERT BRICE)
was hereunto affixed in the)
presence of:-)

STR _____
Paul Warren

TOLHURST FISHER LLP
Marlborough House
Victoria Road South
Chelmsford
Essex
CM1 1LN

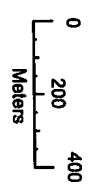


OSDB
NORTH

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[Handwritten Signature]
Attesting Officer



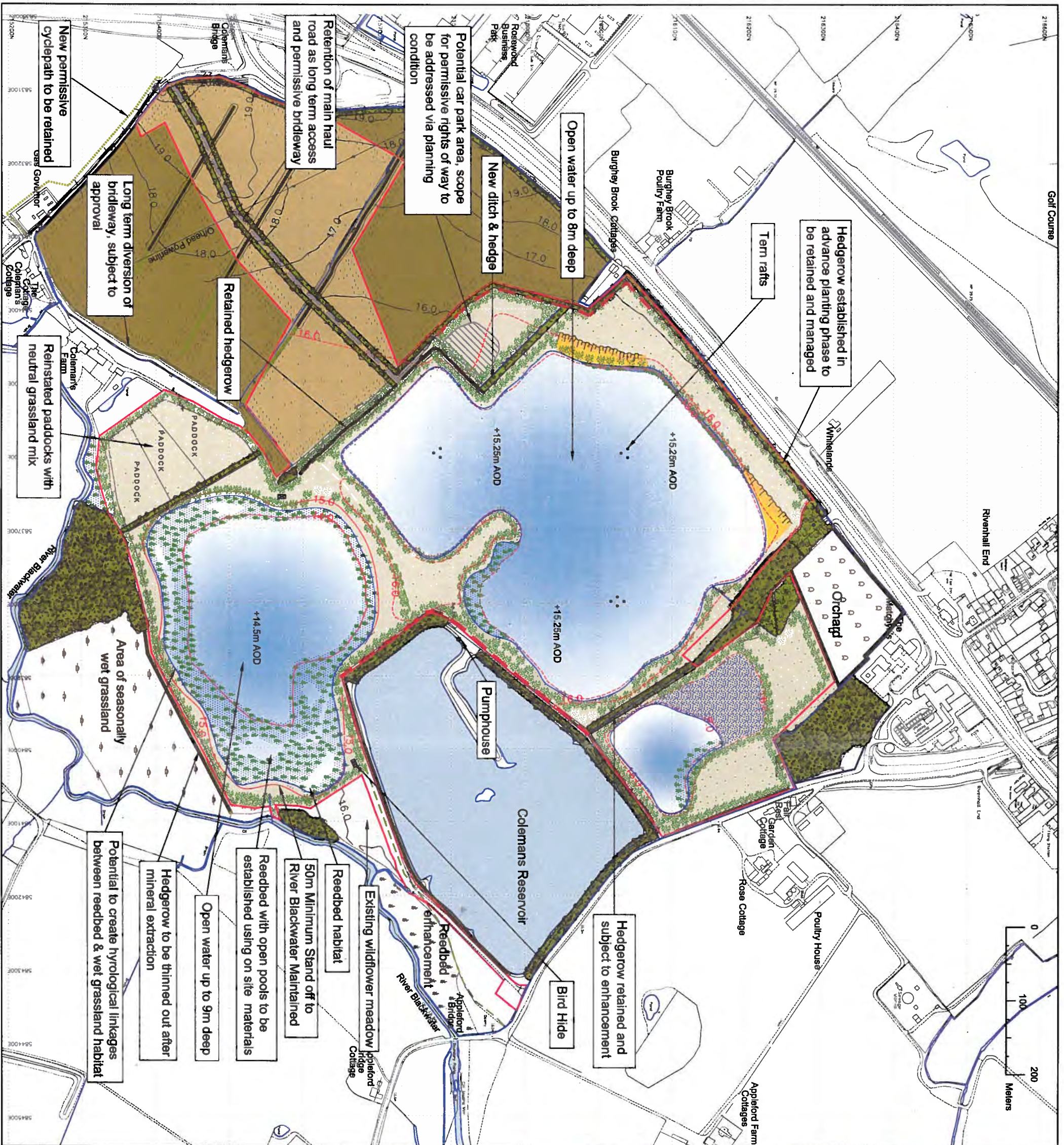
BRICE AGGREGATES

**LAND AT COLEMAN'S FARM
 WITHAM, ESSEX**

LOCATION PLAN

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Scale	1:20,000 @ A3	Date	July 2014	Drawing No.	C45/01/01
Drawn by	LW	Checked by	DW		



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- LEGEND**
- APPLICATION AREA
 - OTHER LAND UNDER APPLICANTS CONTROL
 - RE-INSTATED ARABLE LAND
 - RETAINED ARABLE LAND
 - PROPOSED NEUTRAL GRASSLAND
 - PROPOSED WET GRASSLAND
 - EXISTING TREE PLANTING
 - EXISTING RETAINED HEDGE PLANTING
 - PROPOSED WOODLAND
 - PROPOSED TREE / HEDGE PLANTING
 - PROPOSED DIVERTED ROUTE OF PUBLIC RIGHT OF WAY
 - AGRICULTURAL ACCESS TRACK
 - OPEN WATER (with reedbed fringe and shingle islands)
 - POTENTIAL OFF SITE ECOLOGICAL ENHANCEMENTS
 - PROPOSED INVERTEBRATE BANKS & BARE GROUND
 - EXISTING CONTOURS
 - PROPOSED RESTORATION CONTOURS
 - POTENTIAL CAR PARK AREA

NOTES

OFF SITE ENHANCEMENTS TO BE SECURED VIA SECTION 106 AGREEMENT. SCHEME TO INCLUDE PROVISION OF ARTIFICIAL OTTER HOLTS AT SELECTED LOCATIONS.

ON SITE HABITATS SUBJECT TO LONG TERM AFTERCARE SCHEME.

FORMER SITE ACCESS TO PROVIDE A FURTHER PERMISSIVE BRIDLEWAY ROUTE. ACCESS POINTS TO BE SCALED BACK TO AGRICULTURAL SPECIFICATION UPON CESSATION OF DEVELOPMENT.

BRICE AGGREGATES

LAND AT COLEMAN'S FARM WITHAM, ESSEX

INDICATIVE RESTORATION CONCEPT

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Attesting Officer



Scale	1:5000 @ A3	Date	August 2015	Drawing No.	C45/01/05a
Drawn by	LW	Checked by	DW		

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LEGEND

-  APPLICATION AREA
-  PROPOSED EXTRACTION PHASES
-  GAS MAINS
-  BRIDLEWAY 105_29
-  PROPOSED TEMPORARY DIVERSION ROUTE
-  PROPOSED NEW CYCLEPATH
-  TOPSOIL BUNDS
-  SUBSOIL BUNDS
-  MAIN PLANT SITE
-  ANCILLARY PLANT SITE
-  LAGOONS
-  MAIN HEAVY PLANT ROUTE
-  ADVANCED PLANTING

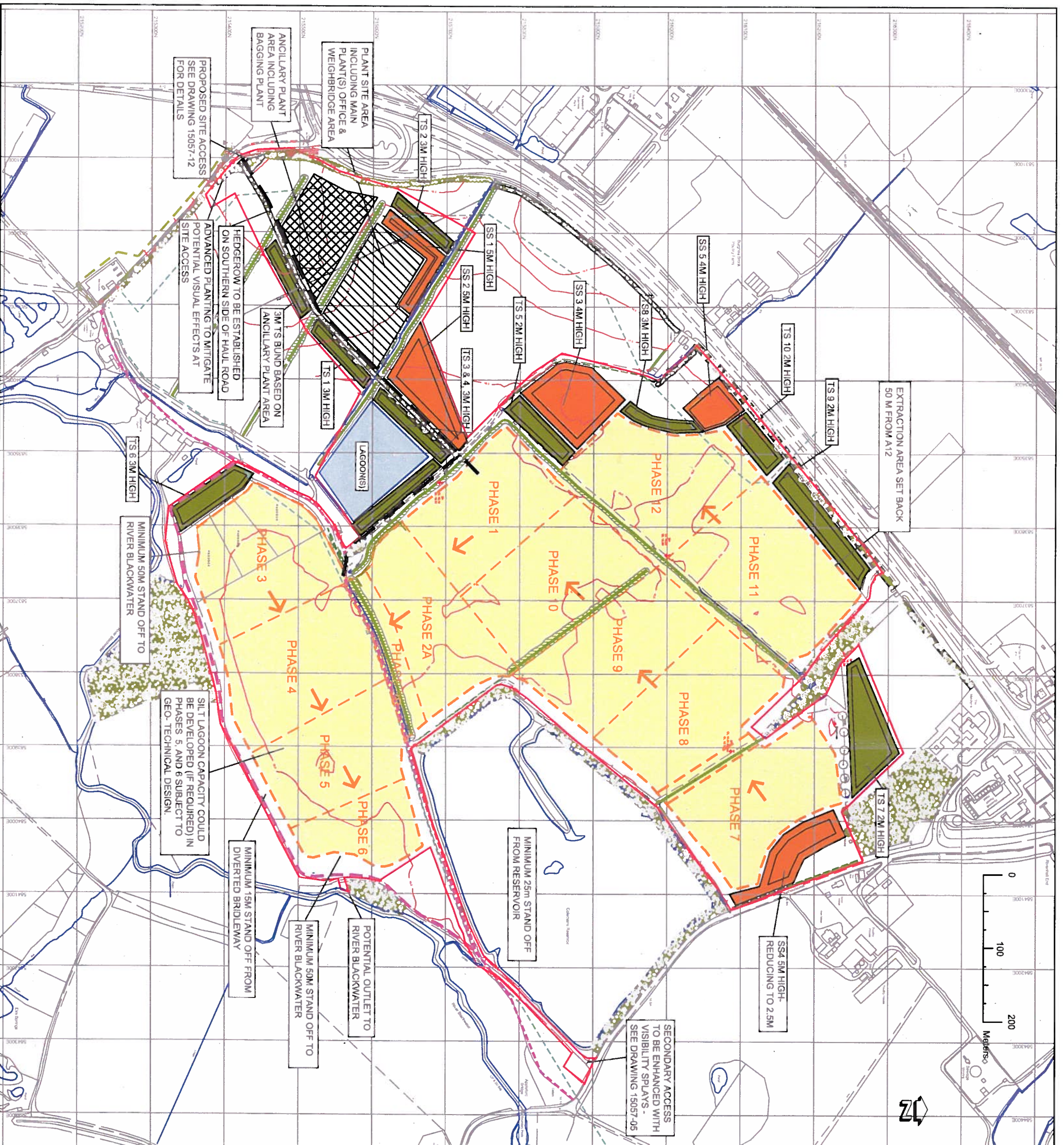
Attesting Officer

NOTES
 INITIAL LAGOON AREA ENVISAGED TO BE MAINTAINED TO PROVIDE LAGOON CAPACITY FOR THE ENTIRE SCHEME.
 PHASES 5 AND 6 COULD PROVIDE SILT LAGOON CAPACITY IF REQUIRED
 STANDOFFS INCREASED IN RELATION TO RIVER BLACKWATER IN RESPECT OF POTENTIAL OTTER ACTIVITY
 PROPOSED NEW PERMISSIVE CYCLEPATH AND FOOTPATH TO BE SECURED VIA PLANNING OBLIGATION
 ALL WORKS AT SITE ACCESS POINTS TO BE SECURED VIA S278 AGREEMENT UNDER HIGHWAYS ACT 1980.
 ALL ADVANCED PLANTING INSTALLED IN FIRST AVAILABLE PLANTING SEASON

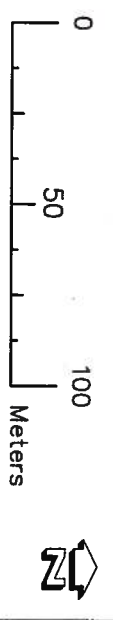
BRICE AGGREGATES
LAND AT COLEMAN'S FARM
WITHAM, ESSEX






INDICATIVE WORKING SCHEME

Project	Land at Coleman's Farm
Title	INDICATIVE WORKING SCHEME
Scale	1:5000 @ A3
Drawn by	LW
Date	August 2015
Checked by	DW
Drawing No.	C45/01/03B



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- LEGEND**
-  APPLICATION AREA
 -  OTHER LAND UNDER APPLICANTS CONTROL
 -  BRIDLEWAY 105_29
 -  FOOTPATH 105_635
 -  PROPOSED SITE ACCESS AND MAIN HAUL ROAD
 -  PROPOSED CYCLEPATH



[Signature]
Attesting Officer

NOTES

BRIDLEWAY 105_29 TO REMAIN AVAILABLE THROUGH ALL PHASES OF THE DEVELOPMENT

PROPOSED NEW PERMISSIVE CYCLEPATH AND FOOTPATH TO BE SECURED VIA PLANNING OBLIGATION

SITE ACCESS TO BE RETAINED AS A PERMISSIVE BRIDLEWAY AS PART OF SITE RESTORATION

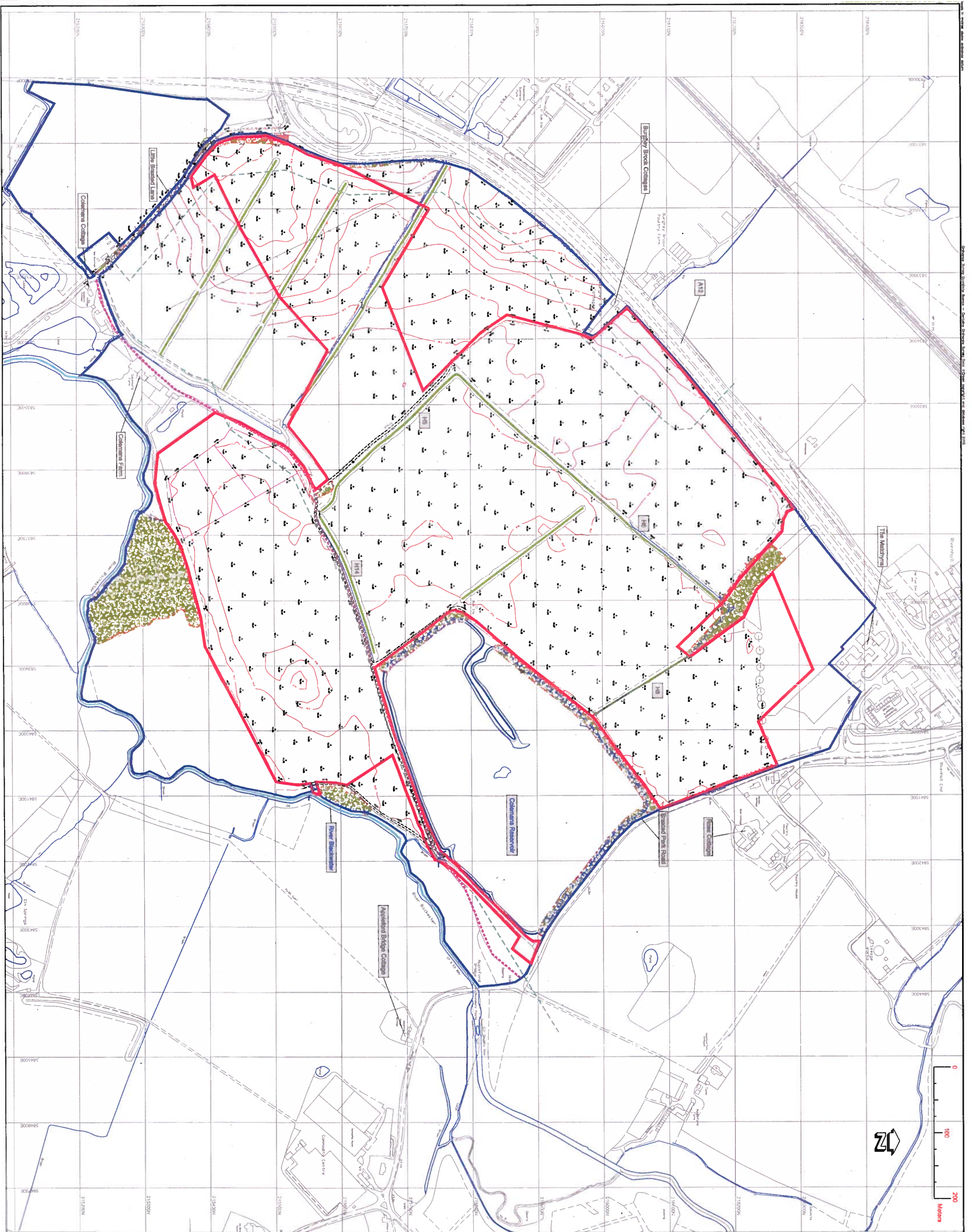
BRICE AGGREGATES

[Signature]

Project
 LAND AT COLEMAN'S FARM
 WITHAM, ESSEX

Title
 PROPOSED CYCLEPATH
 WEST OF LITTLE BRAXTED LANE

Scale	1:2000 @ A3	Date	August 2015	Drawing No.	C45/01/08
Drawn by	DW	Checked by	SB		



- LEGEND**
- APPLICATION AREA
 - OTHER LAND UNDER APPLICANTS CONTROL
 - GAS MAINS
 - EXISTING BRIDLEWAY ROUTE

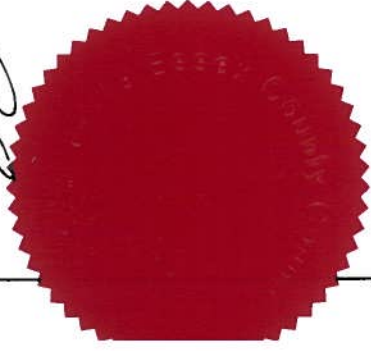
Partial view of the Ordnance Survey map used in the preparation of this plan. The Ordnance Survey map is Crown Copyright Reserved. Licence No. 100000000

NOTES

AMENDED PLAN PROVIDES FOR CORRECTED BRIDLEWAY ROUTE AND CORRECTED BOUNDARY FOR LAND UNDER APPLICANTS CONTROL

STK

Anthony Giles



BRICE AGGREGATES

LAND AT COLUMBUS FARM, WITHAM, ESSEX

Planning Division

11 August 2018

C45/0102A



Appendix 2

Waste Acceptance Procedures

Procedure: Waste Acceptance

V.1 September 2020

Purpose: To ensure that all waste accepted is permitted under the conditions of the Environmental Permit for Deposit of Waste for Recovery

	RESPONSIBLE PERSON	RECORD
<p><u>Environmental Permit and waste codes</u></p>		
<p>1. The Environmental Permit contains the list of waste types that are permitted to be accepted at the site for deposit of waste for recovery. A table containing the codes and descriptions of waste types that are permitted to be deposited at the site is included at the end of this procedure, see <u>Table 1 Permitted Waste Types</u>.</p> <p>If you are unsure whether a load can be accepted, consult this list or the current Environmental Permit. Alternatively contact the Site Manager.</p>	All	<p><u>Table 1 Permitted Waste Types</u></p>
<p>2. If the waste code on the Waste Transfer Note (WTN) is not listed in Table 1 of this procedure/ the Environmental Permit, the load must be rejected in accordance with the <u>Waste Rejection Procedure</u>.</p>	Site Operative	<p><u>Table 1 Permitted Waste Types</u></p> <p><u>Waste Rejection Procedure</u></p>
<p><u>Waste pre acceptance</u></p>		
<p>3. Following a customer enquiry, information about the waste is requested from the waste producer. Such information could include site investigation reports / laboratory test reports / hazardous waste assessments. This information is recorded on the Waste Information Form and the information reviewed to assess if the waste is acceptable or not.</p>	Site Manager	<p><u>Waste Information Form</u></p>
<p>4. A judgement should be made as to the necessity to obtain comprehensive information at this stage. If the source of the waste is not likely to be contaminated, then it may not be necessary to obtain a full site investigation or hazardous waste assessment. If the source of the waste is likely to be contaminated, then a full site investigation and/or a hazardous waste assessment should be requested.</p>	Site Manager	
<p>5. Review of the information in the Waste Information Form will determine the need for (further) sampling/testing/Hazardous Waste Assessment.</p>	Site Manager	<p><u>Waste Information Form</u></p> <p><u>Waste Classification Procedure</u></p>
<p>6. Where a Hazardous Waste Assessment based on WM3 Guidance is required this should be completed, in accordance with the Waste Classification Procedure.</p>		<p><u>Waste Classification Procedure</u></p>
<p>7. All associated Waste Information records and Hazardous Waste Assessments will be kept along with Waste Transfer Notes in a secure location. These records will be maintained for a minimum of two years.</p>	Site Manager	<p><u>Waste Information Form</u></p>
<p><u>Collection of a load</u></p>		
<p>8. A driver arriving at a site to collect waste will:</p> <ul style="list-style-type: none"> • Ensure that the waste type is acceptable as per instructed. • Ensure a Waste Transfer Note is issued with the load and that the description matches the load. 	Site Operative	<p>Waste Transfer Note</p>
<p>9. If a driver collecting a load suspects that the description on the Waste Transfer Note is not accurate then the Site Manager will be contacted. The waste producer will be requested to review/reconsider the information on the Waste Transfer Note so that the description is accurate.</p>	Site Operative	

	RESPONSIBLE PERSON	RECORD
<u>All Vehicles</u>		
10. All vehicles carrying waste on the public highway must be registered as waste carriers and a copy of their certificate should be held on file in the site office. A regular check should be carried out to ensure that registrations are still in date, and where they are found not to be, a copy of the new registration should be obtained immediately.	Site Operative	
<u>Acceptance of waste onto the Site</u>		
11. The driver will provide a WTN to the site operative, who will complete the section relating to transfer of waste, unless a season WTN has been provided. The site operative will then return the WTN to the driver, keeping a copy of the WTN for his own records. A WTN will be generated if one is not provided by the driver.	Site Operative	
12. Unless a season WTN has been provided, a WTN for every load is obtained from the driver and the WTN is checked to ensure it contains the following: <ul style="list-style-type: none"> • Vehicle registration and driver's name and signature. • Waste haulier name and valid Waste Carriers registration number. • Name, address (of destination site) and signature of the person receiving the waste (transferee). • Permit number or exemption reference of person receiving the waste (if applicable). • Description of waste including; waste type, waste source, waste containment and waste quantity. • List of Waste (LoW) code. • SIC Code of the waste holder using SIC Codes (2007). • Date and time of waste transfer and waste transfer note number. • Confirmation that the Waste Hierarchy has been considered. 	Site Operative	Waste Transfer Note
13. Loads not accompanied by a WTN or that do not match the description on the WTN will be rejected in accordance with the Waste Rejection Procedure once the Site Manager has been informed.	Site Operative	<u>Waste Rejection Procedure</u>
14. Every load is visually inspected prior to being off loaded. If there is any doubt about the waste type delivered, then a message is relayed to the Site Manager.	Site Operative	<u>Table 1 Permitted Waste Types</u>
15. After checking the load and the associated paperwork the vehicle is directed to the offloading area for inspection and stockpiling. A Site Operative will inspect tipped loads.	Site Operative	
16. If there is a discrepancy with the load or its paperwork then the Site Manager shall be informed immediately. If the load is not acceptable under the Environmental Permit then, if possible it should be re-loaded onto the vehicle and rejected from site in accordance with the <u>Waste Rejection Procedure</u> .	Site Operative	<u>Waste Rejection Procedure</u>
17. If it is impossible to load a rejected load back onto the delivering vehicle the load will be put into the quarantine area. Waste will be rejected from the Site in accordance with the <u>Waste Rejection Procedure</u> .	Site Operative	<u>Waste Rejection Procedure</u>
<u>Compliance Testing</u>		
18. Compliance testing will be carried out on waste accepted on to the Site. Samples taken from waste piles will be tested at a laboratory to determine the characteristics of the waste and to ensure that the waste is as described on the Waste Transfer Note.	Site Manager	

	RESPONSIBLE PERSON	RECORD
19. An 'Environmental Suite' should be requested from the laboratory for the waste sampled. The tests must be carried out on the waste itself and not the leachate. The Environmental Suite must contain at least the following parameters: <ul style="list-style-type: none"> • Antimony. • Arsenic. • Boron. • Selenium • Metals, including; Beryllium, Cadmium, Chromium III, Chromium VI, Copper, Lead, Manganese, Mercury, Molybdenum, Nickel, Vanadium, Zinc. • Acid Soluble Sulphide. • Phenols (Monohydric). • Total Cyanide. • Elemental Sulphur. • pH Value. • Acid / Alkali Reserve. • PAH (total/speciated). • TPH (total/speciated). • BTEX. • Total Sulphate. • Water Soluble Sulphate. • Moisture Content. • Asbestos. 	Site Manager	

20. A Hazardous Waste Assessment, in accordance with WM3 Guidance, will be completed using the testing results received from the laboratory. This Hazardous Waste Assessment will classify the waste as non-hazardous or hazardous.	Site Operative	<u>Hazardous Waste Assessment</u>
21. If a waste sample is found to be hazardous in nature then the corresponding waste pile will be quarantined and removed from the Site in accordance with the Waste Rejection Procedure.	Site Manager	<u>Waste Rejection Procedure</u>

Records

22. A record is kept of all vehicles delivering waste to and from the site, along with the type, quantity and source of waste delivered.	Site Operative	
23. Waste Transfer Notes will be appropriately stored for a minimum of two years.		Waste Transfer Note
24. Information from the Waste Transfer Notes will be used to provide the necessary data to complete the Waste Return as required by the Environment Agency.	Site Operative	Waste Return

Consequences

25. The consequence of not following this procedure may result in unsuitable waste being accepted on to the site. This may constitute a breach in the conditions of the Environmental Permit, in addition to causing potential contamination of the site.		
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Table 1 Permitted waste types

Exclusions				
Wastes having any of the following characteristics shall not be accepted:				
<ul style="list-style-type: none"> • Consisting solely or mainly of dusts, powders or loose fibres • Wastes that are in a form which is either sludge or liquid 				
Source	Sub-source	Waste code	Description	Additional restrictions
01 Waste resulting from exploration, mining, quarrying and physical and chemical treatment of minerals	01 01 wastes from mineral excavation	01 01 02	Wastes from mineral non-metalliferous excavation	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 01 04 06	
		01 04 09	Waste sand and clays	
02 Waste from agriculture, horticulture, aquaculture, forestry, hunting and fishing, food preparation and processing	02 04 wastes from sugar processing	02 04 01	Soil from cleaning and washing beet	
10 Wastes from thermal processes	10 12 wastes from manufacture of ceramic goods, bricks, tiles and construction products	10 12 08	Waste ceramics, bricks, tiles and construction products (after thermal processing)	
	10 13 waste from manufacture of cement, lime and plaster and articles and products made from them	10 13 14	Waste concrete	
17 Construction and demolition wastes	17 01 concrete, bricks, tiles and ceramics	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	Metal from reinforced concrete must have been removed.
	17 03 bituminous mixtures	17 03 02	Bituminous mixtures other than those mentioned in 17 03 01	Road planings only.
	17 05 soil stones and dredging spoil	17 05 04	Soil and stones other than those mentioned in 17 05 03	Restricted to topsoil, peat, subsoil and stones only.

Source	Sub-source	Waste code	Description	Additional restrictions
19 Wastes from waste management facilities	19 12 wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified	19 12 09	Minerals (for example sand, stones) only	Restricted to wastes from 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
		19 12 12	Other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11	Restricted to crushed bricks, tiles, concrete and ceramics and soils from the mechanical treatment of construction / demolition waste. Metal from reinforced concrete must be removed. Does not include 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	20 02 02	Soils and stones	Restricted to topsoil, peat, subsoil and stones only.

Form: Waste Information

V.1 September 2020

General Information	Waste Producer:				Contact Name:				
	Please tick the box if person completing the form: <input type="checkbox"/>				Telephone No.:				
					Fax No.:				
	Waste Carrier:				Contact Name:				
				Telephone No.:					
				Fax No.:					
Anticipated Volume of waste:				m ³					
Indicate whether estimate is for:				Loose / solid / stockpile		Anticipated Date(s) of delivery:			
Information required for Waste Information	Full address of source of waste (including Postcode)								
	Does the waste producer's site accept hazardous waste?				YES		NO		
	Process from which waste arises:								
	Hazardous Waste Assessment (based on WM3) carried out?				YES	NO	Type of Waste:	Non Hazardous <input type="checkbox"/>	Hazardous <input type="checkbox"/>
	Description and/or composition of waste:								
	Tonnes Per Delivery				Tonnes Per Week				
	Standard Industrial Classification (SIC) Code:				41.1 Construction		41.2 Roads		43.1 Demolition & Site Preparation
	Please circle most appropriate								
	LoW Code:	01 01 02	01 04 08	01 04 09	02 04 01	10 12 08	10 13 14	17 01 01	Other:
		17 01 02	17 01 03	17 01 07	17 05 04	19 12 09	19 12 12	20 02 02	
Details of existing and/or previous use of site (if known) (identify any known previous potentially polluting uses).									
Has a Site Investigation been carried out? (If YES, attach ALL information e.g. Borehole and trial pit logs)				YES		NO			
Is waste being generated as a result of site decontamination works?				YES		NO			
Does waste contain any biodegradable material? (e.g. wood, paper, vegetation)				YES		NO			
Declaration	Customer Declaration:								
	I/we certify that the above information and attachments are corrected in every respect. Where "YES" is confirming that to the best of our knowledge the samples that have been taken are representative of the waste material to be deposited for recovery and that the chemical analysis have been carried out using accredited analytical methods by a UKAS accredited laboratory.								
Name(s): Signed: Date:									

Waste testing and assessment	This section is to be completed by the Waste Assessor i.e. Brice Aggregates Limited							
	Hazardous Waste Assessment (WM3) Required?				YES		NO	
	Accept the waste?				YES		NO	
	Compliance Testing to be carried out?				YES		NO	
	Frequency of Compliance Testing?							
	Comments:							
Signature of Waste Assessor:						Date returned:		

Procedure: Waste Classification

V.1 September 2020

Purpose: To outline the steps to be taken to classify waste in accordance with WM3 Guidance

	RESPONSIBLE PERSON	RECORD
<p>1. This procedure describes how relevant waste will be tested and classified in accordance with the <i>Waste Classification – Guidance on the Classification and Assessment of Waste – Technical Guidance WM3</i> (WM3 Guidance), produced by the Environment Agency.</p>		
<p>2. A Hazardous Waste Assessment may be required in the following situations:</p> <ul style="list-style-type: none"> • Waste pre-acceptance. • Compliance testing. • Removal of waste from the Site. <p>Further information relating to these situations can be found in the sub-sections of this Procedure.</p>		
<p>3. Waste will be classified as non-hazardous or hazardous following an assessment in accordance with WM3 Guidance by completing a Hazardous Waste Assessment.</p> <p>Waste classified as hazardous will need to be dealt with appropriately, as follows:</p> <ul style="list-style-type: none"> • Waste Pre-acceptance – Hazardous waste should not be accepted. • Compliance testing - Hazardous waste should be quarantined and removed from Site accompanied by a Hazardous Waste Consignment Note and sent to a suitably licensed facility. 	Site Manager	
<h3><u>Testing of Waste</u></h3>		
<p>4. Samples should be sent to a laboratory in order to obtain analysis results.</p>	Site Operative	
<p>5. An 'Environmental Suite' should be requested from the laboratory for the sample of waste. The tests must be carried out on the waste itself and not the leachate. The Environmental Suite must contain at least the following parameters:</p> <ul style="list-style-type: none"> • Antimony. • Arsenic. • Boron. • Selenium. • Metals, including; Beryllium, Cadmium, Chromium III, Chromium VI, Copper, Lead, Manganese, Mercury, Molybdenum, Nickel, Vanadium, Zinc. • Acid Soluble Sulphide. • Phenols (Monohydric). • Total Cyanide. • Elemental Sulphur. • pH Value. • Acid / Alkali Reserve • PAH (total/speciated). • TPH (total/speciated). • BTEX. • Total Sulphate • Water Soluble Sulphate. • Moisture Content. • Asbestos. 	Site Operative	
<p>6. Additional analysis may be required if there is suspicion of specific contaminants, for example pesticides.</p>	Site Manager	
<p>7. Where there is a suspicion that asbestos may be present this must be tested for:</p> <ul style="list-style-type: none"> • Testing is required to determine if the waste contains visible pieces of asbestos containing materials. If individual pieces of material are considered to contain asbestos these should be removed from the 	Site Operative	

RESPONSIBLE PERSON **RECORD**

- waste and sent for testing. If these are found to contain 0.1% or more asbestos then the waste should be classified as hazardous.
- Testing for asbestos is also required where there is suspicion that the waste may contain asbestos fibres. If these are found at 0.1% or more then the waste should be classified as hazardous.

Waste Classification

- | | | | |
|-----|--|----------------|-----------------------------------|
| 8. | A Hazardous Waste Assessment will be completed using the waste analysis results received from the laboratory. This Hazardous Waste Assessment will classify the waste as non-hazardous or hazardous. | Site Manager | <u>Hazardous Waste Assessment</u> |
| 9. | A Hazardous Waste Assessment may be carried out by manual assessment or by using a software package to determine the relevant hazardous properties of the waste. | Site Operative | <u>Hazardous Waste Assessment</u> |
| 10. | A copy of the Hazardous Waste Assessment should be kept with the Duty of Care information for that waste. | Site Operative | <u>Hazardous Waste Assessment</u> |

Procedure: Waste Rejection

V.1 September 2020

Purpose: To ensure non-compliant waste is rejected and that associated records of rejected loads are created.

RESPONSIBLE PERSON RECORD

Reasons for Rejection

1. A waste may be non-conforming and rejected from the site for the following reasons:
 - Delivery vehicle is unsuitable for site operations / conditions.
 - The waste is not acceptable the Environmental Permit.
 - There is a prohibited waste within the load.
 - The load is not accompanied by the correct documentation.
 - The waste does not match the description on the accompanying documentation.
 - The waste contains putrescible waste.

Site Manager Waste Transfer Notes

The list is not exhaustive, if you are unsure speak to the Site Manager.

2. If a waste is identified as being unacceptable at the site entrance or at the point of offloading the Site Manager is contacted and a Waste Rejection Form is issued to the driver.
3. The driver of the load is informed of the load’s rejection. The driver will be informed of the reasons for this and requested to leave the Site.
4. If the load is being rejected because the description of the waste on the transfer note is incorrect, the driver may be given the opportunity to correct the mistake so long as the waste is acceptable at the Site.
5. A load will be rejected if the waste is likely to be contaminated and sufficient information e.g. full site investigation and/or a hazardous waste assessment is not provided. A judgement should be made as to the necessity to obtain comprehensive information. If the source of the waste is not likely to be contaminated then it may not be necessary to obtain a full site investigation or hazardous waste assessment.
6. In the event of a rejected load the Environment Agency may be contacted by telephone and / or email with details of the rejected load. These details should include information relating to the nature and quantity of waste involved, the time and date, the name and address of the waste producer, the registration number of the vehicle delivering the waste and the name and address of the vehicle driver and haulage contractor.
7. If the load is not safe to be sent back onto the road, then the vehicle is kept in the Quarantine Area until appropriate arrangements can be for its removal.

Site Manager Waste Rejection Form

Site Manager

Site Operative

Site Manager

Site Manager

Site Manager

Waste Rejected after Offloading of the Vehicle

8. If appropriate, a rejected load should be reloaded onto the delivery vehicle.
9. If waste cannot be reloaded onto the delivery vehicle, the waste will be stored in the quarantine area. The customer will be contacted, arrangements to remove the quarantined waste will be made and a copy of the rejection form containing reasons for the rejection will be supplied.
10. If arrangements for the customer to remove the waste cannot be made, arrangements will be made to ensure the waste’s removal. Waste material in the quarantine area will be exported off Site by a licensed waste carrier to an appropriately licensed facility. If necessary, the EA will be contacted regarding the rejection of the waste.
11. Waste will be stored for a maximum of seven working days in the quarantine area.

Site Operative

Site Operative Waste Rejection Form

Site Manager Waste Rejection Form

Site Manager Waste Rejection Form

	RESPONSIBLE PERSON	RECORD
12. Details of any unauthorised waste and its subsequent removal from Site is recorded and retained on Site.	Site Manager	<u>Waste Rejection Form</u>

Form: Waste Rejection**V.1 September 2020**

Customer / Haulier:		Producer (if different):	
Contact:		Contact:	
Phone:		Phone:	
Fax:		Fax:	
Email:		Email:	
Transfer Note No:		Date:	
Vehicle Registration:		Time:	
Carriers Certificate:		Driver's Name:	
Reason for Rejection:			
Actions Taken:			
You MUST inform the Site Manager or other member of management before taking any further action.			
Manager Informed:			
Destination for Waste:			
Transfer Note No:		Date:	
Vehicle Registration:		Time:	
Carriers Certificate:		Drivers Name:	
Hazardous:	Yes / No	Consignment Note No:	
Signed			Date
Name		Position	



Appendix 2

Pre-Application Recovery vs Disposal Assessment Advice Letter

Kate Brady
Westbury Environmental

Our ref: EPR/JB3508TG/A001

Date: 26 October 2020

Dear Ms Brady

Environmental Permitting – Recovery or Disposal Operation
Pre-application Reference: EPR/JB3508TG/A001
Proposed Operator: Brice Aggregates Limited
Site Address : Colemans Farm, Witham, Essex, CM8 3EX.

As part of our pre-application discussions, you have submitted information to us that includes your assessment that the activity you wish to undertake at your site amounts to a recovery operation.

We have now fully considered your submission and we would like to advise you that:

We agree with your assessment that your activity is a recovery operation. This advice is based on the information you have provided in relation to waste types, amounts and nature of proposal including any proposed landform. If you change any of these between now and when you submit an application form, this advice may no longer apply. **Please also note that following submission of an application, additional assessment will take place (for example, further assessment of the proposed waste types based on the sensitivity of the site location) and therefore agreement that an operation is a recovery activity does not guarantee that a permit will be granted or a variation issued.**

For the sake of clarity, the following documents are considered to form the approved waste recovery plan;

Waste Recovery Plan V1 Project Reference 20/016c

If you have any questions please phone me on 02030 253 808 or email elisabeth.platts@environment-agency.gov.uk

Yours sincerely

Elisabeth Platts
Permitting Officer



Appendix 3

Pre-application advice

Mr. George Evans
Brice Aggregates Ltd
Coleman's Farm
Little Braxted Lane
Rivenhall
Witham
CM8 3EX

Our reference: EPR/JB3508TG/A001

Date: 06/08/2020

Dear Mr. Evans,

Pre application advice – Basic service

Site: Colemans Farm, Little Braxted Lane, Rivenhall, Witham, CM8 3EX

Thank you for your pre application enquiry on 15/07/2020. Based on the information contained in the enquiry form you submitted we can offer the following advice regarding a bespoke site-based permit which would cover the treatment of construction and demolition wastes, and their subsequent deposit for recovery to restore a former quarry void. The advice sets out the application forms that you would need to complete together with the supporting documents, and indicates the application fee. We have also included the habitats advice you requested.

You indicated in your enquiry that further information would be confirmed regarding the potential requirement to discharge water from the washing of construction and demolition wastes. Please ensure you include these additional details with your application. The links below include the permit guidance for discharges to surface and groundwater (foul sewer discharge would require separate approval from the relevant sewerage undertaker) and an emissions guide which covers the management of risks to water from waste activity.

<https://www.gov.uk/guidance/discharges-to-surface-water-and-groundwater-environmental-permits>

<https://www.gov.uk/guidance/control-and-monitor-emissions-for-your-environmental-permit#emissions-that-do-not-have-set-limits>

Habitats Note

A conservation report is attached to this advice which includes details of the relevant features and who you need to contact for more information. The bespoke screening looks for anything within 2km of the NGR so we left the buffer blank on this occasion as the size of the site is unknown. The screening only shows up a couple of results within 2km which are listed on the attached report. If you want a more accurate screening when you have defined the site boundary you can request this using the online form without going through full pre-app process again.

Forms

You need to submit the following forms – Part A, Part B2, Part B4 and Part F1. Please ensure you download the latest version of the forms, as your application will be returned if an old version of the forms is used.

customer service line **03706 506 506**

floodline **03459 88 11 88**

incident hotline **0800 80 70 60**

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Part A - <https://www.gov.uk/government/publications/application-for-an-environmental-permit-part-a-about-you>

Part B2 - <https://www.gov.uk/government/publications/application-for-an-environmental-permit-part-b2-new-bespoke>

Part B4 - <https://www.gov.uk/government/publications/application-for-an-environmental-permit-part-b4-new-bespoke-waste-operation>

Part F1 - <https://www.gov.uk/government/publications/application-for-an-environmental-permit-part-f1-opra-charges-declarations>

You must read all accompanying guidance when completing the forms to ensure you do not miss anything out.

You must ensure you provide dates of birth for all appropriate people as per Appendix 1 in form Part A, and Appendix 2 in form B2. Failure to do so will delay your application being put into our systems. Please note that these details will not be made available on the Public Register.

Declaration (Form F1)

Please ensure the Declaration section is completed by each “relevant person”.

- For an application from an individual, a relevant person is the person to be named on the permit.
- For an application from more than one individual, each person who is applying for their name to be on the permit must complete the declaration – you will have to print a separate copy of the declaration page for each additional individual to complete.
- In the case of a company, a relevant person must be an active director/company secretary as listed on Companies House – <https://beta.companieshouse.gov.uk/>
- For a charity, a relevant person is a key post holder, i.e., chair, chief executive, director or trustee.

Additional information required

The following additional documents and supporting information will be required as part of your application:

Site Plan

The site location drawing should clearly outline the site boundary in a green, unbroken line. The site plan should not be an aerial photograph. The site plan should include a date and a reference, and must be drawn accurately to a defined scale. It is helpful if local features are shown on the plan to help us clearly identify the exact location of the site.

If you are sending us a paper copy of your site plan it must be either A3 or A4 size. Alternatively you can send us an electronic copy on CD or via email.

You should also provide plans showing the site’s infrastructure, storage and drainage arrangements.

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Evidence of appropriate technical competence

If you already have an appropriate qualification, you must provide a copy of the original technical competence certificate, along with the most recent continuing competency certificates, if required.

If you do not yet have the appropriate award but have registered for it, you must provide written confirmation from the course provider of your registration.

If you are relying on the EPOC qualification for a medium or high risk activity, you must provide a copy of the original EPOC certificate and any continuing competencies, along with confirmation from the course provider that you are registered on the appropriate full award.

For further information, including who to contact for advice on the appropriate level of qualification and alternative routes, please refer to the B2 guidance which can be found at:

<https://www.gov.uk/government/publications/application-for-an-environmental-permit-part-b2-new-bespoke>

Environment Management System

We require you to submit a summary of your Environment Management System. Your summary should cover all the points in 'Develop a management system: environmental permits' at

<https://www.gov.uk/guidance/develop-a-management-system-environmental-permits>

Non-Technical Summary

You need to send us a non-technical summary which should explain your proposal using non-technical language. This should summarise your operations (including how waste is handled, treated and stored), key technical standards you will adhere to and the main control measures arising from your risk assessment.

Site-specific risk assessment produced in line with our guidance or equivalent

You should describe the environmental risk posed by your proposals. This must take the form of an environmental risk assessment which should follow the methodology set out in 'Risk assessments for your environmental permit' at <https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit>

Site condition report

We require a site condition report in line with the H5 Site Condition Report Guidance. This guidance includes a template you can use:

<https://www.gov.uk/government/publications/environmental-permitting-h5-site-condition-report>

Waste Recovery Plan

This bespoke permit application will require submission of a WRP. We assess the WRP to determine whether the proposed operation is recovery or disposal. If we find the operation to be disposal, your operation cannot have a deposit for recovery permit. For information about waste

customer service line 03706 506 506

floodline 03459 88 11 88

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recovery plans, how to submit your WRP for assessment, and the fee prior to your permit application submission, please see:

<https://www.gov.uk/guidance/waste-recovery-plans-and-permits>

You have indicated you propose to submit your WRP with the permit application. We would strongly recommend you consider having your WRP assessed before you apply for the permit. If you submit an unassessed WRP with your permit application and we deem the operation disposal, you would lose the full permit application fee.

Emissions (Dust) Management Plan (DMP)

We consider that this application will require the submission of a DMP because of the nature of the activity and the site's proximity to receptors. To see which sites commonly require a DMP and for information about how to write a DMP, please see:

<https://www.gov.uk/guidance/control-and-monitor-emissions-for-your-environmental-permit#emissions-that-do-not-have-set-limits>

A copy of the DEMP template is attached.

Noise Impact Assessment (NIA)

If you think that your operation is likely to cause pollution from noise or vibration beyond your site boundary you must provide a noise impact assessment (NIA) based on BS4142:2014+A1:2019 – 'Methods for rating and assessing industrial and commercial sound'.

<https://www.gov.uk/guidance/control-and-monitor-emissions-for-your-environmental-permit#noise-and-vibration-management-plan>

Where your assessment has used calculations or modelling to predict sound pressure levels at receptors, you must follow our guidance on the presentation of your acoustic data: Noise impact assessments involving calculations or modelling.

<https://www.gov.uk/guidance/noise-impact-assessments-involving-calculations-or-modelling>

Your NIA must be accompanied by a Noise Management Plan based on the results of your NIA.

Noise Management Plan (NMP)

Where your risk assessment cannot screen out impacts from noise and vibration beyond your site boundary you must produce a noise and vibration management plan. The aim of the management plan is to prevent, or where that is not possible minimise, impacts to receptors.

Your noise management plan must take into consideration the outcomes of any noise and vibration impact assessment and provide evidence that appropriate mitigation measures have been taken to control the risks from the activity and operations undertaken on your site.

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incident hotline 0800 80 70 60

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The Environment Agency have published guidance on appropriate measures and requirements of a management plan to assist you in the preparation of the plans.

<https://www.gov.uk/government/publications/environmental-permitting-h3-part-2-noise-assessment-and-control>

If you are unsure as to whether a Noise Impact Assessment and Noise Management Plan are required for your proposal please request enhanced pre application advice. We may return the application, and potentially retain part of your fee, if we find a Noise Impact Assessment and Noise Management Plan should have been included as part of your application.

Further guidance

I would highly recommend that you read our Core Guidance document which will tell you about the permitting process and provide information about your responsibility as a waste operator. Here is the link:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/211852/pb13897-ep-core-guidance-130220.pdf

You should use the Technical Guidance WM3 to help you classify your wastes which is found at:

<https://www.gov.uk/government/publications/waste-classification-technical-guidance>

You might also find useful to read relevant sections of the Sector Guidance Note S5.06 for the recovery and disposal of hazardous and non-hazardous waste, which can be found here:

<https://www.gov.uk/government/publications/sector-guidance-note-s506-recovery-and-disposal-of-hazardous-and-non-hazardous-waste>

Application Fees

A summary of the charging components which make up the application charge for this proposal are below. This reflects the multiple site activities (para 2.12 of the charging guidance explains this in more detail) and the supporting plans based on the likely risks.

Baseline fee of £9,207 for deposit of waste for recovery – please see table 1.17 of the charging guide, row 1.17.9. This is 100% of the charge for the largest application fee.

An additional fee of £3,965 for physical treatment of hazardous/non-hazardous waste – please see table 1.16 of the charging guide, rows 1.16.12/1.16.13. This is 50% of the £7,930 charge for this additional activity.

The following plans and assessments should also be added to the baseline fee(s):

£1,231 Waste Recovery Plan – please see table 1.19 of the charging guide, row 1.19.1

£1,241 Dust Emissions Management Plan – please see table 1.19 of the charging guide, row 1.19.5

£1,246 Noise & Vibration Management Plan – please see table 1.19 of the charging guide, row 1.19.7

Based on the information provided, the total application fee for this proposal will be **£16,890**.

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Please note that your application will not be processed until we receive the full application fee payment.

The charging scheme can be found at:

<https://www.gov.uk/government/publications/environmental-permitting-charging-scheme-2019>

You will need to pay a first year of operation charge once a permit is issued. This is a one off extra charge of £672 for the first year of your operations. This charge covers the costs of an additional site visit from the Environment Agency to provide you with advice at the start of your operations. We do this to make sure your operation is compliant from the beginning as this is more cost effective than trying to put things right later. You will also have to pay an annual subsistence charge which you can find in section 2.16 of the charging scheme.

Please note that a subsistence charge is an annual charge which is based on the type and scale of the activity. Payment of this charge must not be included with payment of an application fee. Subsistence charges are invoiced to operators annually, after a permit is issued. The subsistence charge given above may change if we issue you a permit for an activity of a different type and/or scale to the proposed activity in this pre-application request.

What happens next?

If you submit an environmental permit application then please quote this pre-application reference number: **EPR/JB3508TG/A001**

If the advice above details using the [online digital application form](#), your application can be submitted using this method. If not, please send your completed application documents via email to: psc@environment-agency.gov.uk

We are not currently processing paper applications as our offices are closed. Any applications submitted via post will be stored at the Permitting Support Centre until we are able to re-open the office. For further information, please check our latest operational update on the [Environment Agency website](#)

Dealing with the impact of COVID-19

We are following Government advice to manage the risks of Coronavirus to our organisation, to protect the health, safety and wellbeing of our staff and sustain our critical operations.

We are doing all we can to maintain our service, however it may take us longer than usual to respond to you. It is important that you inform us of any applications that are critical to maintain national resilience, national infrastructure and critical environmental protection.

Our current queues are large and we are taking longer than usual to allocate work for duly made checks. Please see the table below for current average queue times.

Application type	Average time on queue
New standard rules	7-9 weeks
New Bespoke	10-12 weeks
Admin variation	2-4 weeks

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Minor variation	6-8 weeks
Normal variation	9-11 weeks
Substantial variation	9-11 weeks
Transfer	6-8 weeks
Surrender	6-8 weeks

Disclaimer

The advice given is based on the information you have provided, and does not constitute a formal response or decision of the Environment Agency with regard to future permit applications. Any views or opinions expressed are without prejudice to the Environment Agency's formal consideration of any application. Please note that any application is subject to duly making and then full technical checks during determination, and additional information may be required based on your detailed submission and site specific requirements and the advice given is to address the specific pre-application request.

This advice covers waste only. Other permissions from the Environment Agency and/or other bodies may be required for associated or other activities.

This pre-application request is now closed.

Further enquiries resulting from this response must be logged as a new request using the online form:

<https://www.gov.uk/government/publications/environmental-permit-pre-application-advice-form>

Our basic pre-application service is free and is limited to the information detailed on section 2 of the [Environmental permitting charges guidance](#) on gov.uk.

If you need more extensive or technical pre-application advice, you can ask for our enhanced pre-application service. The enhanced pre-application advice is charged at £100 per hour plus VAT. You will need to complete and submit a new online pre-application request to request enhanced pre-application advice.

If you have any questions please find my contact details below.

Yours sincerely,

Mike Kinley

Mike.Kinley@environment-agency.gov.uk

Nature and Heritage Conservation

Screening Report: Bespoke waste

Reference	EPR/JB3508TG/A001
NGR	TL 83766 15811
Buffer (m)	600
Date report produced	1 December 2020
Number of maps enclosed	2

The nature and heritage conservation sites and/or protected species and habitats identified in the table below must be considered in your application.

Protected Species	Screening distance (m)	Further Information
Brown Trout European Eel Bullhead Water Vole European Eel migratory route	up to 500m	Natural England Appropriate Local Record Centre (LRC) Environment Agency. Dial 03708 506 506 for your local Fisheries and Biodiversity team

Protected Habitats	Screening distance (m)	Further Information
Deciduous Woodland	up to 500m	Natural England

Where protected species are present, a licence may be required from [Natural England](#) to handle the species or undertake the proposed works.

Please note we have screened this application for protected and priority sites, habitats and species for which we have information. It is however your responsibility to comply with all environmental and

planning legislation, this information does not imply that no other checks or permissions will be required.

Please note, the enclosed pre-application map(s) is valid for a period of **6 months**. If you plan to submit your application more than 6 months after the map(s) was generated, you must request that the screen is re-run. This will ensure that you have used the most current information on heritage and nature conservation interests in your application.

customer service line
03708 506 506

incident hotline
0800 80 70 60




floodline
0845 988 1188

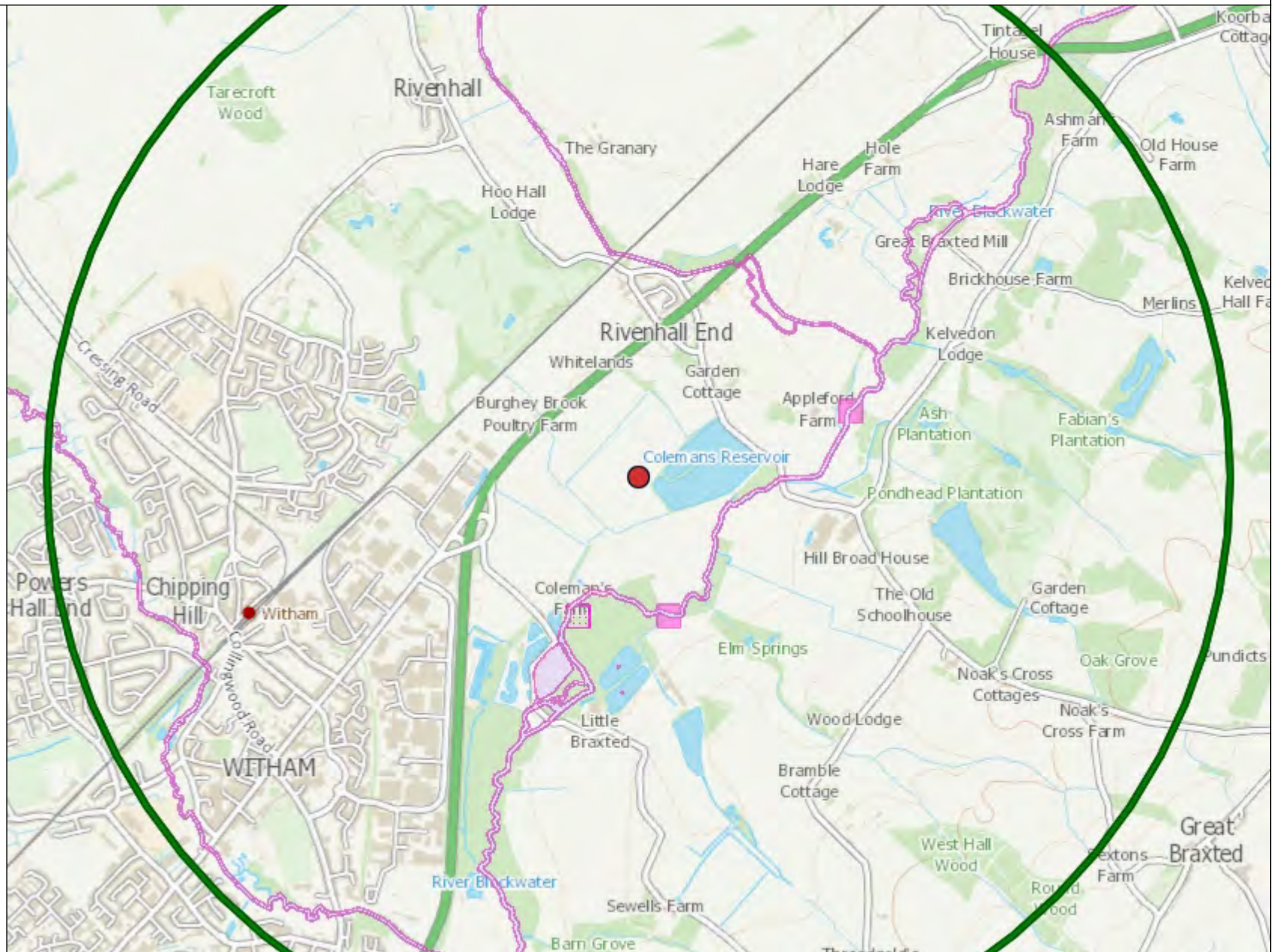
www.environment-agency.gov.uk

Protected Species

Legend

Protected species screened for Env Permits - complete set

-  Protected species, non fish
-  Protected fish
-  Protected fish migratory route




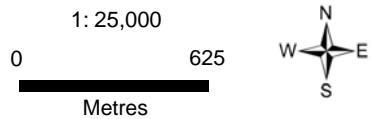
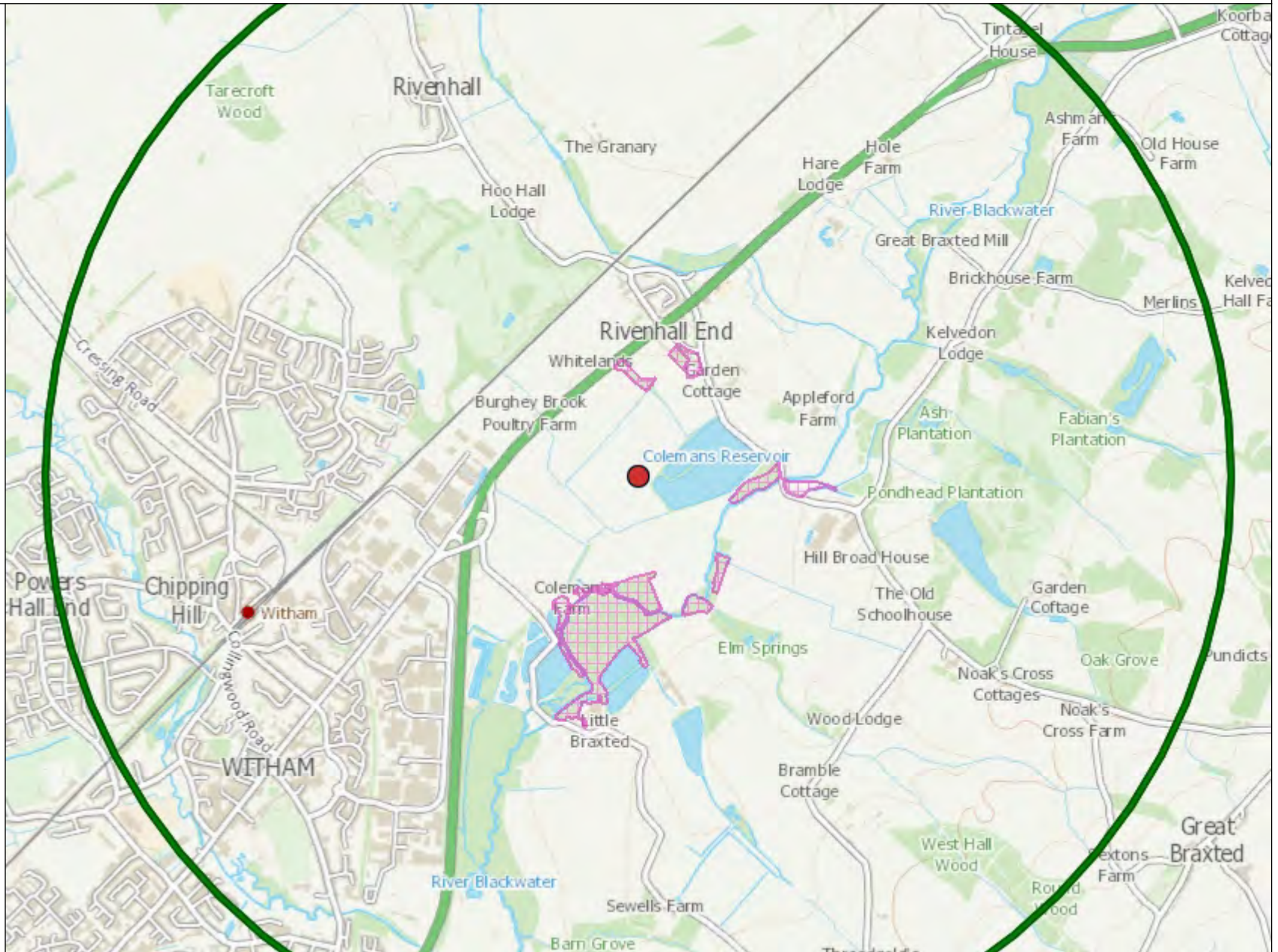
1: 25,000



Protected Habitats

Legend

-  Protected Habitats screened for En Permits





Appendix 4

Environmental Risk Assessment



Data and Information				Judgement				Action (By Permitting)	
Receptor	Source	Harm	Pathway	Probability of Exposure	Consequence	Magnitude of Risk	Justification for Magnitude	Risk Management	Residual Risk
<p>Local human population – Residential dwellings located within the vicinity of the Site.</p> <p>Nearest residential dwelling; 40m NNW</p>	<p>Releases of dusts and micro-organisms (bioaerosols)</p>	<p>Harm to human health - respiratory irritation and illness</p>	<p>Air transport then inhalation</p>	<p>Low</p>	<p>Medium</p>	<p>Low</p>	<p>Permitted waste types are inert and non-hazardous and do not include dusts, powders or loose fibres and have a very low potential to produce bioaerosols.</p> <p>Movement of waste has the potential to emit dust. There is potential for increased dust generation from permitted activities during prolonged dry periods.</p> <p>It is considered that due to the size of the dust particles, the majority of dust is likely to be deposited within 50m of the source. The nearest residential dwelling is located approximately 40m north-northwest of the</p>	<p>A number of mitigation measures will be implemented to reduce the risk of dust nuisance.</p> <p>Vehicles entering and exiting the site will be sheeted in order to reduce the likelihood of dust emissions.</p> <p>Strict waste acceptance procedures will also be in place to ensure that loads comprising mainly dust, fibres or loose fibres are not accepted on Site.</p> <p>Water sprays will be used to minimise dust emissions from the movement of the waste.</p> <p>Waste treatment activities include washing and so will be a wet process, reducing the risk of dust.</p> <p>Waste treatment and storage will be within the quarry void, below ground level, reducing the risk of dust leaving the Site.</p>	<p>Low</p>



Receptor	Source	Harm	Pathway	Probability of Exposure	Consequence	Magnitude of Risk	Justification for Magnitude	Risk Management	Residual Risk
							<p>Site. The predominant wind is from the south west.</p> <p>The residents of the dwelling located 40m north-northwest are the only human receptors located within 50m of the Site.</p> <p>The dwelling is located upwind of the predominant wind direction and is elevated above the quarry. There is considered to be a low likelihood of the dwelling being adversely affected by dust emissions.</p> <p>The works will be phased, reducing the duration and surface area over which materials movement will occur at any one time/location.</p>		
		Nuisance - dust on cars, clothing etc.	Air transport then deposition	Medium	Low	Low	As above.	As above.	Low



Receptor	Source	Harm	Pathway	Probability of Exposure	Consequence	Magnitude of Risk	Justification for Magnitude	Risk Management	Residual Risk
Nearby habitats (Deciduous woodland 20m S, River Blackwater 20m SSE, Colemans Reservoir, 0m E).	Litter	Nuisance, loss of amenity and harm to human health	Air transport then deposition	Low	Medium	Medium	Areas of deciduous woodland located close to the Site may be sensitive to litter. Permitted waste types have a low potential to produce litter.	Any litter found will be collected and disposed of regularly to keep the Site tidy. Strict waste acceptance criteria will be applied within the site's Environmental Management System (EMS) to ensure incoming loads of waste that have a high litter content are rejected.	Low
Local human population – Residential dwellings located within the vicinity of the Site. Nearest residential dwelling; 40m NNW. Workers at Eastways Industrial Estate; 100m W, Witham Wood Chips 150m NE and Brice R A & Partners 150m SW. A12 dual carriageway 60m NNW.	Waste, litter and mud on local roads.	Nuisance, loss of amenity, road traffic incidents, potential for resuspension of dust.	Vehicles entering and leaving the site.	Low	Medium	Low	Local residents are often sensitive to waste, litter, mud on roads. Permitted waste types have a low potential to produce litter.	There will be wheel cleaning facilities to wash mud off vehicles exiting the Site. The site will have access to a road sweeper to deploy in the event that mud is observed on the adjacent highways. The EMS ensures that the internal and external haul routes will be inspected regularly (Site Inspection checklists) to ensure any mud is cleared up in a timely manner.	Low



Receptor	Source	Harm	Pathway	Probability of Exposure	Consequence	Magnitude of Risk	Justification for Magnitude	Risk Management	Residual Risk
<p>Local human population – Residential dwellings located within the vicinity of the Site.</p> <p>Nearest residential dwelling; 40m NNW.</p> <p>Workers at Eastways Industrial Estate; 100m W, Witham Wood Chips 150m NE and Brice R A & Partners 150m SW.</p>	Odour	Nuisance, loss of amenity	Air transport then inhalation	Low	Low	Low	Local residents often sensitive to odour, however permitted waste types have a low potential to give rise to odour.	Waste imported onto the Site will be checked to ensure that it does not contain malodorous materials. This is controlled by the site's Waste Acceptance Procedures.	Very Low
	Noise and vibration	Nuisance, loss of amenity, loss of sleep	Noise through the air and vibration through the ground	Low	Medium	Medium	<p>Local residents are often sensitive to noise and vibration.</p> <p>Nearest residential dwelling c.40m north. Although the dwelling is close to the site, it is situated at a higher elevation (c.25mAOD) compared to the area where waste will be treated (c.18mAOD at ground level). In addition, waste treatment activities will be set below surrounding ground level (c.4.5mbgl). The difference in elevation between the waste deposit/treatment activities will act</p>	<p>All plant and equipment will be maintained in accordance with the manufacturers' recommendations to minimise noise generation.</p> <p>Phased restoration of the site reduces potential for the time and intensity of potentially noise generating activities being carried out/ adversely impacting nearby receptors.</p> <p>Siting of waste treatment activities in an area of the site distant from human/ noise-sensitive receptors. Siting it below ground level will provide additional effective screening of noise from the treatment operations.</p>	Low



Receptor	Source	Harm	Pathway	Probability of Exposure	Consequence	Magnitude of Risk	Justification for Magnitude	Risk Management	Residual Risk
							<p>as an effective screening bund to shield from noise and dust.</p> <p>It is considered likely that the noise generated from the A12 Dual Carriageway (60m N), will exceed the level of noise experienced by nearby human receptors generated from the waste operations carried out at the Site.</p> <p>Noise will adhere to and be controlled by pre-existing noise limits in the planning permission.</p>		
Local human population – Residential dwellings located within the vicinity of the Site. (as above)	Scavenging animals and scavenging birds	Harm to human health - from waste carried off site and faeces. Nuisance and loss of amenity	Air transport and over land	Low	Medium	Low	Permitted waste types unlikely to attract scavenging animals and birds but may become breeding / nesting sites.	<p>Implementation of strict waste acceptance procedures will ensure that materials that could attract scavenging animals are not accepted on to the site.</p> <p>Regular housekeeping will minimise the risk from scavenging animals.</p>	Very Low



Receptor	Source	Harm	Pathway	Probability of Exposure	Consequence	Magnitude of Risk	Justification for Magnitude	Risk Management	Residual Risk
								Waste storage procedures will prevent potential for waste becoming breeding / nesting sites by limiting the maximum storage times for waste.	
	Pests (e.g. flies)	Harm to human health, nuisance, loss of amenity	Air transport and over land	Low	Medium	Low	Permitted waste types unlikely to attract pests. The permitted waste types are not putrescible.	As above.	Very Low
Residential dwelling 40m NNW. Deciduous woodland 20m S. River Blackwater 20m SSE.	Flooding of site	Run off produced from the Site	Flood waters	High	Low	Medium	Permitted waste types are inert and non-hazardous so any waste washed off Site will add to the volume of the local post-flood clean-up workload, rather than the hazard. Flood risk maps suggest the south western and southernmost extents of the site are likely to flood from the River Blackwater. However, the	Any liquids shall be provided with secondary containment. Fuels and oils will be stored appropriately within areas of the Site not at risk of flooding. The areas of the site at risk of flooding are to be restored to low-lying wetland habitat, with these areas of the Site due to be restored using predominately site-won materials. Waste accepted to the site will be controlled by strict waste acceptance procedures.	Very Low



Receptor	Source	Harm	Pathway	Probability of Exposure	Consequence	Magnitude of Risk	Justification for Magnitude	Risk Management	Residual Risk
							majority (c.95%) of the site is designated as being in a Flood Zone I.		
Local human population and / or livestock after gaining unauthorised access to the Site	All on-site hazards: wastes, machinery and vehicles	Bodily injury	Direct physical contact	Medium	Low	Low	The structures, equipment and machinery located on the Site are secured outside of operation / manned hours.	The Site will be constantly manned during operational hours. Inspections will be carried out to ensure that the plant on the Site is sufficiently maintained, in order to reduce malfunction and accidents. Records will be kept of any accidents / incidents on the site to identify any issues.	Low
Local human population – Residential dwellings located within the vicinity of the Site. Nearest residential dwelling; 40m NNW. A12 dual carriageway 60m NNW.	Arson and / or vandalism causing the release of polluting materials to air (smoke or fumes), water or land.	Respiratory irritation, illness and nuisance to the local population. Injury to staff, firefighters or arsonists / vandals. Pollution of water or land.	Air transport of smoke. Spillages and contaminated firewater by direct run-off from site and via surface water drains and ditches	Low	Low	Low	Permitted waste types do not include any flammable materials so a low magnitude of risk is estimated.	Procedures contained within the Environmental Management System (EMS) will identify and minimise the risks of pollution, including those arising from operations, maintenance, accidents, incidents, non-conformances (including fire and spillages). The EMS contains procedures with regards to the risks from arson / vandalism i.e. site security measures.	Very Low



Receptor	Source	Harm	Pathway	Probability of Exposure	Consequence	Magnitude of Risk	Justification for Magnitude	Risk Management	Residual Risk
Deciduous woodland 20m S. River Blackwater 20m SSE.	Accidental fire causing the release of polluting materials to air (smoke or fumes), water or land.	Respiratory irritation, illness and nuisance to the local population. Injury to staff or firefighters. Pollution of water or land.	As above.	Low	Low	Low	Permitted waste types do not include any flammable materials so a low magnitude of risk is estimated. Permitted activities do not include the burning of waste.	The EMS will contain procedures and forms relating to accidents and incidents on the Site and what actions to take should one occur.	Very Low
All surface waters close to and downstream of Site. River Blackwater 20m SSE.	Spillage of liquids, leachate from waste, contaminated run-off from waste e.g. containing suspended solids	Acute effects: oxygen depletion, fish kill and algal blooms. Chronic effects: deterioration of water quality	Direct run-off from site across ground surface, via surface water drains, ditches etc. Indirect run-off via the soil layer.	Medium	Low	Low	Permitted waste types will not include sludges or liquids so only a low magnitude risk is estimated. No point source emissions to water are present. Waste types are inert and non-hazardous, so harm is likely to be temporary and reversible.	Any liquids shall be provided with secondary containment. Wastes from potentially contaminated sites require analysis. Strict waste acceptance procedures will ensure that no contaminated waste will enter the Site.	Low
Groundwater – The Site is not located in a Groundwater Source Protection Zone.	As above. Treatment of non-hazardous waste on hardstanding. Permanent deposit of waste.	Chronic effects: contamination of groundwater, requiring treatment of water or closure of borehole	Transport through soil / groundwater then extraction at borehole.	Low	Medium	Medium	The site is located within a Secondary A Aquifer, is below the watertable and is adjacent to a watercourse which receives baseflow from the aquifer.	Waste acceptance procedures implemented on the Site will ensure that no contaminated waste types are accepted onto the site. Implementation of the EMS will ensure that no substances contaminate the groundwater at the Site.	Low



Receptor	Source	Harm	Pathway	Probability of Exposure	Consequence	Magnitude of Risk	Justification for Magnitude	Risk Management	Residual Risk
							<p>The Site is not located in a Groundwater Source Protection Zone. and is reported to be in an area of medium-low risk groundwater vulnerability.</p> <p>The Principal Chalk bedrock aquifer identified at depth is completely isolated from the mineral extraction zone by at least 15m of clay</p> <p>Waste types are inert and non-hazardous, so harm is likely to be temporary and reversible.</p>	See Hydrogeological Risk Assessment.	
<p>Protected sites - European sites and SSSIs</p> <p>Deciduous woodland 20m S.</p>	Any	Harm to protected site through toxic contamination, nutrient enrichment, smothering, disturbance, predation etc.	Any	Medium	Medium	Medium	<p>Waste operations may cause harm to and deterioration of nature conservation sites.</p> <p>Only nearby protected habitats are priority inventory woodland</p>	<p>Proposed waste activities are unlikely to adversely impact the Site.</p> <p>Operation of the site in accordance with the Environmental Management System will ensure any adverse impacts may be eliminated or mitigated against.</p>	



Receptor	Source	Harm	Pathway	Probability of Exposure	Consequence	Magnitude of Risk	Justification for Magnitude	Risk Management	Residual Risk
							There are no other protected habitats within 500m of the Site.	Adherence to the Dust Management Plan (part of the EMS) will ensure dust emissions will be prevented and mitigated against such as not to cause adverse impact to the protected woodland.	
Local human population and local environment.	Build up and emissions of gas from old waste deposits on the permitted site	Respiratory irritation, illness and nuisance to local population. Risk of explosion and injury to staff and local population.	Gas migrating laterally through waste deposit and building up in ceratina areas.	Low	High	Medium	Old waste deposits may be disturbed by additional waste deposits. Trapping of gas, increased pressure may cause gas to build up. However distance criteria mean that the probability of exposure is low.	The distance criteria prohibits use on historic, closed or operational landfills.	Low



Appendix 5

Hydrogeological Risk Assessment

HYDROGEOLOGICAL RISK ASSESSMENT

COLEMANS FARM QUARRY

Report Reference: 2971/HRA
Final F2
October 2021

Report prepared for:

Brice Aggregates Limited
Colemans Farm Quarry
Little Braxted Lane
WITHAM
Essex
CM8 3EX

GENERAL NOTES

Title of report: Hydrogeological Risk Assessment

Site: Colemans Farm Quarry

Report ref: 2971/HRA

Date: October 2021

Version	Date	Issued to
Draft version D1	January 2021	Brice Aggregates Ltd
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Author: Rosie Marrant BSc MSc FGS

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[https://hafrenw.sharepoint.com/sites/HafrenWater/Shared Documents/General/Projects/Colemans Farm Quarry \(1666\)/2020 - EP Recovery Permit/Reports/HRA/2971-HRA-F2 \(Oct 2021\).docx](https://hafrenw.sharepoint.com/sites/HafrenWater/Shared Documents/General/Projects/Colemans Farm Quarry (1666)/2020 - EP Recovery Permit/Reports/HRA/2971-HRA-F2 (Oct 2021).docx)

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1 INTRODUCTION

1.1 Report context

Colemans Farm Quarry (the 'site') is operated by Brice Aggregates Limited for the production of sand and gravel from an area located to the south and east of Witham, Essex. In 2016 the company was granted planning permission (ESS/39/14/BTE) to extract mineral, with restoration of the quarry void to agriculture, water sports and water-based nature conservation habitats.

Due to proposed improvement works to the adjacent A12 road, Planning Permission is currently being sought by Brice Aggregates to extend the site to the west and restore the northwestern part of the site back to original ground levels, including the area affected by the A12 improvement works, with the remainder of the site being restored to waterbodies.

The updated restoration scheme will include importation of materials, which requires a permit under the Environmental Permitting (England and Wales) Regulations (EPR) (2016).

This report sets out the Hydrogeological Risk Assessment (HRA) that has been prepared in support of the Environmental Permit Application for a bespoke waste recovery permit. The HRA has been prepared with due regard to the hydrogeological risk assessment guidance (Environment Agency, 2016) and template (Environment Agency, March 2010) provided by the Environment Agency.

The design of the proposed restoration and background information regarding the site setting are provided within the Conceptual Model, Environmental Setting and Site Design (ESSD) report (Hafren Water, 2021), which should be read in conjunction with this report. Background and baseline conditions are described within the ESSD report and these have been used to derive a conceptual model for the site in terms of source, pathways and receptors.

A summary of the prior investigations undertaken at the site is provided in *Table 2971/HRA/T1* below.

2971/HRA/T1: Summary of prior investigations undertaken at site	
Investigation/analysis	Date
Mineral investigation boreholes	2005
Mineral investigation boreholes with installation of eight piezometers	February 2008
Groundwater level monitoring	April 2008 to July 2020 ^A
^A No records are available during 2010, 2011, 2012 and 2014. Intermittent records during 2009 and 2017	

Locations of the mineral investigation boreholes and those which were installed as groundwater level monitoring points are shown on *Drawing 2971/HRA/01*. The groundwater level data collected is provided in *Appendix 2971/HRA/A1*.

1.2 Conceptual hydrogeological site model

The conceptual hydrogeological model for the proposed recovery operation is described in Section 3.5 of the ESSD report and as schematic cross-sections on *Drawing 2971/HRA/02*. Scaled cross-sections of the proposed restoration profile are appended to the Waste Recovery Plan (Westbury Environmental, October 2021), and in the ESSD report as *Drawing 2971/ESSD/06b*.

The proposed permit boundary covers the consented mineral extraction area and the proposed Western extension. The area adjacent to the A12 (Phase areas 1 to 9) will be restored using imported and site-won materials (overburden, mineral washings, interburden, etc) back to pre-existing ground levels, in order to achieve the necessary foundations for the proposed A12 improvements and area to its southwest. The southern and eastern site area (Phases 10 to 11 and 14 to 17) will be restored to a water-based nature conservation habitats restoration scheme. Phase areas 1 to 13 will be restored using imported and site-won materials, and the landscaping of Phases 14 to 17 will be achieved using site-won material only.

Whereas the proposed Permit area is approximately 59.3 hectares (ha), the area subject to infilling with imported fill is only approximately 29.8 ha.

Geological and hydrogeological setting

The River Terrace deposits form a longitudinal deposit within the valley of the River Blackwater. Its original thickness varied from 0 m to 6.9 m (average of 3.6 m) with a covering of clayey soils and clay overburden (average combined thickness 1.4 m). Drilling records show that the aquifer thins to 0.5–1 m towards the northeastern and southwestern site boundaries.

The superficial River Terrace deposits are designated a Secondary 'A' aquifer by the Environment Agency. The aquifer is of limited extent to the north and south, with flow boundaries concurrent with the route of the A12 to the north, and the River Blackwater to the south. The shallow aquifer is underlain by over 15 m of Diamicton Clays and the London Clay, which are classed as unproductive units and form an impermeable base to the aquifer. The Chalk bedrock at depth is classed as a Principal Aquifer, however this unit is completely

concealed beneath the proposed Permit Area, by the Diamicton Clays and the London Clay, and is hydraulically isolated.

Groundwater level and geological data indicate that at times of the year the mineral deposits are fully saturated.

The River Blackwater is located to the southeast of the site, flowing southwestwards, and several tributary watercourses, including the Burghey Brook, pass through the site. Pre-operational groundwater level monitoring demonstrates that groundwater flow within the sand and gravel aquifer is predominantly southwards, discharging to the river as baseflow.

Geological and LIDAR topography data indicate that the Burghey Brook and other minor tributaries of the River Blackwater at the site are situated within the Clay overburden and are not in hydraulic continuity with groundwater where they cross the site.

Groundwater control

Mineral extraction, and hence placement of imported restoration materials, extends below the watertable and dewatering is required to depress the groundwater table and remove incident rainfall in order to maintain safe and dry working conditions. Water is pumped from a sump within the active working area to a settlement area prior to discharge off-site. Thus, for the operational stage and post-restoration, an inward groundwater gradient will be maintained within a zone of influence around the quarry void.

Dewatering will be maintained during placement of the imported materials until such time as the restored surface is above the rest water level. Once landscaping of the final phase is completed, dewatering will cease and groundwater levels will begin to recover. Long-term groundwater control is not required in order to prevent groundwater pollution.

On completion of restoration, drainage in the northern area will be controlled by Highways England in association with the A12 improvement works. The water-based nature conservation habitats restoration scheme creates two areas of open water, which have sufficient freeboard to receive drainage and run-off from the surrounding land. No active water management will be required post-restoration, however a passive water level management scheme (weirs or high level overflow pipe) will allow water from the waterbodies to be discharged to the River Blackwater if excess water accumulates.

As part of the mineral extraction, Burghey Brook will be temporarily diverted across Phase 5 of the mineral extraction once this area is restored. On completion of mineral extraction and

restoration of Phase 7, Burghey Brook will be returned to its original course, which will then be constructed into the restoration soils in Phase 7.

Construction

There is no requirement for a geological barrier at a waste recovery site. Nevertheless, the natural in-situ >15 m of clay from the Diamicton Clay and London Clay underlying the site will provide a suitable impermeable base.

Source

The recovery operation will receive materials classified as non-hazardous under EU Waste Codes and exclude wastes that are solely or mainly of dusts, powders or loose fibres, and not in a form which is either sludge or liquid waste as detailed in the Waste Recovery Plan and the ESSD report (Section 2.2). This will include waste generated from the on-site recycling operation. Control of the nature of the imported materials will be ensured by the application of stringent Waste Acceptance Procedures and criteria (WAC) to meet the requirements set out by Highways England and conducted by appropriately trained staff, as detailed elsewhere in the application. Soils from 'greenfield' sites may be imported directly to the operational area. All waste categorised as waste code 19 12 12, including that generated on-site, will be tested to ensure it complies with inert waste WAC. Other incoming waste which has potential to contain contaminants will also be tested to ensure it meets Landfill Directive inert WAC.

Phases within the A12 corridor will receive a higher percentage of untreated construction and demolition waste due to the compressed timeframe required for restoration in this area. Once this area is restored, most incoming waste will be pre-treated at site to remove any saleable aggregate and the residual filter-cake will be used together with site-won materials to create the restoration landform. The filter cake will also be analysed for compliance with inert waste WAC. Further detail of the waste types to be accepted is provided in the ESSD report.

Pathways

Dewatering of the site will result in an inward hydraulic gradient which will prevent any migration of contaminants out of the site into the aquifer during the operational phase. Any migrating contaminants would enter the water in the active sump and be discharged off-site. During the operational phase, pathways therefore include:

1. Discharge off-site into the Burghey Brook or the River Blackwater: Once dewatering has ceased and restoration is complete, the up-gradient groundwater flow generated will be very limited, originating from the thin strip of residual sand and gravel between the extraction area and the A12, which roughly marks the northwestern extent of the aquifer. It is assumed that groundwater flow paths will be largely diverted around the area restored with imported materials, and ultimately will flow in a southwesterly direction, towards the River Blackwater. No vertical pathway exists from the River Terrace deposits to aquifers at depth due to the thickness of in-situ Diamicton and London Clay

During the post-dewatering phase, pathways include:

2. Lateral flow into the adjacent unworked River Terrace deposits
3. Lateral flow through unworked River Terrace deposits into the River Blackwater as it flows to the south of the site.

Receptors

During the operational phase, the primary receptor, and compliance point, is considered to be the point at which water is discharged to either the Burghey Brook or River Blackwater from the water management system.

Groundwater in the River Terrace deposits adjacent to the site will become a receptor once dewatering at the site has ceased, although the residual aquifer between the site and the River Blackwater is extremely limited in extent.

The River Blackwater is considered to be a secondary receptor as it could potentially receive water discharged from the restored site via groundwater baseflow. The previously diverted Burghey Brook and the unnamed watercourse in the west of the site will be situated within clay-rich replaced soils or overburden respectively and are therefore isolated from groundwater in the River Terrace deposits and do not form a receptor.

Identified receptors and pathways are summarised in *Table 2971/HRA/T2*.

2971/HRA/T2: Summary of identified receptors and pathways	
Hazard	The proposed material imported to the site will be carefully controlled (see Section 2.2 of the ESSD report) and it is considered that the site poses minimal potential hazard to nearby surface and groundwater

2971/HRA/T2: Summary of identified receptors and pathways	
Source	All recovery materials to be deposited will adhere to strict Waste Acceptance Criteria and Procedures which shall ensure the recovery materials are correctly characterised in accordance with Environment Agency guidance. It is considered unlikely that rainfall incident to the recovery material will incorporate within it measurable concentrations of pollutants as it percolates. No Hazardous substances are expected to be present and Non-hazardous pollutants, if present, will be of low concentration such that pollution of nearby groundwater and surface water will not occur
Potential primary pathway	Migration laterally into the unworked River Terrace deposits to the east and southwest
Potential secondary pathway	Migration laterally through unworked River Terrace deposits to River Blackwater as baseflow
Potential primary receptor	Groundwater in the unworked River Terrace deposits on cessation of dewatering
Potential secondary receptor	The River Blackwater via baseflow from the River Terrace aquifer
Compliance point	Hazardous substances: During site operation, discharge from the settlement lagoon, and on cessation of dewatering, groundwater in the River Terrace Deposits adjacent to and in hydraulic connection with the River Blackwater Non-hazardous: as above

2 HYDROGEOLOGICAL RISK ASSESSMENT

2.1 Nature of the Hydrogeological Risk Assessment

The Environment Agency requires a Hydrogeological Risk Assessment in support of a bespoke permit for waste recovery to land, where the site setting is deemed sensitive.

Environment Agency guidance proposes a tiered approach to risk assessment such that the degree of effort and complexity reflects the potential risk posed by a particular site or situation, the sensitivity of the site setting and the degree of uncertainty and likelihood of the risk being realised. To meet the requirements a robust conceptual model for the site has been set out and basic risk screening undertaken. The conceptual model is set out in the ESSD report and the risk screening is summarised in Section 2.2 below.

A risk screening exercise is used to determine whether development represents, or potentially represents, a risk to groundwater or surface water resources.

Risk screening is partially covered by the assessment of the application of the Environment Agency's Landfill Location Policy and the identification of source-pathway-receptor linkages and the technical precautions put in place to reduce any potential impacts. These are assessed in Section 2.2.

2.2 Risk screening

2.2.1 Location

Although an application for a landfill permit is not being made, the location of the site is assessed against the Environment Agency's policy on the location of landfills, which is detailed in 'The Environment Agency's approach to groundwater protection (March 2017), Position Statement E1. Landfill Location'.

It is considered that the site complies with the Environment Agency landfill location policy, as discussed in the ESSD report.

The site is located within a Secondary 'A' Aquifer, is below the watertable and is adjacent to a watercourse which receives baseflow from the aquifer. However, the aquifer is of very limited extent up-gradient of the site, hence recharge will be low. The extent of the aquifer will be further reduced by mineral extraction between its northern limit and the discharge zone at the River Blackwater. The Principal Chalk bedrock aquifer identified at depth is completely isolated from the mineral extraction and recovery operation by at least 15 m of clay. The site is not located within a groundwater Source Protection Zone and no sensitive receptors have been identified.

The proposed restoration at Colemans Farm Quarry will receive strictly controlled materials which are compliant with the Waste Acceptance Procedures and Inert Waste Acceptance Criteria.

Due to the nature of the proposed imported materials, it is considered that there will be a negligible risk of deterioration in limited volumes of groundwater surrounding the site and that long-term site management will not be required to prevent groundwater pollution. Significant dilution is afforded by the River Blackwater, hence pollution of this watercourse is not expected. In addition, should migration of contaminants from the imported inert waste occur, the general southward groundwater flow would be intercepted largely by the newly created southern waterbody where, again, significant dilution will occur.

On this basis it is considered that further quantitative screening or risk assessment is not required. It is considered that the site setting is suitable to receive inert WAC waste as a recovery operation without additional site engineering.

This HRA report, together with the ESSD report, constitutes a site-specific risk assessment for the site.

2.2.2 Waste types

It is proposed that the site will take a restricted range of inert and limited non-hazardous materials as detailed in the 'Waste Recovery Plan' (Westbury Environmental, October 2020), and within Section 2.2 of the ESSD report (Hafren Water, January 2021). Much of the material used in the restoration will be generated at the on-site waste recycling plant where any unsuitable material will readily be identified and removed. Any waste imported directly to the quarry void will only be accepted with evidence that the material has been tested and found to be compliant with the relevant waste code. Further constraints on waste codes that may not be inert in nature are given below.

- Code 10 13 14 will be sourced from waste concrete from concrete manufacture, mostly being generated on-site; this is likely to form only a very small portion of the materials used for restoration as preference would be for re-use as a crushed aggregate, and hence poses a commensurately low risk
- Code 19 12 12 is non-hazardous, and may contain elevated concentrations of sulphates, toxic metals and organic pollutants. However, the chemical quality will be regularly subject to inert Waste Acceptance Criteria (WAC) certification. Fines/filter cake produced from the on-site aggregate recycling facility will also be Inert WAC tested. This

will form the majority of the waste placed together with site-won overburden and interburden, in Phases 12 and 13

- The majority of road planings accepted to the site under code 17 03 02 will be crushed and sold. Only very small quantities may be included within the restoration materials
- Materials with potential high organic carbon content, including soil from cleaning and washing beet (code 02 04 01), and topsoil (code 20 02 02) will be re-sold where possible, or only used in the top 500 mm of the restoration

All other waste codes represent inert materials.

2.2.3 Waste Acceptance Procedures

Waste acceptance criteria and procedures have been prepared and are detailed in the Waste Recovery Plan available elsewhere in the permit application.

2.2.4 Compliance with Environmental Permitting (England and Wales) Regulations (2016)

Based upon the majority of waste codes to be accepted at the site and the need for waste to comply with Inert WAC, the restoration fill will comprise largely waste that is inert in nature. Hence, the restoration materials should not produce leachate that could result in discharge of Hazardous substances or significant quantities of Non-hazardous pollutants.

2.2.5 Collection of leachate

As the site is not a landfill there is no requirement to collect and manage leachate. Therefore there is no requirement for leachate drainage layers or an artificial sealing liner.

2.2.6 Geological barrier

As the site is not a landfill, a geological barrier is not required. However, the base of the quarry void comprises over 15 m of Diamicton and London Clay, which will provide a natural vertical attenuation barrier.

2.2.7 Engineering

The site does not fall under the engineering requirements of the Landfill Directive and does not require an engineered barrier.

2.3 Proposed assessment scenarios

2.3.1 Lifecycle phases

Environment Agency guidance states that a Hydrogeological Risk Assessment must be carried out for the whole lifecycle of the landfill, ie from the start of the operational phase until the point at which the landfill is no longer capable of posing an unacceptable environmental risk.

As the site will receive a restricted range of imported materials for a recovery operation, a quantitative Hydrogeological Risk Assessment of the intended operational and post-closure phases of the site is not deemed necessary under the current guidance.

During the operational phase significant dilution will be afforded to any contaminant originating from the waste due to dewatering at the site. Monitoring of the discharge from the site will be undertaken.

Post-restoration, groundwater will preferentially flow around the restored landform due to the relatively low permeability of the fill compared to the residual aquifer surrounding it. Little water is therefore likely to enter the waste and come into contact with any contaminants that may have been included in the waste body. Any water passing southwards through the restored site will also be subject to further dilution in the restoration waterbodies that make up the southern portion of the site. Additional dilution would occur in the small section of residual aquifer (thickness <2 m) adjacent to the River Blackwater and further substantial dilution in the River Blackwater.

2.3.2 Failure scenarios and accidents

Failure scenarios

Due to the nature of the proposed development, there are no engineered management structures required at the site. Failure of such systems is, therefore, not possible and failure scenarios will not be considered.

Accidents

Accidents are considered to be unintentional incidents that could reasonably occur, which are unforeseeable at their time of occurrence. An assessment of the potential impacts of accidents, together with the likelihood of their occurrence and magnitude of the consequences (in relation to compliance with the Environmental Permitting (England and Wales) Regulations (2016)) is presented below.

Accidents at the site could include the acceptance of contaminated material. Due to the proposed Waste Acceptance Criteria and Procedures and absence of any historical waste

on-site, it is considered that the likelihood of 'rogue loads' being accidentally accepted is low, however a rogue load assessment has been undertaken and is described below.

2.4 Rogue load assessment

The Waste Acceptance Procedures to be applied at the site make the deposition of rogue loads unlikely and the potential risk to groundwater minimal. However, a quantitative risk assessment of the acceptance of an accidental rogue load has been undertaken.

2.4.1 Environmentally Acceptable levels

Environmentally Acceptable Levels (EALs) are used to determine the sensitivity of the groundwater near a landfill, or waste recovery operation, and are a measure against which the results of models can be compared. In the absence of background groundwater or surface water quality concentrations from within the site boundary, EALs have been determined on the basis of available water quality standards for the parameters below.

Hazardous substances

The Environmental Permitting (England and Wales) Regulations 2016 (EPR, 2016) requires there to be no discernible discharge of Hazardous substances to groundwater. Therefore, the appropriate EAL would be the concentration at which they become 'discernible'. There are no known contaminative land uses nearby other than agriculture, hence high background concentrations of Hazardous substances are not expected.

Arsenic was chosen as a representative hazardous metal and benzene was chosen to represent a hazardous hydrocarbon. No water quality monitoring is conducted on-site, with the exception of monitoring discharge outfalls as per the permit requirements. Only very limited surface water quality data is available outside of the site boundary for the River Blackwater, however no metal or hydrocarbon concentrations are available. No groundwater quality data is available from the EA within 2 km of the site. Therefore, the initial EALs have been set at the most suitable guideline concentration, which in this case is the minimum reporting value.

Relevant quality standards are presented in *Table 2971/HRA/T3* together with the derived EAL.

2971/HRA/T3: Derivation of EALS for Hazardous substances				
Substance	UK Drinking Water Standard	Fresh Water EOS ¹	Minimum reporting value	Resultant EAL
Arsenic	10 µg/l	50 µg/l	5 µg/l	5 µg/l
Benzene	1 µg/l	10 µg/l (50)	1 µg/l	1 µg/l

¹ EQS = Environmental Quality Standard

Non-hazardous pollutants

The EPR (2016) requires there to be no groundwater pollution caused as a result of discharges of non-hazardous pollutants. The appropriate EAL is therefore deemed to be the most stringent relevant quality standard, except where background concentrations exceed those standards. The relevant standards, together with background monitoring data, are provided in *Table 2971/HRA/T4*.

Ammoniacal nitrogen and cadmium are used to represent non-hazardous parameters, and chloride has been chosen as a conservative, non-reactive parameter.

No water quality monitoring is conducted on-site and no groundwater quality data is available from the EA within 2 km of the site.

Very limited surface water quality data (*Appendix 2971/HRA/A2*) is available from the EA, for two locations outside of the site boundary on the River Blackwater, located up and down-gradient of the river as it passes the site. All recorded concentrations of ammonia (as N) at the up and downstream EA surface water monitoring locations on the River Blackwater exceeded the EQS, however the majority of data collected had a limit of detection (LoD) above the EQS, and therefore could not be accurately assessed. Only one exceedance of the DWS was recorded for ammonia (as N) downstream in August 2011. No data was available from these monitoring points for cadmium concentrations. No exceedances of the chloride EQS or DWS were recorded up or downstream at either of the EA surface water monitoring stations.

2971/HRA/T4: Quality standards and background levels for Non-hazardous pollutants				
Substance	UK Drinking Water Standard	Fresh Water EOS ¹	Maximum background concentration	Resultant EAL
Chloride	250 mg/l	250 mg/l	111 mg/l	122 mg/l ²
Ammoniacal nitrogen	0.39 mg/l	0.015 mg/l	1.15 mg/l	1.26 mg/l ²
Cadmium	5 µg/l	0.25 µg/l	N/A	5 µg/l

¹ EQS = Environmental Quality Standard (Annual average)
² Maximum times 10%

2.4.2 Justification for modelling approach and software

The 'rogue load' assessment has been undertaken using ESI's Risk Assessment Model (RAM) in, assuming conservative hydraulic properties, to identify the concentrations that could be accepted in a rogue load. The RAM model was used as this can be used to represent sub-watertable conditions.

2.4.3 Model parameterisation

The parameters used in the RAM 'rogue load' assessment are described together with justification for their use within the RAM model and in *Table 2971/HRA/T5*. A printout of the RAM model is provided as *Appendix 2971/HRA/A2*.

Of the two post-dewatering pathways described in Section 1.2, only pathway 2 has been modelled as this is most conservative:

From the source, a 2 m thick 7.5 x 7.5 m (112.5 m³, equivalent to 11 six-wheeled lorry loads) rogue load assumed to be located adjacent to the sidewall of the active restoration void, horizontally into the adjacent River Terrace deposits.

The model was run until each parameter reached its peak concentration, which was over 4000 years for cadmium. This is significantly longer than the time period that is likely to be required to achieve Permit Surrender and, hence, is considered to be a conservative upper time limit.

Arbitrary initial concentrations have been input as potential concentrations in the rogue load to allow estimation of time to peak concentration only. The 'remedial target' output has been used to identify the maximum concentration that could be included in the rogue loads at the site boundary without breach of the specific EAL at the appropriate compliance point.

The RAM model simulates the resultant concentrations in groundwater surrounding the site based on a declining source term.

Parameter values were determined from information directly measured on-site or, in the absence of site data, other recognised sources. The results of the assessment are discussed below.

2971/HRA/T5: Model input parameters		
Parameter	Value/distribution	Justification
Waste volume (m ³)	112.5	Assuming rogue load of dimensions 2 m x 7.5 m x 7.5 m The rogue load volume is based on the volume carried on an 8-wheel tipper (12 m ³), which equates to 9 loads
GENERAL CONTAMINANT INFORMATION		
Free water diffusion coefficient (m ² /s): Arsenic Benzene Chloride Cadmium Ammoniacal Nitrogen	9.05 x 10 ⁻¹⁰ 7 x 10 ⁻¹⁰ 2.03 x 10 ⁻⁹ 7.17 x 10 ⁻¹⁰ 1.96 x 10 ⁻⁹	Arsenic from Allison & Allison, 2005. Benzene, chloride and ammoniacal nitrogen from Buss et al, 2004, Table 3.1
HYDROGEOLOGICAL UNITS		
Thickness (m): Saturated sand & gravel	2 m	Estimate of undisturbed saturated sand and gravel at down-gradient southwestern Permit boundary
Hydraulic conductivity: Fine – medium silty gravelly sand	50 m/d (5.8 x 10 ⁻⁴ m/s)	Estimated from field tests and laboratory analysis
Hydraulic gradient: Sand & gravel	1.3 x 10 ⁻³	Estimated from pre-operational on-site groundwater levels
Porosity: Sand & gravel	0.35	Conservative values Fetter (1994) & Freeze & Cherry (1979)
Tortuosity	5	Assumed generic value for all hydrogeological layers
Horizontal travel distance in sand & gravel	149 m 224 m	Distance from Phase 6 boundary to site boundary in undisturbed sand and gravel south of restored area From southernmost imported fill (Phase 13B) to southern site boundary (as this is further this pathway has not been modelled)
ATTENUATION PARAMETERS		
Dispersion	Unit thickness/10	Standard assumption
Mixing depth in saturated sand and gravel	2 m	Assumed
Bulk density (kg/m ³): Fine – medium silty gravelly sand	2000	Estimate
Fraction of organic carbon Sand & gravel	0.01	Mid-point (from Thrasher et al, 2004, Table 7.2)

2971/HRA/T5: Model input parameters		
Parameter	Value/distribution	Justification
<u>Arsenic</u> Partition coefficient (k_d) (L/kg)	3.4	Median value Allison & Allison (2005)
<u>Benzene</u> Koc Partition coefficient (k_d) (L/kg) Half life in groundwater (days)	135 calculated 240	Average from Earl et al, 2003 Average from California EPA, 1994, p25, also USEPA, 1996
<u>Chloride</u> Partition coefficient (k_d) (L/kg) Half life (days)	0 No decay	
<u>Cadmium</u> Partition coefficient (k_d) (L/kg) Half life (days)	501 No decay	Allison & Allison (2005)
<u>Ammoniacal nitrogen</u> Partition coefficient (k_d) (L/kg) Half life (days)	0.4 1095 (3 years)	Mid-point in range, Buss et al (2003) for clean sand and gravel Mid-point in range, Buss et al (2003)
Precipitation (mm/yr) Rainfall factor	571.8 0.4	Witham rain gauge Assumed conservative factor to reduce rainfall infiltrating the fill
References		
Allison JD & Allison TL, 2005. Partition coefficients for metals in surface water, soil and waste. United States Environmental Protection Agency, Report EPA/600/R-05/074		
Buss SR, Herbert AW, Morgan P & Thornton SF, 2003. Review of ammonium attenuation in soil and groundwater. Environment Agency NGWCLC report N° NC/02/49		
Buss SR, Herbert AW, Green KM & Atkinson C. Contaminant fluxes from hydraulic landfills – a review. Environment Agency Science Report SC0310/SR		
California EPA & Department of Toxic Substances Control, 1994. Intermedia transfer factors for contaminants found at hazardous waste sites		
Earl N, Cartwright CD, Horrocks SJ, Worboys M, Swift S, Kirton A, Askan AU, Kellener H & Nancarrow DJ, 2003. Review of the fate and transport of selected contaminants in the soil environment. Environment Technical Report P5-079/TR1		
Thrasher J, Morgan P & Buss SR, 2004. Attenuation of mecoprop in the subsurface. Environment Agency Science Group report NC/03/12		

2.4.4 Results of rogue load risk assessment

As discussed above, although the site will receive only a restricted range of mostly inert soils and fill material the potential impact of a 'rogue load' of contaminated material being deposited on-site has been modelled. It has been assumed that the rogue load is equivalent to a 2 m thick, 7.5 m by 7.5 m area 10 m from the edge of the restoration area. This represents the deposition of nine 8-wheel tipper (12 m³) trucks of non-compliant fill or eleven 6-wheeled trucks.

The results of the rogue load assessment are provided in *Table 2971/HRA/T6*.

2971/HRA/T6: Results of rogue load assessment		
Determinand	EAL at the compliance point (mg/l)	Maximum permitted leachate concentration in rogue load assuming compliance at the appropriate boundary for Hazardous substances and Non-hazardous pollutants
Hazardous: Arsenic	0.005	4.05 mg/l
Benzene	0.001	0.85 mg/l
Non-hazardous: Chloride	122	70,725 mg/l
Cadmium	0.005	8,205 mg/l
Ammoniacal nitrogen	1.26	7,279 mg/l

The results indicate that elevated concentrations of chloride, cadmium, ammoniacal nitrogen, arsenic and benzene could be accidentally accepted at the site without breach of the appropriate EAL (assuming a contaminated volume of 2 m x 7.5 m x 7.5 m) at the appropriate receptor.

This indicates the attenuation and dilution potential of the site setting and are not intended to be used as WAC criteria.

2.5 Review of technical precautions

Due to the expected largely inert nature of the restoration materials, it is considered that the proposed essential and technical precautions detailed below are appropriate and sufficient to prevent any unacceptable discharge from the site:

- i) Strict adherence to Highways Agency specification
- ii) Strict control of restoration material types sourced and accepted
- iii) Strict adherence to Waste Acceptance Criteria and Procedures
- iv) Careful control of waste accepted for treatment at the on-site recycling plant
- v) Removal of standing water in areas to be restored prior to commencement of recovery operation
- vi) In-situ low permeability basal layer
- vii) Progressive restoration to a profile that encourages surface water run-off when restored to ground levels

- viii) Provision of ditches or berms, where required, to minimise surface water ingress to the restoration area during the operational phase
- ix) Monitoring of the site discharge to surface water during dewatering
- x) Monitoring of groundwater quality post-dewatering

It is considered that leachate monitoring and management is not required due to the nature of the recovery materials.

Details of the Waste Acceptance Criteria and Procedures are considered elsewhere in the application.

2.6 Emissions to groundwater

One of the main purposes of the HRA is to establish whether the predicted discharge from the landfill, or recovery operation, complies with the requirements of the Environmental Permitting (England and Wales) Regulations (EPR 2016) Schedule 22 Groundwater activities.

2.6.1 Hazardous substances

The HRA must demonstrate that the proposed technical precautions will prevent Hazardous substances from entering groundwater. Consequently it must consider whether there is likely to be a discernible discharge of Hazardous substances to groundwater. The compliance point is, therefore, the watertable prior to any dilution occurring, taken as the edge of the restored area.

The majority of the waste will be inert in nature with only a few proposed non-hazardous waste codes; hence Hazardous substances are not expected to be present in concentrations likely to cause a breach of the EPR (2016). It is therefore considered that the technical precautions discussed in Section 2.5 above are sufficient to ensure that during normal operation and through to long-term post-closure, there would be no discernible discharge of Hazardous substances from the imported material into groundwater.

2.6.2 Non-hazardous pollutants

The HRA must also demonstrate that technical precautions will limit the introduction of Non-hazardous pollutants into groundwater so as to avoid pollution. Consequently it must consider whether predicted concentrations of Non-hazardous pollutants are likely to exceed relevant standards and other environmental quality criteria or cause an unacceptable deterioration in groundwater quality following dilution.

A pathway exists for Non-hazardous pollutants to reach a receptor, namely groundwater at the site boundary. However, given the nature of the recovery materials it is concluded that under normal operation and through to long-term post-closure concentrations of Non-hazardous pollutants would be sufficiently low as to avoid pollution of the groundwater.

2.6.3 Surface water management

Marginal areas along the southern site border, less than 5% of the site, are located in Flood Zones 2 and 3 (AEP 0.1% - >1%), associated with the River Blackwater. This area will not receive imported fill material and the proposed landscaping will be achieved using natural site-won soils only. The remainder of the site is located in Flood Zone 1 and is therefore not liable to flood, including the northern site area, where the majority of the imported materials will be located for restoration back to pre-development ground levels. The proposed area of restoration is also below the watertable and management of groundwater inflow is required to lower water levels for mineral extraction and during the placement of restoration materials.

During the majority of the operational phase of restoration, any inflowing groundwater will be directed away from the areas of active filling. Bunds and ditches will be constructed as necessary to direct surface water run-off away from the active working area during its operational phase.

Post-operation, the restoration profile of the site is such that surface water run-off will drain towards the restoration waterbodies where sufficient freeboard is available. A passive overflow structure will allow excess water from the southernmost waterbody to overflow to the River Blackwater. There will be no need to actively manage surface water post-closure.

2.7 Emissions to surface water

Given the nature of the recovery materials and the other technical precautions in place, it is concluded that during normal operation and through to long-term post-closure, concentrations of Hazardous substances will not be discernible and Non-hazardous pollutants will be sufficiently low as to avoid pollution of surface water.

3 REQUISITE SURVEILLANCE

3.1 Risk-based monitoring scheme

The risk screening and the numerical modelling together with the strict Waste Acceptance Criteria indicate that the proposed waste recovery scheme does not pose a risk to the water environment, even in the event that a 'rogue' load is introduced into the site.

The site could be considered to be in a sensitive location primarily due to the proximity and potential influence on the River Blackwater which is hydraulically connected to groundwater within the sand and gravel aquifer. However the sand and gravel aquifer is of limited extent and significant dilution is available in the southern waterbody and the River Blackwater.

3.2 Groundwater monitoring

The requirement for groundwater level monitoring for the site was included as a condition of the existing planning permission for the site (Ref: ESS/39/14/BTE). The agreed groundwater level monitoring scheme has been operational since 2008 and will be continued throughout the lifetime of the mineral extraction and subsequent restoration. The groundwater monitoring borehole locations are shown on *Drawing 2971/HRA/01*.

It is proposed that groundwater quality is monitored on a quarterly basis in the boreholes. The analytical suite proposed for these samples is shown in *Table 2971/HRA/T7*. Whilst monitoring is undertaken at the boreholes, it is not considered appropriate to set compliance limits as during active waste recovery groundwater flow will be into the site due to dewatering activities. Hence no down-gradient boreholes will exist.

2971/HRA/T7: Proposed analytical suites for groundwater samples	
Frequency	Analytical suite
Quarterly	pH, conductivity, ammoniacal nitrogen, chloride, Chemical Oxygen Demand, nitrate, sulphate, arsenic, cadmium and benzene
Annually	As quarterly suite plus: total alkalinity, sodium, magnesium, potassium, lead, copper, zinc, chromium, iron, manganese, nickel, TPH and polyaromatic hydrocarbons

3.3 Surface water monitoring

Surface water quality monitoring will continue to be undertaken at the permitted point of discharge outfall from the site as per the existing Permit requirements. Additional water quality analysis is suggested for these locations, at the point of discharge, whilst active

dewatering is on-going. The analytical suite proposed for these samples is shown in *Table 2971/HRA/T8*.

2971/HRA/T8: Proposed analytical suites for site discharge	
Frequency	Analytical suite
Quarterly	pH, conductivity, ammoniacal nitrogen, chloride, Biological Oxygen Demand, Chemical Oxygen Demand, nitrate, sulphate, arsenic, cadmium and benzene
Annually	As quarterly suite plus: total alkalinity, sodium, magnesium, potassium, lead, copper, zinc, chromium, iron, manganese, nickel, TPH and polyaromatic hydrocarbons

Monitoring will cease once the site has been completed to the final restoration levels and the active off-site discharge of water from dewatering ceases. A passive outfall from the restoration waterbodies to the River Blackwater will remain as part of the restoration, however no long-term monitoring of this outfall is required.

4 CONCLUSIONS

4.1 Compliance with the Environmental Permitting (England and Wales) Regulations (2016)

The risk assessment has demonstrated that under normal operational and post-operational phases of restoration with imported materials, Hazardous substances will not be present in groundwater adjacent to the site in concentrations discernible above background and Non-hazardous pollutants will not be present in concentrations such that pollution of nearby groundwater is caused. It is therefore considered that the site will be compliant with respect to the Environmental Permitting (England and Wales) Regulations (2016).

5 REFERENCES

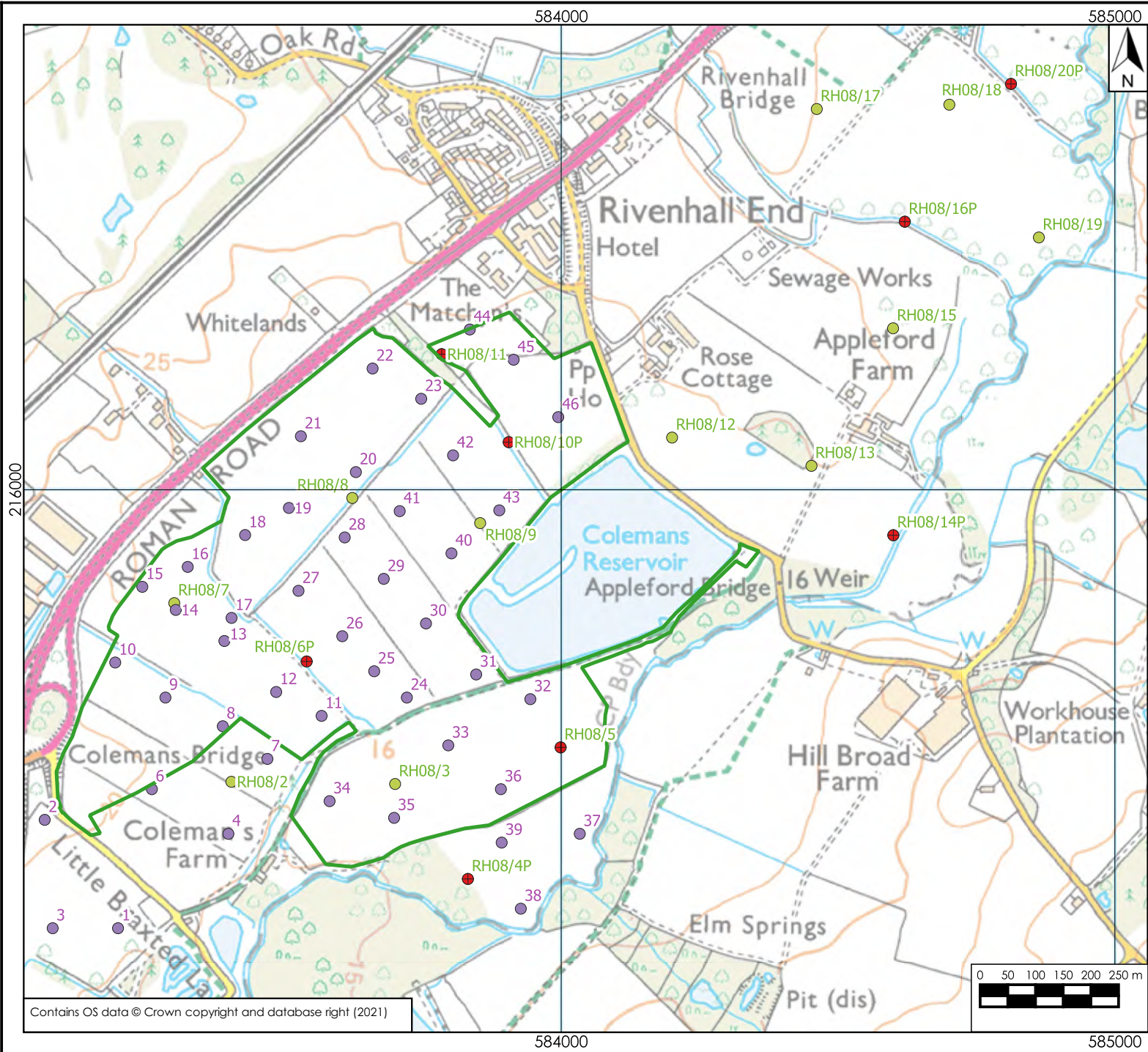
Environment Agency, February 2016. Landfill developments: groundwater risk assessment for leachate. <https://www.gov.uk/guidance/landfill-developments-groundwater-risk-assessment-for-leachate>.

Environment Agency, March 2010. Hydrogeological risk assessment template. Version 1. <https://www.gov.uk/government/publications/hydrogeological-risk-assessment-report-template>

Hafren Water. Conceptual Model, Environmental Setting and Site Design report. Colemans Farm Quarry. Report reference: 2971/ESSD.

Hafren Water. Hydrogeological and hydrological impact assessment of the proposed extension to Colemans Farm Quarry. Report reference: 2842/HIA

DRAWINGS



- Legend
- Proposed Permit Boundary
 - Ground investigation boreholes:
 - 2005 boreholes
 - 2008 boreholes
 - Monitoring borehole locations

Scale correct at A4

Client Brice Aggregates Ltd.
 Coleman's Farm Quarry
 Little Braxted Lane
 Witham, Essex
 CM8 3EX

Title Groundwater monitoring points (and mineral investigation locations)

Project Coleman's Farm Quarry

Drawing 2971/HRA/01	Version 2
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Date Oct 2021	Scale 1:10,000
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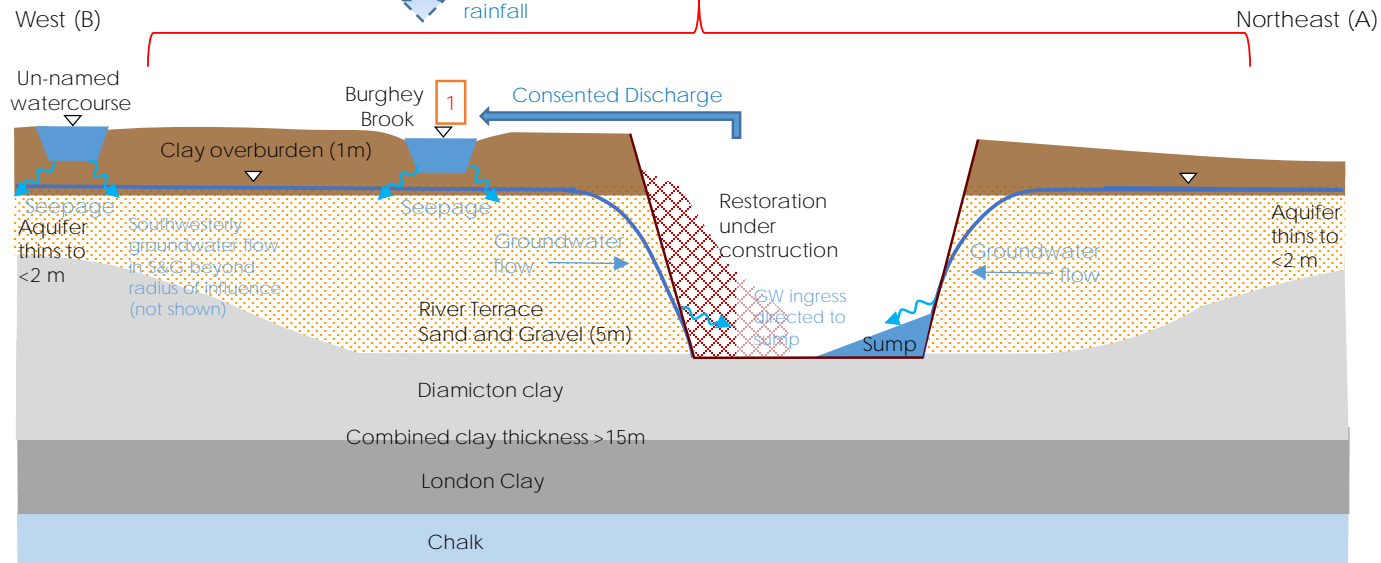
hafrenwater

environmental water management

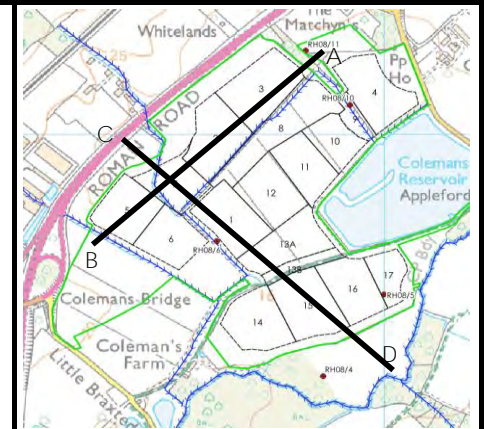
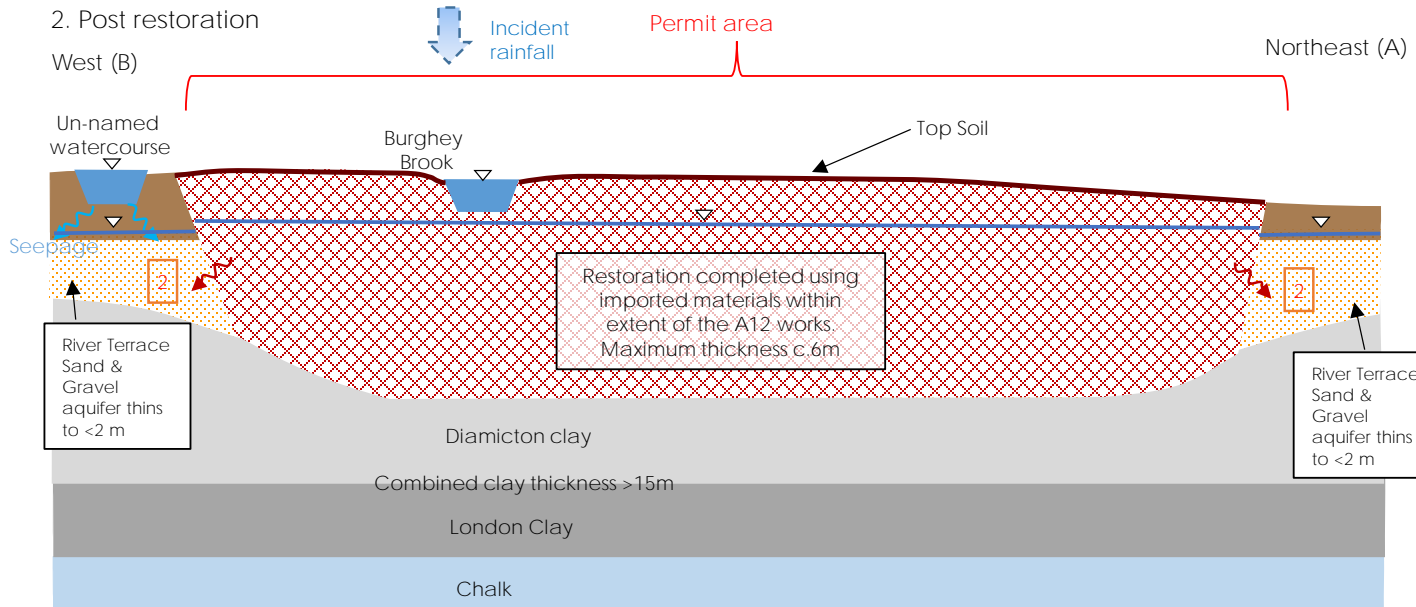
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1. Operational



2. Post restoration



Lines of section

Receptors during operation:

1 Watercourse receiving site discharge

Receptors post operation:

2 Groundwater in River Terrace deposits

Client Brice Aggregates Ltd.
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Little Braxted Lane
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Title Schematic site conceptual model (Cross section A to B)

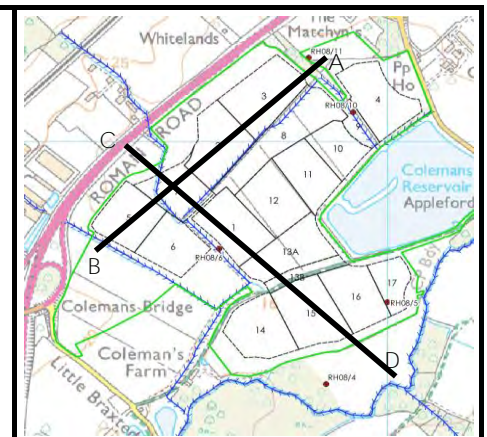
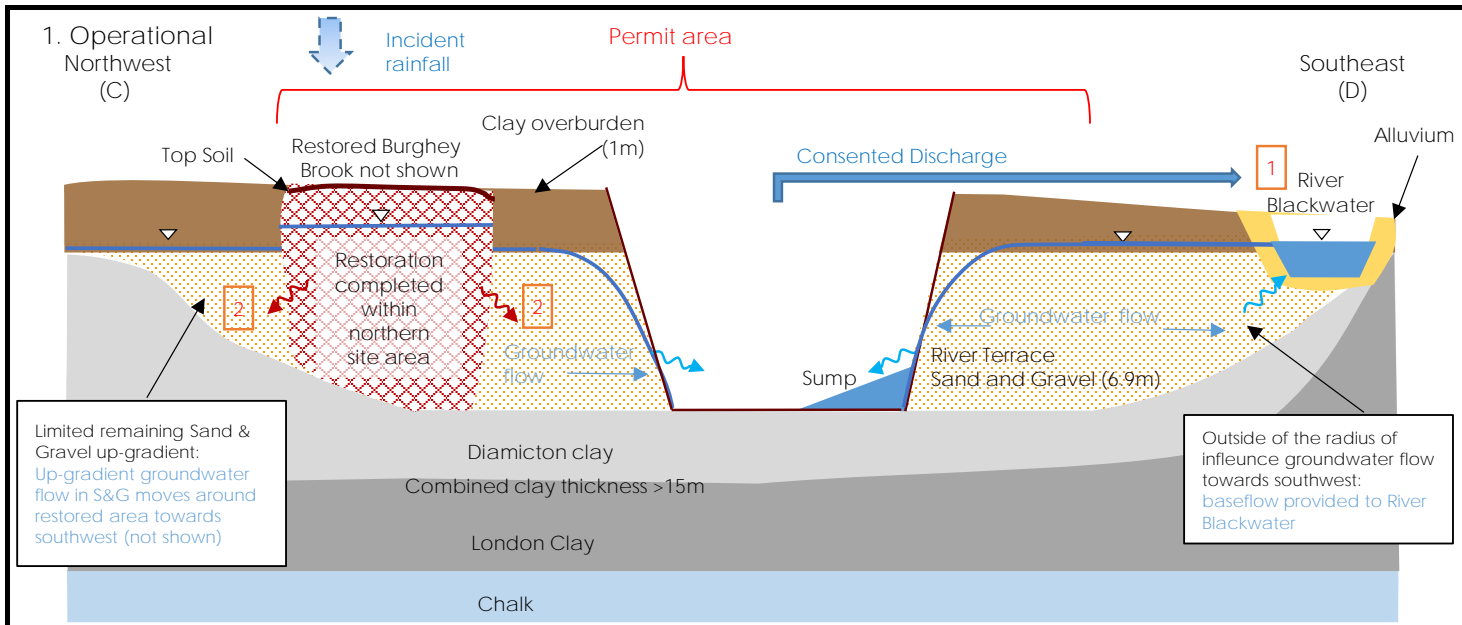
Project Colemans Farm Quarry

Drawing 2971/HRA/02a Version 2

Date Oct-21 Scale nts

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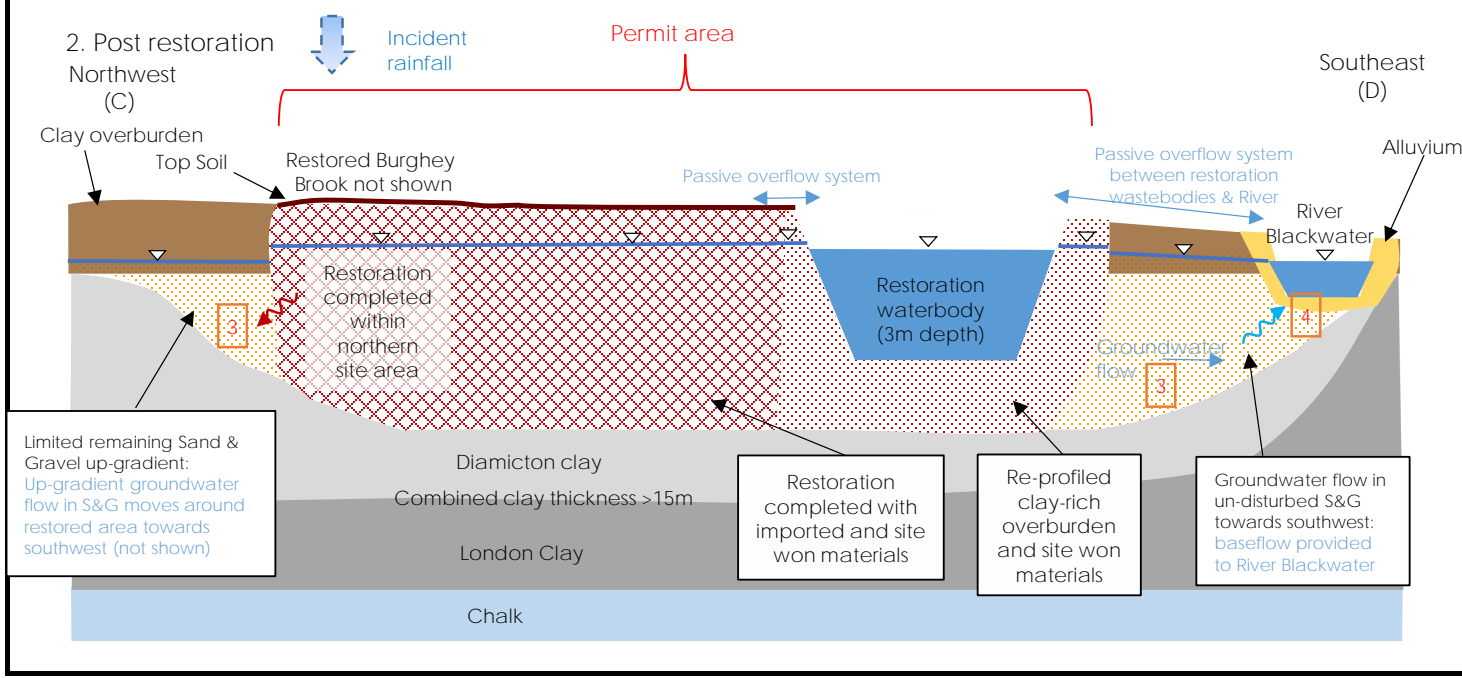
Lines of section

Receptors during operation:

- 1 Watercourse receiving site discharge
- 2 Groundwater in River Terrace deposits

Receptors post operation:

- 3 Groundwater in River Terrace deposits
- 4 Watercourse receiving baseflow



Client Brice Aggregates Ltd.
Colemans Farm Quarry
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Witham, Essex. CM8 3EX

Title Schematic site conceptual model (Cross section C to D)

Project Colemans Farm Quarry

Drawing 2971/HRA/02b Version 2

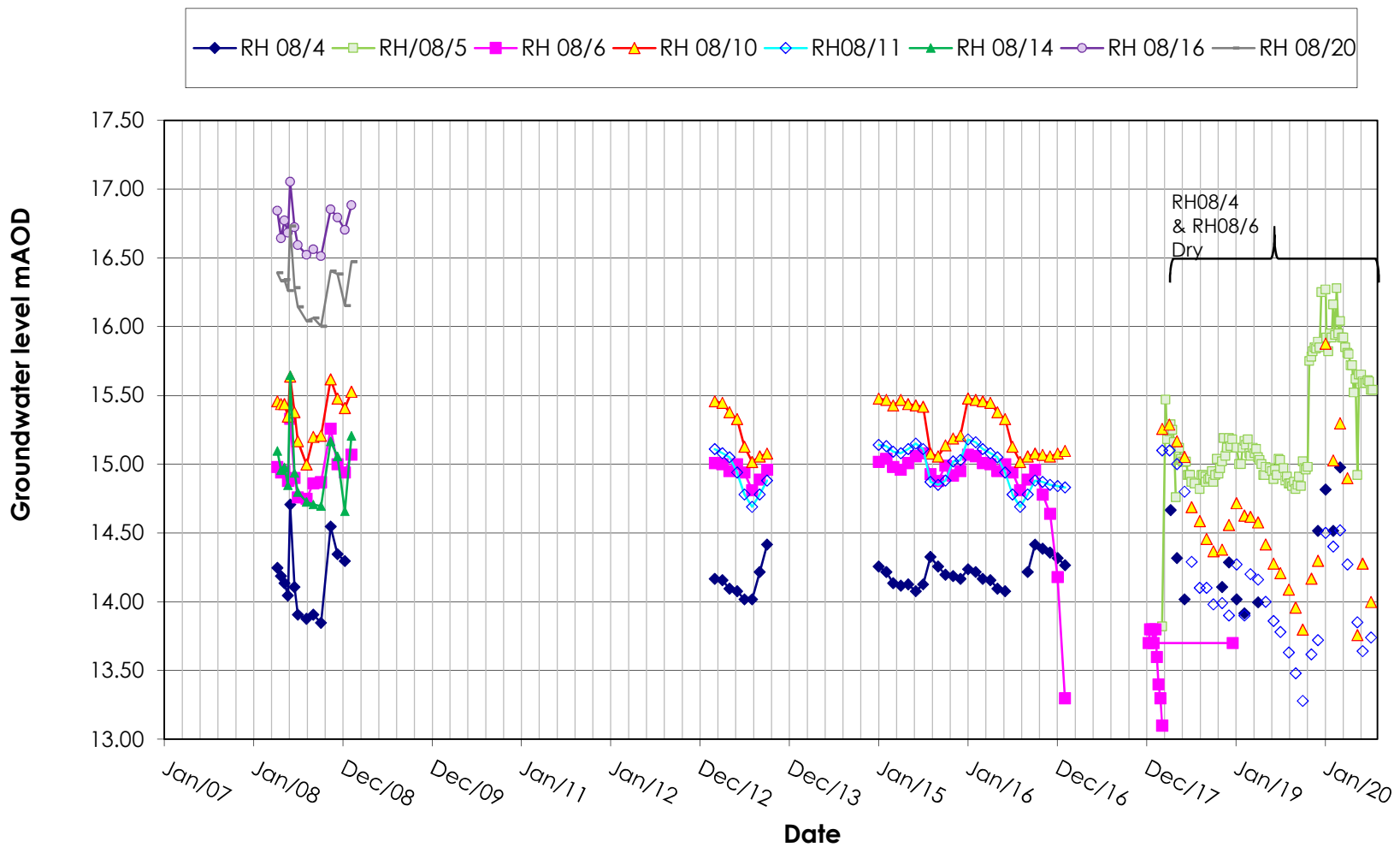
Date Oct-21 Scale nts

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APPENDIX 2971/HRA/A1

Summary of groundwater level monitoring data



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Client
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 CM8 3EX

Title	Groundwater level hydrograph	
Project	Colemans Farm Quarry	
Drawing	2824/HRA/A1	Version 1
Date	Dec-20	Scale NTS

Groundwater Levels measured in Piezometers (metres below local datum)

Piezometer Identification	RH 08/4	RH 08/5	RH 08/6	RH 08/10	RH 08/11	RH 08/14	RH 08/16	RH 08/20
Ground Level (maOD)	14.816	16.02	15.759	16.117	16.2	16.216	17.793	17.803
Datum Elevation (maOD)	15.216	16.72	16.199	16.557	16.2	16.216	17.793	17.803
Date	mbtloc	maOD	mbtloc	maOD	mbtloc	maOD	mbtloc	maOD
07/04/2008	0.97	14.25		1.22	14.98	1.100	15.46	
22/04/2008	1.03	14.19		1.26	14.94	1.120	15.44	
06/05/2008	1.08	14.14		1.25	14.95	1.12	15.44	
20/05/2008	1.17	14.05		1.32	14.88	1.21	15.35	
30/05/2008	0.51	14.71		0.67	15.33	0.92	15.64	
16/06/2008	1.11	14.11		1.3	14.90	1.18	15.38	
30/06/2008	1.31	13.91		1.44	14.76	1.39	15.17	
05/08/2008	1.34	13.88		1.45	14.75	1.56	15.00	
02/09/2008	1.31	13.91		1.34	14.86	1.36	15.20	
03/10/2008	1.37	13.85		1.33	14.87	1.35	15.21	
11/11/2008	0.67	14.55		0.94	15.26	0.94	15.62	
09/12/2008	0.87	14.35		1.26	14.94	1.15	15.41	
08/01/2009	0.92	14.30		1.13	15.07	1.03	15.53	
04/02/2009								
01/03/2013	1.05	14.17		1.19	15.01	1.1	15.46	1.09 15.11
01/04/2013	1.06	14.16		1.2	15.00	1.11	15.45	1.12 15.08
01/05/2013	1.12	14.10		1.25	14.95	1.18	15.38	1.15 15.05
01/06/2013	1.14	14.08		1.2	15.00	1.23	15.33	1.26 14.94
01/07/2013	1.2	14.02		1.26	14.94	1.43	15.13	1.42 14.78
01/08/2013	1.2	14.02		1.39	14.81	1.54	15.02	1.51 14.69
01/09/2013	1	14.22		1.31	14.89	1.5	15.06	1.42 14.78
01/10/2013	0.8	14.42		1.24	14.96	1.48	15.08	1.32 14.88
01/11/2013								
01/12/2013								
01/01/2015	0.96	14.26		1.18	15.02	1.08	15.48	1.06 15.14
01/02/2015	1.00	14.22		1.16	15.04	1.09	15.47	1.07 15.13
01/03/2015	1.08	14.14		1.22	14.98	1.13	15.43	1.11 15.09
01/04/2015	1.10	14.12		1.24	14.96	1.09	15.47	1.12 15.08
01/05/2015	1.09	14.13		1.19	15.01	1.12	15.44	1.09 15.11
01/06/2015	1.14	14.08		1.14	15.06	1.13	15.43	1.05 15.15
01/07/2015	1.09	14.13		1.12	15.08	1.14	15.42	1.09 15.11
01/08/2015	0.89	14.33		1.27	14.93	1.48	15.08	1.33 14.87
01/09/2015	0.96	14.26		1.32	14.88	1.5	15.06	1.35 14.85
01/10/2015	1.02	14.20		1.21	14.99	1.42	15.14	1.32 14.88
01/11/2015	1.03	14.19		1.28	14.92	1.37	15.19	1.18 15.02
01/12/2015	1.05	14.17		1.25	14.95	1.35	15.21	1.17 15.03
01/01/2016	0.98	14.24		1.13	15.07	1.08	15.48	1.02 15.18
01/02/2016	1	14.22		1.14	15.06	1.09	15.47	1.04 15.16
01/03/2016	1.05	14.17		1.19	15.01	1.1	15.46	1.09 15.11
01/04/2016	1.06	14.16		1.2	15.00	1.11	15.45	1.12 15.08
01/05/2016	1.12	14.10		1.25	14.95	1.18	15.38	1.15 15.05
01/06/2016	1.14	14.08		1.2	15.00	1.23	15.33	1.26 14.94
01/07/2016	dry			1.26	14.94	1.43	15.13	1.42 14.78
01/08/2016	dry			1.39	14.81	1.54	15.02	1.51 14.69
01/09/2016	1	14.22		1.31	14.89	1.5	15.06	1.42 14.78
01/10/2016	0.8	14.42		1.24	14.96	1.48	15.08	1.32 14.88
01/11/2016	0.83	14.39		1.42	14.78	1.49	15.07	1.33 14.87
01/12/2016	0.86	14.36		1.56	14.64	1.5	15.06	1.35 14.85
01/01/2017	0.9	14.32		2.02	14.18	1.48	15.08	1.36 14.84
01/02/2017	0.95	14.27		2.9	13.30	1.46	15.10	1.37 14.83
18/12/2018				2.5	13.70			
08/01/2018				2.5	13.70			
15/01/2018				2.4	13.80			
22/01/2018				2.4	13.80			
29/01/2018				2.5	13.70			
05/02/2018				2.4	13.80			
12/02/2018				2.6	13.60			
18/02/2018				2.8	13.40			
26/02/2018				2.9	13.30			
05/03/2018		2.9	13.82	3.1	13.10	1.3	15.257	1.1 15.1
19/03/2018		1.25	15.47					
26/03/2018		1.54	15.18					
03/04/2018						1.27	15.287	
04/04/2018		1.48	15.24	Dry				1.1 15.1
09/04/2018	0.55	14.666	1.43	15.29				
16/04/2018			1.47	15.25				
23/04/2018			1.56	15.18				
30/04/2018			1.96	14.76				
04/05/2018	0.9	14.316			Dry	1.39	15.167	1.2 15
09/05/2018			1.6	15.12				
14/05/2018			1.602	15.118				
22/05/2018			1.68	15.04				
29/05/2018			1.701	15.019				
04/06/2018	1.2	14.016	1.703	15.017	Dry	1.504	15.053	1.4 14.8
11/06/2018			1.702	15.018				
18/06/2018			1.8	14.92				
25/06/2018			1.8	14.92				
27/06/2018			1.8	14.92				
02/07/2018			1.85	14.87				
03/07/2018	Dry				Dry	1.87	14.687	1.91 14.29
16/07/2018			1.86	14.86				
06/08/2018	Dry		1.9	14.82	Dry	1.97	14.587	2.1 14.1
13/08/2018			1.8	14.92				
20/08/2018			1.8	14.92				
28/08/2018			1.81	14.91				
30/08/2018			1.85	14.87				
03/09/2018	Dry				Dry	2.1	14.457	2.1 14.1
10/09/2018			1.83	14.89				
17/09/2018			1.82	14.9				
24/09/2018			1.77	14.95				
01/10/2018	Dry		1.85	14.87	Dry	2.19	14.367	2.22 13.98
08/10/2018			1.8	14.92				
15/10/2018			1.88	15.04				
22/10/2018			1.79	14.93				
29/10/2018			1.75	14.97				
05/11/2018	1.11	14.106	1.7	15.02	Dry	2.18	14.377	2.21 13.99
12/11/2018			1.53	15.19				
19/11/2018			1.66	15.06				
26/11/2018			1.6	15.12				
03/12/2018	0.93	14.286	1.53	15.19	Dry	2	14.557	2.3 13.9
10/12/2018			1.59	15.13				
17/12/2018			1.54	15.18				
03/01/2019	1.2	14.016	1.6	15.12		1.84	14.717	1.93 14.27
14/01/2019			1.72	15				
21/01/2019			1.72	15				
28/01/2019			1.6	15.12				
04/02/2019			1.55	15.17	Dry			
11/02/2019	1.3	13.916	1.58	15.14		1.93	14.627	2.3 13.9
18/02/2019			1.54	15.18				
25/02/2019			1.64	15.08				
01/03/2019	Dry		1.66	15.06	Dry	1.94	14.617	2 14.2
11/03/2019			1.6	15.12				
18/03/2019			1.64	15.08				
25/03/2019			1.61	15.11				
01/04/2019	1.22	13.996	1.67	15.05	Dry	1.98	14.577	2.04 14.16
08/04/2019			1.69	15.03				
15/04/2019			1.72	15				
23/04/2019			1.8	14.92				
29/04/2019			1.8	14.92				
03/05/2019	Dry		1.74	14.98	Dry	2.14	14.417	2.2 14
20/05/2019			1.75	14.97				
28/05/2019			1.77	14.95				

04/06/2019			1.83	14.89	Dry		2.28	14.277	2.34	13.86							
10/06/2019	Dry		1.76	14.96													
17/06/2019			1.8	14.92													
24/06/2019			1.68	15.04													
01/07/2019			1.69	15.03													
02/07/2019	Dry																
15/07/2019			1.75	14.97	Dry		2.35	14.207	2.42	13.78							
22/07/2019			1.84	14.88													
29/07/2019			1.81	14.91													
05/08/2019	Dry		1.86	14.86			2.47	14.087	2.57	13.63							
12/08/2019			1.86	14.86													
19/08/2019			1.86	14.84													
27/08/2019			1.85	14.87													
02/09/2019	Dry		1.9	14.82	Dry		2.6	13.957	2.72	13.48							
09/09/2019			1.87	14.85													
16/09/2019			1.81	14.91													
23/09/2019			1.88	14.84													
01/10/2019	Dry		1.7	15.02	Dry		2.76	13.797	2.92	13.28							
07/10/2019			1.75	14.97													
14/10/2019			1.76	14.96													
21/10/2019			1.74	14.98													
28/10/2019			0.97	15.75													
05/11/2019	Dry		0.94	15.78	Dry		2.39	14.167	2.582	13.618							
11/11/2019			0.9	15.82													
18/11/2019			0.87	15.85													
25/11/2019			0.88	15.84													
02/12/2019	0.7	14.516	0.83	15.89	Dry		2.26	14.297	2.48	13.72							
09/12/2019			0.87	15.85													
16/12/2019			0.47	16.25													
02/01/2020	0.4	14.816	0.45	16.27	Dry		0.68	15.877	1.7	14.5							
06/01/2020			0.8	15.92													
13/01/2020			0.9	15.82													
20/01/2020			0.77	15.95													
27/01/2020			0.8	15.92													
03/02/2020	0.7	14.516	0.96	16.16	Dry		1.53	15.027	1.8	14.4							
10/02/2020			0.78	15.94													
17/02/2020			0.44	16.28													
24/02/2020			0.77	15.95													
02/03/2020	0.24	14.976	0.68	16.04	Dry		1.26	15.297	1.68	14.52							
09/03/2020			0.8	15.92													
16/03/2020			0.8	15.92													
23/03/2020			0.87	15.85													
01/04/2020	Dry		0.91	15.81	Dry		1.66	14.897	1.93	14.27							
06/04/2020			0.92	15.8													
14/04/2020			1	15.72													
20/04/2020			1	15.72													
27/04/2020			1.2	15.52													
04/05/2020			1.1	15.62													
11/05/2020			1.8	14.92			2.8	13.757	2.35	13.85							
18/05/2020			1.07	15.65													
27/05/2020			1.07	15.65													
02/06/2020	Dry		1.12	15.6	Dry		2.28	14.277	2.56	13.64							
08/06/2020			1.13	15.59													
15/06/2020			1.13	15.59													
22/06/2020			1.11	15.61													
29/06/2020			1.12	15.6													
06/07/2020	Dry		1.18	15.54	Dry		2.56	13.997	2.46	13.74							
11/07/2020	Dry				Dry												
13/07/2020			1.18	15.54													
Mn	Dry		0.44	13.82	Dry		0.68	13.76	1.02	13.28	0.57	14.66	0.74	16.51	1.07	16.00	
Max		1.37	14.98	2.90	16.28	3.10	15.33	2.80	15.88	2.92	15.18	1.56	15.65	1.28	17.05	1.80	16.73
Average		0.996	14.22	1.47	15.25	1.52	14.68	1.53	15.02	1.63	14.57	1.25	14.96	1.07	16.72	1.52	16.29

APPENDIX 2971/HRA/A2

Summary of background water quality data

River Blackwater Upstream - Sample point BL03

Date	EQS (freshwater)	EQS source	DWS	DWS Source	Units	2010 - 2020					
						Sample count	Min	Max	Average	DWS Exceedances	EQS exceedances
Temperature					CEL	90	1.69	21.3	11.34		
pH					PHUNITS	75	7.68	8.68	8.10		
Alkalinity pH 4_5					mg/l	75	195	313	248.11		
Conductivity @ 25C					uS/cm	98	624	1151	888.34		
TurbidityNTU					NTU	70	1	100	7.76		
Suspended solids @ 105oC					mg/l	59	3	114	12.17		
Dissolved oxygen saturation %sat					%	89	60.9	146	95.85		
Dissolved oxygen					mg/l	89	5.93	16.4	10.55		
BOD ATU					mg/l	71	1	4.14	1.60		
COD as O2					mg/l	59	10	40	18.36		
Ammonia(N)	0.015	LFTGN01: Average annual concentration	0.500	WHO ATO	mg/l	90	0.03	0.276	0.07	90 (LoD above EQS)	0
N Oxidised					mg/l	90	4.25	14.8	9.50		
Nitrate-N					mg/l	89	4.22	14.7	9.44		
Nitrite-N					mg/l	90	0.011	0.181	0.06		
NH3 un-ion					mg/l	75	0.0004	0.0066	0.0012		
Chloride Ion	250	LFTGN01: Average annual concentration	250	WHO ATO/ EU & UK DWS	mg/l	73	25.1	101	62.58	0	0
Orthophosphate					mg/l	90	0.047	0.457	0.22		
SiO2					mg/l	58	0.86	13.7	8.83		
Benzazone					ug/l	24	0.0105	0.0578	0.03		
Chlorophyll					ug/l	76	0.52	94.5	11.04		

River Blackwater Downstream - Sample point BL02

Date	EQS (freshwater)	EQS source	DWS	DWS Source	Units	2010-2014					
						Sample count	Min	Max	Average	DWS Exceedances	EQS exceedances
Temperature					CEL	36	2.09	18.70	11.70		
pH					PHUNITS	36	7.68	8.57	8.09		
Alkalinity pH 4_5					mg/l	36	203.0	276.0	243.44		
Conductivity @ 25C					uS/cm	50	559.0	1094.0	901.90		
TurbidityNTU					NTU	50	1.0	105.0	9.77		
Dissolved oxygen saturation %sat					%	36	73.20	123.40	89.39		
Dissolved oxygen					mg/l	36	7.14	14.30	9.78		
Ammonia(N)	0.015	LFTGN01: Average annual concentration	0.500	WHO ATO	mg/l	36	0.030	1.150	0.085	36 (LoD above EQS)	1
N Oxidised					mg/l	36	6.63	12.30	9.47		
Nitrate-N					mg/l	36	6.59	12.20	9.42		
Nitrite-N					mg/l	36	0.01480	0.191	0.05317		
NH3 un-ion					mg/l	36	0.00044	0.0272	0.00175		
Chloride Ion	250	LFTGN01: Average annual concentration	250	WHO ATO/ EU & UK DWS	mg/l	50	31.8	111	73.51	0	0
Orthophosphate					mg/l	36	0.119	0.593	0.29467		

River Blackwater Upstream - Sample point BL03

Date	01/02/2010	19/02/2010	18/03/2010	29/04/2010	03/06/2010	15/06/2010	23/07/2010	17/08/2010	15/09/2010	21/10/2010	17/11/2010	29/11/2010
Temperature	1.76	4.18	9.68	15.58	13.07	14.39	18.47	15.61	14.45	7.85	6.48	1.69
pH	8.08	8.1	8.49	8.47	8.17	8.32	8.22	8.01	8.21	8.21	8.06	8.07
Alkalinity pH 4_5	237	205	246	242	240	249	248	216	229	244	253	263
Conductivity @ 25C	775	686	862	867	924	955	923	865	932	945	888	981
TurbidityNTU	6	26.2	2.4	1.9	1.6	1	1	1	2.2	2.3	2.3	1.7
Suspended solids @ 105oC	10.5	50	10.1	5.03	5.65	3.15	3	3	6.6	8.02	3.08	3
Dissolved oxygen saturation %sat	96.5	92.1	144.6	146	112.7	107.2	120.4	86.8	95.4	84.6	85.1	87.3
Dissolved oxygen	13.4	12	16.4	14.5	11.8	10.9	11.3	8.61	9.7	10	10.4	12.1
BOD ATU	1	2.2	2.7	2.3	1	1.4	1.3	1	1.8	2.6	1	1
COD as O2	13	29	14	17	20	12	16	12	13	15	20	12
Ammonia(N)	0.189	0.219	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.09	0.124
N Oxidised	13	10.6	10.1	8.18	8.22	9.06	7.1	7.31	9.09	10.2	10.1	10.7
Nitrate-N	13	10.5	10	8.1	8.12	8.9	7.06	7.26	9.04	10.2	10	10.6
Nitrite-N	0.0492	0.0526	0.056	0.0813	0.0987	0.159	0.0365	0.0476	0.0511	0.0258	0.0988	0.0792
NH3 un-ion	0.00188	0.0026	0.00053	0.00082	0.00068	0.00075	0.00101	0.00082	0.00076	0.00047	0.00127	0.00123
Chloride Ion	45.6	45.3	61.9	65.6	76.1	82.2	77.7	70.3	76	70.7	63.1	70.6
Orthophosphate	0.151	0.144	0.09	0.127	0.219	0.33	0.273	0.338	0.301	0.288	0.248	0.244
SiO2	7.63	6.9	3.75	1.7	6.1	8.42	8.3	11.2	9.77	11.9	11.6	12.5
Bentazone												
Chlorophyll	0.96	7.2	27.9	25.5	9.6	3.1	6.6	6.2	14	3.3	0.96	0.71

River Blackwater Downstream - Sample point BL02

	25/01/2010	19/02/2010	18/03/2010	29/04/2010	03/06/2010	15/06/2010	23/07/2010	17/08/2010	15/09/2010	21/10/2010	17/11/2010	29/11/2010
Temperature	5.12	4	8.47	14.34	13.41	14.67	17.62	15.63	14.69	7.89	6.4	2.09
pH	7.95	8.1	8.17	8.28	8.16	8.2	8.01	7.97	8.13	8.13	8.04	8.1
Alkalinity pH 4_5	228	203	250	252	235	252	248	221	236	242	253	260
Conductivity @ 25C	771	699	920	928	929	979	977	900	971	932	935	1011
TurbidityNTU	10.3	30.8	2.3	2.4	1.6	1.7	1	1.2	1.5	1.6	2.8	1.7
Dissolved oxygen saturation %sat	92.2	91.6	103.9	121.2	92.6	85.2	75.1	78	79.2	85.6	79.9	84.1
Dissolved oxygen	11.7	12	12.1	12.4	9.64	8.62	7.14	7.73	8.01	10.1	9.83	11.6
Ammonia(N)	0.158	0.165	0.030	0.030	0.068	0.057	0.049	0.034	0.037	0.030	0.051	0.094
N Oxidised	12.3	9.95	10.3	8.61	8.53	8.78	7.88	8.09	9.26	9.47	10.3	11.1
Nitrate-N	12.2	9.91	10.3	8.51	8.42	8.7	7.85	8.07	9.23	9.44	10.2	11
Nitrite-N	0.0562	0.0429	0.0383	0.102	0.113	0.0838	0.0339	0.0235	0.0285	0.0265	0.0624	0.0702
NH3 un-ion	0.0018	0.00194	0.00049	0.00075	0.00159	0.00146	0.00156	0.00087	0.00095	0.00047	0.00071	0.00096
Chloride Ion	49.5	49	71.2	75.4	80.3	87.9	89.3	75	83.8	74.1	72.8	80
Orthophosphate	0.167	0.151	0.119	0.204	0.271	0.362	0.324	0.363	0.371	0.297	0.257	0.271

River Blackwater Upstream - Sample point BL03

Date	21/01/2011	09/02/2011	11/03/2011	20/04/2011	06/06/2011	22/06/2011	22/07/2011	09/08/2011	12/09/2011	05/10/2011	01/11/2011	21/11/2011
Temperature	4.82	6.32	7.33	15.81	14.8	16.09	17.26	15.83	17.54	16.44	12.95	8.26
pH	7.68	8.05	8.35	8.35	8.16	8.06	8.3	7.83	8.03	7.82	7.93	7.91
Alkalinity pH 4_5	228	263	264	240	241	208	229	247	242	262	262	258
Conductivity @ 25C	751	918	900	885	953	847	869	904	929	1041	1050	986
TurbidityNTU	10.4	3.7	2.3	2.4	1.7	1.6	3.3	2.5	3.4	3.3	7.9	8.3
Suspended solids @ 105oC	18.5	5.8	3.05	5.73	3.43	3	6.18	32.4	20.6	34	7.22	25.3
Dissolved oxygen saturation %sat	91.5	89.2	110.9	125.5	83.6	99.8	102	86.7	88.8	60.9	77	87.6
Dissolved oxygen	11.7	11	13.3	12.4	8.44	9.8	9.77	8.56	8.46	5.93	8.1	10.3
BOD ATU	1.5	1.3	1.4	2.8	1.3	1	1.5	3	2.5	3.7	1.5	2
COD as O2	20	13	19	15	17	28	12	18	17	30	18	29
Ammonia(N)	0.09	0.202	0.071	0.03	0.084	0.039	0.03	0.077	0.03	0.03	0.034	0.064
N Oxidised	11.9	11.2	11	8.42	8.67	7.31	7.65	8.09	8.65	8.32	9.45	9.01
Nitrate-N	11.9	11.1	10.9	8.34	8.55	7.21	7.63	8.03	8.62	8.26	9.4	8.92
Nitrite-N	0.0437	0.087	0.0508	0.0828	0.117	0.105	0.0248	0.0563	0.0286	0.0554	0.0475	0.0891
NH3 un-ion	0.00054	0.00281	0.00106	0.00084	0.00217	0.00111	0.00093	0.00147	0.00095	0.00058	0.00066	0.00084
Chloride Ion	39.3	64.5	62.4	72.5	80	71.4	74.9	82.8	82.7	101	94.4	85
Orthophosphate	0.151	0.334	0.126	0.131	0.442	0.348	0.301	0.284	0.255	0.183	0.346	0.291
SiO2	9.68	10.6	4.59	1.26	4.52	7.77	10.9	10.9	11.1	10.9	12.8	13.7
Bentazone												
Chlorophyll	2.6	2	9.2	3.4	9.8	6.4	1.9	41.1	72.1	10.4	10.3	43.7

River Blackwater Downstream - Sample point BL02

	21/01/2011	09/02/2011	11/03/2011	20/04/2011	06/06/2011	22/06/2011	22/07/2011	09/08/2011	12/09/2011	05/10/2011	01/11/2011	21/11/2011
Temperature	4.98	6.16	6.88	15.25	14.91	15.9	16.63	16.03	16.94	16.22	12.98	7.92
pH	7.68	8.1	8.21	8.08	8.04	8.07	8.2	7.92	7.98	8.13	7.96	7.94
Alkalinity pH 4_5	227	266	268	249	207	232	232	219	244	256	253	257
Conductivity @ 25C	768	945	937	948	856	945	909	996	978	1094	1043	1010
TurbidityNTU	12.6	4.1	2.6	2.3	3.8	2.1	1.1	1.3	1.3	1.4	2.4	2
Dissolved oxygen saturation %sat	91.7	89	88	105.5	73.2	90.2	87.9	88.2	79.3	81.7	79.6	91
Dissolved oxygen	11.7	11	10.7	10.5	7.37	8.89	8.53	8.67	7.65	8	8.36	10.8
Ammonia(N)	0.095	0.119	0.030	0.030	0.091	0.059	0.038	1.150	0.030	0.030	0.030	0.036
N Oxidised	11.1	11	11.1	9.24	7.99	8.16	8.62	8.17	8.96	10.8	10.3	9.45
Nitrate-N	11.1	10.9	11.1	9.18	7.9	8.09	8.6	7.98	8.94	10.8	10.3	9.41
Nitrite-N	0.0364	0.0698	0.0335	0.064	0.0903	0.0723	0.0217	0.191	0.0202	0.0262	0.0383	0.0444
NH3 un-ion	0.00058	0.00164	0.00044	0.0008	0.00237	0.00165	0.00112	0.0272	0.00087	0.00086	0.00062	0.00049
Chloride Ion	45.5	72.6	70.5	82.2	78.5	84.6	86	94.4	89.8	111	91.5	90.9
Orthophosphate	0.146	0.309	0.211	0.245	0.362	0.413	0.426	0.593	0.38	0.346	0.378	0.33

River Blackwater Upstream - Sample point BL03

Date	24/01/2012	23/02/2012	20/03/2012	15/05/2012	21/05/2012	08/06/2012	16/07/2012	19/07/2012	19/07/2012	27/07/2012	03/09/2012	11/09/2012
Temperature	5.44	8.74	9.21	10.5	12.8	14.6	15.5		16.4	17.4	17.2	
pH	8.07	8.16	8.68	8.07	8.21	8.11	7.96		7.88	8.01	8.27	
Alkalinity pH 4_5	234	256	228	269	266	236	281		313	298	257	
Conductivity @ 25C	834	924	922	839	899	831	709		818	849	977	
TurbidityNTU	6.7	2.9	22	8.2	4.2	3.6	5.5		2.7	1.9	2.8	
Suspended solids @ 105oC	7.07	3.03	7.43	13.7	6.75	4.75	5.05		3.82	3	8.37	
Dissolved oxygen saturation %sat	86.7	99.5	135.8	81	99.4	99.1	86.6		91.2	75.1	115.3	
Dissolved oxygen	10.9	11.5	15.6	9.01	10.5	10	8.61		8.9	7.18	11.1	
BOD ATU	1.4	1.8	3.6	2	2.3	1	1.1		1	1	1	
COD as O2	21	18	10	19	20	25	26		15	17	15	
Ammonia(N)	0.222	0.082	0.03	0.096	0.036	0.258	0.041		0.033	0.03	0.03	
N Oxidised	12.3	11.4	8.9	7.64	8.81	7.81	4.25		4.99	5.91	9.38	
Nitrate-N	12.2	11.3	8.88	7.58	8.74	7.63	4.22		4.95	5.89	9.36	
Nitrite-N	0.102	0.071	0.0244	0.0622	0.067	0.181	0.0348		0.0415	0.0205	0.0214	
NH3 un-ion	0.0029	0.00136	0.00052	0.00182	0.00081	0.00658	0.00102		0.00073	0.00094	0.00092	
Chloride Ion	55.6	69.3	77.9	51.6	62.9	60.1	25.1		37.6	46.9	86.9	
Orthophosphate	0.17	0.225	0.147	0.131	0.123	0.209	0.266		0.227	0.247	0.298	
SiO2	10.1	6.93	4.82	10	7.2	7.71	12.7		11.6	10.5	9.26	
Bentazone						0.0443	0.0284	0.0267		0.0303	0.0393	0.0406
Chlorophyll	10	10	58.3	7.9	22.6	10.1	4.6		1.7	1.1	11.7	

River Blackwater Downstream - Sample point BL02

	24/01/2012	23/02/2012	20/03/2012	03/04/2012	11/05/2012	02/07/2012	11/07/2012	10/08/2012	05/09/2012	03/10/2012	22/10/2012	15/11/2012
Temperature	5.28	8.46	8.68	10.1	13.6	16.3	15.7	18.7	15.4	13.3	12	8.7
pH	8.08	8.03	8.57	8.42	8.09	8.04	7.9	8.13	8.04	8.08	8.03	8.17
Alkalinity pH 4_5	234	255	233	245	251	241	236	261	253	237	252	276
Conductivity @ 25C	887	981	947	954	747	892	776	906	1033	957	796	913
TurbidityNTU	6.3	3.1	3.4	2.5	18.3	1.5	2.5	1.3	2.1	2.7	15	3.6
Dissolved oxygen saturation %sat	87.1	91.6	123.4	98.7	92.5	85.9	80.6	99.1	77.5	97	85.4	85.4
Dissolved oxygen	11	10.7	14.3	11.1	9.59	8.4	7.98	9.22	7.72	10.1	9.18	9.92
Ammonia(N)	0.085	0.055	0.030	0.030	0.064	0.030	0.042	0.030	0.030	0.030	0.039	0.065
N Oxidised	11.9	11.6	9.12	8.66	6.63	8.79	6.83	8.28	10.1	9.25	11.2	9.14
Nitrate-N	11.8	11.5	9.09	8.63	6.59	8.76	6.79	8.26	10.1	9.21	11.2	9.04
Nitrite-N	0.0767	0.0579	0.0268	0.0298	0.0436	0.0316	0.0443	0.0198	0.0148	0.0373	0.0466	0.0956
NH3 un-ion	0.0011	0.0009	0.0005	0.00055	0.00152	0.00087	0.00093	0.00103	0.00081	0.0007	0.00082	0.00108
Chloride Ion	69.1	83.8	83.6	82.6	41.7	72.7	52.7	73.7	99.1	84.3	41.9	64.7
Orthophosphate	0.229	0.272	0.188	0.17	0.152	0.318	0.294	0.393	0.354	0.385	0.293	0.264

River Blackwater Upstream - Sample point BL03

Date	04/09/2013	07/10/2013	23/10/2013	11/11/2013	21/11/2013	02/01/2014	20/02/2014	05/03/2014	01/04/2014	11/04/2014	01/05/2014	03/06/2014
Temperature	15.6	13.8	13.6		5.6	7.2	8	7.1	10.1		13.5	15.1
pH			7.73					7.94				7.91
Alkalinity pH 4_5			195					236				233
Conductivity @ 25C	950	978	771		939	624	703	653	898		892	814
TurbidityNTU	1.8		16.7		11.1	100	40.8	48	2.5		4	14.5
Suspended solids @ 105oC	3.98		17.4	8.08	11.3	114	41.4	46	4.3	6	6.57	19.8
Dissolved oxygen saturation %sat	81.4	93.4	84.3		92.5	84.2	102.2	101.6	98.2		92.3	87.8
Dissolved oxygen	8.08	9.64	8.74		11.6	10.2	12.1	12.3	11		9.59	8.81
BOD ATU	1		1.5	1.04	1.56	1.71	1	1.56	2.09	2.92	2.35	1.37
COD as O2	22		25	18	23	40	15	17	10	12	15	20
Ammonia(N)	0.03		0.21	0.061	0.231	0.054	0.058	0.072	0.03	0.03	0.074	0.048
N Oxidised	9.67		9.15	12.5	11	10.1	7.57	6.13	10.3	9.83	10.5	10.1
Nitrate-N	9.63		9.03	12.4	10.9	10.1	7.54	6.1	10.3		10.4	10
Nitrite-N	0.043		0.121	0.0668	0.108	0.0322	0.028	0.033	0.0493	0.0542	0.117	0.0783
NH3 un-ion			0.00271					0.00093				0.00104
Chloride Ion	75.6		58.5	45.1	76.2	28.7	34.4	27	62.8	62.4	62.2	52.9
Orthophosphate	0.385		0.27	0.178	0.21	0.119	0.113	0.116	0.047	0.088	0.161	0.197
SiO2	11.5		10.7	10.7	11.6	8.48	7.8	6.75	2.58		3.6	8.49
Bentazone	0.0497		0.0578	0.0411	0.0361	0.0159	0.0176	0.0122				
Chlorophyll	2.8		10.2	2.9	2.5	4.7	3.2	5.9	20.4		11.9	21.6

River Blackwater Downstream - Sample point BL02

	02/01/2014	03/02/2014
Temperature		
pH		
Alkalinity pH 4_5		
Conductivity @ 25C	673	661
TurbidityNTU	105	37.4
Dissolved oxygen saturation %sat		
Dissolved oxygen		
Ammonia(N)		
N Oxidised		
Nitrate-N		
Nitrite-N		
NH3 un-ion		
Chloride Ion	37.7	31.8
Orthophosphate		

River Blackwater Upstream - Sample point BL03

Date	22/07/2014	06/08/2014	02/09/2014	09/10/2014	05/11/2014	02/12/2014	07/01/2015	06/02/2015	06/03/2015	01/04/2015	01/05/2015	05/06/2015
Temperature	21.3	17.6	15.6			8.3	5.1			7.8		
pH			7.94			8.13	8.1			8.19		
Alkalinity pH 4_5			243			301	272			242		
Conductivity @ 25C	743	874	848	748	881	840	790	889	874	885	864	885
TurbidityNTU	1.8	1.6	2	15.5	7	6.6	9.9	7.1	5.9	3	3.9	11.3
Suspended solids @ 105oC	3	3	3									
Dissolved oxygen saturation %sat	111.2	84.4	87.9			85.1	99.2			96.5		
Dissolved oxygen	9.83	8.03	8.72			9.98	12.6			11.5		
BOD ATU	1.52	1	1									
COD as O2	14	27	12									
Ammonia(N)	0.03	0.03	0.03			0.097	0.139			0.03		
N Oxidised	6.73	8.94	10.4			8.99	8.87			9.11		
Nitrate-N	6.69	8.92	10.4			8.94	8.79			9.07		
Nitrite-N	0.0399	0.019	0.0471			0.0519	0.0822			0.0428		
NH3 un-ion			0.00072			0.00156	0.00177			0.00047		
Chloride Ion	51.8	64.6	53.5	51.3	58	40.7	36.9	58.4	50.4	64.4	59.3	70.2
Orthophosphate	0.252	0.209	0.185			0.154	0.149			0.157		
SiO2	11.5	9.59	12.5									
Bentazone												
Chlorophyll	2	3.3	1.7	4.9	2.2	1.5	1.9	1.5	7.1	7.4	80.1	9.4

River Blackwater Downstream - Sample point BL02

Temperature
pH
Alkalinity pH 4_5
Conductivity @ 25C
TurbidityNTU
Dissolved oxygen saturation %sat
Dissolved oxygen
Ammonia(N)
N Oxidised
Nitrate-N
Nitrite-N
NH3 un-ion
Chloride Ion
Orthophosphate

River Blackwater Upstream - Sample point BL03

Date	10/07/2015	11/08/2015	14/09/2015	01/10/2015	06/11/2015	23/11/2015	13/01/2016	02/02/2016	16/05/2016	08/08/2016	08/11/2016	01/03/2017
Temperature	18.1			12.8				7.8	14	18.2	6.1	7.6
pH	8.09			8.06				8.25	8.3	8.41	8.09	8.32
Alkalinity pH 4_5	232			247				268	253	246	260	235
Conductivity @ 25C	896	952	917	935				941	890	1014	916	872
TurbidityNTU	2	1.2	1.8	2.1								
Suspended solids @ 105oC												
Dissolved oxygen saturation %sat	114.9			98.7				94.1	113.8	124.6	87.1	107.1
Dissolved oxygen	10.8			10.4				11.2	11.7	11.7	10.8	12.8
BOD ATU												
COD as O2												
Ammonia(N)	0.03			0.03				0.062	0.03	0.03	0.036	0.048
N Oxidised	7.99			9.92				10.2	9.55	8.8	8.76	11.4
Nitrate-N	7.92			9.9				10.1	9.51	8.78	8.72	11.3
Nitrite-N	0.0711			0.0231				0.056	0.0448	0.017	0.044	0.0535
NH3 un-ion	0.00099			0.00067				0.00096	0.00073	0.00099	0.00049	0.00073
Chloride Ion	72.2	76.1	72.6	69.1								
Orthophosphate	0.343			0.315				0.192	0.244	0.295	0.215	0.166
SiO2												
Bentazone												
Chlorophyll	10	7.1	2.2	2.1	5	1.2	6	2.3				

River Blackwater Downstream - Sample point BL02

Temperature
pH
Alkalinity pH 4_5
Conductivity @ 25C
TurbidityNTU
Dissolved oxygen saturation %sat
Dissolved oxygen
Ammonia(N)
N Oxidised
Nitrate-N
Nitrite-N
NH3 un-ion
Chloride Ion
Orthophosphate

River Blackwater Upstream - Sample point BL03

Date	05/09/2017	14/11/2017	21/11/2017	05/12/2017	02/01/2018	09/04/2018	17/04/2018	08/08/2018	02/10/2018	07/02/2019	01/04/2019	22/05/2019
Temperature	16.3	7.4	8.5	6.1	5.5	9.9	12.3	19.9	12.4	6.3	11	15.2
pH	8.1	8.11	8.13	8.04	8.02	7.91		7.94	8.03	8.06	8.45	8.21
Alkalinity pH 4_5	251	249	269	251	208	262		251	261	239	240	224
Conductivity @ 25C	909	896	940	1017	733	855		963	1151	1049	907	855
TurbidityNTU												
Suspended solids @ 105oC												
Dissolved oxygen saturation %sat	109	93.3	91.1	92.8	93.4		106.5	89	93.1	86.5	116.1	100.2
Dissolved oxygen	10.7	11.2	10.6	11.5	11.8		11.4	8.09	9.92	10.7	12.8	10
BOD ATU											2.35	1.29
COD as O2												
Ammonia(N)	0.03	0.03	0.03	0.15	0.11	0.128		0.03	0.03	0.102	0.03	0.036
N Oxidised	9.1	8.03	9.15	11.3	14.8	9.82		7.86	10.1	13.6	9.6	7.25
Nitrate-N	9.08	8	9.13	11.2	14.7	9.76		7.84	10.1	13.5	9.58	7.2
Nitrite-N	0.016	0.0343	0.0173	0.113	0.0595	0.065		0.0219	0.0281	0.073	0.0245	0.0461
NH3 un-ion	0.00087	0.00045	0.00049	0.00205	0.00144	0.00189		0.00098	0.00065	0.00142	0.00059	0.00096
Chloride Ion												
Orthophosphate	0.282	0.281	0.233	0.24	0.141	0.131		0.328	0.457	0.148	0.136	0.159
SiO2												
Bentazone												
Chlorophyll												

River Blackwater Downstream - Sample point BL02

Temperature
pH
Alkalinity pH 4_5
Conductivity @ 25C
TurbidityNTU
Dissolved oxygen saturation %sat
Dissolved oxygen
Ammonia(N)
N Oxidised
Nitrate-N
Nitrite-N
NH3 un-ion
Chloride Ion
Orthophosphate

River Blackwater Upstream - Sample point BL03

Date	02/07/2019	08/08/2019	05/09/2019	03/10/2019	11/11/2019	21/11/2019	02/12/2019	06/01/2020	03/02/2020	02/03/2020
Temperature	18.7	17.3	14.7	11.6	7.4	5.9	5	6.9	8.1	6.6
pH	8.12	8	7.94	7.93	8.06	7.98	8.03	8.02	8.01	8.07
Alkalinity pH 4_5	230	230	260	220	259	261	260	260	250	220
Conductivity @ 25C	839	995	1043	877	1000	995	978	921	860	727
TurbidityNTU										
Suspended solids @ 105oC										
Dissolved oxygen saturation %sat	92.4	76.3	68.5	78.9	83.8	81.3	90.3	95.2	95.3	99.1
Dissolved oxygen	8.6	7.31	6.93	8.56	10.1	10.1	11.5	11.6	11.2	12.1
BOD ATU	1	1	2.5	1	1	1.2	1.1	1.1	1.1	1.1
COD as O2										
Ammonia(N)	0.03	0.043	0.03	0.03	0.03	0.03	0.072	0.11	0.076	0.061
N Oxidised	6.2	8.7	8.1	6.4	9.07	10.3	12	13	14	14
Nitrate-N	6.18	8.68	8.09	6.38	9.01	10.2	11.9	12.9	13.9	14
Nitrite-N	0.019	0.017	0.011	0.022	0.0552	0.0684	0.089	0.098	0.083	0.035
NH3 un-ion	0.00103	0.00133	0.00067	0.00053	0.00045	0.00039	0.00091	0.0016	0.00121	0.00087
Chloride Ion										
Orthophosphate	0.25	0.3	0.3	0.33	0.229	0.206	0.17	0.16	0.15	0.11
SiO2										
Bentazone										
Chlorophyll										

River Blackwater Downstream - Sample point BL02

Temperature
pH
Alkalinity pH 4_5
Conductivity @ 25C
TurbidityNTU
Dissolved oxygen saturation %sat
Dissolved oxygen
Ammonia(N)
N Oxidised
Nitrate-N
Nitrite-N
NH3 un-ion
Chloride Ion
Orthophosphate

APPENDIX 2971/HRA/A3

Results from RAM model

BREAKTHROUGH RESULTS

Site Name: Colemans Farm Quarry

Advanced

Pollutant Linkage: Restoration Fil, Sand & Gravel, GW at edge of cell

Remedial Target Concentrations in mg/L in Restoration Fil

Compared with source concentrations in mg/L

	2.000E+01	2.000E+01	5.000E+02	5.000E-01	2.000E+01
Time(years)	Species1	Species2	Species3	Species4	Species5
	Arsenic	Benzene	Chloride	Cadmium	Amm-N
0.1	1.000E+40	2.002E+10	5.050E+03	1.000E+40	6.366E+04
0.2	2.789E+13	4.160E+03	1.073E+04	1.000E+40	4.929E+02
0.2	2.789E+13	4.160E+03	1.073E+04	1.000E+40	4.929E+02
0.3	1.490E+08	4.028E+01	5.728E+04	1.000E+40	1.902E+02
0.4	4.057E+05	5.349E+00	3.537E+05	1.000E+40	1.783E+02
0.4	4.057E+05	5.349E+00	3.537E+05	1.000E+40	1.783E+02
0.5	1.325E+04	1.957E+00	2.248E+06	1.000E+40	2.308E+02
0.6	1.476E+03	1.170E+00	1.430E+07	1.000E+40	3.460E+02
0.7	3.281E+02	9.168E-01	9.039E+07	1.000E+40	5.594E+02
0.75	1.835E+02	8.671E-01	2.265E+08	1.000E+40	7.236E+02
0.8	1.117E+02	8.470E-01	5.660E+08	1.000E+40	9.436E+02
0.9	5.037E+01	8.701E-01	3.511E+09	1.000E+40	1.632E+03
1	2.756E+01	9.605E-01	2.154E+10	1.000E+40	2.867E+03
1.1	1.734E+01	1.115E+00	1.288E+11	1.000E+40	5.085E+03
1.2	1.209E+01	1.344E+00	6.899E+11	1.000E+40	9.072E+03
1.25	1.041E+01	1.491E+00	1.416E+12	1.000E+40	1.214E+04
1.3	9.114E+00	1.664E+00	2.511E+12	1.000E+40	1.625E+04
1.4	7.302E+00	2.104E+00	5.018E+12	1.000E+40	2.916E+04
1.5	6.138E+00	2.703E+00	7.637E+12	1.000E+40	5.241E+04
1.6	5.363E+00	3.516E+00	1.316E+13	1.000E+40	9.425E+04
1.7	4.834E+00	4.621E+00	5.640E+13	1.000E+40	1.695E+05
1.75	4.636E+00	5.313E+00	1.000E+40	1.000E+40	2.273E+05
1.8	4.472E+00	6.120E+00	1.000E+40	1.000E+40	3.047E+05
1.9	4.226E+00	8.159E+00	1.000E+40	1.000E+40	5.475E+05
2	4.066E+00	1.094E+01	1.000E+40	1.000E+40	9.833E+05
2.1	3.972E+00	1.472E+01	1.000E+40	1.000E+40	1.765E+06
2.2	3.932E+00	1.988E+01	1.000E+40	1.000E+40	3.164E+06

Pollutant Linkage: Restoration Fil, Sand & Gravel, GW at site boundary

Remedial Target Concentrations in mg/L in Restoration Fil

Compared with source concentrations in mg/L

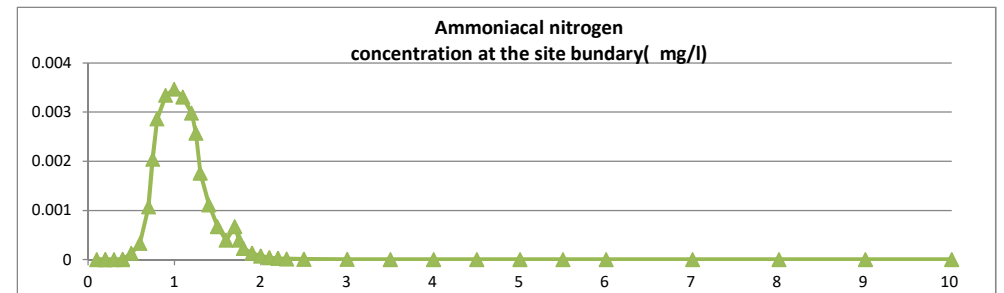
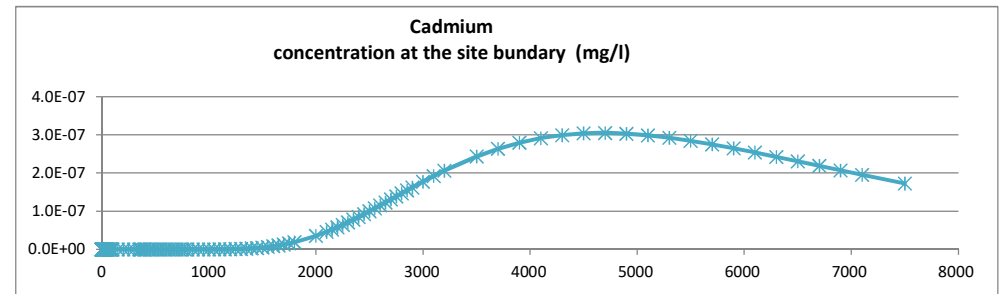
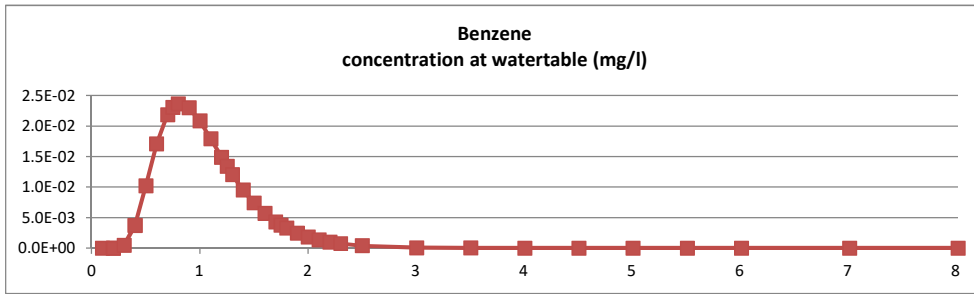
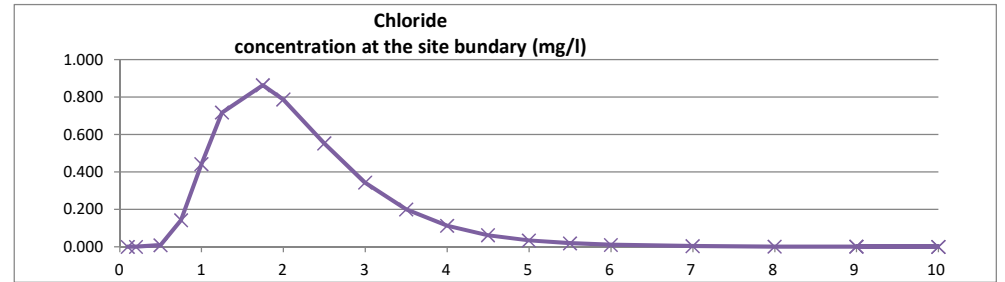
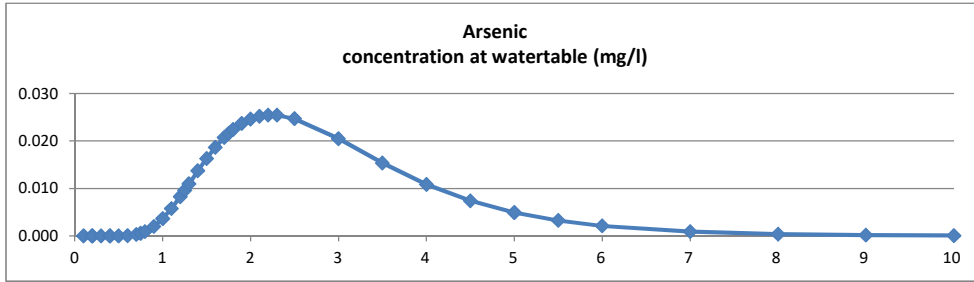
	2.000E+01	2.000E+01	5.000E+02	5.000E-01	2.000E+01
Time(years)	Species1	Species2	Species3	Species4	Species5
	Arsenic	Benzene	Chloride	Cadmium	Amm-N
0.1	1.000E+40	1.000E+40	1.000E+40	1.000E+40	3.924E+33
0.2	1.000E+40	2.717E+37	2.913E+13	1.000E+40	4.819E+23
0.5	2.352E+36	1.000E+40	7.241E+06	1.000E+40	3.003E+15
0.75	1.267E+28	1.000E+40	4.297E+05	1.000E+40	3.256E+10
1	8.870E+23	1.000E+40	1.385E+05	1.000E+40	1.333E+08
1.25	4.927E+21	1.020E+17	8.516E+04	1.000E+40	5.675E+06
1.75	9.207E+18	7.042E+13	7.073E+04	1.000E+40	1.987E+05
2	1.000E+40	1.399E+13	7.755E+04	1.000E+40	7.693E+04
2.5	1.000E+40	4.069E+12	1.106E+05	1.000E+40	2.352E+04
3	1.709E+14	5.530E+12	1.783E+05	1.000E+40	1.237E+04
3.5	1.068E+12	1.799E+13	3.060E+05	1.000E+40	8.809E+03
4	2.434E+10	1.004E+14	5.436E+05	1.000E+40	7.542E+03
4.5	1.322E+09	8.012E+14	9.852E+05	1.000E+40	7.280E+03
5	1.316E+08	8.190E+15	1.807E+06	1.000E+40	7.625E+03
5.5	2.030E+07	1.001E+17	3.337E+06	1.000E+40	8.462E+03
6	4.348E+06	1.396E+18	6.190E+06	1.000E+40	9.797E+03
7	4.014E+05	3.600E+20	2.142E+07	1.000E+40	1.433E+04
8	7.004E+04	1.226E+23	7.425E+07	1.000E+40	2.263E+04
9	1.863E+04	1.000E+40	2.569E+08	1.000E+40	3.749E+04
10	6.644E+03	1.000E+40	8.859E+08	1.000E+40	6.409E+04
9	1.863E+04	1.000E+40	2.569E+08	1.000E+40	3.749E+04
10	6.644E+03	1.000E+40	8.859E+08	1.000E+40	6.409E+04
11	2.926E+03	6.267E+22	3.042E+09	1.000E+40	1.119E+05
12	1.509E+03	3.039E+22	1.041E+10	1.000E+40	1.984E+05
13	8.773E+02	3.707E+22	3.543E+10	1.000E+40	3.554E+05
14	5.602E+02	1.000E+40	1.201E+11	1.000E+40	6.415E+05
15	3.854E+02	1.000E+40	4.046E+11	1.000E+40	1.164E+06

2.3	3.935E+00	2.694E+01	1.000E+40	1.000E+40	5.669E+06
2.5	4.051E+00	4.980E+01	1.000E+40	1.000E+40	1.815E+07
3	4.884E+00	2.375E+02	1.000E+40	1.000E+40	3.277E+08
3.5	6.518E+00	1.154E+03	1.000E+40	1.000E+40	5.646E+09
4	9.226E+00	5.650E+03	1.000E+40	1.000E+40	6.680E+10
4.5	1.354E+01	2.771E+04	1.000E+40	1.000E+40	2.277E+11
5	2.034E+01	1.358E+05	1.000E+40	1.000E+40	5.788E+11
5.5	3.102E+01	6.641E+05	1.000E+40	5.247E+33	1.000E+40
6	4.781E+01	3.235E+06	1.000E+40	9.301E+31	1.000E+40
7	1.157E+02	7.158E+07	1.000E+40	1.418E+29	1.000E+40
8	2.841E+02	5.879E+08	1.000E+40	1.000E+40	1.000E+40
9	7.018E+02	8.333E+08	1.000E+40	3.711E+25	1.000E+40
10	1.737E+03	1.004E+09	1.000E+40	1.000E+40	1.000E+40

16	2.815E+02	1.000E+40	1.346E+12	1.000E+40	2.122E+06
17	2.160E+02	1.000E+40	4.344E+12	1.000E+40	3.878E+06
18	1.726E+02	1.000E+40	1.295E+13	1.000E+40	7.104E+06
19	1.426E+02	1.000E+40	3.266E+13	1.000E+40	1.303E+07
21	1.057E+02	1.000E+40	1.063E+14	1.000E+40	4.399E+07
23	8.520E+01	8.450E+21	3.440E+14	1.000E+40	1.488E+08
25	7.314E+01	4.415E+21	1.000E+40	1.000E+40	5.036E+08
27	6.587E+01	3.354E+21	1.000E+40	1.000E+40	1.704E+09
29	6.159E+01	3.052E+21	1.000E+40	1.000E+40	5.759E+09
31	5.933E+01	3.115E+21	1.000E+40	1.000E+40	1.943E+10
33	5.854E+01	3.495E+21	1.000E+40	1.000E+40	6.531E+10
35	5.889E+01	4.311E+21	1.000E+40	1.000E+40	2.171E+11
39	6.238E+01	1.029E+22	1.000E+40	1.000E+40	1.957E+12
40	6.377E+01	1.616E+22	1.000E+40	1.000E+40	2.980E+12
45	7.372E+01	1.000E+40	1.000E+40	1.000E+40	6.751E+12
50	8.900E+01	1.000E+40	1.000E+40	1.000E+40	7.353E+12
55	1.108E+02	1.000E+40	1.000E+40	1.000E+40	8.864E+12
60	1.408E+02	1.000E+40	1.000E+40	1.000E+40	1.350E+13
65	1.818E+02	1.000E+40	1.000E+40	1.000E+40	4.043E+13
70	2.376E+02	1.000E+40	1.000E+40	1.000E+40	1.000E+40
75	3.131E+02	1.000E+40	1.000E+40	1.000E+40	1.000E+40
80	4.154E+02	1.000E+40	1.000E+40	4.348E+35	1.000E+40
85	5.539E+02	1.000E+40	1.000E+40	2.227E+34	1.000E+40
90	7.416E+02	1.000E+40	1.000E+40	9.003E+32	1.000E+40
95	9.958E+02	1.000E+40	1.000E+40	5.726E+31	1.000E+40
100	1.341E+03	1.000E+40	1.000E+40	7.675E+30	1.000E+40
150	2.766E+04	1.000E+40	1.000E+40	1.000E+40	1.000E+40
200	5.764E+05	1.000E+40	1.000E+40	1.000E+40	1.000E+40
250	1.175E+07	1.000E+40	1.000E+40	3.563E+21	1.000E+40
300	2.330E+08	1.000E+40	1.000E+40	6.073E+19	1.000E+40
350	4.263E+09	1.000E+40	1.000E+40	1.000E+40	1.000E+40
400	4.253E+10	1.000E+40	1.000E+40	1.354E+17	1.000E+40
450	1.545E+11	1.000E+40	1.000E+40	2.214E+15	1.000E+40
360	7.338E+09	1.000E+40	1.000E+40	1.000E+40	1.000E+40
375	1.559E+10	1.000E+40	1.000E+40	2.085E+18	1.000E+40
400	4.253E+10	1.000E+40	1.000E+40	1.354E+17	1.000E+40
425	8.395E+10	1.000E+40	1.000E+40	1.550E+16	1.000E+40

2150	1.000E+40	2.147E+23	1.969E+15	4.822E+04	1.960E+14
2200	1.000E+40	2.175E+23	1.996E+15	4.313E+04	1.917E+14
2250	1.000E+40	2.204E+23	2.026E+15	3.884E+04	1.886E+14
2300	1.000E+40	2.232E+23	2.057E+15	3.519E+04	1.858E+14
2350	1.000E+40	2.255E+23	2.086E+15	3.206E+04	1.830E+14
2400	1.000E+40	2.275E+23	2.114E+15	2.937E+04	1.810E+14
2450	1.000E+40	2.310E+23	2.146E+15	2.705E+04	1.796E+14
2500	1.000E+40	2.339E+23	2.174E+15	2.502E+04	1.777E+14
2550	1.000E+40	2.358E+23	2.204E+15	2.325E+04	1.765E+14
2600	1.000E+40	2.393E+23	2.235E+15	2.169E+04	1.758E+14
2650	1.000E+40	2.411E+23	2.266E+15	2.032E+04	1.751E+14
2700	1.000E+40	2.455E+23	2.299E+15	1.910E+04	1.747E+14
2750	1.000E+40	2.479E+23	2.330E+15	1.802E+04	1.740E+14
2800	1.000E+40	2.505E+23	2.359E+15	1.706E+04	1.739E+14
2850	1.000E+40	2.537E+23	2.392E+15	1.620E+04	1.739E+14
2900	1.000E+40	2.556E+23	2.423E+15	1.542E+04	1.737E+14
3000	1.000E+40	2.626E+23	2.483E+15	1.410E+04	1.736E+14
3100	1.000E+40	2.685E+23	2.546E+15	1.302E+04	1.741E+14
3200	1.000E+40	2.740E+23	2.611E+15	1.213E+04	1.754E+14
3500	1.000E+40	2.922E+23	2.799E+15	1.027E+04	1.787E+14
3700	1.000E+40	3.042E+23	2.926E+15	9.487E+03	1.817E+14
3900	1.000E+40	3.179E+23	3.055E+15	8.945E+03	1.852E+14
4100	1.000E+40	3.296E+23	3.186E+15	8.581E+03	1.893E+14
4300	1.000E+40	3.438E+23	3.316E+15	8.353E+03	1.935E+14
4500	1.000E+40	3.555E+23	3.444E+15	8.234E+03	1.979E+14
4700	1.000E+40	3.679E+23	3.575E+15	8.205E+03	2.027E+14
4900	1.000E+40	3.812E+23	3.703E+15	8.254E+03	2.072E+14
5100	1.000E+40	3.939E+23	3.832E+15	8.371E+03	2.119E+14
5300	1.000E+40	4.064E+23	3.963E+15	8.551E+03	2.169E+14
5500	1.000E+40	4.186E+23	4.097E+15	8.790E+03	2.220E+14
5700	1.000E+40	4.320E+23	4.229E+15	9.086E+03	2.272E+14
5900	1.000E+40	4.453E+23	4.359E+15	9.438E+03	2.325E+14
6100	1.000E+40	4.595E+23	4.489E+15	9.848E+03	2.376E+14
6300	1.000E+40	4.703E+23	4.620E+15	1.032E+04	2.430E+14
6500	1.000E+40	4.840E+23	4.749E+15	1.084E+04	2.484E+14
6700	1.000E+40	4.981E+23	4.883E+15	1.143E+04	2.537E+14
6900	1.000E+40	5.113E+23	5.014E+15	1.209E+04	2.590E+14

2500							
Min value	3.93	0.85					
7100							
7500							
Min value				70,725.67	8205.26	7279.61	





Appendix 6

Dust Management Plan



Dust Management Plan

Brice Aggregates Limited
Colemans Farm,
Little Braxted Lane,
Rivenhall,
Witham,
CM8 3EX.



PROVIDING SOLUTIONS, ENSURING COMPLIANCE

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Document Control Table

Project Reference	20/016d	
Project Title	Colemans Farm: Permit application	
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Drawings

Drawing No. 20/016d 001	Sensitive Receptors Plan
Drawing No. 20/016c 002	Site Layout Plan

Appendices

Appendix No. 1	Inspection Checklists
Appendix No. 2	Complaints Form



1. Introduction

- 1.1. Westbury Environmental Limited has prepared this Dust Management Plan on behalf of Brice Aggregates Limited in support of a Bespoke Environmental Permit application to operate a deposit for recovery and aggregates recycling facility (waste treatment).
- 1.2. The proposed waste activities will be operated at Colemans Quarry, Little Braxted Ln, Witham CM8 3EX (the 'Site').
- 1.3. The Site extends to an area of approximately 41 hectares (ha). The location and extent of the Site is shown in Figure 1.1. The land-use surrounding the Site is predominantly agricultural fields and forestry to the north, east and south with the west of the Site being the town and of Witham.

Figure 1.1: Location of Colemans Quarry



Content of the Dust Management Plan

- 1.4. This Dust Management Plan provides detailed information on the sources, risks and mitigation measures related to the potential of dust emissions from the operations undertaken on the Site. It has been prepared in accordance with Environment Agency guidance "Control and monitor emissions for your environmental permit" last updated 19 October 2020 and the Environment Agency issued template.
- 1.5. This Dust Management Plan will form part of the Environmental Management System (EMS) for the Site. Procedures and Forms referenced within this Dust Management Plan will be included within the EMS. Completed forms (records) will be kept, as required by conditions included in an Environmental Permit.
- 1.6. This Dust Management Plan is structured as follows:



- Section 2 provides a summary of the relevant legislation and guidelines.
- Section 3 provides information relating to the Site setting, including the location of the Site and nearby sensitive receptors.
- Section 4 provides a summary of the operations carried out on the Site and the delivery of material to the Site.
- Section 5 provides information on the site management and the mitigation measures employed at the Site.
- Section 6 provides information on how dust emissions are monitored at the Site.
- Section 7 provides a description of how complaints can be made and how they are addressed by the site management.



2. Relevant legislation

- 2.1. The Air Quality Strategy (AQS) for England, Scotland, Wales and Northern Ireland fulfils the requirement under Part IV of the Environment Act 1995 for a national air quality strategy which sets out policies for improving ambient air quality and keeping these under review. The first strategy, the National Air Quality Strategy (NAQS), was published in March 1997. In January 1999, proposals to amend the strategy were put out for consultation and a consultation document was produced. Following consultation, a revised version of the strategy was published in January 2000. This was further revised in 2007 and has not been revised since this date.
- 2.2. The AQS provides a framework for air quality control through air quality management and air quality standards and objectives for different pollutants (including particulate matter). These air quality standards and objectives were transposed into English Law by the Air Quality (Standards) Regulations 2010.

Air Quality Management Area (AQMA)

- 2.3. The system of local air quality management (LAQM) was introduced under the Environment Act 1995. LAQM requires local authorities to periodically review and assess the current and future quality of air in their areas. Where it is determined that an air quality objective is not likely to be met within the relevant time period, the authority must designate an AQMA.
- 2.4. The Site is located within a Local Authority that has an AQMA. However, the closest AQMA boundary is 8km south of the Site (Maldon).

Low Emission Zone (LEZ)

- 2.5. A LEZ is an area that has restrictions on the type and age of vehicles permitted in it, therefore, vehicles emitting high levels of pollution can be prevented from entering and operating within the zone.
- 2.6. The Site is not located within a LEZ.



3. Site location and sensitive receptors

Site Location

- 3.1. The Site is located on the edge of Witham, of which the A12 that runs along the east border of, is approximately 100m west of the Site. The residential town of Rivenhall End is approximately 100m north of the Site. Access to the Site is via the Little Braxted Ln off the A12, which runs along part of the north western boundary of the Site. The access point to the Site from Little Braxted Lane is located at grid reference TL 83455 15300.
- 3.2. The entire Site extends to approximately 41 ha, see Figure 1.1.
- 3.3. The land-use surrounding the Site is predominantly agricultural fields to the north, south and east with Witham located to the west.
- 3.4. The majority of the site is located in Flood Zone 1, Flood zone 1 means the probability of fluvial flooding is less than 1 in 1,000 in any one year. Small areas of the site's southern border (c.<5% of the site), are located in Flood Zones 2 and 3, associated with the River Blackwater. Flood Zone 3 describes land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding.
- 3.5. The Site is not located within a Source Protection Zone (SPZ).
- 3.6. The Site is not located on a designated bedrock aquifer. The Site is located on a designated Secondary A superficial aquifer.

Meteorology

- 3.7. Unlike many other atmospheric pollutants, the generation of dust is particularly dependent upon weather conditions.
- 3.8. The prevailing meteorological conditions at any site will be dependent upon many factors, including its location in relation to macroclimatic conditions as well as more site specific, microclimatic conditions. Clearly the most significant meteorological factor is the predominant wind direction and wind speeds, and consequently data has been collected regarding the predominant wind speeds and directions appropriate to the Site.

Figure 3.1: Wind rose from Maldon/Blackwater weather station that has based these statistics on data observed between the December 2012 and December 2020





- 3.9. Wind speed and direction data have been obtained from the Maldon/Blackwater weather station for the period from 12/2012 to 12/2020, see Figure 3.1. Maldon/Blackwater weather station is located approximately 9.5km south of the Site. This observing station has wind speed and direction data appropriate for characterisation of the wind climate at the Site.
- 3.10. The predominant wind blows towards receptors to the north-east of the Site which includes Rivenhall End and Rivenhall End South residential area (Visible in Figure 1.1 and Sensitive Receptors Plan Drawing No. 20/016d 001).

Sensitive Receptors

- 3.11. This Dust Management Plan for Waste Operations identifies all types of receptors within 500m of the Site that may be sensitive to dust emissions.
- 3.12. Locations with a high sensitivity to dust for this Dust Management Plan include deciduous woodland, agricultural land and residential dwellings.
- 3.13. The distance from the Site boundary to the sensitive receptor plays an important role in the potential impact experienced from airborne dust. Concentrations of airborne dust reduce significantly further away from the source.
- 3.14. Due to the nature of the materials being handled on this Site the particle size of the dust emitted is of intermediate to large particles. Therefore, it can be concluded that these particles are highly likely to be deposited within 50m of the source.
- 3.15. The direction and distances from the boundary of the Site to the boundary of sensitive receptors are provided in Table 3.1 below. The receptors are also presented on the Sensitive Receptors Plan, Drawing No. 20/016d 001.

Table 3.1: Sensitive Receptors within 500m of the Site Boundary

Ref	Receptor	Description	Direction from Site Boundary	Approximate distance from Site Boundary (m)
1	Burghey Brook	Watercourse	On-site	0
1	Colemans Reservoir	Surface water body	E, NE and SE	0
2	Protected Habitat	Deciduous Woodland	S	23
3	River Blackwater	Surface water course	S	20
4	Residence off Roman Road	Residential dwelling	N	40
5	A12 (Roman Road)	Road	NW	60
6	Eastways Industrial Estate	Local Businesses	W	100
7	Witham Wood Chips	Local Business	NE	150
8	Brice R A & Partners	Local Business	SW	150
9	Burghey Brook Fencing	Local Business	N	160
10	The Rivenhall	Local Business	N	255
11	Colemans Bait & Tackle	Local Business	SW	300
12	Braxted Back Lake	Surface water body	S	315
13	Old Farm House Hay	Local Business	E	330
14	The Willows	Surface water body	SW	350
15	Screwfix	Local Business	SW	410
16	Solar Farm	Utility (solar)	SE	410



Ref	Receptor	Description	Direction from Site Boundary	Approximate distance from Site Boundary (m)
16	Braxted Front Lake	Surface water body	S	415
17	APC Overnight	Local Business	E	430
18	Coleman's Cottage Fishery	Local Business	SW	450
19	BP	Fuel Station/Local Business	N	475
20	The Lake	Surface Water Body	SE	>500
21	Residential	Residential Dwellings	NW	>500
22	Rivenhall Oaks Golf Centre	Local Business	NW	>500

- 3.16. Three of the receptors within 50m of the Site are waterbodies. It is considered unlikely that dust emissions could adversely impact on these receptors irrespective of distance to the Site.
- 3.17. The nearest residential receptor is located 40m north of the Site. This receptor is not located downwind of the predominant wind direction. In addition, the site falls in elevation from broadly north to south. It is considered that should dust be generated at the Site and entrained by the wind that it is unlikely to travel upwards for any appreciable distance, making it unlikely for the nearby residence to be adversely impacted by dust emissions from the Site. The same is true for the A12 road which travels broadly east-west along the Site's norther boundary.
- 3.18. Deciduous woodland located 23m s of the site is located upwind of the predominant wind direction at the Site, though it is also located at a lower elevation to much of the Site meaning it could be more likely to be impacted than if it were at a higher elevation. It is considered that dust would be emitted from the Site in quantities to cause smothering of the leaves which might adversely impact the habitat.
- 3.19. There are a number of workplace receptors between 100m-500m of the Site. Of these, those located downwind of the predominant wind direction (workplaces to the north east) are at greatest risk of being impacted by dust emissions generated from the Site. Receptors to the north east are located at a higher elevation to the Site. In addition, the type of dust generated by the Site is likely to be deposited within 50-100m of its entrainment location. As such, it is considered unlikely that dust emissions would adversely impacting the nearby commercial receptors.
- 3.20. A solar farm is identified 410m southeast of the Site. Being at a significant distance and upwind of the predominant wind direction to the Site, it is very unlikely that dust emissions from the Site would cause an adverse impact (obscuring of solar panels) at this receptor. Indeed, all receptors located greater than 100m distance from the Site are unlikely to be impacted by dust emissions.
- 3.21. The mitigation measures discussed in Section 5 of this Dust Management Plan will prevent the generation of dust and ensure swift action is taken should dust entrainment be observed. The mitigation measures will further limit the possibility of dust emissions reaching or adversely impacting sensitive receptors close to the Site.



4. Site operations – potential dust sources

Waste Deliveries

- 4.1. Waste acceptance procedures will be applied to ensure that only suitable waste is accepted. Only those waste codes detailed in the Environmental Permit will be accepted onto the Site. Waste acceptance procedures will ensure that waste will not comprise solely or mainly of dust, powders or loose fibres.
- 4.2. Waste will be delivered onto the Site by Heavy Good Vehicles. The movement of vehicles visiting the Site has the potential to cause dust emissions, particularly in dry and windy conditions. A 5mph speed limit and the minimisation of vehicle movements will be enforced on the Site to help reduce the amount of dust generated by vehicle wheels.
- 4.3. All vehicles entering / exiting the Site will be sheeted to minimise the likelihood of dust emissions. Loaded vehicles arriving onto the Site that are not sheeted will be rejected in accordance with the Waste Rejection Procedure within the EMS.
- 4.4. Vehicles entering the Site will be visually inspected prior to unloading to ensure that loads comprising solely or mainly of dust, powders or loose fibres are not accepted to Site. Loads which do not comprises solely or mainly of dust but have the potential to create dust (i.e. friable soils) will be wetted prior to tipping or rejected from Site in accordance with the Waste Rejection Procedure in the EMS.
- 4.5. The tracking of mud and debris onto paved surfaces and the adjacent highway have the potential to cause dust emissions by resuspension from the passing of vehicles. Mud and debris will be prevented from being tracked from the Site by the use of wheel cleaning facilities. Should mud become entrained on the road/ paved surfaces, a road sweeper will be deployed to remove it.

Overview of Waste Operations

- 4.6. The operations to be carried out at the Site include material importation for treatment and permanent deposit. Treatment activities will include, crushing, screening and washing of waste to produce recycled aggregate.
- 4.7. The following have been considered to pose a risk of dust emissions from the Site, particularly in especially hot or dry conditions.
 - Material handling and movement
 - Any drop of material from a height i.e. loading, unloading of vehicles
 - Material storage
 - Wind-whipping of stockpiles/ material stored in bays.
 - Material treatment
 - Dry treatment of waste such as crushing and screening.
 - Vehicle movements
 - Movement of vehicles along paved and unpaved surfaces
 - Resuspension of dried mud on surrounding roads as a result of mud from the Site

Site Layout

- 4.8. The proposed layout of the Site is shown on the Site Layout Plan, Drawing No. 20/016d 002.
- 4.9. Incoming loads are directed to the Site Office, which are located outside of the permit boundary and on the access road off Little Braxted Ln.



- 4.10. Incoming loads will then be directed to the offloading area on the Site to input waste straight into the restoration works or to an area for temporary waste storage to be treated. The double handling of materials will be avoided where possible.
- 4.11. Where appropriate, was will be deposited directly into the quarry void. The void will be restored in a phased manner. The phasing helps to limit the area over which material is being deposited at any one time, thus reducing the time and area over which dust may be generated.
- 4.12. Waste treatment activities will be undertaken in a dedicated location, Phase 1. This location has been chosen for its low elevation compared to surrounding ground level (c.3m bgl). It is also sited appropriately, upwind of the predominant wind direction and away from some of the more sensitive receptors (residential and highways) to minimise the potential for harm in the event of dust generation.
- 4.13. Dust monitoring can be undertaken anywhere within the Site boundary. There are no specific dust monitoring points. Monitoring is undertaken by all site operatives.

Plant and Equipment

- 4.14. The following plant and equipment are proposed to be used on the Site for the waste operations:
 - Crusher
 - Screener
 - Loading shovel
 - Wash Plant
 - 360° excavators
- 4.15. All plant and equipment used on the Site will be subject to maintenance checks in accordance with the procedures within the EMS.
- 4.16. All plant will be operated in accordance with industry good practice, for example, operation of a no-idling policy, no-revving of engines etc.
- 4.17. The Operator will implement a policy of replacing older machinery with new, lower emission machinery as it becomes available and as the business development allows.

Waste Types

- 4.18. The waste types allowed at the Site have been summarised and assigned a “low”, “medium” or “high” risk level for the potential to emit dust, as shown in Table 4.1.

Table 4.1: Potential of waste types to produce dust

Dust Potential	Waste Types	Processes waste type subjected to	Summary of mitigation measures implemented
Low	Bricks, tiles, glass, road planings etc.	Storage, handling, screening and crushing	Dampening and compaction of stockpiles
Medium	Concrete, minerals (sand and gravels) gypsum, bark and cork etc.	Storage, handling, screening and crushing	Stockpile height limited. Water sprays implemented when dust emissions observed.
High	Soils (silty, sandy, clayey), ash, dredgings, residual waste from treatment processes etc.	Storage, handling, screening and crushing	All waste types subject to visual monitoring by site operatives

- 4.19. Consideration has been given to mitigation measures to be employed on Site based upon the risk potential of the material to produce dust, and the processes to which it will be subjected to.
- 4.20. The operator will take a conservative approach, applying mitigation measures appropriate for the highest risk waste types and processes, to all wastes stored and treated at the Site.



5. Dust management and mitigation

Responsibility for Implementation of the Dust Management Plan

- 5.1. The Site Manager is responsible for the implementation of the Dust Management Plan and for ensuring that the mitigation strategies in place are adhered to. Where the Site Manager is unavailable to oversee the implementation of dust suppression measures, a suitably experienced Site Operative is allocated responsibility.
- 5.2. The Dust Management Plan for Waste Operations will be reviewed every four years or when a change in operations is deemed to have a potential effect on increasing dust emissions. The review process will amend any mitigation measures that have been identified as areas for improvement in reducing dust emissions on Site.
- 5.3. All staff members have the necessary training to deliver dust suppression measures detailed within this Dust Management Plan for Waste Operations. All staff will be given training on the EMS for the Site, which include a Dust Procedure. All staff on the Site will be trained on the Dust Procedure which includes details regarding mitigation measure and monitoring/recording visual inspections. Site procedures will be communicated between staff via EMS training and weekly toolbox talks. Where new dust suppression measures are to be implemented refresher training will be provided to ensure staff remain competent. This training will be delivered by the Site Manager.

Overview of Dust Control

- 5.4. Dust control measures are in place to help mitigate dust emissions at the Site, see Table 5.2: Mitigation measures. These measures are implemented when appropriate, particularly in periods of dry weather or when dust is identified to be escaping the Site boundary. The Site boundary is inspected regularly to identify any dust emissions / dust leaving the Site. If dust emissions are observed, then the use of water sprays is instigated.
- 5.5. Water bowsers and water sprays will be available at the Site to dampen surfaces and stockpiles of material to prevent particulate matter becoming airborne. The condition and integrity of the bowsers and water sprays will be checked as part of the Inspection Checklists.
- 5.6. The handling height of material will be minimised, at all times, by all mobile plant in order to reduce the distance in which dust and particulates could be blown and dispersed by winds.
- 5.7. Site surfacing will be checked by way of the Inspection Checklists, see Appendix 1. Build-up of materials on paved surface will be minimised by implementing the procedures within the EMS. A front shovel loader will be used to scrape the surface of the Site where dust/debris build-up has been recognised.
- 5.8. The Site Manager may decide to cease operations should there be excessive dust emissions from the Site. Operations will resume on the Site when the circumstances causing the excessive dust have been resolved. It is the Site Manager who decides when operations will continue.

Sources and Control of Fugitive Dust Emissions

- 5.9. Table 5.1 details the potential sources of dust on the Site and which mitigation measures are implemented in order to break the source-pathway-receptor routes for dust emissions.
- 5.10. Table 5.2 lists the mitigation measures to control dust emissions at the Site.

**Table 5.1: Source pathway receptor routes**

Source	Pathway	Receptor	Type of Impact	Where relationship can be interrupted
Mud	Transportation of mud on wheels and vehicles, then mud dropping off wheels / vehicles.	Adjacent public highways	Mud on the Site and local roads. Resuspension of dried mud as airborne particles.	Wheel washing facilities present on Site remove the mud from the wheels of vehicles entering and exiting the Site. Vehicles delivering and collecting waste will be sheeted. All surfaces will be subject to regular housekeeping in accordance with the procedures in the EMS. The distance between the Site and the highway is long (c.250m) and so it is considered that any incident mud not removed during wheel cleaning, would likely be removed before re-joining the highway. A road sweeping vehicle will be hired in and deployed when necessary to remove mud from the access road and public highway.
Debris	Falling off lorries	Adjacent public highways	Visual soiling, also consequent resuspension as airborne particulates	Vehicles delivering and collecting waste will be sheeted. All area surfaces (paved and hardstanding) will be subject to regular housekeeping. Where debris is identified as an on-going issue a road sweeper will be deployed.
Vehicle / Plant movements	Atmospheric dispersion	Surrounding sensitive receptors	Airborne particulates	The Site's surface is compacted hardstanding and therefore dust generation is likely to be minimal. A 5mph speed limit and a 'no-idling' policy is implemented on Site. The Site is subject to regular housekeeping in accordance with the procedures in the EMS.
Tipping and storage of materials in the open	Atmospheric dispersion	Surrounding sensitive receptors	Visual build-up of dust.	Potential dust emissions will be reduced by minimising drop heights when moving/depositing dusty wastes. Waste will be stored in stockpiles which will be dampened down in periods of dry weather, when wind whipping is identified to be excessive or to prevent material drying and becoming friable. Dowsing stockpiles causes a crust to form that will reduce the amount of dust emitted from the Site from wind-whipping of stockpiles. Operations will cease when winds are deemed to cause excessive movement of wastes and materials.



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Source	Pathway	Receptor	Type of Impact	Where relationship can be interrupted
Operation of screening / crushing plant	Atmospheric dispersion	Surrounding sensitive receptors	Visual soiling and airborne particulates	Operations will cease in periods of very high winds. Plant will be regularly cleaned down after use to prevent the build-up of dust.
Stockpiled materials	Atmospheric dispersion	Surrounding sensitive receptors	Visual build-up of dust	Dampening of stockpiles in dry/ windy weather or when excessive dust is identified, to prevent stockpiled material becoming friable.

**Table 5.2: Mitigation measures**

Mitigation Measure	Description / Effect	Use on Site	Trigger for Implementation	How is it implemented?	Further mitigation to be implemented if not effective
Site speed limit, “no idling” policy and minimisation of vehicle movements on the Site.	Reducing vehicle movements reduces dust emissions from the Site. Enforcement of the speed limit and limiting movements reduces the chance and amount of re-suspension of dust by vehicle wheels.	There will be a 5mph speed limit, a ‘no-idling’ policy, and the minimisation of vehicle movements on the Site. Vehicle movements will be minimised by ensuring that the double handling of materials is avoided where possible e.g. loads entering the Site that can be clearly identified as one waste type will be immediately sent to the correct waste stockpile area. If a load requires attention such as handpicking to separate waste types is accepted onto the Site, then the load will be deposited, picked and then moved to the correct stockpile.	No trigger for implementation. These mitigation measures will be included in the EMS and therefore are carried out at all times.	Enforcement by Site Manager and observation by Site operatives.	If excessive dust emissions are observed to be leaving the Site boundary, then the further mitigation measure(s) will be triggered. If there is mud on the access road, then a mobile bowser will be deployed to clean and dampen the surface. If excessive dust emissions from vehicle movements continue after these measures, then operations shall cease.
Minimising drop heights for material.	Minimising the height from which the material is dropped should reduce the likelihood dust could be generated and dispersed by winds.	Handling of material on Site should be minimised at all times in accordance with procedures within the EMS. Staff will be trained in the importance of minimising drop heights.	This measure will be implemented whenever the Site is operational i.e. whenever material is being moved.	By plant operators lowering the grabs/shovels on the equipment being used to move and deposit materials.	Water will also be available to dampen surfaces and stockpiles to reduce dust generation. If excessive dust emissions continue after these measures, then operations shall cease.
Good housekeeping	Having a consistent, regular housekeeping regime that is supported	The EMS will have a procedure for housekeeping.	These measures will be implemented whenever the Site is operational.	Good housekeeping will be implemented by the	If excessive dust emissions are observed to be leaving the Site



Mitigation Measure	Description / Effect	Use on Site	Trigger for Implementation	How is it implemented?	Further mitigation to be implemented if not effective
	by management, ensures the Site is regularly checked and issues remedied to prevent and remove dust build up and subsequent entrainment of dust by wind whipping.	Waste will be stored in designated stockpiles and bays and will not be allowed to escape from boundary of the Site.		housekeeping procedure within the EMS and by carrying out site inspections.	boundary, then the further mitigation measure(s) will be triggered e.g. water suppression.
Sheeting of vehicles.	Prevents the escape of debris and dust from vehicles including that from wind whipping.	All vehicles entering / exiting the Site must be sheeted to minimise the likelihood of dust emissions. Excessively dusty loads will not be accepted onto the Site.	<p>Loading/ unloading of materials to/from a vehicle will be followed by closing of the sheet covers on that vehicle.</p> <p>Visual observation of incoming vehicles will take place to ensure vehicles arriving are sheeted.</p> <p>All vehicles carrying waste to the Site will be sheeted at all times unless being loaded or unloaded.</p>	The sheeting equipment will be activated and checked to ensure proper coverage before the vehicle can leave the site. Incoming vehicles that are not sheeted will be rejected from the site or sheeted immediately.	If excessive dust emissions are observed to be leaving the Site boundary, then the further mitigation measure(s) will be triggered. Materials may be dampened.
Wheel washing	Helps to remove mud from wheels of the vehicles.	The wheel washing facility is used to remove mud from the wheels of vehicles and is inspected on a regular basis to ensure the facility is in working order.	The wheel wash will be used by all vehicles entering and exiting the Site when the wheels are observed as having accumulated a significant amount of mud.	Site operatives ensure that vehicles use the wheel washing facilities as required.	If excessive dust emissions that could cause nuisance to local receptors continue, further mitigation measures will be triggered. E.g. water sprays will be used to dampen surfaces and stockpiles to prevent dust becoming airborne.
Ceasing operations during high winds and/or exceptionally dry conditions.	Mobilisation of dust is likely to be greater during periods of strong winds or exceptionally dry conditions.	During exceptionally dry and/or windy conditions, if any operations / Site movements cause or are likely to cause excessive dust emissions beyond the Site boundary, or if	If excessive dust is being generated by the operations and water sprays are proving not to be sufficient, then the Site Manager will notify staff and operations will	The Site Manager will make the decision to temporarily cease activities that are causing the dust emissions.	N/A



Mitigation Measure	Description / Effect	Use on Site	Trigger for Implementation	How is it implemented?	Further mitigation to be implemented if not effective
		<p>abnormal dust emissions are observed within the Site, Site operations may be suspended temporarily to avoid further dust emissions. The weather conditions at the Site will be considered at the start of each working day so that the day's work may be planned to take in regard any potential dust emissions. If the wind speed and direction are likely to increase the risk of nuisance to neighbouring receptors, then operations may be temporarily stopped. There will be no specific wind speed limit and/or no specific criteria for this to occur, as dust is dependent on other conditions such as rain.</p> <p>The Site Manager will decide whether to cease operations as a result of weather conditions. This decision is based on a combination of factors, including those mentioned above. The conditions will be recorded on the Daily Inspection Checklists. The record will include an overall description of the weather conditions including, but not limited to, wind strength (e.g.</p>	<p>temporarily cease. Operations will commence once the wind has subsided and/or the area is dampened down.</p> <p>Weather condition monitoring (Visual observation) including wind strength, wind direction and rainfall. This monitoring will be recorded on the Daily Inspection Checklist.</p>		



Mitigation Measure	Description / Effect	Use on Site	Trigger for Implementation	How is it implemented?	Further mitigation to be implemented if not effective
		windy, not windy), wind direction (e.g. towards northern boundary) and rain.			
Minimisation of storage heights on the Site.	Minimising stockpile heights should reduce the distance over which debris and dust could be blown and dispersed by winds i.e. wind whipping.	The EMS will require that the handling of waste material on Site will be minimised where possible. Staff will be trained about the importance of reducing drop heights.	No trigger for implementation. These measures are implemented whenever the Site is operational.	The Site Manager will keep a record on the Daily Inspection Checklists to ensure stockpiles do not exceed the heights specified in the stockpile plan in the EMS.	If excessive dust emissions that could cause nuisance to local receptors continue, further mitigation measures will be triggered. E.g. use of water sprays to dampen stockpiles / surfaces or temporarily ceasing dusty activities.
Water suppression	Use of water sprays. This measure can remove particles from the air and dampen down dusty / dry materials	Sprays will be in use at the Site to dampen surfaces and stockpiles of material to prevent particulate matter becoming airborne. The condition and integrity of the sprays will be checked as part of the Inspection Checklists.	When excessive dust emissions are observed to be leaving the Site boundary. Visual observation will be carried out by all employees on the Site. Findings from the visual observations will be recorded on Daily Inspection Checklists.	Use of water sprays on the Site will be used to minimise dust emissions.	If excessive dust emissions that could cause nuisance to local receptors continue, further mitigation measures will be triggered. E.g. cessation of dusty activities.
Road sweeper	Removes the mud from the access road and public highway and reduces the potential for dust emissions from vehicle movements in the area.	The Operator will hire a road sweeper if required. The road sweeper is deployed when necessary to control the amount of mud on local roads and minimise the generation of dust when required. The cleanliness of roads in the vicinity of the Site entrance are checked as	Visual observation of the state of the access road and local roads – findings recorded on the Inspection Checklists in Appendix 1. This identifies the need for the use of the road sweeper.	The road sweeper will be deployed to clean the access road and local roads. Site management instructs a trained Site Operative to carry out the road sweeping.	N/A



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Mitigation Measure	Description / Effect	Use on Site	Trigger for Implementation	How is it implemented?	Further mitigation to be implemented if not effective
		part of the Inspection Checklists.			



Remedial measure	Description / Effect	Use on Site	Trigger for Implementation	How is it implemented?	Further mitigation to be implemented if not effective
Road sweeper	Removes the mud from the access road and adjacent highway (as required) and reduces the potential for dust emissions from vehicle movements in the area.	<p>A road sweeping vehicle is hired to control the amount of mud on local roads and minimise the generation of dust when appropriate.</p> <p>The road sweeper will be maintained in accordance with the manufacturer's specifications.</p> <p>Appendix 1 Inspection Checklists will be populated with items on the Site that are required to be maintained on a scheduled basis, such as the road sweeper.</p> <p>The cleanliness of roads in the vicinity of the Site entrance are checked as part of the Inspection Checklists.</p> <p>If the Inspection Checklist identifies a requirement for the road sweeper to be used, then a road sweeper will be hired and deployed to be used by a trained member of staff.</p>	<p>Visual observation of the state of the access road and local roads - findings recorded on the Inspection Checklists in Appendix 1.</p> <p>This identifies the need for the use of the road sweeper. Constant observation by all operatives on the Site.</p> <p>The Site Manager will check on the state of the road at least once daily and if mud is visible on the road, that has been tracked out from the Site, then the road sweeper will be hired and deployed.</p>	<p>The Road sweeper would be deployed to clean the access road and local roads. Site management instructs the trained operative to carry out the road sweeping.</p> <p>The Site will be swept as required.</p>	N/A



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Remedial measure	Description / Effect	Use on Site	Trigger for Implementation	How is it implemented?	Further mitigation to be implemented if not effective
Water suppression	Using mobile water bowzers and spray attachments. This measure can remove particles from the air and dampen down dry / dusty materials.	Sprays will be in use at the Site to dampen surfaces and stockpiles of material to prevent dust emissions. The condition and integrity of the water bowser and sprays will be checked as part of the Inspection Checklists in Appendix 1.	<p>When excessive dust emissions are observed to be leaving the Site boundary. Visual observation will be carried out by all employees on the Site.</p> <p>Findings from the visual observations will be recorded on Inspection Checklists.</p> <p>Use of water sprays on the Site are used to minimise dust emissions unless the Site is not operational or there is wet weather.</p>	The water levels in the bowzers are monitored by site operatives to ensure that there is a sufficient supply available for the water sprays.	If excessive dust emissions are continued to be observed leaving the Site boundary, then the further mitigation measure(s) is triggered. Cease operations causing the dust emission.



Other Considerations:

Water availability

- 5.11. Waste for dust suppression will be available from the adjacent site office and tinkered or piped to the area where it is required. There is not a shortage of water on the Site nor water pressure variations to consider in this Dust Management Plan.

In the event of a drought

- 5.12. During exceptionally dry and/or windy conditions, if any operations / site movements cause or are likely to cause visible dust emissions beyond the Site boundary, or if abnormally high dust emissions are observed within the Site, operations may be suspended to avoid further dust emissions. This will be decided by the Site Manager.
- 5.13. Depending on the severity of the drought conditions, restrictions may be in place on the amount of water available for use on Site from the supplier (mains water supply). In this case, operations may be reduced or suspended in order to comply with any water usage restrictions.



6. Monitoring

Visual Dust Monitoring

- 6.1. Dust emissions at the Site will be monitored by visual observation. This monitoring can take place anywhere within and around the Site boundary.
- 6.2. The duration of visual monitoring will be within operational hours. It is expected that staff members will also check for dust emissions as they approach and leave the Site.
- 6.3. It will be the responsibility of every member of staff to monitor the dust emissions on the Site as they undertake their daily tasks.
- 6.4. Reports will be made to the Site Manager regarding dust emissions when dust is observed leaving, or about to leave, the Site boundary.
- 6.5. If excessive dust emissions (dust clouds) are observed, then the Site Manager will establish what is causing the excessive dust emission to be generated and take remedial action. The results of the investigation and what action was taken will be recorded and retained.
- 6.6. The weather conditions at the Site will be considered and recorded at the start of each working day so that the day's work may be planned as appropriate regarding potential dust emissions. Information on the Inspection Checklists will contain an overall description of the weather conditions including, but not limited to, wind strength, wind direction (e.g. toward northern boundary) and rain.
- 6.7. As well as visual monitoring being undertaken by Site Operatives at all times, there are times of the day where visual monitoring is required to be recorded on the Inspection Checklists. The recorded visual monitoring checks will be carried out by a Site Operative, who will have been trained in accordance with the procedures within the EMS. Remedial actions required will be specified and identified on the Inspection Checklists.
- 6.8. Recorded visual monitoring will be undertaken at least twice a day, for a minimum of five minutes each time. They will take place at the beginning of the working day and when operations with the highest potential to produce dust are taking place. Undertaking visual monitoring recorded checks at the times when the Site is considered to have the highest potential for dust emissions is considered to be the most beneficial method to ensure that mitigations measures in place at the Site are effective.
- 6.9. Extra and unplanned monitoring will be carried out on the Site when conditions are particularly windy or dry, new activities are being undertaken, new machinery is being used or following the receipt of a complaint or incident related to dust emissions.



7. Reporting and complaints response

Engagement with the Community

- 7.1. A Site Notice Board will be located at the Site entrance.
- 7.2. The Site Notice Board will include the following information:
 - The Permit holder's name.
 - The Operator's name.
 - An emergency contact name and telephone number.
 - A statement that the Site is permitted by the Environment Agency
 - The Environmental Permit Reference.
 - The Environment Agency national numbers, 03708 506506 and 0800 807060 (incident hotline).
- 7.3. The provision of the above information will ensure that members of the community can contact the Operator should they be concerned by dust emissions or wish to make a complaint. This also applies to any events that may happen when the Site is unmanned / not operational.

Reporting of Complaints

- 7.4. The Environmental Management System (EMS) on Site will have a procedure for responding and dealing with complaints. A Complaints Form will be available on Site and must be filled in and kept on file whenever a complaint is received in accordance with the EMS complaints procedure. An example of the Compliant Form to be used on the Site is provided in Appendix 2.
- 7.5. The Complaints Form will record who made the complaint, what the complaint was about and what has been done to resolve the issue and make sure this does not happen again.
- 7.6. The Site Manager will identify what caused the excessive dust emission to be generated. This generation may have been caused by failure of Site machinery or dust procedures. If the excessive dust emission has been caused by a procedure not being carried out properly, then staff will receive further training on the dust procedures and site management. If the excessive dust emission has been caused by plant failure, then the plant will be repaired as soon as possible.
- 7.7. In all cases, and where information is available, all complaints will be acknowledged and investigated. Any complaints received by the Environment Agency relating to dust emissions from the site are dealt with as soon as is reasonably possible upon notification.

Out of Hours Arrangements

- 7.8. In the event of an out-of-hours complaint or incident occurring at the Site related to dust emissions, then a Director can be contacted via phone call. The Director resides in the buildings around the Site.
- 7.9. The Director can attend the Site or instruct a relevantly trained Site Operative to attend the Site in their absence. On arrival at the Site, the cause of the dust emission will be identified, and the most suitable corrective measure will be instigated.

Management Responsibilities

- 7.10. Site staff will be responsible for dust management issues and detecting/reporting dust emissions. All members of staff will be given training on the EMS for the Site, which will include a Dust Procedure. All staff on the Site will be trained on the Dust Procedure which will include details regarding mitigation measures and monitoring/recording visual inspections.
- 7.11. On receipt of a complaint the Site Manager will investigate and establish the cause. The most effective corrective or preventative action must then be determined to prevent future emissions occurring. Where additional time is required to implement the appropriate corrective or preventative action the complainant will be contacted with details of the actions to be implemented and the estimated timescales for



completion. The maximum response time for investigating the cause of the complaint and contacting a complainant will be two working days.

- 7.12. Should numerous complaints be received at the Site regarding the same issue, the cause of the complaint(s) will be investigated in accordance with the Accidents, Incidents & Complaints Procedure within the EMS. Operations on the Site will cease, should excessive dust emissions be observed, following the implementation of additional mitigation measures or when instruction from the Environment Agency to cease operations has been received.

Reviewing the Dust Management Plan

- 7.13. The Dust Management Plan will be reviewed within a week of a complaint being received, or an incident taking place, related to dust emissions to see if any changes can be made to prevent a recurrence. The Accident / Incident Form or Complaint Form will detail what happened and what corrective measures were/are required. The relevant form will identify whether a change to the Dust Management Plan for the Site is required.
- 7.14. Should the monitoring being undertaken on the Site repeatedly record dust emissions with the potential to leave, or leaving, the Site boundary, then the Dust Management Plan will be reviewed and amended to account for new mitigation measures to be undertaken on the Site.



Dust Management Plan

Drawings

Drawing No. 20/016d 001

Sensitive Receptors Plan

Drawing No. 20/016c 002

Site Layout Plan

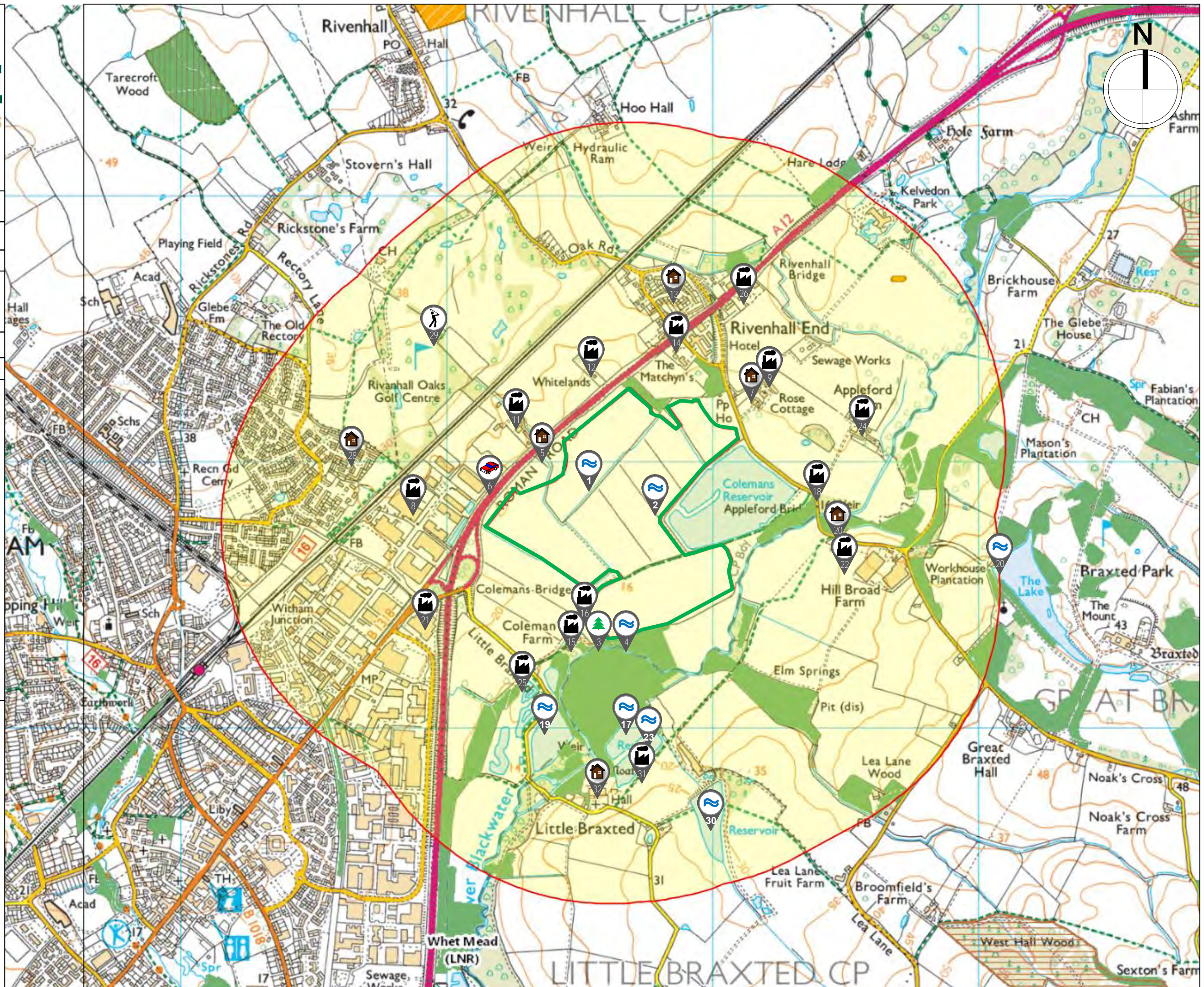


Client	Brice Aggregates Limited
Title	Sensitive Receptors Plan
Plan No.	20/016d 001
Site	Colemans Quarry, Little Braxted Ln, Witham CM8 3EX
Scale	1:11,000
Date	12/02/21

Key	
1	Excavation Boundary
2	Radius (1km)
3	Burghy Brook
4	Colemans Reservoir
5	Protected Habitat
6	River Blackwater
7	Residence off Roman Road
8	A12 (Roman Road)
9	Rivenhall End (including Rose Cottage)
10	Eastways Industrial Estate
11	Witham Wood Chips
12	Brice R A & Partners
13	Burghy Brook Poultry Farm
14	Burghy Brook Fencing
15	Rivenhall End North
16	The Rivenhall
17	Colemans Bait & Tackle
18	Coleman Farm
19	Braxted Back Lake
20	Old Farm House Hay
21	The Willows
22	Appleford Bridge Cottage
23	Screwfix
24	Solar Panels
25	Braxted Front Lake
26	APC Overnight
27	Colemans Cottage Fishery
28	BP
29	The Lake
30	Witham
31	Rivenhall Oaks Golf Centre
32	Little Braxted Reservoir
33	Solar Panels
34	Little Braxted



Agriculture House, T: 01952 879705
 Southwater Way, M: 07762 580839
 Telford, E: info@westburyenv.co.uk
 TF3 4NR www.westburyenv.co.uk



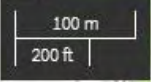
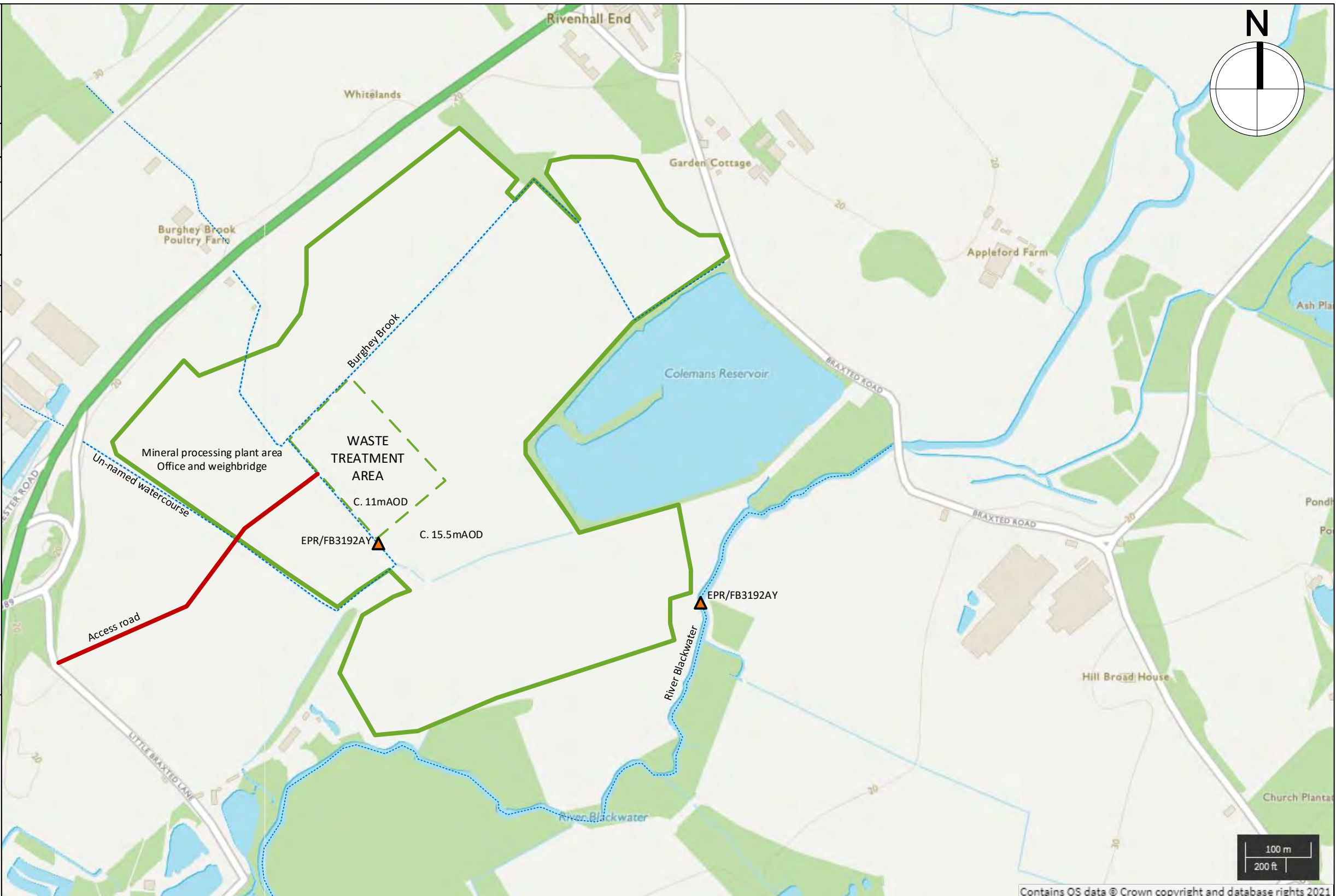


Client	Brice Aggregates Limited
Title	Site Layout Plan
Plan No.	20/016c 002
Site	Colemans Quarry, Little Braxted Ln, Witham CM8 3EX
Scale	1:10,000
Date	12/02/2021

- Key**
- Excavation Boundary
 - Waste Treatment Area
 - Watercourse
 - Access road
 - Quarry discharge locations



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Appendix 1

Appendix 1 Inspection Checklists

Form No. 3.3a Inspection Checklists

V.1 January 2021

Daily Visual Inspection Checklist					
Item	Aspects	Checked?	Details	Remedial Action Required?	Action Form Completed
Litter	Within extraction / restoration area				
	Within waste storage area				
	Along Site boundaries				
	Immediately outside Site entrance and exits				
Dust emissions	No excessive dust emissions should be escaping the boundary of the site				
Roads	Public highway clear of mud and debris				
Mobile water bowsers	Water levels in bowsers				
Weather	Please describe (temperature, wind speed, wind direction, dry/wet)				

Date: _____

Completed by: _____

Signature: _____

Form No. 3.3a Inspection Checklists

Weekly Visual Inspection Checklist					
Item	Aspects	Checked?	Details	Remedial Action Required?	Action Form Completed
Site Security	Locks on gates working and no holes in gate.				
	No damage to boundary fencing / hedging				

Date: _____

Completed by: _____

Signature: _____

Form No. 3.3a Inspection Checklists

Monthly Visual Inspection Checklist					
Item	Aspects	Checked?	Details	Remedial Action Required?	Action Form Completed
Spill kits	Spill kits present on the Site and ready for use.				
Water bowser	Tanks free from leaks.				
	Spray attachments in good working order.				

Date: _____

Completed by: _____

Signature: _____

Form No. 3.3a Inspection Checklists

Annual Inspection Checklist					
Item for Visual Inspection	Aspects for Inspection	Checked?	Details	Remedial Action Required?	Action Form Completed

Date: _____

Completed by: _____

Signature: _____



Dust Management Plan

Appendix 2

Appendix 2 Complaints Form

Form No. 6.1c Complaints Form

V.1 January 2021

Who made the complaint?	Name:	
	Address:	
	Phone No.:	
Date and time they made the complaint:		
What happened? What was it about?		
Was anyone else aware of this – other neighbours or your staff? If so, who?		
Did the complaint relate to your site? If so, what happened? What went wrong?		
What have you done to make sure that it does not happen again?		
Was there any significant pollution – for example: dust, odour or noise outside the site or spillage of polluting liquids onto the ground, into a drain or a watercourse?		
<p>If there was, then you must notify the Environment Agency on 0800 807060 and any other relevant regulators.</p> <p>Have you done so? Yes <input type="checkbox"/> No <input type="checkbox"/></p>	At what time did you phone?	
<p>You must also write or send an email to confirm this to your local Environment Agency office.</p> <p>Have you done so? Yes <input type="checkbox"/> No <input type="checkbox"/></p>	What date did you contact?	
Please print and sign your name:		



Appendix 7

Waste Acceptance Procedures

Procedure: Waste Acceptance

V.2 February 2021

Purpose: To ensure that all waste accepted is permitted under the conditions of the Environmental Permit for Deposit of Waste for Recovery and waste treatment

	RESPONSIBLE PERSON	RECORD
<p><u>Environmental Permit and waste codes</u></p>		
<p>1. The Environmental Permit contains the list of waste types that are permitted to be accepted at the site for deposit of waste for recovery. Tables containing the codes and descriptions of waste types that are permitted to be deposited at the site are included at the end of this procedure, see <u>Table 1 Permitted Waste Types – waste treatment</u> and <u>Table 2 Permitted waste types – waste recovery</u>.</p> <p>If you are unsure whether a load can be accepted, consult this list or the current Environmental Permit. Alternatively contact the Site Manager.</p>	All	<u>Table 1 & Table 2 Permitted Waste Types</u>
<p>2. If the waste code on the Waste Transfer Note (WTN) is not listed in Table 1 or Table 2 of this procedure/ the Environmental Permit, the load must be rejected in accordance with the <u>Waste Rejection Procedure</u>.</p>	Site Operative	<u>Table 1 & Table 2 Permitted Waste Types</u> <u>Waste Rejection Procedure</u>
<p><u>Waste pre acceptance</u></p>		
<p>3. Following a customer enquiry, information about the waste is requested from the waste producer. Such information could include site investigation reports / laboratory test reports / hazardous waste assessments. This information is recorded on the Waste Information Form and the information reviewed to assess if the waste is acceptable or not.</p>	Site Manager	<u>Waste Information Form</u>
<p>4. A judgement should be made as to the necessity to obtain comprehensive information at this stage. If the source of the waste is not likely to be contaminated, then it may not be necessary to obtain a full site investigation. If the source of the waste is likely to be contaminated, then a full site investigation and/or a hazardous waste assessment should be requested.</p>	Site Manager	
<p>5. Review of the information in the Waste Information Form will determine the need for (further) sampling/testing/Hazardous Waste Assessment.</p>	Site Manager	<u>Waste Information Form</u> <u>Waste Classification Procedure</u>
<p>6. Classification of waste is the responsibility of the waste producer, however should one not be available the Operator will carry one out to ensure that the waste is non-hazardous. The Hazardous Waste Assessment will be completed in accordance with WM3 Guidance and should be completed in accordance with the Waste Classification Procedure.</p>		<u>Waste Classification Procedure</u>
<p>7. All associated Waste Information records and Hazardous Waste Assessments will be kept along with Waste Transfer Notes in a secure location. These records will be maintained for a minimum of two years.</p>	Site Manager	<u>Waste Information Form</u>
<p><u>Collection of a load</u></p>		
<p>8. A driver arriving at a site to collect waste will:</p> <ul style="list-style-type: none"> • Ensure that the waste type is acceptable as per instructed. • Ensure a Waste Transfer Note is issued with the load and that the description matches the load. 	Site Operative	Waste Transfer Note

	RESPONSIBLE PERSON	RECORD
9. If a driver collecting a load suspects that the description on the Waste Transfer Note is not accurate then the Site Manager will be contacted. The waste producer will be requested to review/reconsider the information on the Waste Transfer Note so that the description is accurate.	Site Operative	
<u>All Vehicles</u>		
10. All vehicles carrying waste on the public highway must be registered as waste carriers and a copy of their certificate should be held on file in the site office. A regular check should be carried out to ensure that registrations are still in date, and where they are found not to be, a copy of the new registration should be obtained immediately.	Site Operative	
<u>Acceptance of waste onto the Site</u>		
11. Unless a season WTN has been provided, a WTN for every load is obtained from the driver and the WTN is checked to ensure it contains the following: <ul style="list-style-type: none"> • Vehicle registration and driver's name and signature. • Waste haulier name and valid Waste Carriers registration number. • Name, address (of destination site) and signature of the person receiving the waste (transferee). • Permit number or exemption reference of person receiving the waste (if applicable). • Description of waste including; waste type, waste source, waste containment and waste quantity. • List of Waste (LoW) code. • SIC Code of the waste holder using SIC Codes (2007). • Date and time of waste transfer and waste transfer note number. • Confirmation that the Waste Hierarchy has been considered. <p>A WTN will be generated if one is not provided by the driver.</p>	Site Operative	Waste Transfer Note
12. Loads not accompanied by a WTN or that do not match the description on the WTN will be rejected in accordance with the Waste Rejection Procedure once the Site Manager has been informed.	Site Operative	<u>Waste Rejection Procedure</u>
13. Every load is visually inspected prior to being off loaded. <p>If there is any doubt about the waste type delivered, then a message is relayed to the Site Manager.</p>	Site Operative	<u>Table 1 & Table 2 Permitted Waste Types</u>
14. After checking the load and the associated paperwork the vehicle is directed to the offloading area for inspection and stockpiling. A Site Operative will inspect tipped loads.	Site Operative	
15. <u>Waste deposited without treatment</u> Non-hazardous wastes accepted that have the potential to contain contamination will be tested to ensure it meets Landfill Directive inert Waste Acceptance Criteria (WAC). <p><u>On-site treated waste</u> Fines and filter cake from the screening/ washing processes to be deposited in the void, will be stockpiled and tested to ensure they comply with Landfill Directive inert WAC.</p>	Site Operative	
16. If there is a discrepancy with the load or its paperwork then the Site Manager shall be informed immediately. If the load is not acceptable under the Environmental Permit then, if possible it should be re-loaded onto the vehicle and rejected from site in accordance with the <u>Waste Rejection Procedure</u> .	Site Operative	<u>Waste Rejection Procedure</u>
17. If it is impossible to load a rejected load back onto the delivering vehicle the load will be put into the quarantine area. Waste will be rejected from the Site in accordance with the <u>Waste Rejection Procedure</u> .	Site Operative	<u>Waste Rejection Procedure</u>

RESPONSIBLE PERSON **RECORD**

Compliance Testing

- | | | |
|--|--------------|--|
| 18. Compliance testing will be carried out on waste accepted on to the Site. Samples taken from waste piles will be tested at a laboratory to determine the characteristics of the waste and to ensure that the waste is as described on the Waste Transfer Note. | Site Manager | |
| 19. For classification compliance testing, an ‘Environmental Suite’ should be requested from the laboratory for the waste sampled. The tests must be carried out on the waste itself and not the leachate. The Environmental Suite must contain at least the following parameters: <ul style="list-style-type: none"> • Antimony. • Arsenic. • Boron. • Selenium • Metals, including; Beryllium, Cadmium, Chromium III, Chromium VI, Copper, Lead, Manganese, Mercury, Molybdenum, Nickel, Vanadium, Zinc. • Acid Soluble Sulphide. • Phenols (Monohydric). • Total Cyanide. • Elemental Sulphur. • pH Value. • Acid / Alkali Reserve. • PAH (total/speciated). • TPH (total/speciated). • BTEX. • Total Sulphate. • Water Soluble Sulphate. • Moisture Content. • Asbestos. | Site Manager | |

For Landfill Directive inert WAC compliance testing, the collected samples will be tested for Landfill Directive inert WAC tests at an accredited laboratory.

- | | | |
|---|----------------|-----------------------------------|
| 20. A Hazardous Waste Assessment, in accordance with WM3 Guidance, will be completed using the testing results received from the laboratory. This Hazardous Waste Assessment will classify the waste as non-hazardous or hazardous. | Site Operative | <u>Hazardous Waste Assessment</u> |
| 21. If a waste sample is found to be hazardous in nature then the corresponding waste pile will be quarantined and removed from the Site in accordance with the Waste Rejection Procedure. | Site Manager | <u>Waste Rejection Procedure</u> |

Records

- | | | |
|--|----------------|---------------------|
| 22. A record is kept of all vehicles delivering waste to and from the site, along with the type, quantity and source of waste delivered. | Site Operative | |
| 23. Waste Transfer Notes will be appropriately stored for a minimum of two years. | | Waste Transfer Note |
| 24. Information from the Waste Transfer Notes will be used to provide the necessary data to complete the Waste Return as required by the Environment Agency. | Site Operative | Waste Return |

Consequences

- | | | |
|---|--|--|
| 25. The consequence of not following this procedure may result in unsuitable waste being accepted on to the site. This may constitute a breach in the conditions of the Environmental Permit, in addition to causing potential contamination of the site. | | |
|---|--|--|

Table 1 Permitted waste types – waste treatment

Waste Code	Description
01	Wastes resulting from exploration, mining, quarrying and physical and chemical treatment of minerals
01 04	Wastes from physical and chemical processing of non-metalliferous minerals
01 04 08	Waste gravel and crushed rocks other than those containing dangerous substances
01 04 09	Waste sand and clays
02	Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing, food preparation and processing
02 02	Waste from preparation and processing of meat, fish and other foods of animal origin
02 02 02	Shellfish shells from which the soft tissue or flesh has been removed only
10 11	Wastes from manufacture of glass and glass products
10 11 12	Clean glass other than those mentioned in 10 11 11
10 12	Wastes from manufacture of ceramic goods, bricks, tiles and construction products
10 12 08	Waste ceramics, bricks, tiles and construction products (after thermal processing)
10 13	Wastes from manufacture of cement, lime and plaster and articles and products made from them
10 13 14	Waste concrete only
15	Waste packaging, absorbents, wiping cloths, filter materials and protective clothing not otherwise specified
15 01	Packaging (including separately collected municipal packaging waste)
15 01 07	Clean glass only
17	Construction and demolition wastes (including excavated soil from contaminated sites)
17 01	Concrete, bricks, tiles and ceramics
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
17 02	Wood, glass and plastic
17 02 02	Clean glass only
17 03	Bituminous mixtures, coal tar and tarred products
17 03 02	Bituminous mixtures other than those mentioned in 17 03 01, including waste comprised of clean road stone swept from newly laid roads
17 05	Soil (including excavated soil from contaminated sites), stones and dredging spoil
17 05 04	Soils and stones other than those mentioned in 17 05 03, including waste comprised of clean road stone swept from newly laid roads
17 05 06	Dredging spoil other than those mentioned in 17 05 05
17 05 08	Track ballast other than those mentioned in 17 05 07
19	Wastes from waste management facilities, off site waste water treatment plants and preparation of water intended for human consumption/industrial waste
19 05	Wastes from aerobic treatment of solid waste
19 05 03	Compost from source segregated biodegradable waste only
19 08	Wastes from waste water treatment plants not otherwise specified
19 08 02	Washed sewage grit (waste from desanding) free from sewage contamination only

Waste Code	Description
19 08 99	Stone filter media free from sewage contamination only
19 09	Wastes from the preparation of water intended for human consumption or water for industrial use
19 09 02	Sludges from water clarification
19 12	Wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified
19 12 05	Clean glass only
19 12 09	Minerals (for example sand, stones)
19 12 12	Soil from treatment of construction/demolition waste only
19 13	Wastes from soil and groundwater remediation
19 13 02	Solid wastes from soil remediation other than those mentioned in 19 13 01
19 13 04	Sludges from soil remediation other than those mentioned in 19 13 03
20	Municipal wastes (household waste and similar commercial, industrial and institutional wastes) including separately collected fractions
20 01	Separately collected fractions (except 15 01
20 01 02	Clean glass only
20 02	Garden and park wastes (including cemetery waste)
20 02 02	Soil and stones

Table 2 Permitted waste types – waste recovery

Exclusions				
Wastes having any of the following characteristics shall not be accepted:				
<ul style="list-style-type: none"> • Consisting solely or mainly of dusts, powders or loose fibres • Wastes that are in a form which is either sludge or liquid 				
Source	Sub-source	Waste code	Description	Additional restrictions
01 Waste resulting from exploration, mining, quarrying and physical and chemical treatment of minerals	01 01 wastes from mineral excavation	01 01 02	Wastes from mineral non-metalliferous excavation	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 01 04 06	
		01 04 09	Waste sand and clays	
02 Waste from agriculture, horticulture, aquaculture, forestry, hunting and fishing, food preparation and processing	02 04 wastes from sugar processing	02 04 01	Soil from cleaning and washing beet	
10 Wastes from thermal processes	10 12 wastes from manufacture of ceramic goods, bricks, tiles and construction products	10 12 08	Waste ceramics, bricks, tiles and construction products (after thermal processing)	

Source	Sub-source	Waste code	Description	Additional restrictions
	10 13 waste from manufacture of cement, lime and plaster and articles and products made from them	10 13 14	Waste concrete	
17 Construction and demolition wastes	17 01 concrete, bricks, tiles and ceramics	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	Metal from reinforced concrete must have been removed.
	17 03 bituminous mixtures	17 03 02	Bituminous mixtures other than those mentioned in 17 03 01	Road planings only.
	17 05 soil stones and dredging spoil	17 05 04	Soil and stones other than those mentioned in 17 05 03	Restricted to topsoil, peat, subsoil and stones only. Topsoil and peat will be restricted to the top 500m only.
19 Wastes from waste management facilities	19 12 wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified	19 12 09	Minerals (for example sand, stones) only	Restricted to wastes from 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
		19 12 12	Other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11	Restricted to crushed bricks, tiles, concrete and ceramics and soils from the mechanical treatment of construction / demolition waste. Metal from reinforced concrete must be removed. Does not include 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	20 02 02	Soils and stones	Restricted to topsoil, peat, subsoil and stones only.

Form: Waste Information

V.1 September 2020

General Information	Waste Producer:		Contact Name:						
	Please tick the box if person completing the form: <input type="checkbox"/>		Telephone No.: Fax No.:						
	Waste Carrier:		Contact Name:						
	Please tick the box if person completing the form: <input type="checkbox"/>		Telephone No.: Fax No.:						
Anticipated Volume of waste:				m ³		Anticipated Date(s) of delivery:			
Indicate whether estimate is for:		Loose / solid / stockpile							
Information required for Waste Information	Full address of source of waste (including Postcode)								
	Does the waste producer's site accept hazardous waste?								
	YES				NO				
	Process from which waste arises:								
	Hazardous Waste Assessment (based on WM3) carried out?			YES	NO	Type of Waste:	Non Hazardous <input type="checkbox"/>	Hazardous <input type="checkbox"/>	
	Description and/or composition of waste:								
	Tonnes Per Delivery				Tonnes Per Week				
	Standard Industrial Classification (SIC) Code:			41.1 Construction		41.2 Roads		43.1 Demolition & Site Preparation	
	Please circle most appropriate								
	LoW Code:	01 01 02	01 04 08	01 04 09	02 04 01	10 12 08	10 13 14	17 01 01	Other:
	17 01 02	17 01 03	17 01 07	17 05 04	19 12 09	19 12 12	20 02 02		
Details of existing and/or previous use of site (if known) (identify any known previous potentially polluting uses).									
Has a Site Investigation been carried out? (If YES, attach ALL information e.g. Borehole and trial pit logs)						YES		NO	
Is waste being generated as a result of site decontamination works?						YES		NO	
Does waste contain any biodegradable material? (e.g. wood, paper, vegetation)						YES		NO	
Declaration	Customer Declaration: I/we certify that the above information and attachments are corrected in every respect. Where "YES" is confirming that to the best of our knowledge the samples that have been taken are representative of the waste material to be deposited for recovery and that the chemical analysis have been carried out using accredited analytical methods by a UKAS accredited laboratory.								
	Name(s): Signed: Date:								

Waste testing and assessment	This section is to be completed by the Waste Assessor i.e. Brice Aggregates Limited								
	Hazardous Waste Assessment (WM3) Required?			YES			NO		
	Accept the waste?			YES			NO		
	Compliance Testing to be carried out?			YES			NO		
	Frequency of Compliance Testing?								
	Comments:								
Signature of Waste Assessor:						Date returned:			

Procedure: Waste Classification

V.1 September 2020

Purpose: To outline the steps to be taken to classify waste in accordance with WM3 Guidance

	RESPONSIBLE PERSON	RECORD
1. This procedure describes how relevant waste will be tested and classified in accordance with the <i>Waste Classification – Guidance on the Classification and Assessment of Waste – Technical Guidance WM3</i> (WM3 Guidance), produced by the Environment Agency.		
2. A Hazardous Waste Assessment may be required in the following situations: <ul style="list-style-type: none"> • Waste pre-acceptance. • Compliance testing. • Removal of waste from the Site. <p>Further information relating to these situations can be found in the sub-sections of this Procedure.</p>		
3. Waste will be classified as non-hazardous or hazardous following an assessment in accordance with WM3 Guidance by completing a Hazardous Waste Assessment.	Site Manager	
Waste classified as hazardous will need to be dealt with appropriately, as follows: <ul style="list-style-type: none"> • Waste Pre-acceptance – Hazardous waste should not be accepted. • Compliance testing - Hazardous waste should be quarantined and removed from Site accompanied by a Hazardous Waste Consignment Note and sent to a suitably licensed facility. 		

Testing of Waste

4. Samples should be sent to a laboratory in order to obtain analysis results.	Site Operative	
5. An 'Environmental Suite' should be requested from the laboratory for the sample of waste. The tests must be carried out on the waste itself and not the leachate. The Environmental Suite must contain at least the following parameters: <ul style="list-style-type: none"> • Antimony. • Arsenic. • Boron. • Selenium. • Metals, including; Beryllium, Cadmium, Chromium III, Chromium VI, Copper, Lead, Manganese, Mercury, Molybdenum, Nickel, Vanadium, Zinc. • Acid Soluble Sulphide. • Phenols (Monohydric). • Total Cyanide. • Elemental Sulphur. • pH Value. • Acid / Alkali Reserve • PAH (total/speciated). • TPH (total/speciated). • BTEX. • Total Sulphate • Water Soluble Sulphate. • Moisture Content. • Asbestos. 	Site Operative	
6. Additional analysis may be required if there is suspicion of specific contaminants, for example pesticides.	Site Manager	
7. Where there is a suspicion that asbestos may be present this must be tested for: <ul style="list-style-type: none"> • Testing is required to determine if the waste contains visible pieces of asbestos containing materials. If individual pieces of material are considered to contain asbestos these should be removed from the 	Site Operative	

RESPONSIBLE PERSON

RECORD

- waste and sent for testing. If these are found to contain 0.1% or more asbestos then the waste should be classified as hazardous.
- Testing for asbestos is also required where there is suspicion that the waste may contain asbestos fibres. If these are found at 0.1% or more then the waste should be classified as hazardous.

Waste Classification

8.	A Hazardous Waste Assessment will be completed using the waste analysis results received from the laboratory. This Hazardous Waste Assessment will classify the waste as non-hazardous or hazardous.	Site Manager	<u>Hazardous Waste Assessment</u>
9.	A Hazardous Waste Assessment may be carried out by manual assessment or by using a software package to determine the relevant hazardous properties of the waste.	Site Operative	<u>Hazardous Waste Assessment</u>
10.	A copy of the Hazardous Waste Assessment should be kept with the Duty of Care information for that waste.	Site Operative	<u>Hazardous Waste Assessment</u>

Procedure: Waste Rejection

V.1 September 2020

Purpose: To ensure non-compliant waste is rejected and that associated records of rejected loads are created.

	RESPONSIBLE PERSON	RECORD
<p><u>Reasons for Rejection</u></p>		
<p>1. A waste may be non-conforming and rejected from the site for the following reasons:</p> <ul style="list-style-type: none"> • Delivery vehicle is unsuitable for site operations / conditions. • The waste is not acceptable the Environmental Permit. • There is a prohibited waste within the load. • The load is not accompanied by the correct documentation. • The waste does not match the description on the accompanying documentation. • The waste contains putrescible waste. <p>The list is not exhaustive, if you are unsure speak to the Site Manager.</p>	Site Manager	Waste Transfer Notes
2. If a waste is identified as being unacceptable at the site entrance or at the point of offloading the Site Manager is contacted and a <u>Waste Rejection Form</u> is issued to the driver.	Site Manager	<u>Waste Rejection Form</u>
3. The driver of the load is informed of the load's rejection. The driver will be informed of the reasons for this and requested to leave the Site.	Site Manager	
4. If the load is being rejected because the description of the waste on the transfer note is incorrect, the driver may be given the opportunity to correct the mistake so long as the waste is acceptable at the Site.	Site Operative	
5. A load will be rejected if the waste is likely to be contaminated and sufficient information e.g. full site investigation and/or a hazardous waste assessment is not provided. A judgement should be made as to the necessity to obtain comprehensive information. If the source of the waste is not likely to be contaminated then it may not be necessary to obtain a full site investigation or hazardous waste assessment.	Site Manager	
6. In the event of a rejected load the Environment Agency may be contacted by telephone and / or email with details of the rejected load. These details should include information relating to the nature and quantity of waste involved, the time and date, the name and address of the waste producer, the registration number of the vehicle delivering the waste and the name and address of the vehicle driver and haulage contractor.	Site Manager	
7. If the load is not safe to be sent back onto the road, then the vehicle is kept in the Quarantine Area until appropriate arrangements can be for its removal.	Site Manager	
<p><u>Waste Rejected after Offloading of the Vehicle</u></p>		
8. If appropriate, a rejected load should be reloaded onto the delivery vehicle.	Site Operative	
9. If waste cannot be reloaded onto the delivery vehicle, the waste will be stored in the quarantine area. The customer will be contacted, arrangements to remove the quarantined waste will be made and a copy of the rejection form containing reasons for the rejection will be supplied.	Site Operative	<u>Waste Rejection Form</u>
10. If arrangements for the customer to remove the waste cannot be made, arrangements will be made to ensure the waste's removal. Waste material in the quarantine area will be exported off Site by a licensed waste carrier to an appropriately licensed facility. If necessary, the EA will be contacted regarding the rejection of the waste.	Site Manager	<u>Waste Rejection Form</u>
11. Waste will be stored for a maximum of seven working days in the quarantine area.	Site Manager	<u>Waste Rejection Form</u>

	RESPONSIBLE PERSON	RECORD
12. Details of any unauthorised waste and its subsequent removal from Site is recorded and retained on Site.	Site Manager	<u>Waste Rejection Form</u>

Form: Waste Rejection**V.1 September 2020**

Customer / Haulier:		Producer (if different):	
Contact:		Contact:	
Phone:		Phone:	
Fax:		Fax:	
Email:		Email:	
Transfer Note No:		Date:	
Vehicle Registration:		Time:	
Carriers Certificate:		Driver's Name:	
Reason for Rejection:			
Actions Taken:			
You MUST inform the Site Manager or other member of management before taking any further action.			
Manager Informed:			
Destination for Waste:			
Transfer Note No:		Date:	
Vehicle Registration:		Time:	
Carriers Certificate:		Drivers Name:	
Hazardous:	Yes / No	Consignment Note No:	
Signed			Date
Name		Position	



Appendix 8

Climate Change Risk Assessment



Anglian river basin: climate change risk assessment

Name (as on your part A application form)	Brice Aggregate Limited
Our permit reference number (if you have one)	EPR/JB3508TG/A001
Your document reference number	Environmental Permit Application Report, Version 1. Ref. 20/016c.

Risk assessment worksheet for the 2050s

Anglian river basin district

You must carry out a climate change risk assessment for any new bespoke waste and installations permit applications if you expect to operate for more than 5 years. Use the [user guide](#) to complete the table. You can add in extra pages if necessary.

Consider how your operations will be affected by the changes in weather and climate described in the table. Consider any changes to average climate conditions that may impact on your operations, for example extreme rainfall.

Also consider:

- critical thresholds - where a 'tipping point' is reached, for example a specific temperature where site processes cannot operate safely
- changes to averages - for example an entire summer of higher than expected rainfall causing waterlogging
- where hazards may combine to cause more impacts

You can add in other climate variables if you wish.

If you have stated on your application form that you do not expect to be operational in 2050, you must still consider climate change risks for the time you do intend to operate. Whilst the variables are for the 2050s, this is an estimated date and you may experience these conditions before then.

This worksheet will sit in your management system. It must appear on the management system summary you submit with your application, even if you do not need to submit the whole risk assessment with your application.

If your pre-mitigation risk score (column D) is 5 or higher, you must complete columns E to H.

	Severe impact (score = 4)	Medium impact (score = 3)	Mild impact (score = 2)	Minor impact (score = 1)
Highly likely (score = 4)	16	12	8	4
Likely (score = 3)	12	9	6	3
Low likelihood (score = 2)	8	6	4	2
Unlikely (score = 1)	4	3	2	1



Potential changing climate variable	A Impact	B Likelihood	C Severity	D Risk (B x C)	E Mitigation (what will you do to mitigate this risk)	F Likelihood (after mitigation)	G Severity (after mitigation)	H Residual risk (F x G)
<p>1. Summer daily maximum temperature may be around 7°C higher compared to average summer temperatures now.</p>	<p>Higher temperatures may mean drier site conditions for longer requiring more water supply for dust suppression.</p> <p>Drier conditions may make water availability for dust suppression, scarce.</p> <p>Sustained above average temperatures may lead to overheating of plant/ vehicles or fuel storage.</p> <p>Hotter temperature peaks will not otherwise affect the proposed waste operations.</p>	2	3	6	<p>Site staff will continually monitor for potential or actual dust generation from site activities and assess whether activities should continue. In times of prolonged draught, dampening of materials will be performed to reduce the amount of dust produced by materials in loading, unloading and movement activities.</p> <p>The use of water for dust suppression will be carefully controlled in the event of a drought, placed only when and where needed. Should water be very scarce, consideration will be given to alternative measures such as the use of chemical dust suppressant in water for site surfaces, covering potential dust sources, or altering site activities.</p> <p>The phased quarry restoration means potential dust generation is localised and over a shorter time period and surface area, which minimises dust generation potential.</p> <p>The Site will implement a no-idling policy as good practice. The Site will employ the use of modern vehicles with a reduced potential to overheat. Overheating of modern vehicles leads to their shut-down rather than risk of fire or spillage of fuel/ oil. As such, in the event of vehicle overheating, the conditions of which will</p>	2	1	2



Potential changing climate variable	A Impact	B Likelihood	C Severity	D Risk (B x C)	E Mitigation (what will you do to mitigate this risk)	F Likelihood (after mitigation)	G Severity (after mitigation)	H Residual risk (F x G)
					dictate actions to prevent recurrence.			
2. Winter daily maximum temperature could be 4°C more than the current average, with the potential for more extreme temperatures, both warmer and colder than present.	<p>Extreme winter conditions such as snow may mean arduous conditions on site for staff and plant movement.</p> <p>Higher than usual winter temperatures may mean prolonged periods of muddy conditions on site, increasing the chance of tracking mud onto adjacent highways, which could lead to resuspended dust.</p> <p>Colder than usual winter temperatures may cause adverse (hard) ground conditions, stalling or delaying restoration works. It is not considered to result in an adverse environmental impact.</p> <p>Extreme temperatures could pose a risk to fuel/oil containment.</p> <p>Colder temperature peaks will not otherwise affect the proposed waste operations.</p>	2	3	6	<p>Wheel cleansing facilities will be available on site to prevent the tracking of mud onto the local highway. Should these measures not achieve the aim of preventing mud being tracked, the use of ground mats or improved site surfacing will be employed to reduce the incidence of mud on wheels.</p> <p>All fuels and oils will be appropriately stored in sealed containers with secondary containment with 110% of the capacity of the container.</p> <p>Fuel tanks will be double skinned which will lower the exposure risk of the liquid to extreme temperatures.</p>	2	1	2
3. The biggest rainfall events are up to 20% more intense than current	There may be increased risk of surface water flooding on the site.	3	2	6	Any liquids shall be provided with secondary containment. The EMS includes a flood management plan	2	1	2



Potential changing climate variable	A Impact	B Likelihood	C Severity	D Risk (B x C)	E Mitigation (what will you do to mitigate this risk)	F Likelihood (after mitigation)	G Severity (after mitigation)	H Residual risk (F x G)
extremes (peak rainfall intensity)*.	Permitted waste types are inert and non-hazardous. Any waste washed off site will add to the volume of the local post-flood clean-up workload, rather than the hazard.				<p>for the site which outlines surfacing requirements in relation to waste types i.e. hardstanding for all permitted waste types. The flood management plan also includes key contacts and action to take in case of a flood on site. All staff are trained in procedures implemented by the flood management plan and with regard to the location of key cut off points.</p> <p>Wastes will not be stored adjacent to surface water courses. Waste for permanent deposit will be placed directly in the void. Wastes for physical treatment will be stored within the quarry void, below ground level. Therefore the risk of waste being washed off site into nearby watercourses is negligible.</p> <p>The construction of a drainage network within the site will be considered if flooding becomes a significant issue on the site.</p> <p>Pooling and ponding may occur in areas of materials extraction. Dewatering of the void will be undertaken regularly to prevent overtopping and prevent rainwater coming into sustained contact with placed or stored waste.</p> <p>In times of prolonged above average rainfall events the ground may become saturated causing surface run-off of rainwater. The construction of bunds may be</p>			



Potential changing climate variable	A Impact	B Likelihood	C Severity	D Risk (B x C)	E Mitigation (what will you do to mitigate this risk)	F Likelihood (after mitigation)	G Severity (after mitigation)	H Residual risk (F x G)
					considered if extreme surface run-off is observed to redirect water and avoid run-off into nearby surface water features and watercourses.			
4. Average winter rainfall may increase by 35% on today's averages.	As above. More winter rainfall may lead to increased risk of flooding on the site.	3	2	6	As above.	2	1	2
5. Sea level could be as much as 0.6m higher compared to today's level*.	The site is located c.15km from the coast. Elevated sea levels may cause an increase in water levels in local watercourses leading to the sea, increasing the risk of flooding at the site.	3	2	6	As above.	N/A	N/A	N/A
6. Drier summers, potentially up to 39% less rain than now.	Drier summers could impact site operations by increased dust emissions and the potential for hose pipe bans which could affect dust suppression measures.	2	2	4	<p>The robust dust mitigation measures included in the Dust Management Plan are considered appropriate to limit the potential impact of drier summers on increased potential for dust emissions at the site.</p> <p>The site will implement the recycling of water (including in the wash plant), where possible. Washing of waste (physical treatment) may be stopped if water is very scarce.</p> <p>If the site cannot be properly operated without an adequate water supply, operations may be stopped.</p>	N/A	N/A	N/A
7. At its peak, the flow in watercourses could be 35% more than now, and	It is considered unlikely that the increased or reduced flow in water	1	2	2	N/A	N/A	N/A	N/A



Potential changing climate variable	A Impact	B Likelihood	C Severity	D Risk (B x C)	E Mitigation (what will you do to mitigate this risk)	F Likelihood (after mitigation)	G Severity (after mitigation)	H Residual risk (F x G)
at its lowest it could be 80% less than now.	courses will impact site operations. Operations will not rely on a water supply from a watercourse. Flooding issues are discussed in section 3 above.							

*Indicates data has come from climate change allowances as part of the spatial planning process. Evidence from your planning submission is acceptable evidence for this worksheet.



Appendix 9

Environmental Setting & Site Design Report

ENVIRONMENTAL SETTING AND SITE

DESIGN REPORT

COLEMANS FARM QUARRY

Report Reference: 2971/ESSD

Final version F2

October 2021

Report prepared for:

Brice Aggregates Limited
Colemans Farm Quarry
Little Braxted Lane
WITHAM
Essex
CM8 3EX

GENERAL NOTES

Title of report: Environmental Setting and Site Design Report
Site: Colemans Farm Quarry
Report ref: 2971/ESSD
Date: October 2021

Version	Date	Issued to
Draft version D1	28 th January 2021	Brice Aggregates Ltd
Draft version D2	February 2021	Brice Aggregates Ltd
Final version F1	February 2021	Brice Aggregates Ltd
Final Version F2	October 2021	Brice Aggregates Ltd

Author: Rosie Marrant BSc MSc FGS
Reviewer: Heather MacLeod BSc MSc FGS

This report has been prepared by Hafren Water Ltd for the named Client, with reasonable skill, care and diligence within the agreed scope and terms of contract. Hafren Water Ltd disclaims any responsibility to the client and others in respect of any matters outside the agreed scope of work. This report has been prepared for use by the client and others acting on their behalf. The report may be passed to regulators. This report does not constitute legal advice or opinion.

This report does not represent advice to third parties and no reliance is offered to third parties. No liability is accepted with regard to third parties. Reliance required by any specific Third Party must be agreed in writing with Hafren Water Ltd.

[https://hafrenw.sharepoint.com/sites/HafrenWater/Shared Documents/General/Projects/Colemans Farm Quarry \(1666\)/2020 - EP Recovery Permit/Reports/ESSD/2971-ESSD vn F2 \(Oct 2021\).docx](https://hafrenw.sharepoint.com/sites/HafrenWater/Shared Documents/General/Projects/Colemans Farm Quarry (1666)/2020 - EP Recovery Permit/Reports/ESSD/2971-ESSD vn F2 (Oct 2021).docx)

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1 INTRODUCTION

1.1 Report context

Colemans Farm Quarry (the 'site') is operated by Brice Aggregates Limited for the production of sand and gravel from an area located to the east of Witham, Essex. In 2016 the company was granted planning permission (ESS/39/14/BTE) to extract mineral, with restoration of the quarry void to agriculture, water sports and water-based nature conservation habitats.

A scheme is being developed by Highways England for improvement works, widening/realigning the adjacent A12 trunk road. The working of the consented minerals in advance of the A12 improvement works would minimise the potential for sterilisation of mineral resources, consistent with national and local planning policy. Due to the road improvement works there is a need to restore the affected area back to original ground elevation. Planning Permission is currently being sought by Brice Aggregates to update the restoration scheme to allow the A12 corridor to be restored back to original ground levels, extend the site to the west and to revise the phasing to allow for the road improvement works timetable set by Highways England. As part of these works, the Burghey Brook, which crosses the site, will be temporarily diverted.

The updated restoration will be achieved using imported materials, which requires a permit under the Environmental Permitting (England and Wales) Regulations (EPR) (2016). It is intended that the restoration makes use of recovered materials and therefore a Waste for Recovery bespoke permit is required. The Agent preparing the application is Westbury Environmental.

Hafren Water has been requested to prepare the Environmental Setting and Site Design (ESSD) report, which sets out the background and baseline conditions in support of the Permit Application. This is then used to derive a conceptual model for the proposed waste recovery operation. The format of this ESSD report is based upon the Environment Agency template **entitled** 'Template: Conceptual Site Model, Environmental Setting and Site Design Report', dated 14th October 2016.

1.2 Site details and context

1.2.1 Site location

The site is located to the south of the village of Rivenhall End and approximately 1.5 km east of the centre of Witham, Essex (*Drawing 2971/ESSD/01*). The centre of the site is located at National Grid Reference (NGR) TL 83660 15770. The A12 road lies parallel and adjacent to the northwestern site boundary. A minor road (Braxted Farm Road) forms the eastern site

boundary and connects the villages of Rivenhall End and Appleford Bridge. The main access to the site is from the southwest via Little Braxted Lane, with only limited use of the eastern access onto Braxted Road.

1.2.2 Site classification

This document is the Environmental Setting and Site Design (ESSD) that accompanies the application by Brice Aggregates Limited for a bespoke permit to allow deposit of waste for recovery and waste recycling activity at Colemans Farm Quarry, Little Braxted Lane, Witham, Essex, CM8 3EX. A waste recovery plan for the site (Westbury Environmental, July 2020) has been submitted to the Environment Agency.

1.2.3 Application boundary

The site layout and phasing is shown on *Drawing 2971/ESSD/02*. The proposed permit boundary covers the originally consented mineral extraction area, the proposed Western Extension and the mineral processing plant area. It totals approximately 59.3 hectares (ha). The mineral extraction area is smaller, covering approximately 38.6 ha and the area to be filled with inert fill is approximately 29.8 ha.

Extraction phases 1 to 9 will be restored back to pre-existing ground levels, in order to achieve the necessary foundations for the proposed A12 improvements and adjacent orchard and lowland meadow. Phases 12 and 13 will also be restored to pre-existing ground levels. Water-based nature conservation habitats will be created within Phases 10 and 11. The restoration within Phases 1 to 13 will be created using imported and site-won materials.

The southern area of the site (Phase areas 14, 15, 16 and 17) will also be restored to a water-based nature conservation habitat but will be created using site-won materials only.

Waste recycling (crushing, screening and washing) will be conducted within Phase 1.

1.2.4 Landform

The area of proposed mineral extraction is characterised by low relief, with maximum ground elevations at the northern site extent at approximately 25 metres Above Ordnance Datum (mAOD). Ground elevations decline southward and southwestwards across the proposed Permit Area towards the River Blackwater, to between (approximately) 15–20 mAOD. Mineral extraction is complete in Phases 1 and 2, with the base of these voids at approximately 11 mAOD, and is on-going within Phase 3 (August 2020).

Beyond the site boundary, ground elevations increase gradually to the northwest, away from the River Blackwater, attaining some 40 mAOD at a distance of 1 km from the northern site

boundary. Ground elevations increase south of the River Blackwater, culminating in a southwest-northeast feature known as the Tiptree Ridge. The axis of the ridge occurs some 2.5 km from the site and attains an elevation of 80–85 mAOD.

1.2.5 Surrounding land use

The environmental site setting is shown on *Drawing 2971/ESSD/03*.

The site was historically used for agriculture.

The existing A12 road (London/Roman Road) is located parallel and adjacent to the northern site boundary and is intended to be widened/re-aligned. A railway line runs parallel to the north of the A12. The A12 connects the town of Witham, located to the west of the proposed permit boundary, with the hamlet of Rivenhall End, located to the north.

There are several residential and industrial areas within 500 m of the proposed permit boundary as listed in *Table 2971/ESSD/T1* (Section 1.2.9 below) and shown on *Drawing 2971/ESSD/03*. The closest are located to the southwest (Colemans Farm), to the northeast (Rose Cottage/Garden Cottage) and to the northwest ('Whitelands' house, an unnamed property and the Burghey Brook Poultry Farm, all adjacent to the A12). Mill House and the village of Little Braxted are located further than 500 m south of the permit boundary, however they are directly adjacent to the River Blackwater downstream of the site.

A gas pipeline passes immediately to the north of the mineral extraction area and crosses the west of the processing area. A gas works is located to the west, off Little Braxted Lane, approximately 138 m southwest of the western permit boundary and 380 m southwest of the nearest area subject to infilling with imported fill. Two solar farms are located approximately 410 m to the east adjacent to Hill Broad Farm/Commodity House, and 500 m to the south. A sewage treatment works is located approximately 380 m to the northeast (*Drawing 2971/ESSD/03*).

1.2.6 Hydrology

Drawing 2971/ESSD/03 shows the main River Blackwater flowing southwestwards between 50 and 220 m southeast of the site. Relative to the area to be restored with imported fill (Phases 1 to 13), the river is located some 240 m south at its closest approach. Marginal areas along the southern site boundary are within Flood Zones 2 and 3 associated with the River Blackwater.

Two tributary watercourses, the Burghey Brook and an unnamed watercourse, pass through the site from northwest to southeast before joining at the southwestern corner of the existing silt lagoon area and flowing southwestwards to discharge to the River Blackwater. Three

smaller ordinary watercourses (OW1 to OW3) originate close to the eastern site boundary and cross the site as shown on *Drawing 2971/ESSD/03*. During mineral extraction and restoration within Phase 7, the Burghey Brook will be temporarily diverted across the restored surface of the adjacent Phase 5, into the unnamed watercourse. The smaller ordinary watercourses (OW1 to OW3) will be removed as mineral extraction is undertaken in these areas.

Fifteen waterbodies have been identified within 500 m of the proposed permit boundary, the largest of which is Colemans Reservoir, an agricultural and fishing reservoir located to the east, and a series of fishery lakes and reservoirs located to the southwest. These features are shown on *Drawing 2971/ESSD/03*, and further details on the hydrology of the site and its surrounds are provided in Section 3.2. The only waterbodies within the Permit boundary are associated with the existing water management scheme.

The Environment Agency has identified one de-regulated groundwater abstraction and two licensed surface water abstractions (with multiple locations) within 500 m of the proposed permit boundary (*Drawings 2971/ESSD/03 and 08*). No licensed groundwater abstractions exist within 500 m of the site. Braintree Council has not identified any active private water supplies within 500 m.

1.2.7 Sites of ecological or historical interest

There is one ecologically sensitive site within 1 km of the Permit boundary, a Nature Reserve known as Braxted Park Lake which is located 760 m to the east. It is situated to the south of the River Blackwater and is, therefore, hydraulically isolated from the site (*Drawing 2971/ESSD/04*). Two other Nature Reserves have been identified within 3 km of the proposed permit boundary and further details are provided in Section 3.2.6.

There is one scheduled monument within 1 km of the Permit boundary known as Rivenhall long mortuary enclosure (reference 1008980, source: Magic.defra.gov.uk). The monument is located approximately 840 m to the northeast as shown on *Drawing 2971/ESSD/04* and is described as a well-preserved buried ditch feature associated with early to mid-Neolithic human burial. There are also five listed buildings/structures within 500 m of the proposed permit boundary, the locations of which are shown on *Drawing 2971/ESSD/04*.

1.2.8 Waste management and other consented activities

Waste management activities within 500 m of the proposed permit boundary are shown on *Drawing 2971/ESSD/03*. A single sewage treatment works is located within 500 m, approximately 380 m to the northeast. A single pollution incident, relating to a spill of organic chemicals, is registered within the industrial estates to the northwest of the site.

A single historical (inactive) waste management licence has been identified by the Environment Agency within 500 m of the proposed permit boundary; Danbury Haulage (Landfill) Limited has historically operated an inert waste management activity under permit EA/EPR/GP3137PY/V003. The Government website, environment.data.gov.uk, records no authorised or historical landfills within 1 km of the site. The closest areas of landfill are historical and located within 1.3–1.7 km to the south of the proposed permit boundary:

- Maldon Road, historical Permit Reference EAHLD00457: Received commercial and household waste and liquid sludge from 1963-1964
- Perry Road/east of railway line/refuse tip east of sewage works, historical Permit References EAHLD01707, EAHLD00944, and EAHLD31001 respectively: Received industrial, commercial and household waste and liquid sludge from 1964–1990. This area of land is now known as Whet Mead Local Nature Reserve
- Blackwater Lane, historical Permit Reference EAHLD00446: Received household waste from 1958–1964

The site holds a single discharge consent with two permitted outfalls (Permit Ref: EPR FB3192AY) for treated water derived from dewatering the mineral extraction. One outfall is currently active into the Burghey Brook, and the other, located further east on the River Blackwater, will be used when extraction moves into the southern phases (*Drawings 2971/ESSD/03 and 08*). The Environment Agency has provided details of three other discharge consents identified within 500 m of the site; two of the consented discharges are located 500 m to the northeast, registered for sewage and miscellaneous use, the third is located 500 m south and is also registered for sewage discharge.

1.2.9 Summary of land use

A summary of the current and historical land use in a 500 m proximity to the Permit boundary is provided in *Tables 2971/ESSD/T1 and T2* below. The environmental setting of the site is shown on *Drawing 2971/ESSD/03* and the cultural and natural heritage (SSSIs, etc) is shown on *Drawing 2971/ESSD/04*.

2971/ESSD/T1: Summary of land uses within 500 m of Permit boundary	
Land use	Distance/direction from site
Residential properties:	
Unnamed property off A12 (south)	85 m NE
Whitlands	95 m N
Colemans Farm	60 m SW
Rose Cottage/Garden Cottage	100 m NE
Burghey Brook Poultry Farm (north of A12)	130 m NE

2971/ESSD/T1: Summary of land uses within 500 m of Permit boundary	
Land use	Distance/direction from site
Witham (Eastways/Swan Vale industrial estates)	150 m NE
Rivenhall End (village)	150 m N
Colemans Cottage	250 m SW
Appleford Bridge Cottage	370 m E
Warehouse (Little Braxted)	410 m S
Appleford Farm	425 m E
Colemans Reservoir holiday accommodation	450 m SW
Hill Broad Farm/Commodity House	460 m E
Agricultural land: On-site South of site Northeast of site Northwest of site Southwest of site	Existing land use Adjacent to River Blackwater Northeast of Braxted Road Between A12 and rail line Adjacent to Little Braxted Lane & Fishery
Utility: Gas pipeline Gas works Sewage works Solar Farm	0–330 m NW, W & SW 138 m SW 380 m NE 410 m E & 500 m S
Conservation: Ecological & environmental conservation sites	None

2971/ESSD/T2: Summary of historical land uses within 500 m of Permit boundary	
Land use	Distance from site
Landfill: Authorised & historic landfill Historical inert waste site (inactive)	None 400 m W
Cultural heritage: Scheduled monuments Listed buildings/structures (x 5 N ^o)	None 385/420/420 m N, 380/420 m E

1.3 Compliance with Landfill Location Policy

Although this ESSD relates to an application for a Recovery Permit, the site location has been compared to the Environment Agency's policy on the location of landfills detailed in 'The Environment Agency's approach to groundwater protection (March 2017), Position Statement E1. Landfill Location'. This states:

"The Environment Agency will normally object to any proposed landfill site in groundwater SPZ1.

For all other proposed landfill site locations, a risk assessment must be conducted based on the nature and quantity of the wastes and the natural setting and properties of the location.

Where this risk assessment demonstrates that active long-term site management is essential to prevent long-term groundwater pollution, the Environment Agency will object to sites:

- *below the watertable in any strata where the groundwater provides an important contribution to river flow, or other sensitive receptors*
- *within SPZ2 or 3*
- *on or in a principal aquifer"*

The site is located within a Secondary 'A' superficial aquifer, it is below the watertable and is adjacent to a watercourse which receives baseflow from the aquifer. The Principal Chalk bedrock aquifer identified at depth is completely isolated from the mineral extraction zone by at least 15 m of clay. The site is not located within a groundwater Source Protection Zone 1 and no sensitive receptors have been identified.

The proposed restoration at Colemans Farm Quarry will receive strictly controlled materials, which are compliant with the Waste Acceptance Procedures and Criteria. Due to the nature of the imported materials, which need to meet the Highways England specification, it is considered that there will be a negligible risk of deterioration in groundwater or surface water quality, and that long-term site management will not be required to prevent groundwater pollution.

This ESSD report, together with the accompanying HRA report, constitutes a site-specific risk assessment for the site.

It is therefore concluded that the site complies with the Environment Agency landfill location policy.

2 SOURCE TERM CHARACTERISTICS

2.1 Historical development

2.1.1 On-site

Permission to extract sand and gravel at Colemans Farm was granted in 2016 (Reference: ESS/39/14/BTE) with progressive restoration using site-won materials to create waterbodies, neutral grassland, reedbeds and arable land. Since this planning consent was implemented there have been numerous further phases of planning on-site, as well as the planning consent for the operation and use of a ready mixed concrete plant.

Mineral extraction has been completed within Phases 1 and 2 and is currently on-going within Phase 3 (August 2020). Prior to this, the site had been used for agricultural purposes.

The site holds a single discharge consent for treated water from on-site dewatering, with two permitted outfalls, one of which is currently active into the Burghey Brook. The other outfall is directly to the River Blackwater and is located southeast of the site.

2.1.2 Off-site

No authorised or historical landfill sites have been identified within 500 m of the site.

Two industrial estates are located to the northwest and west of the site. A pollution incident, relating to a spill of organic chemicals, is registered within the industrial estates to the northwest and an inactive inert waste management activity and is located 300 m to the west of the permit boundary.

The Burghey Brook Poultry Farm is located approximately 100 m to the northwest of the site, adjacent to the A12.

A sewage treatment works is located approximately 380 m to the northeast and also discharges to the River Blackwater.

The site falls within the Water Framework Directive Waterbody for the River Blackwater (Blackwater - Combined Essex, ID: GB105037041160). This catchment is noted to have a 'Good' chemical status, but a 'Moderate' ecological status. Point and diffuse sources of pollution from agricultural and sewage discharge sources are cited as some of the reasons for not achieving a 'Good' status, or for deterioration of water quality within the catchment.

2.2 Proposed development

Planning Permission is currently being sought for a western extension to mineral extraction and early restoration of the area adjacent to the A12 using imported and site-won materials. The proposed restoration scheme and cross-sections are shown on *Drawings 2971/ESSD/06a* and *6b*. Post-settlement contours for the proposed restoration scheme are provided in *Appendix 2971/ESSD/A5*.

Restoration of Colemans Farm Quarry will be undertaken progressively following extraction of the superficial sand and gravel. Extraction will take place in 17 phases (as shown on *Drawing 2971/ESSD/05*) and is estimated to be completed within 8 years, with a further year for completion of the restoration. The area to be restored back to pre-existing ground levels adjacent to the A12 (Phase areas 1 to 9), will be undertaken across a very compressed timeframe starting January 2022 and finishing December 2024. Phases 12 and 13, outside the A12 improvements footprint, will also be restored to pre-existing ground levels and Phases 10 to 11 and 14 to 17 will be restored to water-based nature conservation habitats.

The restoration of Phases 1 to 13 will be completed using imported and site-won materials. The restoration of Phases 14 to 17 will be completed using site-won materials only.

a) Waste types

The materials to be imported into the site have been detailed in 'Waste Recovery Plan, Brice Aggregates Limited, Colemans Farm', Westbury Environmental, October 2021, and are summarised in *Table 2971/ESSD/T3* below. The site will only accept materials classified as non-hazardous, excluding wastes which are solely or mainly of dusts, powders or loose fibres, and not in a form that is either sludge or liquid.

2971/ESSD/T3: Permitted waste types				
Source	Sub-source	Waste code	Description	Additional restrictions
01: Waste resulting from exploration, mining, quarrying and physical and chemical treatment of minerals	01 01: Wastes from mineral excavation	01 01 02	Wastes from mineral non-metalliferous excavation	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 01 04 06	
		01 04 09	Waste sand and clays	

2971/ESSD/T3: Permitted waste types				
Source	Sub-source	Waste code	Description	Additional restrictions
02: Waste from agriculture, horticulture, aquaculture, forestry, hunting and fishing, food preparation and processing	02 04: Wastes from sugar processing	02 04 01	Soil from cleaning and washing beet	
10: Wastes from thermal processes	10 12: Wastes from manufacture of ceramic goods, bricks, tiles and construction products	10 12 08	Waste ceramics, bricks, tiles and construction products (after thermal processing)	
	10 13: Wastes from manufacture of cement, lime and plaster and articles and products made from them	10 13 14	Waste concrete	
17: Construction and demolition wastes	17 01: Concrete, bricks, tiles and ceramics	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	Metal from reinforced concrete must have been removed
	17 03: Bituminous mixtures	17 03 02	Bituminous mixtures other than those mentioned in 17 03 01	Road planings only
	17 05: Soil, stones and dredging spoil	17 05 04	Soil and stones other than those mentioned in 17 05 03	Restricted to topsoil, peat, subsoil and stones only
19: Wastes from waste management facilities	19 12: Wastes from the mechanical treatment of waste (eg sorting, crushing, compacting, pelletising) not otherwise specified	19 12 09	Minerals (eg sand, stones) only	Restricted to wastes from 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

2971/ESSD/T3: Permitted waste types				
Source	Sub-source	Waste code	Description	Additional restrictions
		19 12 12	Other wastes (including mixtures of materials) from mechanical treatment of waste other than those mentioned in 19 12 11	Restricted to crushed bricks, tiles, concrete, ceramics, and soils from the mechanical treatment of construction/ demolition waste. Metal from reinforced concrete must be removed. Does not include 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	20 02 02	Soils and stones	Restricted to topsoil, peat, subsoil and stones only

The majority of the restoration materials will be imported from local construction activities and suitable materials produced at the on-site aggregate recycling facility. All incoming material will be subject to the rigorous Waste Acceptance Procedures as provided elsewhere in the Application. The waste will be in compliance with the Landfill Directive, hence Hazardous substances are not anticipated to occur. Additional comments on specific waste codes are included below:

- Code 02 04 01 will contain organic material, which will be limited to the upper 0.5 m of the infill
- Code 10 13 14 will be sourced from waste concrete from concrete manufacture, mostly being generated on-site; this is likely to form only a very small portion of the materials used for restoration as preference would be for re-use as a crushed aggregate, and hence poses a commensurately low risk
- Code 19 12 12 is non-hazardous; however the chemical quality will be regulated by controlling the incoming waste to the recycling plant. Any incoming waste fines from other construction and demolition treatment plants under code 19 12 12 and that generated on-site will be subject to inert Waste Acceptance Criteria (WAC). This will form

the majority of the waste placed together with site-won overburden and interburden, in Phases 12 to 13, outside the footprint of the 12 improvements

- The majority of road planings accepted to the site under code 17 03 02 will be crushed and sold
- Materials with potential high organic carbon content, including soil from cleaning and washing beet (code 02 04 01) and topsoil (code 20 02 02) will be re-sold where possible, or only used in the top 300 mm of the restoration

a) Phasing

It is proposed that progressive restoration of the site will be completed over a period of 9 years. Placement of the imported materials will commence in Phases 2 and 3 in the north of the site and move progressively as mineral extraction in each phase is completed. The restoration of Phases 1 to 9 will be restored using imported and site-won inert materials on a compressed timescale from January 2022 until December 2024 to facilitate the A12 improvement works. The restoration of Phases 10 to 13 will also be completed using imported materials; Phases 10 and 11 to waterbodies and 12 and 13 back to original ground levels. The waterbodies in Phases 14 to 17 will be created using solely site-won material.

b) Waste volumes

In order to achieve the approved restoration profile, approximately 1,826,929 m³ of material will be required. Of this approximately 1,152,253 m³ will be imported to the site. The remaining volume (674,674 m³) required to complete the restoration profile will be sourced from site-won materials (topsoil, subsoil, overburden and clean mineral processing silts).

c) Restoration and afteruse

The area impacted by the A12 improvement works (see A12 boundary shown on *Drawing 2971/ESSD/05*) will be returned to close to existing topographic levels. The area south of the road improvement works will be restored to a mixture of pre-existing elevations (Phases 12 and 13) and water-based nature conservation habitats (Phases 10 to 11 and 14 to 17). Part of Phases 4 and 8 will be restored to an orchard and meadow respectively.

The final restoration scheme is provided as *Drawing 2971/ESSD/06a and 6b*.

d) Site layout and design

The site layout and design is illustrated on *Drawing 2971/ESSD/05*. The site entrance, car park, offices, weighbridge and mineral processing plant are located to the west of the site, outside

the proposed Permit boundary. Hardstanding in the facilities area is limited to concrete pads beneath the site offices and the mineral processing plant.

It is proposed to locate a waste recycling (crushing, screening and washing) operation within the partially restored Phase 1, which will be retained at a lower level with active dewatering to maintain a dry working area.

The existing water management system is also illustrated on *Drawing 2971/ESSD/05*. Existing operations remove incident rainfall and groundwater ingress through dewatering from a sump within the active mineral extraction void. Water is then pumped to a settlement area prior to discharge off-site. It is proposed to continue this system during the site restoration.

2.3 Post-closure controls

Management measures implemented in order to monitor the operation of the proposed waste recovery facility include:

- Strict adherence to Highways Agency specification
- Strict adherence to Waste Acceptance Criteria
- Careful control of waste accepted for recycling
- Knowledge of where imported waste has been generated together with requisite testing before receipt on-site
- Monitoring of water quality of off-site water discharge (for all but the last phase of restoration)

Monitoring, as described in Section 5.2 below, will continue throughout the life of the proposed development including the active and post-closure phases. Monitoring infrastructure that becomes inoperable will be replaced as necessary.

Differential settlement is not anticipated due to the proposed waste types to be accepted at the site and the need to adhere to the Highways Agency design specification. The site and its immediate vicinity are not in an area of former mining, hence subsidence due to mine failure is also not expected. Post-settlement contours for the proposed restoration scheme are provided in *Appendix 2971/ESSD/A5*.

2.3.1 Permit surrender criteria

Permit completion and surrender will be attained when the waste facility no longer has the potential to adversely impact on surface water, groundwater or human health.

The Environment Agency's guidance on permit surrender¹ indicates that documents and records maintained during the operational phase of the facility will be used in support of a permit surrender application. In particular if it can be proved via the Duty of Care and detailed other records that the site only received permitted wastes and that these do not pose a risk, this should be sufficient for a surrender application to be determined, without the need to prepare a detailed surrender report. If this is not the case, based on draft new guidance, a Surrender Report will need to be supported with details from waste composition verification testing and monitoring data.

Environment Agency Guidance is currently being revised and this should be reviewed when issued in order to ensure compliance and ease of future surrender.

¹ Environment Agency, 2012. Additional guidance for Landfill (EPR 5.02) and other permanent deposits of waste. How to surrender your environmental permit

3 PATHWAY AND RECEPTOR CHARACTERISATION

3.1 Geology

3.1.1 Regional

The regional geology is illustrated on *Drawing 2971/ESSD/07* and the geological succession in the area is summarised in *Table 2971/ESSD/T4*.

2971/ESSD/T4: Regional geology and hydrogeology				
Deposit	Group	Formation	Lithology	Aquifer designation
Superficial deposits	-	Peat	Peat	Unproductive/Secondary (undifferentiated)
		Head	Clay, silt, sand and gravel	Unproductive/Secondary (undifferentiated)
		Interglacial lacustrine	Clay and silt	Unproductive
		Glaciofluvial	Sand and gravel	Secondary 'A'
		Alluvium	Clay, silt, sand and gravel	
		River Terrace	Sand and gravel	
				Lowestoft Formation
Bedrock	Thames Group	London clay	Blue-grey silty clay	Unproductive
	Lambeth Group	Reading Beds	Glaucconitic sand	Secondary A
		Woolwich		
	Montrose Group	Thanet Sands	Glaucconite-coated, nodular flint at base (Bullhead Bed), overlain by pale yellow-brown, fine-grained sand.	
	Unconformity			
	Chalk Group	Upper & Middle Chalk	Chalk with flints	Principal

The solid geology underlying the site at depth comprises the Upper and Middle Chalk. The Thanet Sands and the Woolwich and Reading Beds lie unconformably above the Chalk. London Clay is situated above the Reading Beds and underlies superficial deposits in the region.

To the northeast and southwest of the site the London Clay is locally absent, with the Thanet Sand and the Woolwich and Reading Beds juxtaposed against the superficial deposits.

Superficial River Terrace deposits occur extensively together with alluvium within the River Blackwater valley, and its tributaries. Beyond these deposits, extending to the northwest and in localised areas to the southeast, glaciofluvial deposits of sand and gravel, interglacial lacustrine deposits of clay and silt, Head deposits of clay, silt, sand and gravel, and extensive Diamicton Till deposits (Lowestoft Formation) are present.

The geological maps note the outline of a buried channel, which is considered to be infilled predominantly with chalky Boulder Clay or laminated silts beneath the River Blackwater between Kelvedon and Witham.

The soils over the superficial deposits are described on the Cranfield University Soilscales website as freely draining, slightly acid, loamy, soils.

3.1.2 Geology of the site

The site lies entirely within the demarked buried Glacial Channel identified by the BGS.

Several phases of mineral investigation were conducted across the site in 1990, 2005 and 2008. Boreholes logs are available for twenty locations drilled in 2008, nine of which were located within the site boundary. Six of the 2008 boreholes were installed as monitoring wells. Tabulated overburden and mineral data is available from the forty-six boreholes drilled in 2005, thirty-six of which are located within the site boundary. Both data sets are provided as *Appendix 2971/ESSD/A1* and the borehole locations are shown on *Drawing 2971/ESSD/A1.1* within *Appendix 2971/ESSD/A1*.

River Terrace sand and gravel deposits are extracted at the site, and are overlain by soil and clay overburden, and underlain by the Lowestoft Diamicton (formerly Boulder Clay). Occasionally, towards the north and northeast of the site (RH08/8 and RH08/11), two sand and gravel bands were identified, separated by a thin clay horizon; this clay unit is not considered to be continuous across the site.

Records (provided as *Appendix 2971/ESSD/A1*) indicate that mineral thicknesses within the site ranged from 0 to 6.9 m with an average thickness of 3.6 m. The greatest mineral thickness of 6.9 m is located within the southern area in Phase 15 of the site. The mineral thins to 0.5–1 m towards Braxted Road and Little Braxted Lane and also thins to 2 m towards the River Blackwater. Mineral thickness contours are shown on *Drawing 2971/ESSD/08*.

Borehole logs from 2008 typically describe the sand as brown, slightly clayey and fine-medium with a small gritty fraction. Gravels are predominantly sub-angular, fine to medium flints, sub-rounded quartz. Clay content within the mineral deposits is variable.

The basal Diamicton Clay is described as blue-grey or light brown, firm to stiff clay with sub-rounded chalk clasts. The mineral is typically covered by clayey soils and clay overburden, described as mottled orange-brown, firm, silty clay, with an average combined thickness of 1.4 m. The lowermost lithology occasionally encountered within the boreholes is a silt (blue-grey, very sandy) which is interpreted on the logs as a glacial lacustrine deposit.

A BGS log for a borehole located north of Phase 14 and within the demarked buried channel, identifies the Lowestoft Diamicton (described as Chalky Boulder Clay) as being 15.9 m thick with a maximum depth of 22.9 m below ground level (mbgl). The London Clay was encountered below the Diamicton. This underlies the majority of the site but is absent beneath a small area in the west of the main plant site and outside of the proposed extraction and infill area.

3.2 Hydrology

3.2.1 Watercourses

The largest watercourse in the vicinity of the site is the River Blackwater, which parallels the majority of the southern site boundary and is located between 50-220 m to the southeast from the proposed permit boundary. The river flows southwestwards in the vicinity of the site and discharges into the Chelmer and Blackwater Navigation (canal) approximately 8 km downstream and continues into the Blackwater Estuary, approximately 15 km downstream of the site.

Under the Water Framework Directive the River Blackwater falls within the Blackwater (Combined Essex) Waterbody (ID: GB105037041160), with a hydromorphological designation of 'Heavily Modified'. The EA has provided historical daily mean surface water flow data for the River Blackwater at Appleford Bridge, (Station number 37010). This gauging station is immediately upstream of the site at NGR TL 84463 15816. River flows of 0.09–46.1 m³/s were recorded between 1962 and 2013, with an average flow of 1.3 m³/s.

Five ordinary watercourses (as defined by the Environment Agency) cross the site. The northeastern watercourse along the eastern side of Phases 5 and 6 is known as the Burghey Brook, and the southernmost watercourse along the western side of Phases 5 and 6 is unnamed. Both rise northwest of the northern site boundary and flow southeastwards, the unnamed watercourse combining with the Burghey Brook before its confluence with the River Blackwater. Both are understood to receive urban run-off from Witham, are considered to be situated within the clay overburden and have been observed to be seasonally dry. The Burghey Brook, where it passes through Phase 7, will be temporarily diverted across the restored area of Phase 5 into the unnamed watercourse during the extraction and restoration of Phase 7.

The other three ordinary watercourses rise from within the northeast of the site in the area between Phases 4, 8 and 9 (OW1, OW2 and OW3 on *Drawings 2971/ESSD/03 and 08*). These watercourses are little more than field drains in reality and are reportedly often dry. They will be removed as part of the mineral extraction as approved in the current planning permission.

3.2.2 Flood risk

The majority of the site is located in Flood Zone 1 (Environment Agency flood map), where the probability of fluvial flooding in any one year is less than 1 in 1,000 (Annual Exceedance Probability, AEP <0.1%). Marginal areas along the southern site boundary, approximately <5% of the site, are located in Flood Zones 2 and 3 (AEP 0.1% - >1%), associated with the River Blackwater. No imported fill will be placed within Flood Zones 2 and 3.

3.2.3 Waterbodies

The only waterbodies within the Permit boundary are associated with the water management scheme for the existing mineral workings (*Drawing 2971/ESSD/05*).

There are fifteen waterbodies outside the site within 500 m of the proposed permit boundary, shown on *Drawing 2971/ESSD/03*, the largest of which is Colemans Reservoir, an agricultural irrigation and fishing reservoir located to the east. It was constructed in 1979, is clay-lined and has a capacity of 341,000 m³ (75 million gallons). The other large waterbodies within the vicinity of the site are a series of fishery lakes and reservoirs located to the southwest.

3.2.4 Surface water quality

The site is within the catchment of Water Framework Directive waterbody Blackwater (Combined Essex), ID: GB105037041160, which is classed as a heavily modified waterbody. The 2016 ecological potential of the waterbody is 'Moderate' and the Chemical status is 'Good'.

The site is located within the River Blackwater surface water Nitrate Vulnerable Zone (NVZ) (Ref: 434), the Blackwater (Combined Essex) Surface Water Drinking Water Protected Areas (Ref: UKGB105037041160), the Surface Water Drinking Water Safeguard Zone (Ref: SWSGZ1028), and the Rivers Blackwater and Brain Urban Waste Water Treatment Directive Area (Ref: UKENRI63). The Safeguard Zone SWSGZ1028 is designated at risk from Nitrate and Pesticides (Carbetamide, Clopyralid, Metaldehyde, Propyzamide).

Surface water quality monitoring

No surface water quality monitoring is conducted on-site, with the exception of monitoring discharge outfalls as per the permit requirements.

Two EA water quality monitoring locations have been identified upstream (location reference BL03) and downstream (location reference BL02) of the site, located 450 m southeast of the mineral extraction area, and 2.2 km southwest respectively. Tables 2971/ESSD/T5 and 2971/ESSD/T6 below summarise the data available for the upstream location, from 2010 to 2020, and downstream from 2010 to 2014. The raw data is presented in Appendix 2971/ESSD/A2.

2971/ESSD/T5: Surface water quality summary (upstream sample location BL03 data 2010 -2020)							
Date	Units	Sample count	Min	Max	Ave	Exceedances	
						EOS	DWS
pH	pH units	75	7.68	8.68	8.10		
Alkalinity pH 4_5	mg/l	75	195	313	248.11		
Conductivity @ 25C	µS/cm	98	624	1151	888.34		
Suspended solids @ 105°C	mg/l	59	3	114	12.17		
Dissolved oxygen	mg/l	89	5.93	16.4	10.55		
BOD ATU	mg/l	71	1	4.14	1.60		
COD as O ₂	mg/l	59	10	40	18.36		
Ammonia(N)	mg/l	90	0.03	0.276	0.07	90 (LoD above EQS) ^A	0 ^A
N Oxidised	mg/l	90	4.25	14.8	9.50		
Nitrate-N	mg/l	89	4.22	14.7	9.44		
Nitrite-N	mg/l	90	0.011	0.181	0.06		
NH ₃ un-ion	mg/l	75	0.00039	0.00658	0.0012		
Chloride Ion	mg/l	73	25.1	101	62.58	0 ^B	0 ^B
Orthophosphate	mg/l	90	0.047	0.457	0.22		
Bentazone	µg/l	24	0.0105	0.0578	0.03		

2971/ESSD/T5: Surface water quality summary (upstream sample location BL03 data 2010 -2020)							
Date	Units	Sample count	Min	Max	Ave	Exceedances	
						EOS	DWS
Chlorophyll	µg/l	76	0.52	94.5	11.04		
Key: LOD = Limit of detection DWS = Drinking water standard EOS = Environmental quality standard							
A Ammoniacal nitrogen EQS: 0.015 mg/l (source - LFTGN01: Average annual concentration) DWS: 0.5 mg/l (source – WHO ATO)							
B Chloride EQS: 250 mg/l (source - LFTGN01: Average annual concentration) DWS: 250 mg/l (source – WHO ATO/EU & UK DWS)							

2971/ESSD/T6: Surface water quality summary (downstream sample location BL02 data 2010 - 2014)							
Date	Units	Sample count	Min	Max	Ave	Exceedances	
						EOS	DWS
pH	pH units	36	7.68	8.57	8.09		
Alkalinity pH 4_5	mg/l	36	203.0	276.0	243.44		
Conductivity @ 25C	µS/cm	50	559.0	1094.0	901.90		
Dissolved oxygen	mg/l	36	7.14	14.30	9.78		
Ammonia(N)	mg/l	36	0.030	1.150	0.085	36 (LoD above EQS) ^A	1 ^A
N Oxidised	mg/l	36	6.63	12.30	9.47		
Nitrate-N	mg/l	36	6.59	12.20	9.42		
Nitrite-N	mg/l	36	0.01480	0.191	0.05317		
NH ₃ un-ion	mg/l	36	0.00044	0.0272	0.00175		
Chloride Ion	mg/l	50	31.8	111	73.51	0 ^B	0 ^B
Orthophosphate	mg/l	36	0.119	0.593	0.29467		
Key: LOD = Limit of detection DWS = Drinking water standard EOS = Environmental quality standard							
A Ammoniacal nitrogen EQS: 0.015 mg/l (source - LFTGN01: Average annual concentration) DWS: 0.5 mg/l (source – WHO ATO)							
B Chloride EQS: 250 mg/l (source - LFTGN01: Average annual concentration) DWS: 250 mg/l (source – WHO ATO/EU & UK DWS)							

Of the determinands measured both up and downstream of the site, no temporal trend was noted in records of pH, alkalinity, conductivity, nitrate and orthophosphate. A gradual declining trend is observed from 2010 to 2020 in upstream concentrations of chloride, dissolved oxygen and nitrite. A decline in the peak upstream concentration of ammonia (as N) has also

been observed. Upstream measurements of pH, dissolved oxygen, ammonia (as N) and nitrite were observed to be slightly elevated above the concentrations detected downstream.

Variation in concentrations up and downstream was generally mirrored between 2010 and 2014 for pH, alkalinity, conductivity, dissolved oxygen, ammonia (as N), nitrate, nitrite, chloride and orthophosphate.

Ammonia (as N) and chloride data was screened against the Environmental and Drinking Water Quality Standards (EQS and DWS). All recorded concentrations of ammonia (as N) up and downstream exceeded the EQS, however the majority of data collected had a limit of detection (LoD) above the EQS, and therefore could not be accurately assessed. Only one exceedance of the DWS was recorded for ammonia (as N) downstream in August 2011. No exceedances of the chloride EQS or DWS were recorded up or downstream.

3.2.5 Surface water abstractions

The Environment Agency has provided details of seven licensed surface water abstractions with multiple locations within 2 km of the proposed permit boundary. Two abstractions are located within 500 m of the site on the River Blackwater, both of which are for seasonal spray irrigation from November to March (licence reference 8/37/31/*S/0147), or May to September (licence reference 8/37/31/*S/0169). Licence 8/37/31/*S/0169 is held by the site owner, R A Brice & Partners, and is also used for mineral washing. The closest licensed abstraction is shown on *Drawing 2971/ESSD/08*.

Braintree Council has confirmed that there are no private or de-regulated surface water abstractions within a 500 m vicinity of the site.

3.2.6 Sites of ecological interest

There are three Local Nature Reserves (LNR) within 3 km of the site boundary (*Drawing 2971/ESSD/04*); Braxted Park Lake located 760 m to the east, Whet Mead, located approximately 1.5 km south and Brockwell Meadows, located 3 km to the northeast. Whet Mead, a historic landfill site now restored to predominantly grassland, contains several waterbodies (lagoons), however these are considered likely to be clay-lined. Braxted Park Lake is located to the south of the River Blackwater and is, therefore, hydraulically isolated from the site.

The closest SSSI is Tiptree Heath, located approximately 3.7 km southeast. The River Blackwater is a tributary to the Blackwater Estuary SSSI/SAC/SPA/RAMSAR; this protected site is located approximately 8 km to the southeast of the site.

3.3 Hydrogeology

3.3.1 Aquifer characteristics

Protected groundwater zones

The site is not located within a groundwater Source Protection Zone (SPZ) as shown on the Government's MAGIC website. The closest protection zones are over 3 km to the north and south of the proposed permit boundary.

The site is not located within a groundwater Drinking Water Safeguarding Zone.

Aquifer classification

The London Clay present beneath most of the superficial deposits in the vicinity of the site is classed as an unproductive unit, not capable of transmitting groundwater. Aquifer units underlying the London Clay are completely isolated from the superficial aquifer within and beyond the area of mineral extraction and are not considered further.

The superficial River Terrace, Alluvium and Glaciofluvial Deposits are classified by the Environment Agency as a Secondary 'A' Aquifer. The base of this aquifer is marked by the Diamicton Clay, defined as a Secondary (undifferentiated) aquifer where it has not been possible to attribute either category 'A' (permeable) or 'B' (lower permeability) to a rock type. The remaining clay-rich superficial deposits noted within the surrounding area (Peat Head and Interglacial lacustrine) are also defined as either unproductive and/or Secondary (undifferentiated) aquifers.

3.3.2 Groundwater flow

Monitoring

Groundwater levels within the River Terrace deposits of the site and its immediate surroundings are known from on-site monitoring. Eight monitoring boreholes were installed in February 2008, the locations of which are shown on *Drawing 2971/ESSD/A3.1 (Appendix 2971/ESSD/A3)*, and the borehole logs are provided in *Appendix 2971/ESSD/A1*.

The raw groundwater level records are included as *Appendix 2971/ESSD/A3* and a summary is provided in *Table 2971/ESSD/T7* below. Groundwater level hydrographs are presented as *Drawing 2971/ESSD/A3.2 (Appendix 2971/ESSD/A3)*. The groundwater level record is intermittent between April 2008 and July 2020; no records are available for 2010 to 2012 and 2014, and only sparse records are available during 2009 and 2017.

2971/ESSD/T7: Groundwater level data summary				
Borehole record	Groundwater level (mAOD)			
	Min	Max	Average	Records
RH08/04	Dry	14.98	14.22	2008 - 2020
RH08/05	13.82	16.28	15.25	2018 - 2020
RH08/06	Dry	15.33	14.68	2008 - 2020
RH08/10	13.76	15.88	15.02	2008 - 2020
RH08/11	13.28	15.18	14.57	2008 - 2020
RH08/14	14.66	15.65	14.96	2008 - 2009
RH08/16	16.51	17.05	16.72	2008 - 2009
RH08/20	16.00	16.73	16.29	2008 - 2009

Under pre-operational conditions, the highest groundwater levels, between 16–17 mAOD, were observed over 600 m northeast of the site (boreholes RH08/16 and RH08/20). Within the site, the highest levels of 15–15.5 mAOD were observed within borehole RH08/10. Groundwater levels decline to between 14–14.5 mAOD towards the River Blackwater to the south (RH08/04). Borehole RH08/04 is located in the south of the site and is one of the closest boreholes to the River Blackwater. Therefore the observed variations may also be influenced by the river stage as the river is in hydraulic continuity with the aquifer

Due to the intermittent data collection, seasonal variation in groundwater levels is not clearly defined. However, some cyclical variation, of less than 1 m, is observed, with higher levels between December/January and June/July, and lower levels noted during the second half of the year.

Mineral extraction and dewatering began in October 2016, following which groundwater levels decline in a southwesterly or westerly direction, towards the point of dewatering within Phase 1. Borehole RH08/06, located to the west of Phase 1 has been dry since April 2018, and borehole RH08/04 has been dry intermittently since July 2018.

Saturated mineral thickness

Table 2971/ESSD/T8 shows a comparison of the maximum pre-operational groundwater levels together with the surface elevation of the aquifer within the closest piezometers to the proposed permit boundary (RH08/04, 05, 06, 10 and 11). This comparison demonstrates that the aquifer can be considered fully saturated. The mineral thickness contours on Drawing 2971/ESSD/08 therefore show the distribution of saturated mineral across the site under pre-operational conditions.

2971/ESSD/T8: Saturated mineral thickness				
Borehole record	Pre-operational maximum groundwater level 2008 – 2016 (mAOD)	Top of aquifer (mAOD)	Base of aquifer (mAOD)	Maximum saturated mineral thickness (m)
RH08/04	14.71	13.22	9.32	3.9
RH08/05	No pre-operational data available	15.02	12.72	N/A (mineral thickness 2.3)
RH08/06	14.97	14.56	8.86	5.7
RH08/10	15.34	14.92	9.02	5.9
RH08/11	15.01	14.5	11.00	Combined thickness of 2.6 (split by clay interburden)

Flow regime

The groundwater level data indicate a southwesterly or southerly groundwater flow direction towards the River Blackwater under pre-operational conditions. The effects of the impediment to groundwater flow caused by Colemans Reservoir (which is clay-lined) can be inferred by the distortion of the groundwater contours around the reservoir; the pre-operational groundwater level contours are shown on *Drawing 2971/ESSD/A3.3 (Appendix 2971/ESSD/A3)*. The pre- and post-operational groundwater flow directions are shown on *Drawing 2971/ESSD/08*.

Since the commencement of mineral extraction and dewatering, local groundwater flow has been towards the centre of dewatering within the active operational area.

Surface water interaction

The base elevation of the Burghey Brook and the unnamed watercourse declines from a maximum of 16-17 mAOD, adjacent to Phase 5, southwards to 15 mAOD at their confluence located north of Phase 14. The top of the aquifer and maximum recorded groundwater elevation in borehole RH08/06, adjacent to Phase 6, was at 14.56 mAOD and 14.97 mAOD respectively. Therefore, it is concluded that both watercourses are located at least 0.5 m above the rest water level under pre-operational conditions and are likely located within the clay overburden above the aquifer. Hence, these watercourses are not considered to be hydraulically linked with the aquifer.

Aquifer properties

Two methods have been used to calculate the hydraulic conductivity of the sand and gravel: analysis of historical test pumping data undertaken at a waterwell installed within the site, and the Hazen approximation using particle size analysis from the 2008 boreholes. With

consideration of the results outlined below from field tests and laboratory analysis, hydraulic conductivities representative of the aquifer beneath the site are estimated to be approximately 50 m/d.

i) *Analysis of test pumping data*

Test pumping was undertaken on completion of installation of a historical waterwell located in the north-central section of the site (BGS Reference TL81NW65, NGR TL 8385 1622) in 1964 (Appendix 2971/ESSD/A4). An estimate of the hydraulic conductivity of the sand and gravel has been made utilising the Logan Approximation method, which is of the form:

$$T = \frac{1.22Q}{S_w}$$

Where: T = transmissivity (m/d)
Q = discharge from a pumped well (m³/d)
S_w = steady-state drawdown (m)

Values of discharge (49,000 gallons over 6 hours, equivalent to 891 m³/d) and steady-state drawdown (13 ft 6 inches, equivalent to 4.1 m) pertaining to the test pumping results were substituted into the formula, as below:

$$T = \frac{1.22 \times 891}{4.1} = 265.1 \text{ m}^2/\text{d}$$

The approximate saturated aquifer thickness based on the borehole log and rest water level is 4.6 m, therefore the hydraulic conductivity of the sand and gravel, is some 57.6 m/d.

A second borehole nearby, BGS Reference TL81NW66, was pumped for 7 hours at a rate of 7,685.7 gallons/hour (838.6 m³/d) for a drawdown of 12 ft, or 3.66 m, giving an approximate transmissivity of 279.5 m²/d and with a thickness of sand of 11 ft (3.35 m), a hydraulic conductivity of 83.4 m/d.

ii) *Particle size analysis*

An estimate of hydraulic conductivity (k) can be determined using various empirical formulae. The freely available HydroSieveXL spreadsheet tool has been used to analyse the particle size distribution data from thirty-two samples from boreholes RH08/2 to 6P, RH08/09 to 12 and RH08/14P to 20P. The spreadsheet tool estimates the hydraulic conductivity using sixteen methods and calculates the geometric and arithmetic means for those methods only whose criteria are met.

The results of the particle size analysis and the HydroSieveXL outputs are provided as *Appendix 2971/ESSD/A4*. The geometric mean calculated from all the relevant methods for each sample is 41 m/d and the 75th and 25th percentile values are 18.7 and 72.5 m/d respectively. This method of analysis is known to over-estimate hydraulic conductivities, however they are within the same range of magnitude as the estimates from nearby pumping tests.

3.3.3 Groundwater quality

This aquifer is designated within the Essex Gravels Waterbody (ID: GB40503G000400) under the Water Framework Directive (WFD). The 2016 Quantitative groundwater status of the waterbody is 'Good' and the Chemical status is 'Poor'. This 'Poor' status is considered to be due to diffuse pollution from poor livestock and nutrient management within the catchment.

The site lies within groundwater nitrate vulnerable zone G78, for Sandlings and Chelmsford.

The groundwater vulnerability across the site is designated by the Environment Agency as "Low to Medium". This groundwater status is defined as "the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a single square kilometre".

Groundwater quality monitoring

There are no on-site or EA off-site groundwater quality monitoring locations within 2 km of the site.

3.3.4 Licensed and private groundwater abstractions

Details of licensed, de-regulated, and private abstractions were requested from the Environment Agency and Braintree Council.

The EA provided information for a single licensed and four de-regulated groundwater abstractions within 2 km of the site, however only one of the de-regulated abstractions was located within 500 m of the proposed permit boundary. The de-regulated licence 8/37/31/*G/0017 is registered to Rose Cottage for <20 m³/day water supply for agricultural use. The cottage is located 80 m northeast of the site boundary, however the licensed location provided appears incorrectly at 40 m southwest of the site boundary, adjacent to Colemans Farm (*Drawings 2971/ESSD/03 and 08*). The BGS records show the Rose Cottage supply borehole (reference TL81NW66) was completed in 1963 to a depth of 4.57 m, and abstracts from superficial sand deposits.

Braintree Council has provided information for a single active well, located 1.1 km north of the proposed permit boundary at Hoo Hall. The supply is used for domestic purposes at a rate of

0.4 m³/day. The BGS records show this borehole (reference TL81NW40) was completed in 1969, is 12.8 m deep and likely abstracts from the superficial gravels located between the overlying Till deposits and the underlying London Clay.

3.4 Man-made sub-surface pathways

Several main gas pipelines are present within close proximity to the site, aligned northeast-southwest as shown on *Drawing 2971/ESSD/03*. The first passes immediately north of the site, from Phase 2 to Phase 5. From Phase 5, it is paralleled by a second pipeline and both terminate at the gas works off Little Braxted Lane, located to the southwest of the site. The third pipeline passes to the south of Colemans Reservoir, and along the southern boundary of Phase 13B, also terminating at the gas works. The pipelines do not cross into the proposed area of mineral extraction and placement of imported fill, and as a 10 m stand-off is required along each side of these pipelines, site operations will not interact with these services.

There are no other buried services, for private or public supply, located across the site.

3.5 Receptors and compliance points

3.5.1 Conceptual model

The baseline environmental and hydrogeological data have been used to develop a site conceptual model to identify the key aspects of the site, **its' setting and potential receptors**. The schematic illustration of the conceptual model is provided as *Drawings 2971/ESSD/09a and 09b* and cross-sections of the proposed restoration profile are appended to the Waste Recovery Plan (Westbury Environmental, October 2020).

3.5.2 Groundwater receptors

During the operational phase of the site, groundwater will be removed and discharged off-site, hence an inward gradient will occur and groundwater surrounding the site is not a receptor. On completion of dewatering, groundwater flow surrounding the site will return to its pre-development south/southwest direction. However, the aquifer is naturally limited in extent due to it thinning to zero thickness concurrent with the A12, and similarly thinning towards the River Blackwater. Drilling records also shown the aquifer thinning significantly beyond the northeastern and southwestern boundaries (*Drawing 2971/ESSD/08*). Therefore only thin strips of aquifer will remain surrounding the site, with commensurately low levels of recharge, groundwater flow will be very restricted. The residual aquifer down-gradient to the southwest of the site, and between the site and the River Blackwater, will however, remain a receptor during the post-operational phase.

The superficial aquifer is underlain by over 15 m of clays from the Diamicton and London Clay, which is considered as a non-aquifer and forms an impermeable base to the River Terrace deposits. The Chalk bedrock at depth is classed as a Principal Aquifer, however this unit is completely concealed beneath and within the vicinity of the proposed permit boundary, by the Diamicton clays and the London Clay, and is not considered a receptor.

No environmental or ecological water-supported sites have been identified down-gradient of the site within 500 m. The closest site is a Local Nature Reserve known as Braxted Park Lake, located 760 m to the east, on the opposite bank of the River Blackwater and is, therefore, hydraulically isolated from the site.

No abstractions from groundwater have been identified within 500 m down-gradient of the site. A single de-regulated groundwater abstraction from the superficial sand deposits has been identified within 500 m of the permit boundary, located up-gradient of the site to the northeast.

3.5.3 Surface water

The River Blackwater, located parallel to the southern site boundary, is considered to be the main down-gradient surface water receptor. Two licensed surface water abstractions, with multiple abstraction locations from the River Blackwater, have also been identified within 500 m of the permit boundary. Pre-operational groundwater level monitoring demonstrates that groundwater flow within the sand and gravel aquifer is predominantly south/southwestwards, discharging to the river as baseflow. The river has a regional scale catchment which supports river flows and levels and provides a significant dilution capacity. Within the scale of the catchment, the contribution of baseflow from the aquifer within the site boundary, to the river, is therefore not considered to be significant.

The ordinary watercourses which pass through the site from northwest to south (unnamed watercourse and the Burghey Brook) are considered to be situated within the clay overburden, hence, neither watercourse receives baseflow from the sands and gravels. However, they may provide some recharge to the aquifer via seepage. Post-restoration the Burghey Brook will be reinstated to its original course which will now be underlain by infilled restoration materials.

There are no surface water-supported statutory or non-statutory environmental or ecological sites of interest within a sufficient distance to be impacted by the proposed development.

During the operation of the quarry, a discharge of settled clean water from dewatering occurs to the Burghey Brook. As the mineral extraction progresses into the southern phase areas, this

discharge will move directly to the River Blackwater. Burghey Brook and then the River Blackwater are therefore direct receptors during the operational phase of the site.

Following completion of the restoration, as the northern part of the site will be restored to pre-existing ground levels, surface water run-off from this area will continue as per the pre-development situation. Run-off will be towards the Burghey Brook and other on-site drainage ditches, towards the water-based nature conservation habitat in the southern site area and the River Blackwater to the south. The southern waterbody and the River Backwater will form surface water receptors post-dewatering.

3.5.4 Landfill gas

Due to the nature of the materials being imported to the site, the probability of landfill gas being generated is considered to be negligible. Therefore, it is considered unnecessary to undertake a landfill gas risk assessment.

4 POLLUTION CONTROL MEASURES

4.1 Site engineering

4.1.1 Basal lining system

As the site is not a landfill and due to the proposed nature of the restoration materials, leachate collection is not required, hence an artificial sealing liner is not necessary.

As the site is not a landfill, there is no requirement for a geological barrier. Nevertheless, the natural in-situ clay of the Diamicton Clay and London Clay underlying the site will provide a suitable impermeable base.

4.1.2 Capping requirements

The site will be operating under a waste recovery permit and there is no requirement for an engineered low permeability cap.

4.2 Restoration

The proposed permit boundary covers the originally permitted mineral extraction area and the proposed Western Extension. The area adjacent to the A12 (Phase areas 1 to 9) will be restored using imported and site-won materials approximately back to pre-existing ground levels, in order to achieve the necessary foundations for the proposed A12 improvements. Phases 12 and 13 will also be restored to close to re-existing elevations. Phases 10 and 11 and 14 to 17 will be restored to a water-based nature conservation habitat restoration scheme. The restoration of Phases 1 to 13 will be completed using imported and site-won materials, and the restoration of southern Phases, 14 to 17, will be completed using site-won materials only. The final restoration scheme is provided as *Drawings 2971/ESSD/06a and 6b*.

The accepted materials will need to meet a stringent specification set out by Highways England. The placement of materials within the restoration will be in line with the Series 600 Specification for Highways England works.

It is considered that settlement of the restored landform will be negligible due to the types of material to be accepted by the site and the method of placement. Post-settlement contours are provided as *Appendix 2971/ESSD/A5*.

4.3 Water management

Mineral extraction and subsequent restoration with imported materials will take place below the watertable in the superficial sand and gravel aquifer, hence dewatering and groundwater management will be required.

4.3.1 Water management system: Operational phase

The existing water management system is illustrated on *Drawing 2971/ESSD/05*. Existing operations to remove incident rainfall and groundwater ingress through dewatering from a sump within the active mineral extraction void will be continued.

Water is then pumped to a settlement lagoon area where excess water is discharged off-site in line with the discharge consent (Permit Ref: EPR FB3192AY). It is proposed to continue this system during the site restoration as necessary.

4.3.2 Water management system: Post-restoration

On completion of restoration, drainage will be implemented by Highways England for the area dedicated to the A12 improvement works. The water-based nature conservation habitats restoration scheme intended for the remainder of the site includes two areas of open water which have sufficient freeboard to receive drainage and run-off from the surrounding land. The waterbodies within the restoration scheme are assumed to be mostly clay-lined, however hydraulic continuity with residual sand and gravel aquifer will be retained in places. No active water management will be required post-restoration. However, a passive water level management scheme will allow excess water from the waterbodies to be discharged to the River Blackwater at times of high rainfall or storm events.

4.3.3 Surface water monitoring

Surface water monitoring of suspended solids, pH and visible oil and grease will continue to be undertaken at the permitted points of discharge outfall from the site, as per the permit requirements.

4.4 Post-closure controls (aftercare)

Restoration soils placed over the imported materials will comprise the indigenous topsoil and subsoil stripped from the site prior to mineral extraction and stored for this purpose, together with appropriate imported soils as necessary.

Restoration will be in accordance with the approved restoration scheme.

Due to the type of materials being placed in the site, the potential for settlement is considered to be extremely low.

5 MONITORING

5.1 Weather

5.1.1 Data sources

Rainfall data are available from the Environment Agency for a rainfall gauging station at Witham (Station ID WITHAR, NGR TL 82819 14016), which is located approximately 1.5 km to the southwest of the site.

5.1.2 Rainfall

Average monthly rainfall data at the station between 2009 and 2020 is shown in *Table 2971/ESSD/T9*; a maximum average monthly rainfall of 63.3 mm (August) and a minimum of 31.5 mm (April). Average annual rainfall over the period was 571.8 mm/a.

2971/ESSD/T9: Long-term average monthly rainfall (1979 – 2013)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rainfall (mm)	52.8	40.7	32.7	31.5	38.1	49.7	48.5	63.3	43.3	48.6	62.6	60.2

5.2 Monitoring

The requirement for groundwater level monitoring for the site was included as a condition of the existing planning permission for the site (Ref: ESS/39/14/BTE). The agreed groundwater level monitoring scheme has been operational since 2008 and will be continued throughout the lifetime of the mineral extraction restoration.

No groundwater quality monitoring is undertaken.

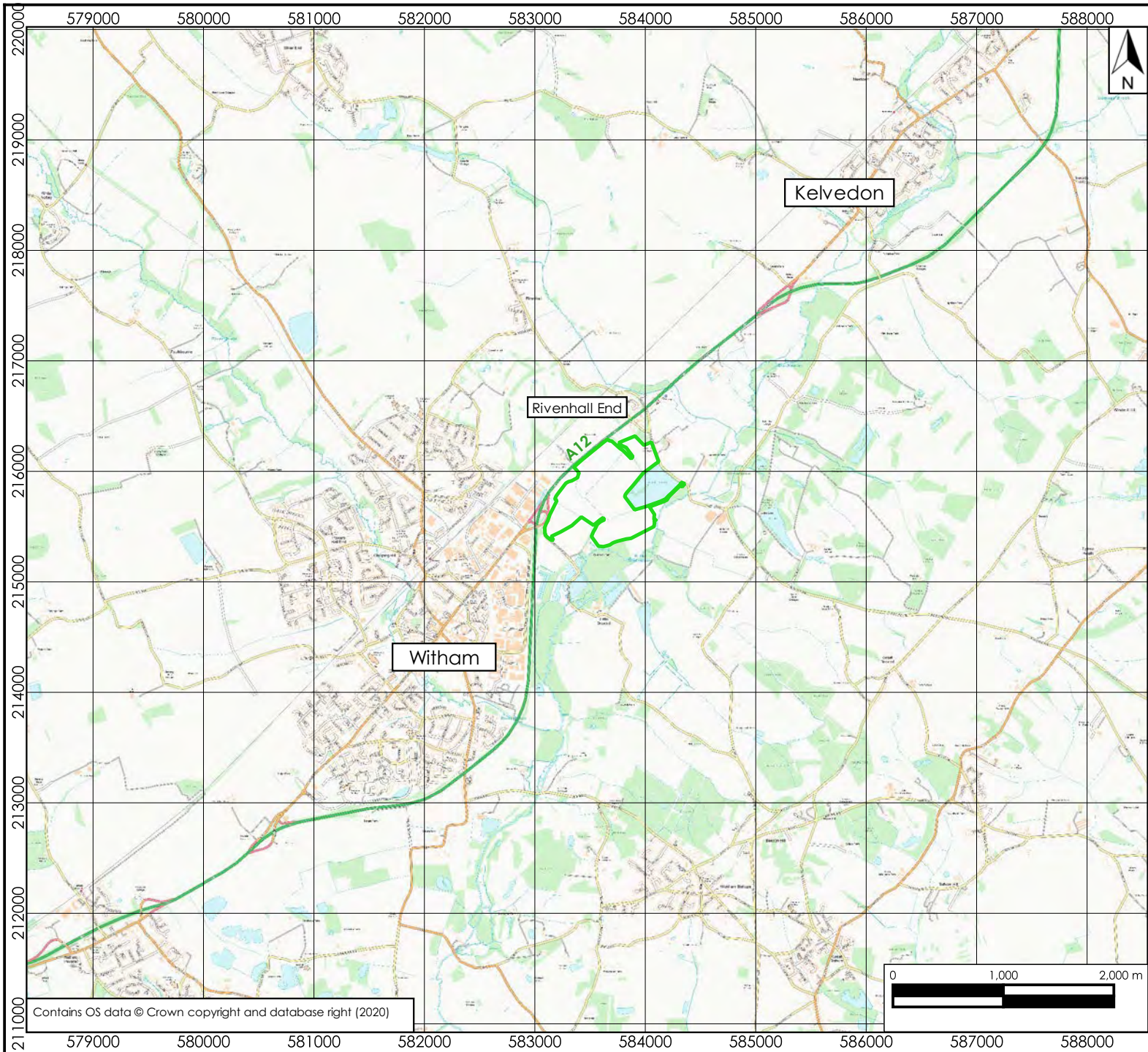
Surface water quality monitoring will continue to be undertaken at the permitted points of discharge outfall from the site as per the Permit requirements.

No gas monitoring is undertaken.

The existing monitoring scheme is considered to remain adequate and considering the nature of the imported material, the restricted material types that will be accepted and the WAC procedures to be implemented, no additional monitoring locations are proposed.

It is proposed that groundwater quality monitoring from existing monitoring points be conducted as described within the Hydrogeological Risk Assessment (HRA, Hafren Water, January 2021).

DRAWINGS



Legend
 Proposed permit boundary

Scale correct at A4

Client Brice Aggregates Ltd.
 Colemans Farm Quarry
 Little Braxted Lane
 Witham, Essex
 CM8 3EX

Title Site location

Project Colemans Farm Quarry

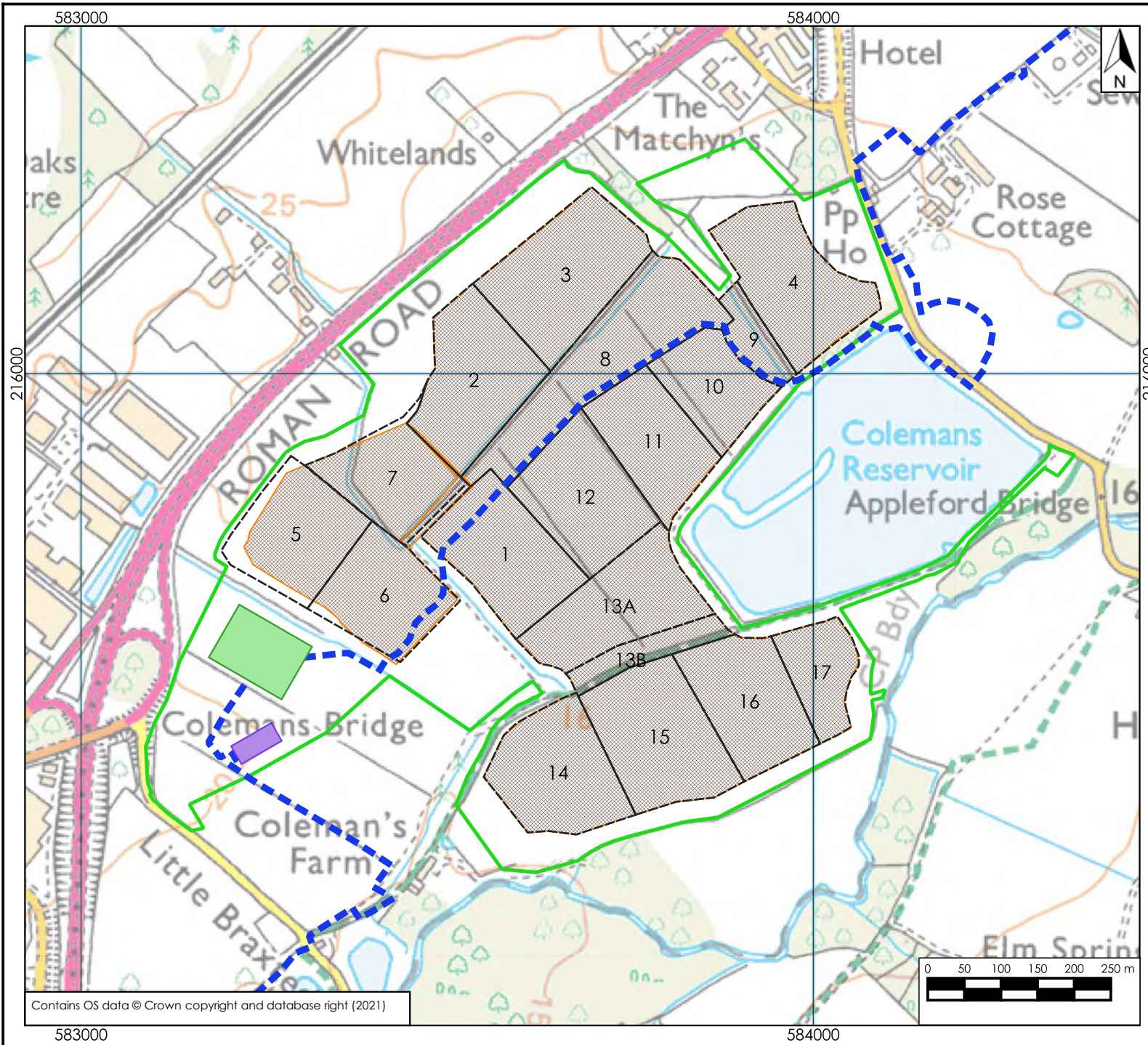
Drawing 2971/ESSD/01 Version 2

Date Oct 2021 Scale 1:50,000

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- Legend
- Proposed Permit Boundary
 - Phasing
 - Approved mineral extraction area
(Planning ref: ESS/39/14/BTE)
 - Boundary extent of A12 works
 - Mineral processing plant area
(small concrete pad)
 - Office/weighbridge (small concrete pad)

Scale correct at A4

Client Brice Aggregates Ltd.
Colemans Farm Quarry
Little Braxted Lane
Witham, Essex
CM8 3EX

Title Site layout

Project Coleman's Farm Quarry

Drawing 2971/ESSD/02	Version 2
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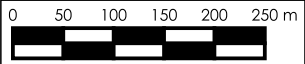
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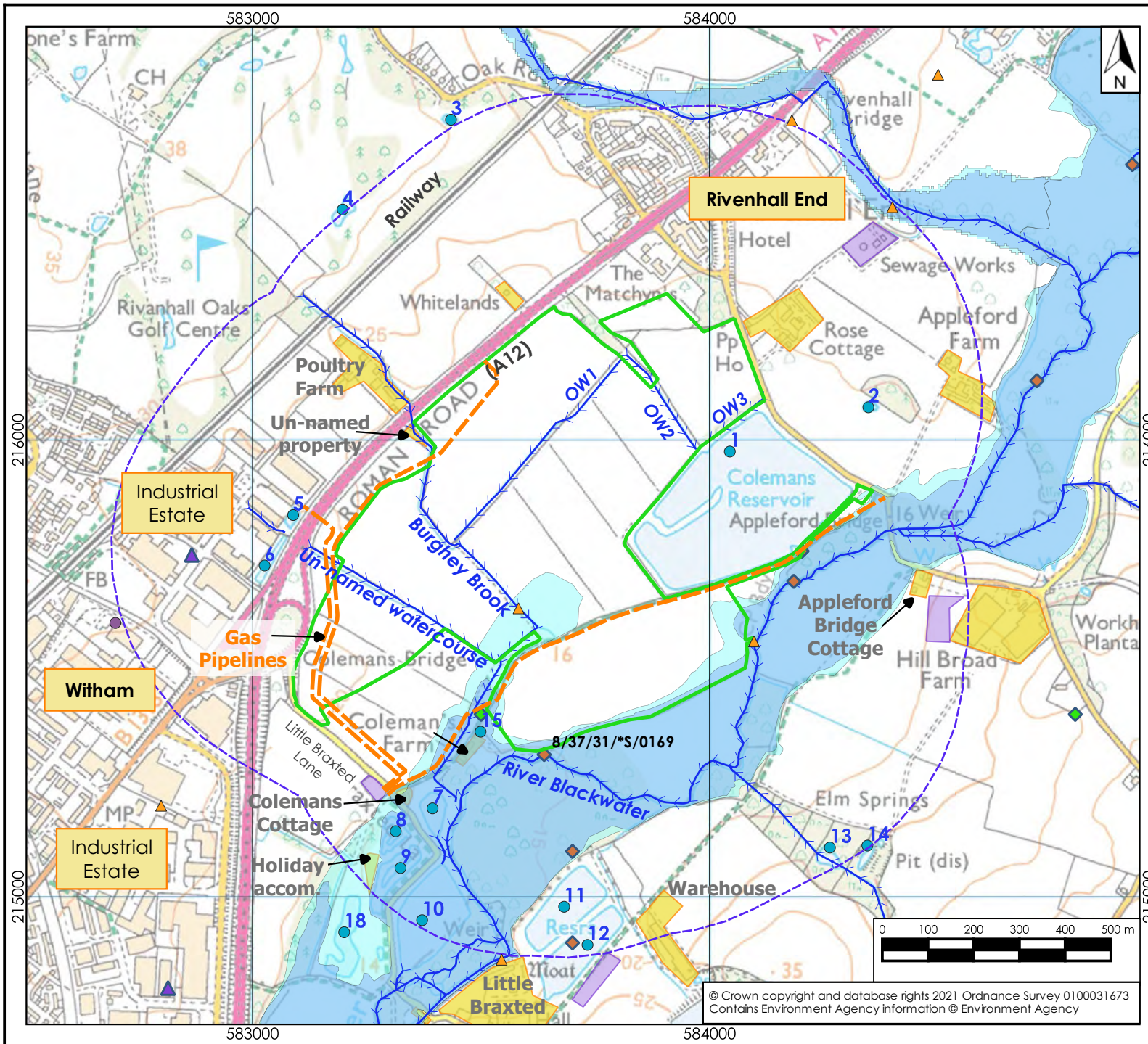
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- Legend**
- Proposed Permit Boundary
 - 500 m buffer
 - Residential / warehouse
- Surface water features:**
- Waterbodies (within 500 m)
 - Watercourse
 - Fluvial Flood Zone 2
 - Fluvial Flood Zone 3
- Waste management/Utility:**
- Utility (gas/sewage works/solar farm)
 - Mains Gas Pipelines
 - Waste Management Sites
 - ▲ Pollution incidents
 - ▲ Discharge Consent Outfalls
- Abstractions:**
- ◆ Groundwater (de-regulated)
 - ◆ Surface water
- Scale correct at A4

Client Brice Aggregates Ltd.
 Colemans Farm Quarry
 Little Braxted Lane
 Witham, Essex
 CM8 3EX

Title Environmental site setting

Project Colemans Farm Quarry

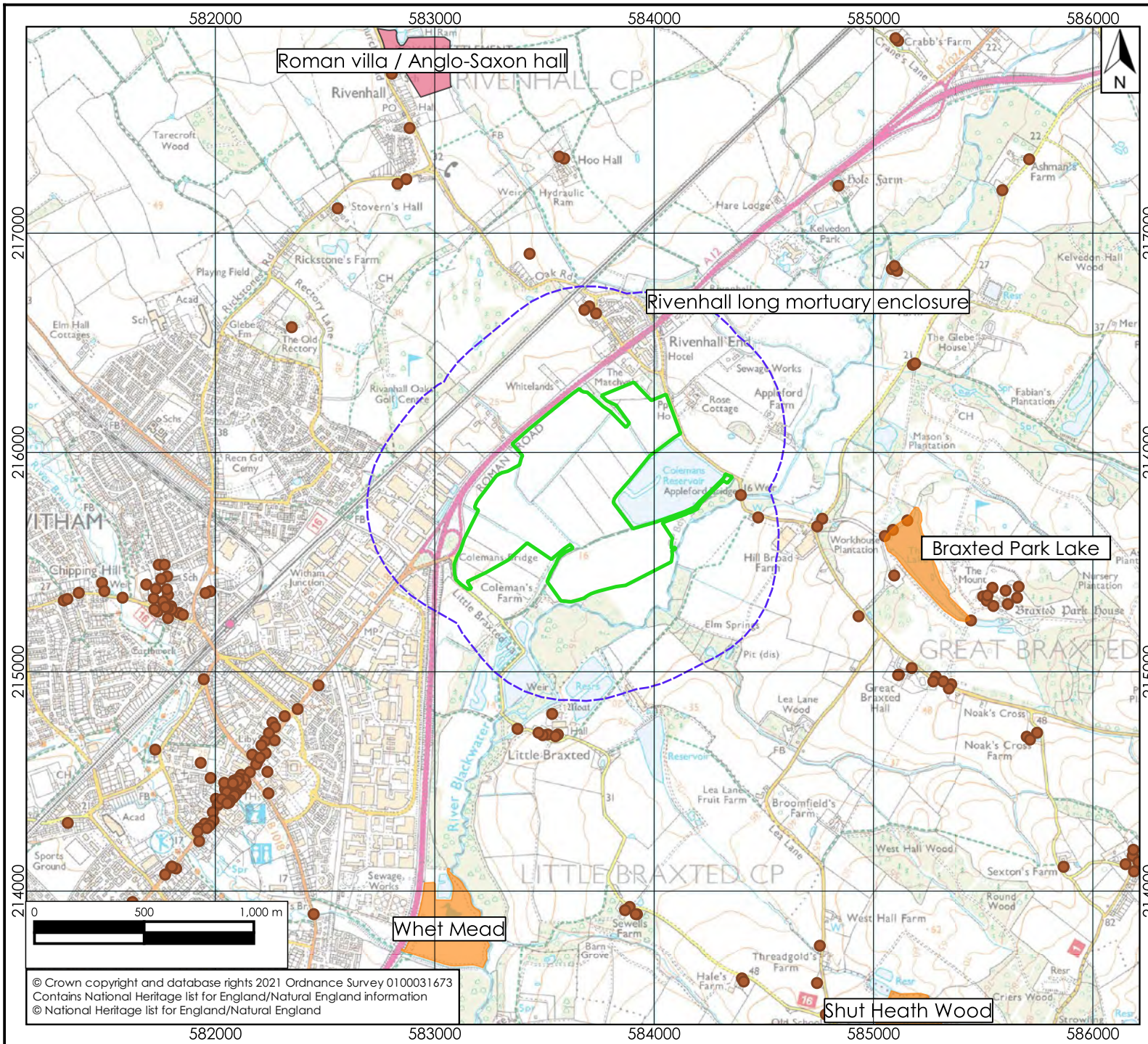
Drawing 2971/ESSD/03 **Version** 2

Date Oct 2021 **Scale** 1:12,000

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- Legend
- Proposed Permit Boundary
 - 500 m buffer
 - Local Nature Reserve
 - Scheduled Monument
 - Listed Buildings

Scale correct at A4

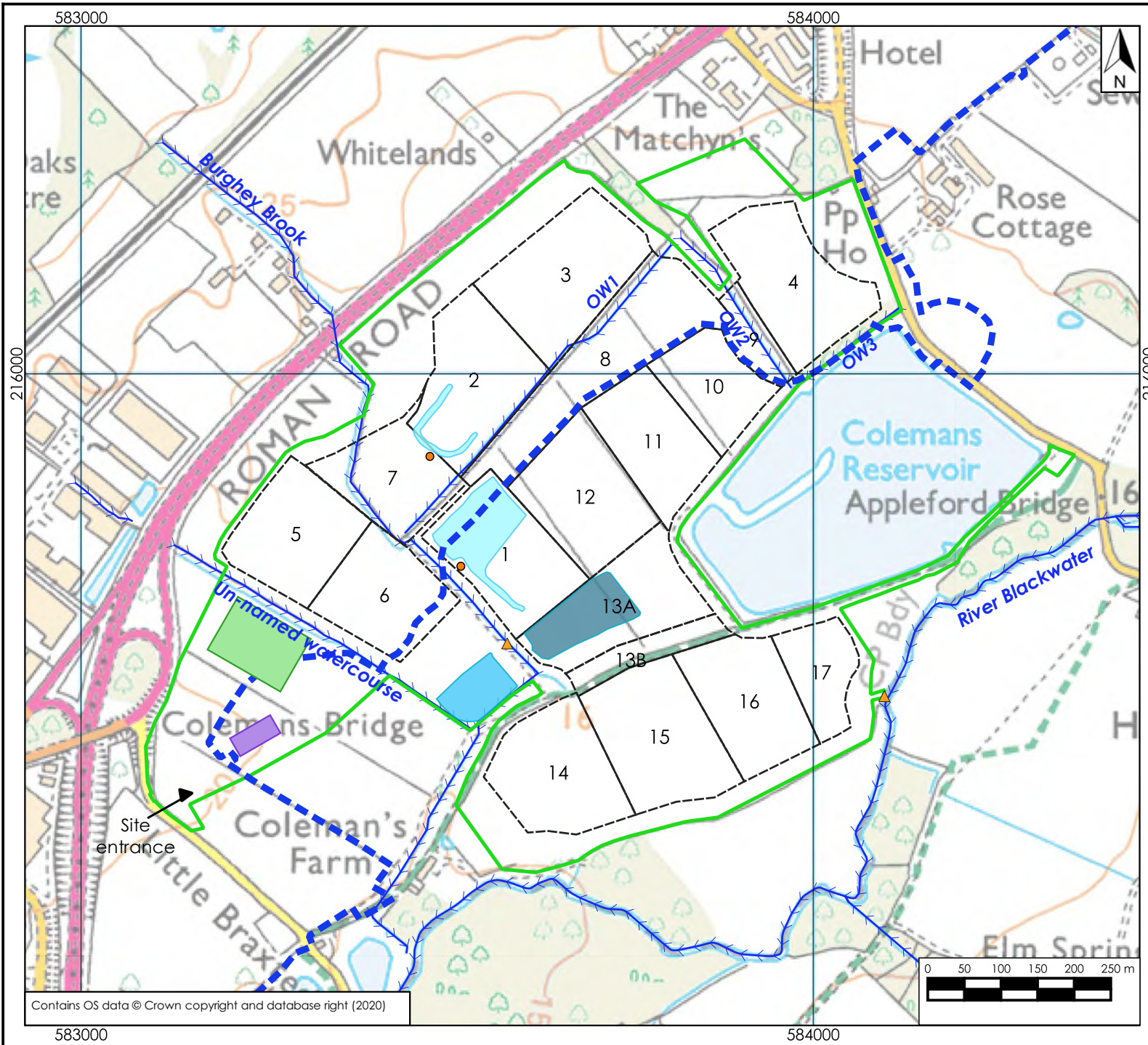
Client	Brice Aggregates Ltd. Colemans Farm Quarry Little Braxted Lane Witham, Essex CM8 3EX	
Title	Cultural and natural heritage	
Project	Colemans Farm Quarry	
Drawing	2971/ESSD/04	Version 2
Date	Oct 2021	Scale 1:25,000

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- Legend**
- Proposed Permit Boundary
 - Phasing
 - Boundary extent of A12 works
 - >>> Watercourse

- Lagoons:**
- Freshwater lagoon
 - Silt settlement lagoon
 - Dewatering sump areas (Approx. locations August 2020)
 - ▲ Site discharge locations
 - Dewatering pumps (August 2020)
 - Mineral processing plant area (small concrete pad)
 - Office/weighbridge (small concrete pad)

Scale correct at A4

Client Brice Aggregates Ltd.
 Colemans Farm Quarry
 Little Braxted Lane
 Witham, Essex
 CM8 3EX

Title Site design (August 2020)

Project Colemans Farm Quarry

Drawing 2971/ESSD/05 **Version** 2

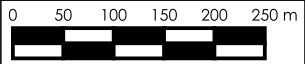
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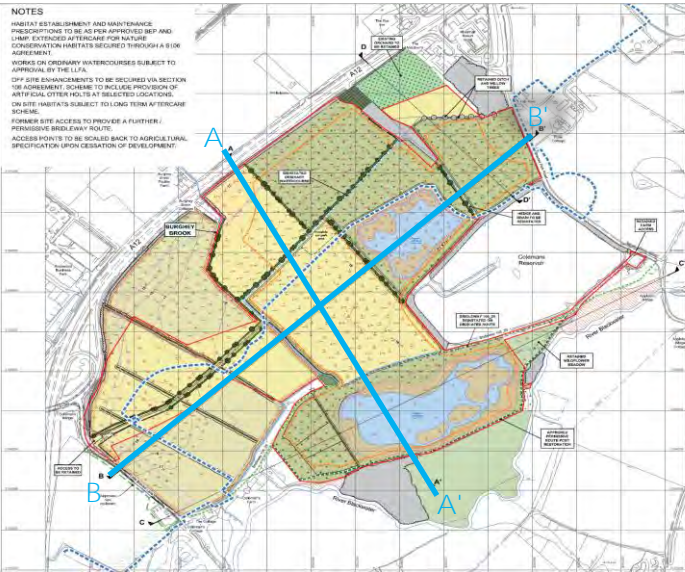
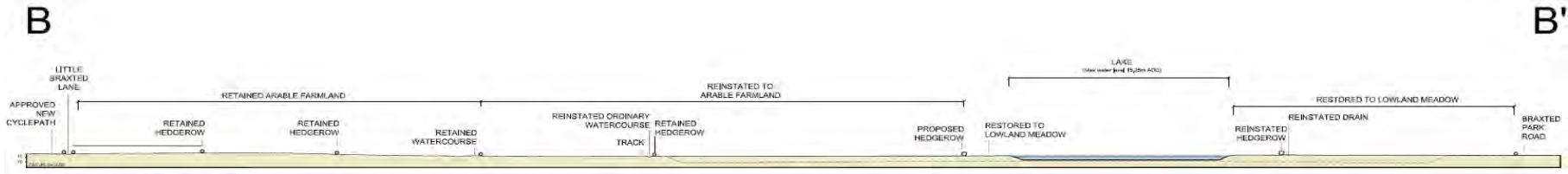
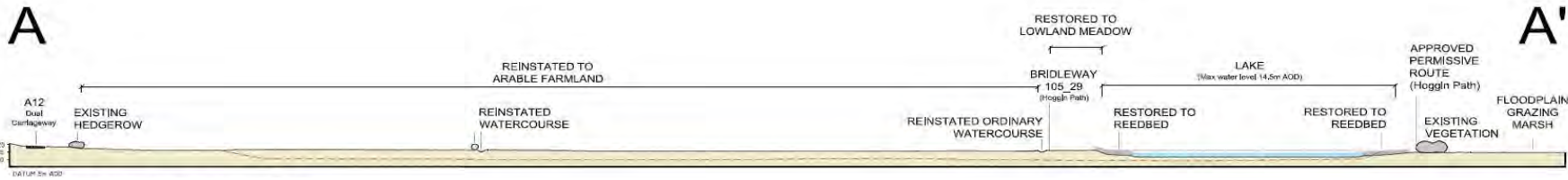
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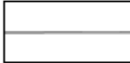


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LEGEND

-  PROPOSED RESTORATION PROFILE
-  EXISTING GROUND LEVEL
-  INFERRED EXTRACTION VOID PROFILE



Project: **COLEMAN'S FARM QUARRY
WITHAM, ESSEX**

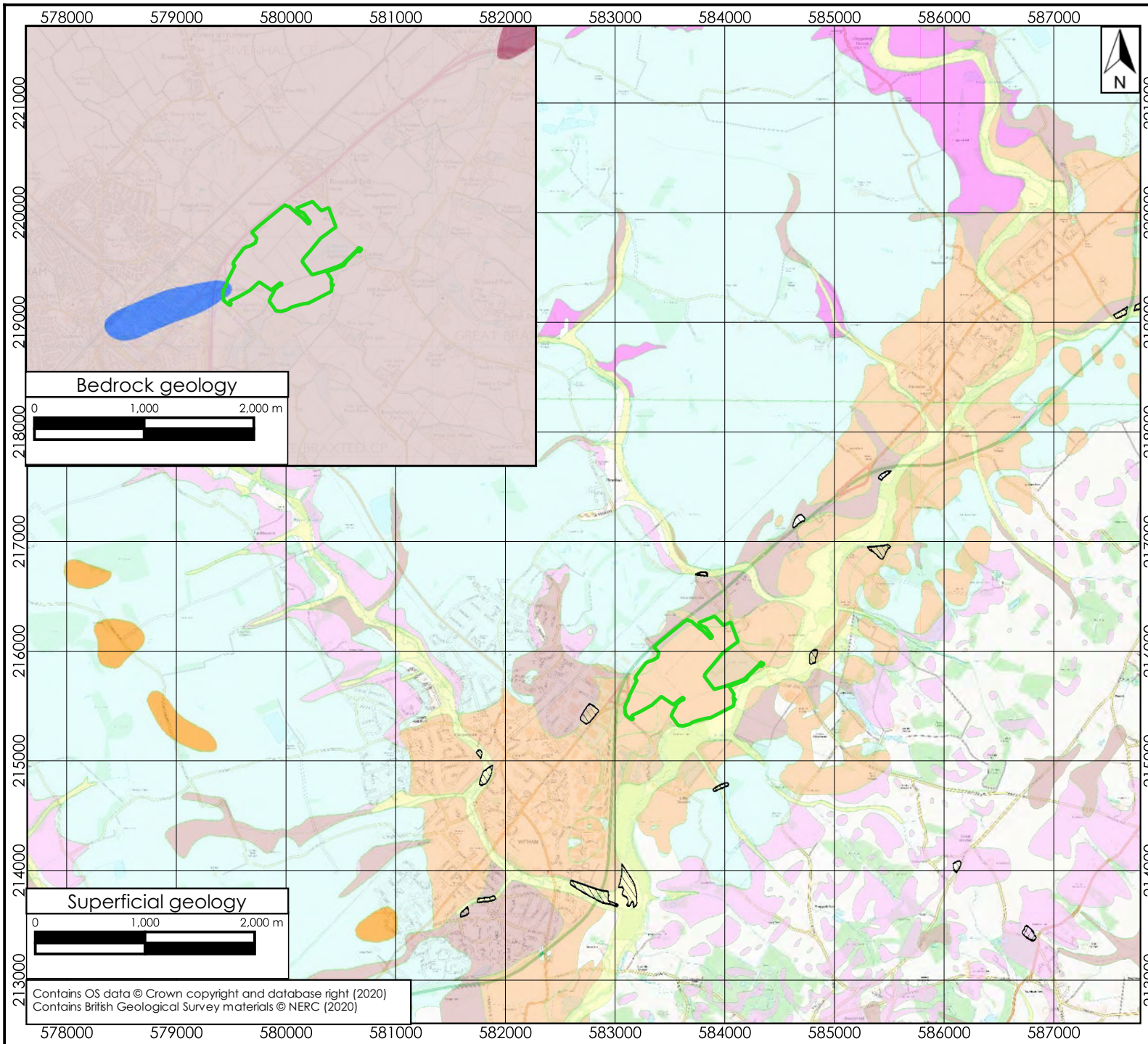
Title: **SITE CROSS SECTIONS**

Scale: 1:2500 @ A2	Date: July 2021	Drawing No.:
Drawn by: DJA	Checked by: OB	C45/08/06A

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Client: Brice Aggregates Ltd.
 Colemans Farm Quarry
 Little Braxted Lane
 Witham, Essex. CM8 3EX

Title: Restoraiton scheme - Scale cross sections	
Project: Colemans Farm Quarry	
Drawing: 2971-ESSD-06b	Version: 2
Date: Oct-21	Scale: As shown



- Legend**
- Proposed Permit Boundary
 - Bedrock geology:**
 - London Clay Formation
 - Thanet Formation & Lambeth Group (Undifferentiated)
 - Thanet Formation
 - Superficial geology:**
 - Peat
 - Head
 - Interglacial Lacustrine Deposits
 - Glaciofluvial deposits
 - Alluvium
 - River Terrace Deposits
 - Lowestoft Formation
 - Kesgrave Catchment Subgroup
 - Brickearth
 - Buried channel margin
- Scale correct at A4

Client Brice Aggregates Ltd.
 Colemans Farm Quarry
 Little Braxted Lane
 Witham, Essex
 CM8 3EX

Title Geology

Project Colemans Farm Quarry

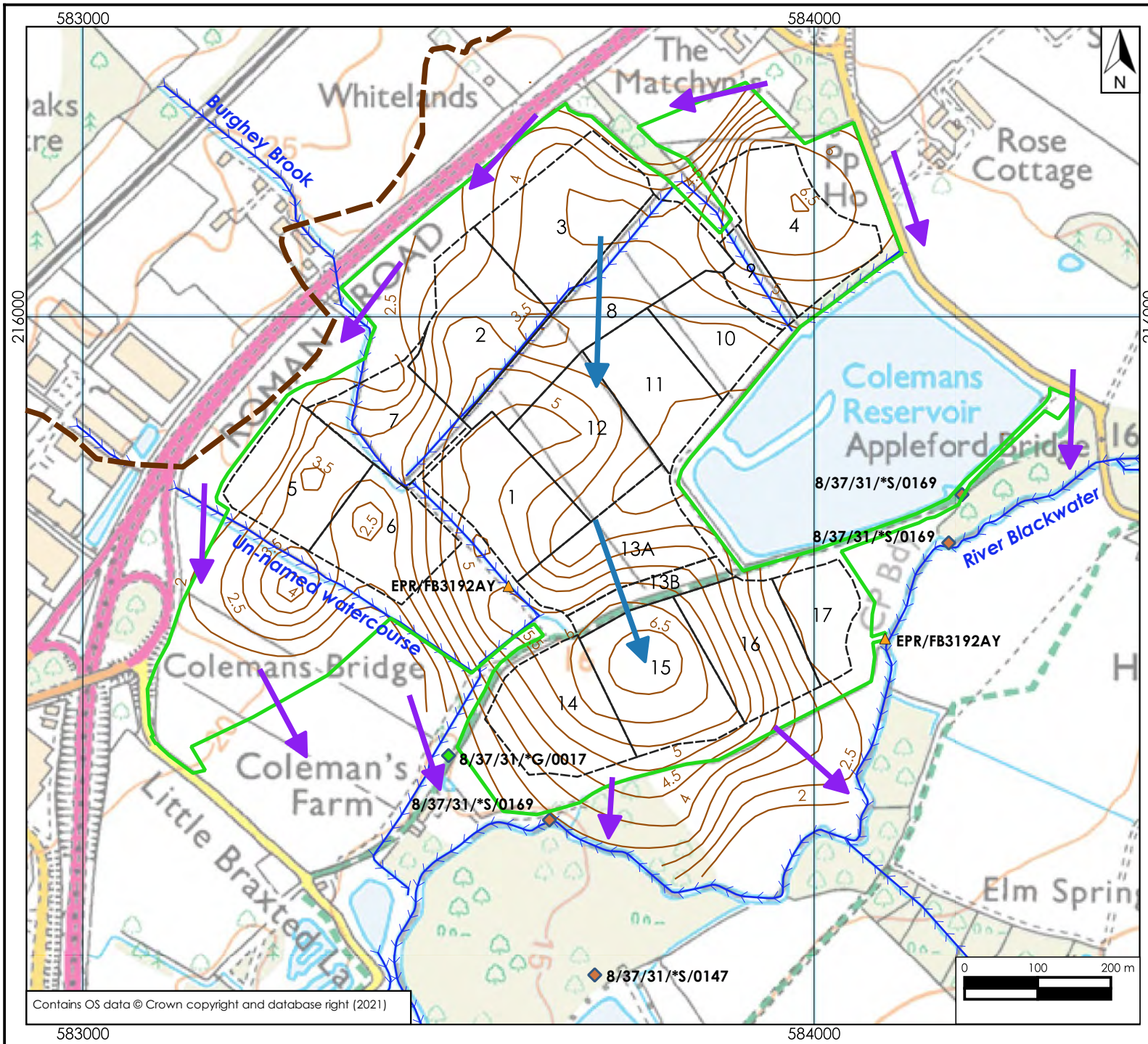
Drawing 2971/ESSD/07 **Version** 2

Date Oct 2021 **Scale** 1:50,000

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Legend

- Proposed Permit Boundary
- Phasing
- Boundary extent of A12 works
- ↓ Pre-operational groundwater flow direction
- ↓ Post-operational groundwater flow direction
- ~ Watercourse
- ▲ Site discharge locations

Abstractions:

- ◆ Groundwater de-regulated
- ◆ Surface water licenced

— Aquifer thickness contour (m)

- - - Northwestern boundary extent of aquifer unit

Scale correct at A4

Client Brice Aggregates Ltd.
 Coleman's Farm Quarry
 Little Braxted Lane
 Witham, Essex
 CM8 3EX

Title Local hydrogeology and hydrology (greenfield conditions)

Project Coleman's Farm Quarry

Drawing 2971/ESSD/08 **Version** 2

Date Oct 2021 **Scale** 1:7,500

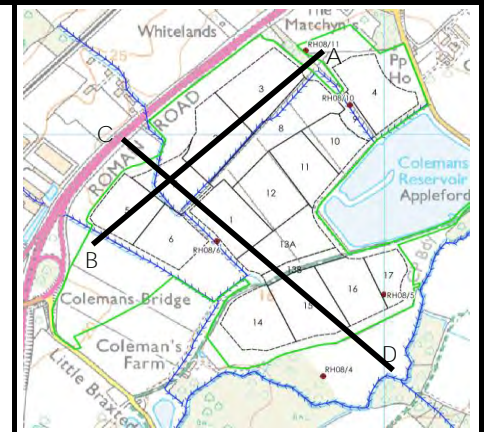
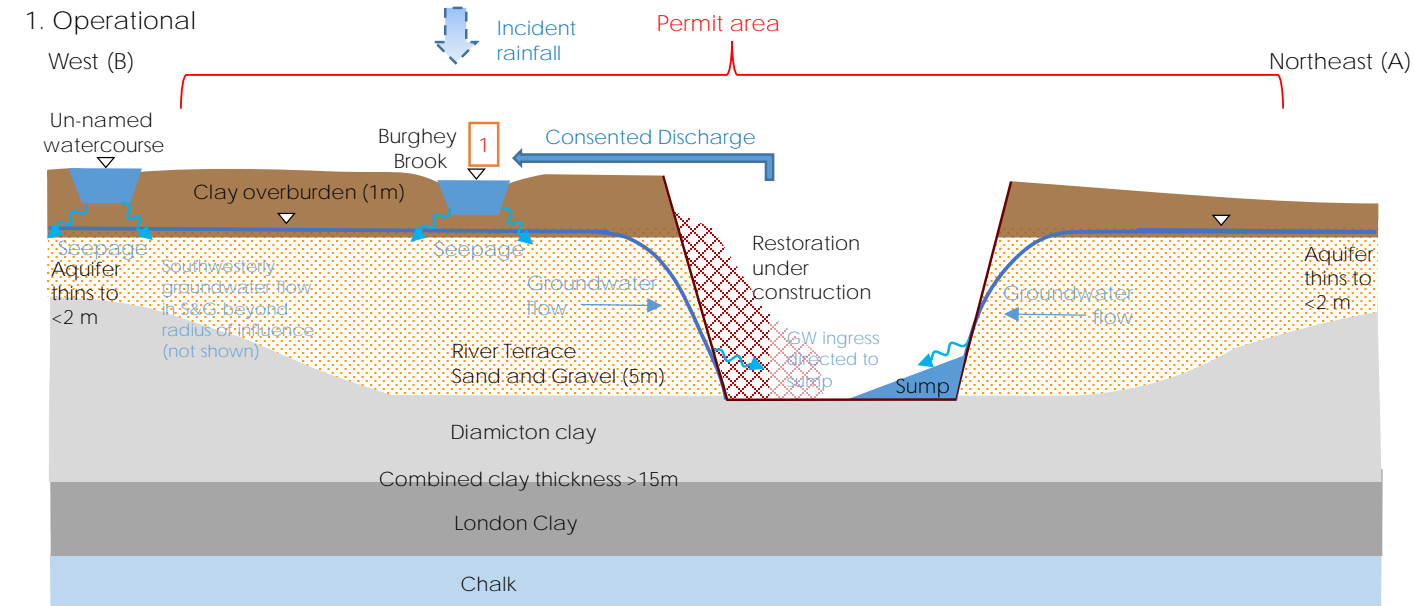
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1. Operational



Lines of section

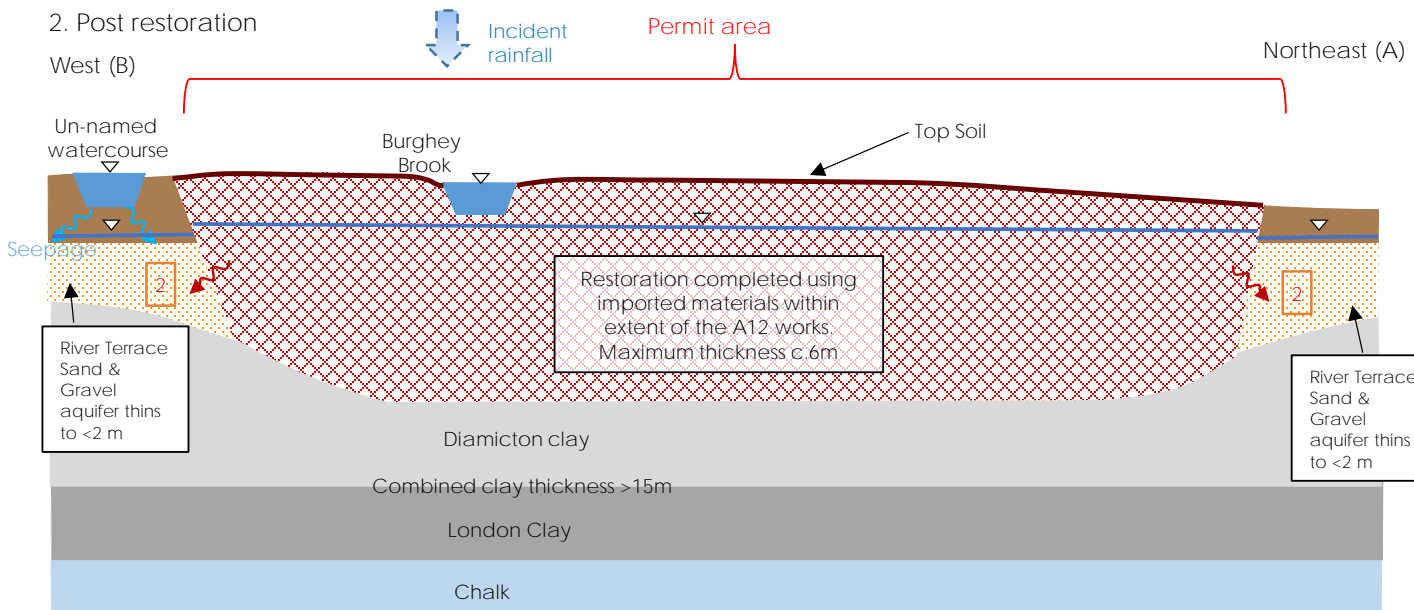
Receptors during operation:

1 Watercourse receiving site discharge

Receptors post operation:

2 Groundwater in River Terrace deposits

2. Post restoration



Client Brice Aggregates Ltd.
Colemans Farm Quarry
Little Braxted Lane
Witham, Essex. CM8 3EX

Title Schematic site conceptual model (Cross section A to B)

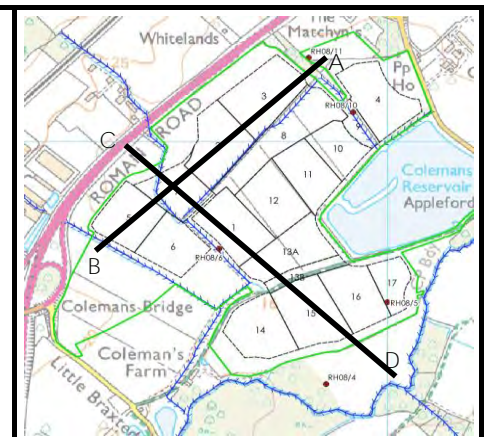
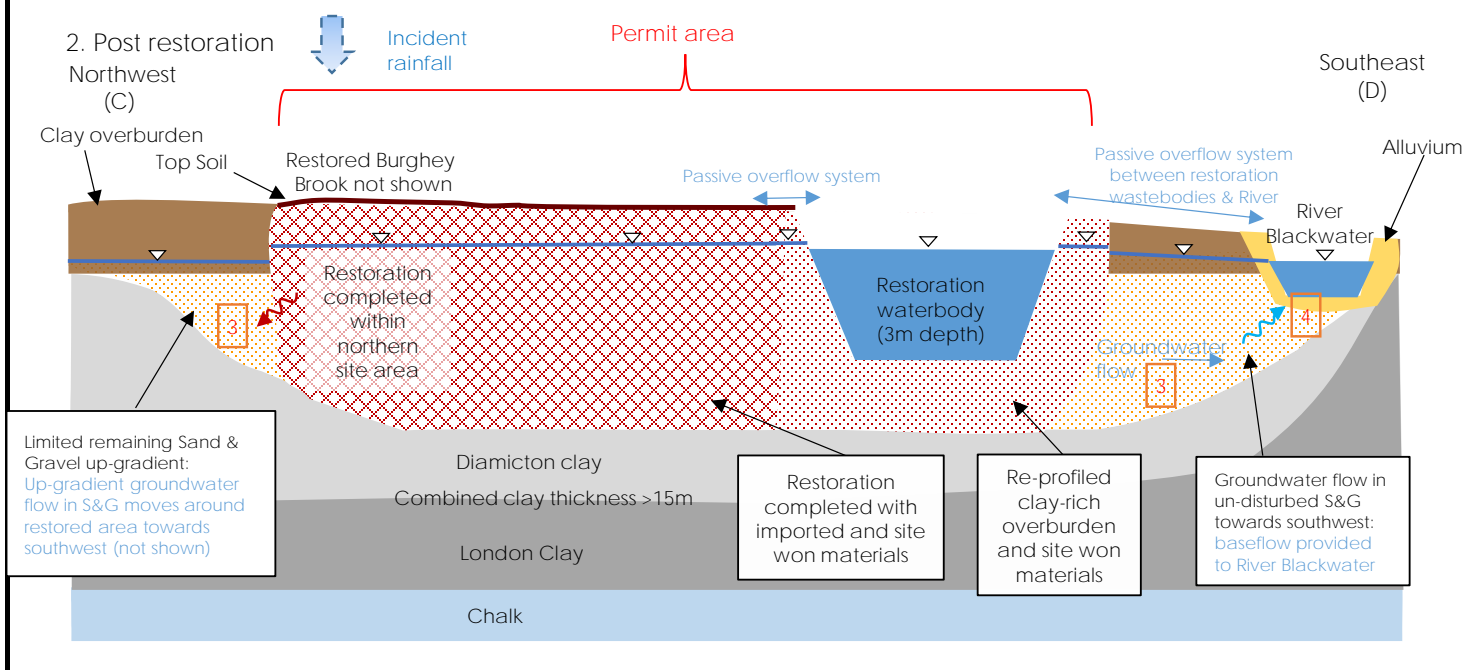
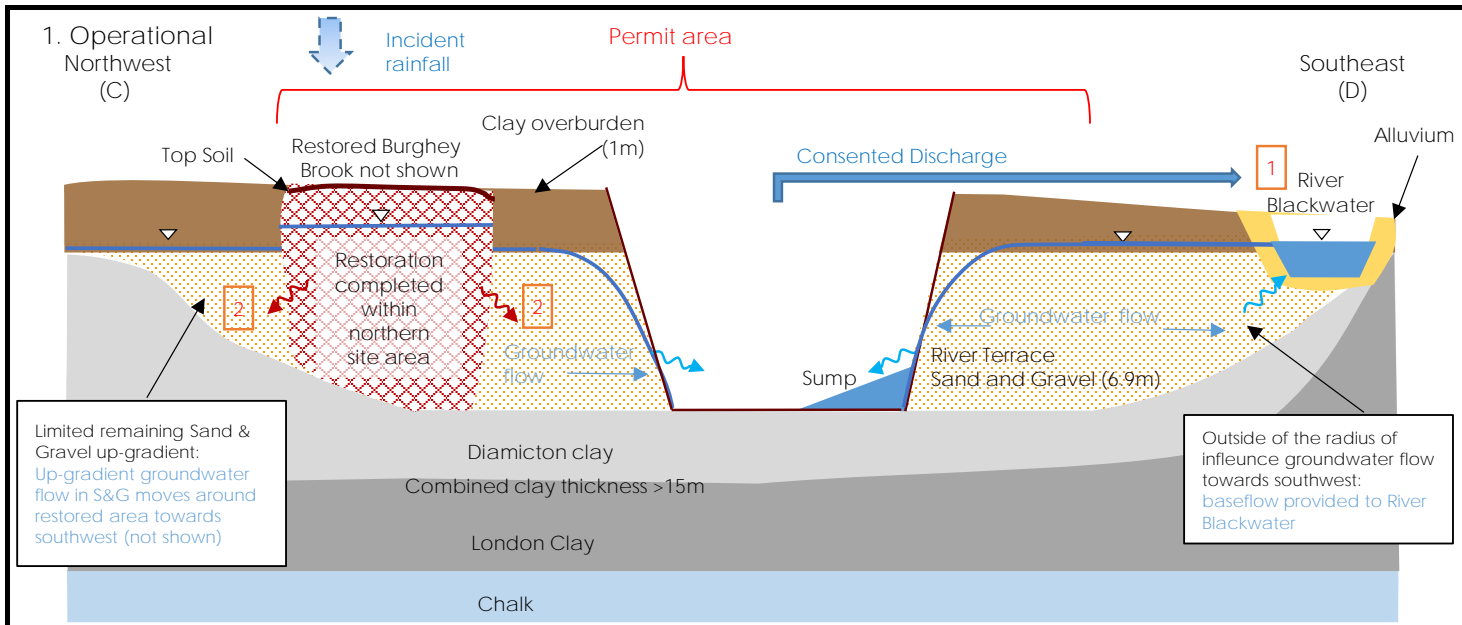
Project Colemans Farm Quarry

Drawing 2971/ESSD/09a	Version 2
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Date Oct-21	Scale nts
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Lines of section

- Receptors during operation:
- 1 Watercourse receiving site discharge
 - 2 Groundwater in River Terrace deposits
- Receptors post operation:
- 3 Groundwater in River Terrace deposits
 - 4 Watercourse receiving baseflow

Client Brice Aggregates Ltd.
 Coleman's Farm Quarry
 Little Braxted Lane
 Witham, Essex. CM8 3EX

Title Schematic site conceptual model (Cross section C to D)

Project Coleman's Farm Quarry

Drawing 2971/ESSD/09b Version 2

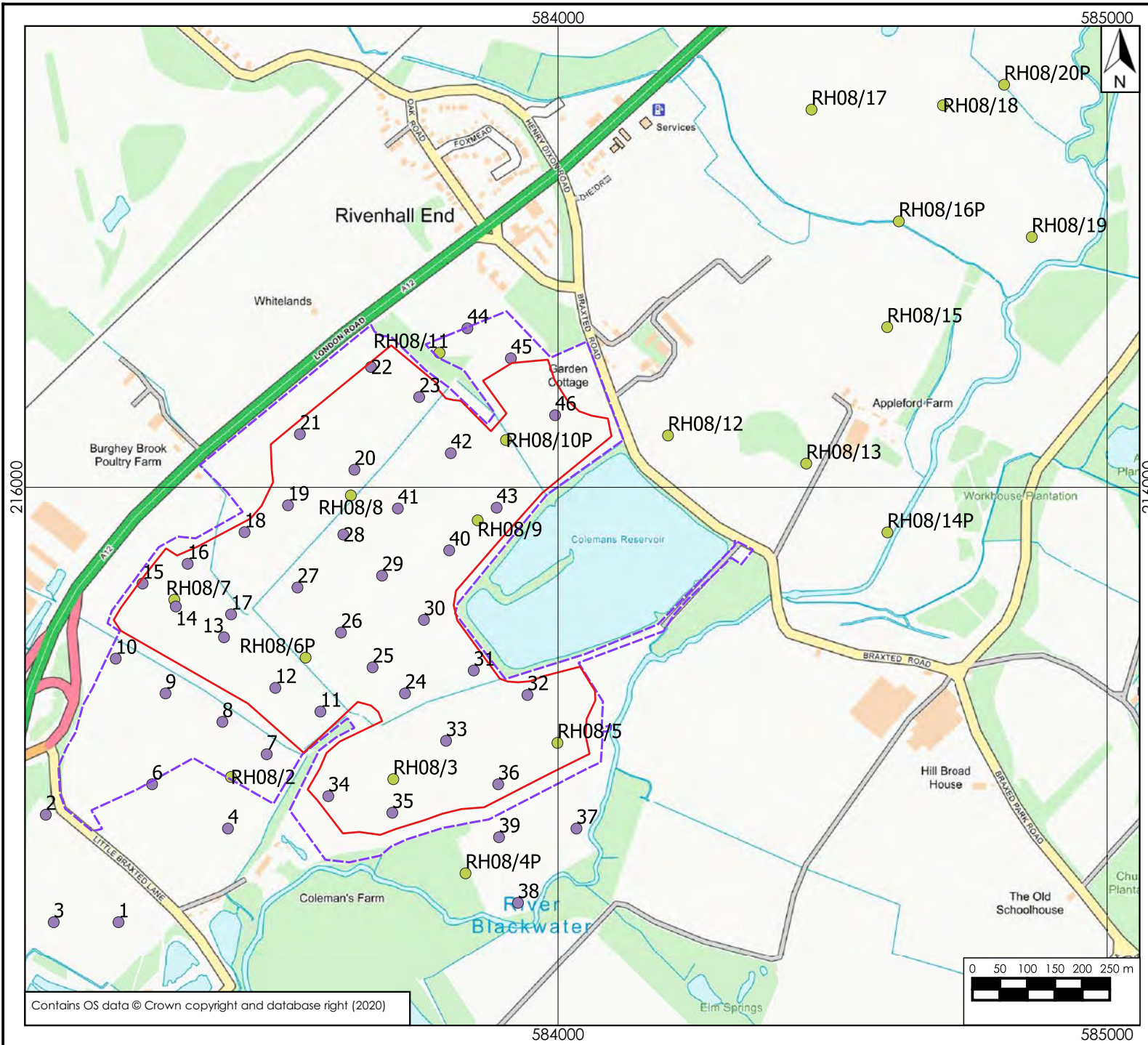
Date Oct-21 Scale nts

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APPENDIX 2971/ESSD/A1

Site investigation data
(mineral data and borehole logs)



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- Legend**
- Proposed permit boundary
 - Proposed planning boundary
- Ground investigation boreholes:**
- 2005 boreholes
 - 2008 boreholes

Scale correct at A4

Client Brice Aggregates Ltd.
 Coleman's Farm Quarry
 Little Braxted Lane
 Witham, Essex
 CM8 3EX

Title Mineral investigation
 borehole locations

Project Coleman's Farm Quarry

Drawing 2971/ESSD/A1.1 Version 1

Date Jan 2021 Scale 1:10000

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Appendix 1: Ground investigation data

Investigation	Borehole	Approx. E	Approx. N	O/B thickness	Mineral thickness	Notes
2005	BH05/01	583200.0	215208	0.8	1.4	
	BH05/02	583067.0	215404	0.2	2.3	
	BH05/03	583082.0	215208	1.5	1.5	
	BH05/04	583399.0	215379	1	1	
	BH05/05	-	-	-	-	not drilled
	BH05/06	583261.0	215459	-	-	not drilled
	BH05/07	583469.0	215514	0.3	2	
	BH05/08	583389.0	215573	1.5	1.2	
	BH05/09	583285.0	215625	1.5	4.5	
	BH05/10	583194.0	215688	6	2.2	
	BH05/11	583567.0	215592	0.2	5.8	
	BH05/12	583485.0	215635	0.3	4.2	
	BH05/13	583392.0	215727	0.8	2	
	BH05/14	583304.0	215783	0.2	3.8	
	BH05/15	583243.0	215825	-	0	Barren
	BH05/16	583325.0	215861	6	3	
	BH05/17	583405.0	215769	3	3	
	BH05/18	583429.0	215918	3	1.5	
	BH05/19	583508.0	215967	1.5	4.5	
	BH05/20	583629.0	216032	0.4	4.5	
	BH05/21	583530.0	216097	1	3	
	BH05/22	583659.0	216219	1.5	4.5	
	BH05/23	583747.0	216165	3	4.5	
	BH05/24	583721.0	215625	0.2	5.8	
	BH05/25	583662.0	215672	1.5	3.5	
	BH05/26	583605.0	215736	1.5	4.5	
	BH05/27	583525.0	215818	1.5	5.2	
	BH05/28	583609.0	215914	0.5	4.8	
	BH05/29	583679.0	215839	0.2	5.1	
	BH05/30	583756.0	215759	1.5	3	
	BH05/31	583846.0	215667	0.2	4.8	
	BH05/32	583944.0	215622	1.5	2.5	
	BH05/33	583796.0	215539	0.6	6.9	
	BH05/34	583582.0	215438	0.6	3.9	
	BH05/35	583698.0	215408	1.5	5	
	BH05/36	583891.0	215459	0.3	5.7	
	BH05/37	584033.0	215379	0.2	2.8	
	BH05/38	583927.0	215244	-	0	Barren
	BH05/39	583892.0	215363	1.5	3	
	BH05/40	583802.0	215885	1.5	3.5	
	BH05/41	583708.0	215962	1.5	3.5	
	BH05/42	583805.0	216062	0.2	4.3	
	BH05/43	583888.0	215963	1.5	3.5	
	BH05/44	583835.0	216290	-	0	Barren
	BH05/45	583914.0	216235	2	6.3	
	BH05/46	583995.0	216131	0.2	6.5	
	BH05/47	Eastern site area?		3	4	Sand
	BH05/48	Eastern site area?		3	5	Sand
	BH05/49	Eastern site area?		-	0	Barren
	BH05/50	Eastern site area?		-	0	Barren
	BH05/51	Eastern site area?		2.5	3.8	
	BH05/52	Eastern site area?		-	0	Barren
	BH05/53	Eastern site area?		-	0	Barren
2008	RH08/1	583199.9	215466.9	1.2	0.5	Sand
	RH08/2	583404.2	215472.8	1	1.3	Sand & Gravel
	RH08/3	583699.9	215468.8	1.3	6.2	Sand & Gravel
	RH08/4P	583831.4	215297.3	1.6	3.9	Sand & Gravel
	RH08/5	583998.8	215534.9	1	2.3	Sand & Gravel
	RH08/6P	583540.2	215690.1	1.2	5.7	Sand & Gravel
	RH08/7	583301.1	215795.5	4	-	Barren
	RH08/8	583622.6	215985.4	0.7	1.1	Sand & Gravel with a further 2.8m S&G at depth below a clay band
	RH08/9	583853.5	215940.0	1.2	3.8	Sand & Gravel
	RH08/10P	583905.1	216086.2	1.2	5.9	Sand & Gravel
	RH08/11	583784.0	216245.1	1.7	1.5	Sand & Gravel with a further 1.1m S&G at depth below a clay band
	RH08/12	584200.1	216094.5	1.2	4.8	Sand & Gravel
	RH08/13	584451.8	216043.4	0.25	1	Sandy silt & sand
	RH08/14P	584599.6	215918.1	0.3	1.5	Sand & Gravel
	RH08/15	584599.2	216291.8	0.9	1.7	Sand & Gravel
	RH08/16P	584620.4	216484.4	1.95	2.35	Sandy peat & sand
	RH08/17	584461.4	216687.9	3	2.2	Sand & Gravel
	RH08/18	584700.8	216695.7	1	10.4	1m of Sand & Gravel, clay, 0.2 m Sand & Gravel, clay, 10.4m Sand & Gravel.
	RH08/19	584862.5	216455.9	0.9	2.1	Sand & Gravel
	RH08/20P	584812.1	216733.2	0.25	10.85	Sand & Gravel and Sand

Red text - investigative borehole is not located within site boundary

Bold text - monitoring borehole installation

Mineral thickness statistics within site boundary:

Min 0 m
 Max 6.9 m
 Average 3.8 m

Overburden thickness statistics within site boundary:

Min 0.2 m
 Max 6 m
 Average 1.4 m

APPENDIX 2971/ESSD/A2
Surface water quality data

River Blackwater Upstream - Sample point BL03

Date	EQS (freshwater)	EQS source	DWS	DWS Source	Units	2010 - 2020					
						Sample count	Min	Max	Average	DWS Exceedances	EQS exceedances
Temperature					CEL	90	1.69	21.3	11.34		
pH					PHUNITS	75	7.68	8.68	8.10		
Alkalinity pH 4_5					mg/l	75	195	313	248.11		
Conductivity @ 25C					uS/cm	98	624	1151	888.34		
TurbidityNTU					NTU	70	1	100	7.76		
Suspended solids @ 105oC					mg/l	59	3	114	12.17		
Dissolved oxygen saturation %sat					%	89	60.9	146	95.85		
Dissolved oxygen					mg/l	89	5.93	16.4	10.55		
BOD ATU					mg/l	71	1	4.14	1.60		
COD as O2					mg/l	59	10	40	18.36		
Ammonia(N)	0.015	LFTGN01: Average annual concentration	0.500	WHO ATO	mg/l	90	0.03	0.276	0.07	90 (LoD above EQS)	0
N Oxidised					mg/l	90	4.25	14.8	9.50		
Nitrate-N					mg/l	89	4.22	14.7	9.44		
Nitrite-N					mg/l	90	0.011	0.181	0.06		
NH3 un-ion					mg/l	75	0.0004	0.0066	0.0012		
Chloride Ion	250	LFTGN01: Average annual concentration	250	WHO ATO/ EU & UK DWS	mg/l	73	25.1	101	62.58	0	0
Orthophosphate					mg/l	90	0.047	0.457	0.22		
SiO2					mg/l	58	0.86	13.7	8.83		
Benzazone					ug/l	24	0.0105	0.0578	0.03		
Chlorophyll					ug/l	76	0.52	94.5	11.04		

River Blackwater Downstream - Sample point BL02

Date	EQS (freshwater)	EQS source	DWS	DWS Source	Units	2010-2014					
						Sample count	Min	Max	Average	DWS Exceedances	EQS exceedances
Temperature					CEL	36	2.09	18.70	11.70		
pH					PHUNITS	36	7.68	8.57	8.09		
Alkalinity pH 4_5					mg/l	36	203.0	276.0	243.44		
Conductivity @ 25C					uS/cm	50	559.0	1094.0	901.90		
TurbidityNTU					NTU	50	1.0	105.0	9.77		
Dissolved oxygen saturation %sat					%	36	73.20	123.40	89.39		
Dissolved oxygen					mg/l	36	7.14	14.30	9.78		
Ammonia(N)	0.015	LFTGN01: Average annual concentration	0.500	WHO ATO	mg/l	36	0.030	1.150	0.085	36 (LoD above EQS)	1
N Oxidised					mg/l	36	6.63	12.30	9.47		
Nitrate-N					mg/l	36	6.59	12.20	9.42		
Nitrite-N					mg/l	36	0.01480	0.191	0.05317		
NH3 un-ion					mg/l	36	0.00044	0.0272	0.00175		
Chloride Ion	250	LFTGN01: Average annual concentration	250	WHO ATO/ EU & UK DWS	mg/l	50	31.8	111	73.51	0	0
Orthophosphate					mg/l	36	0.119	0.593	0.29467		

River Blackwater Upstream - Sample point BL03

Date	01/02/2010	19/02/2010	18/03/2010	29/04/2010	03/06/2010	15/06/2010	23/07/2010	17/08/2010	15/09/2010	21/10/2010	17/11/2010	29/11/2010
Temperature	1.76	4.18	9.68	15.58	13.07	14.39	18.47	15.61	14.45	7.85	6.48	1.69
pH	8.08	8.1	8.49	8.47	8.17	8.32	8.22	8.01	8.21	8.21	8.06	8.07
Alkalinity pH 4_5	237	205	246	242	240	249	248	216	229	244	253	263
Conductivity @ 25C	775	686	862	867	924	955	923	865	932	945	888	981
TurbidityNTU	6	26.2	2.4	1.9	1.6	1	1	1	2.2	2.3	2.3	1.7
Suspended solids @ 105oC	10.5	50	10.1	5.03	5.65	3.15	3	3	6.6	8.02	3.08	3
Dissolved oxygen saturation %sat	96.5	92.1	144.6	146	112.7	107.2	120.4	86.8	95.4	84.6	85.1	87.3
Dissolved oxygen	13.4	12	16.4	14.5	11.8	10.9	11.3	8.61	9.7	10	10.4	12.1
BOD ATU	1	2.2	2.7	2.3	1	1.4	1.3	1	1.8	2.6	1	1
COD as O2	13	29	14	17	20	12	16	12	13	15	20	12
Ammonia(N)	0.189	0.219	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.09	0.124
N Oxidised	13	10.6	10.1	8.18	8.22	9.06	7.1	7.31	9.09	10.2	10.1	10.7
Nitrate-N	13	10.5	10	8.1	8.12	8.9	7.06	7.26	9.04	10.2	10	10.6
Nitrite-N	0.0492	0.0526	0.056	0.0813	0.0987	0.159	0.0365	0.0476	0.0511	0.0258	0.0988	0.0792
NH3 un-ion	0.00188	0.0026	0.00053	0.00082	0.00068	0.00075	0.00101	0.00082	0.00076	0.00047	0.00127	0.00123
Chloride Ion	45.6	45.3	61.9	65.6	76.1	82.2	77.7	70.3	76	70.7	63.1	70.6
Orthophosphate	0.151	0.144	0.09	0.127	0.219	0.33	0.273	0.338	0.301	0.288	0.248	0.244
SiO2	7.63	6.9	3.75	1.7	6.1	8.42	8.3	11.2	9.77	11.9	11.6	12.5
Bentazone												
Chlorophyll	0.96	7.2	27.9	25.5	9.6	3.1	6.6	6.2	14	3.3	0.96	0.71

River Blackwater Downstream - Sample point BL02

	25/01/2010	19/02/2010	18/03/2010	29/04/2010	03/06/2010	15/06/2010	23/07/2010	17/08/2010	15/09/2010	21/10/2010	17/11/2010	29/11/2010
Temperature	5.12	4	8.47	14.34	13.41	14.67	17.62	15.63	14.69	7.89	6.4	2.09
pH	7.95	8.1	8.17	8.28	8.16	8.2	8.01	7.97	8.13	8.13	8.04	8.1
Alkalinity pH 4_5	228	203	250	252	235	252	248	221	236	242	253	260
Conductivity @ 25C	771	699	920	928	929	979	977	900	971	932	935	1011
TurbidityNTU	10.3	30.8	2.3	2.4	1.6	1.7	1	1.2	1.5	1.6	2.8	1.7
Dissolved oxygen saturation %sat	92.2	91.6	103.9	121.2	92.6	85.2	75.1	78	79.2	85.6	79.9	84.1
Dissolved oxygen	11.7	12	12.1	12.4	9.64	8.62	7.14	7.73	8.01	10.1	9.83	11.6
Ammonia(N)	0.158	0.165	0.030	0.030	0.068	0.057	0.049	0.034	0.037	0.030	0.051	0.094
N Oxidised	12.3	9.95	10.3	8.61	8.53	8.78	7.88	8.09	9.26	9.47	10.3	11.1
Nitrate-N	12.2	9.91	10.3	8.51	8.42	8.7	7.85	8.07	9.23	9.44	10.2	11
Nitrite-N	0.0562	0.0429	0.0383	0.102	0.113	0.0838	0.0339	0.0235	0.0285	0.0265	0.0624	0.0702
NH3 un-ion	0.0018	0.00194	0.00049	0.00075	0.00159	0.00146	0.00156	0.00087	0.00095	0.00047	0.00071	0.00096
Chloride Ion	49.5	49	71.2	75.4	80.3	87.9	89.3	75	83.8	74.1	72.8	80
Orthophosphate	0.167	0.151	0.119	0.204	0.271	0.362	0.324	0.363	0.371	0.297	0.257	0.271

River Blackwater Upstream - Sample point BL03

Date	21/01/2011	09/02/2011	11/03/2011	20/04/2011	06/06/2011	22/06/2011	22/07/2011	09/08/2011	12/09/2011	05/10/2011	01/11/2011	21/11/2011
Temperature	4.82	6.32	7.33	15.81	14.8	16.09	17.26	15.83	17.54	16.44	12.95	8.26
pH	7.68	8.05	8.35	8.35	8.16	8.06	8.3	7.83	8.03	7.82	7.93	7.91
Alkalinity pH 4_5	228	263	264	240	241	208	229	247	242	262	262	258
Conductivity @ 25C	751	918	900	885	953	847	869	904	929	1041	1050	986
TurbidityNTU	10.4	3.7	2.3	2.4	1.7	1.6	3.3	2.5	3.4	3.3	7.9	8.3
Suspended solids @ 105oC	18.5	5.8	3.05	5.73	3.43	3	6.18	32.4	20.6	34	7.22	25.3
Dissolved oxygen saturation %sat	91.5	89.2	110.9	125.5	83.6	99.8	102	86.7	88.8	60.9	77	87.6
Dissolved oxygen	11.7	11	13.3	12.4	8.44	9.8	9.77	8.56	8.46	5.93	8.1	10.3
BOD ATU	1.5	1.3	1.4	2.8	1.3	1	1.5	3	2.5	3.7	1.5	2
COD as O2	20	13	19	15	17	28	12	18	17	30	18	29
Ammonia(N)	0.09	0.202	0.071	0.03	0.084	0.039	0.03	0.077	0.03	0.03	0.034	0.064
N Oxidised	11.9	11.2	11	8.42	8.67	7.31	7.65	8.09	8.65	8.32	9.45	9.01
Nitrate-N	11.9	11.1	10.9	8.34	8.55	7.21	7.63	8.03	8.62	8.26	9.4	8.92
Nitrite-N	0.0437	0.087	0.0508	0.0828	0.117	0.105	0.0248	0.0563	0.0286	0.0554	0.0475	0.0891
NH3 un-ion	0.00054	0.00281	0.00106	0.00084	0.00217	0.00111	0.00093	0.00147	0.00095	0.00058	0.00066	0.00084
Chloride Ion	39.3	64.5	62.4	72.5	80	71.4	74.9	82.8	82.7	101	94.4	85
Orthophosphate	0.151	0.334	0.126	0.131	0.442	0.348	0.301	0.284	0.255	0.183	0.346	0.291
SiO2	9.68	10.6	4.59	1.26	4.52	7.77	10.9	10.9	11.1	10.9	12.8	13.7
Bentazone												
Chlorophyll	2.6	2	9.2	3.4	9.8	6.4	1.9	41.1	72.1	10.4	10.3	43.7

River Blackwater Downstream - Sample point BL02

	21/01/2011	09/02/2011	11/03/2011	20/04/2011	06/06/2011	22/06/2011	22/07/2011	09/08/2011	12/09/2011	05/10/2011	01/11/2011	21/11/2011
Temperature	4.98	6.16	6.88	15.25	14.91	15.9	16.63	16.03	16.94	16.22	12.98	7.92
pH	7.68	8.1	8.21	8.08	8.04	8.07	8.2	7.92	7.98	8.13	7.96	7.94
Alkalinity pH 4_5	227	266	268	249	207	232	232	219	244	256	253	257
Conductivity @ 25C	768	945	937	948	856	945	909	996	978	1094	1043	1010
TurbidityNTU	12.6	4.1	2.6	2.3	3.8	2.1	1.1	1.3	1.3	1.4	2.4	2
Dissolved oxygen saturation %sat	91.7	89	88	105.5	73.2	90.2	87.9	88.2	79.3	81.7	79.6	91
Dissolved oxygen	11.7	11	10.7	10.5	7.37	8.89	8.53	8.67	7.65	8	8.36	10.8
Ammonia(N)	0.095	0.119	0.030	0.030	0.091	0.059	0.038	1.150	0.030	0.030	0.030	0.036
N Oxidised	11.1	11	11.1	9.24	7.99	8.16	8.62	8.17	8.96	10.8	10.3	9.45
Nitrate-N	11.1	10.9	11.1	9.18	7.9	8.09	8.6	7.98	8.94	10.8	10.3	9.41
Nitrite-N	0.0364	0.0698	0.0335	0.064	0.0903	0.0723	0.0217	0.191	0.0202	0.0262	0.0383	0.0444
NH3 un-ion	0.00058	0.00164	0.00044	0.0008	0.00237	0.00165	0.00112	0.0272	0.00087	0.00086	0.00062	0.00049
Chloride Ion	45.5	72.6	70.5	82.2	78.5	84.6	86	94.4	89.8	111	91.5	90.9
Orthophosphate	0.146	0.309	0.211	0.245	0.362	0.413	0.426	0.593	0.38	0.346	0.378	0.33

River Blackwater Upstream - Sample point BL03

Date	24/01/2012	23/02/2012	20/03/2012	15/05/2012	21/05/2012	08/06/2012	16/07/2012	19/07/2012	19/07/2012	27/07/2012	03/09/2012	11/09/2012
Temperature	5.44	8.74	9.21	10.5	12.8	14.6	15.5		16.4	17.4	17.2	
pH	8.07	8.16	8.68	8.07	8.21	8.11	7.96		7.88	8.01	8.27	
Alkalinity pH 4_5	234	256	228	269	266	236	281		313	298	257	
Conductivity @ 25C	834	924	922	839	899	831	709		818	849	977	
TurbidityNTU	6.7	2.9	22	8.2	4.2	3.6	5.5		2.7	1.9	2.8	
Suspended solids @ 105oC	7.07	3.03	7.43	13.7	6.75	4.75	5.05		3.82	3	8.37	
Dissolved oxygen saturation %sat	86.7	99.5	135.8	81	99.4	99.1	86.6		91.2	75.1	115.3	
Dissolved oxygen	10.9	11.5	15.6	9.01	10.5	10	8.61		8.9	7.18	11.1	
BOD ATU	1.4	1.8	3.6	2	2.3	1	1.1		1	1	1	
COD as O2	21	18	10	19	20	25	26		15	17	15	
Ammonia(N)	0.222	0.082	0.03	0.096	0.036	0.258	0.041		0.033	0.03	0.03	
N Oxidised	12.3	11.4	8.9	7.64	8.81	7.81	4.25		4.99	5.91	9.38	
Nitrate-N	12.2	11.3	8.88	7.58	8.74	7.63	4.22		4.95	5.89	9.36	
Nitrite-N	0.102	0.071	0.0244	0.0622	0.067	0.181	0.0348		0.0415	0.0205	0.0214	
NH3 un-ion	0.0029	0.00136	0.00052	0.00182	0.00081	0.00658	0.00102		0.00073	0.00094	0.00092	
Chloride Ion	55.6	69.3	77.9	51.6	62.9	60.1	25.1		37.6	46.9	86.9	
Orthophosphate	0.17	0.225	0.147	0.131	0.123	0.209	0.266		0.227	0.247	0.298	
SiO2	10.1	6.93	4.82	10	7.2	7.71	12.7		11.6	10.5	9.26	
Bentazone						0.0443	0.0284	0.0267		0.0303	0.0393	0.0406
Chlorophyll	10	10	58.3	7.9	22.6	10.1	4.6		1.7	1.1	11.7	

River Blackwater Downstream - Sample point BL02

	24/01/2012	23/02/2012	20/03/2012	03/04/2012	11/05/2012	02/07/2012	11/07/2012	10/08/2012	05/09/2012	03/10/2012	22/10/2012	15/11/2012
Temperature	5.28	8.46	8.68	10.1	13.6	16.3	15.7	18.7	15.4	13.3	12	8.7
pH	8.08	8.03	8.57	8.42	8.09	8.04	7.9	8.13	8.04	8.08	8.03	8.17
Alkalinity pH 4_5	234	255	233	245	251	241	236	261	253	237	252	276
Conductivity @ 25C	887	981	947	954	747	892	776	906	1033	957	796	913
TurbidityNTU	6.3	3.1	3.4	2.5	18.3	1.5	2.5	1.3	2.1	2.7	15	3.6
Dissolved oxygen saturation %sat	87.1	91.6	123.4	98.7	92.5	85.9	80.6	99.1	77.5	97	85.4	85.4
Dissolved oxygen	11	10.7	14.3	11.1	9.59	8.4	7.98	9.22	7.72	10.1	9.18	9.92
Ammonia(N)	0.085	0.055	0.030	0.030	0.064	0.030	0.042	0.030	0.030	0.030	0.039	0.065
N Oxidised	11.9	11.6	9.12	8.66	6.63	8.79	6.83	8.28	10.1	9.25	11.2	9.14
Nitrate-N	11.8	11.5	9.09	8.63	6.59	8.76	6.79	8.26	10.1	9.21	11.2	9.04
Nitrite-N	0.0767	0.0579	0.0268	0.0298	0.0436	0.0316	0.0443	0.0198	0.0148	0.0373	0.0466	0.0956
NH3 un-ion	0.0011	0.0009	0.0005	0.00055	0.00152	0.00087	0.00093	0.00103	0.00081	0.0007	0.00082	0.00108
Chloride Ion	69.1	83.8	83.6	82.6	41.7	72.7	52.7	73.7	99.1	84.3	41.9	64.7
Orthophosphate	0.229	0.272	0.188	0.17	0.152	0.318	0.294	0.393	0.354	0.385	0.293	0.264

River Blackwater Upstream - Sample point BL03

Date	04/09/2013	07/10/2013	23/10/2013	11/11/2013	21/11/2013	02/01/2014	20/02/2014	05/03/2014	01/04/2014	11/04/2014	01/05/2014	03/06/2014
Temperature	15.6	13.8	13.6		5.6	7.2	8	7.1	10.1		13.5	15.1
pH			7.73					7.94				7.91
Alkalinity pH 4_5			195					236				233
Conductivity @ 25C	950	978	771		939	624	703	653	898		892	814
TurbidityNTU	1.8		16.7		11.1	100	40.8	48	2.5		4	14.5
Suspended solids @ 105oC	3.98		17.4	8.08	11.3	114	41.4	46	4.3	6	6.57	19.8
Dissolved oxygen saturation %sat	81.4	93.4	84.3		92.5	84.2	102.2	101.6	98.2		92.3	87.8
Dissolved oxygen	8.08	9.64	8.74		11.6	10.2	12.1	12.3	11		9.59	8.81
BOD ATU	1		1.5	1.04	1.56	1.71	1	1.56	2.09	2.92	2.35	1.37
COD as O2	22		25	18	23	40	15	17	10	12	15	20
Ammonia(N)	0.03		0.21	0.061	0.231	0.054	0.058	0.072	0.03	0.03	0.074	0.048
N Oxidised	9.67		9.15	12.5	11	10.1	7.57	6.13	10.3	9.83	10.5	10.1
Nitrate-N	9.63		9.03	12.4	10.9	10.1	7.54	6.1	10.3		10.4	10
Nitrite-N	0.043		0.121	0.0668	0.108	0.0322	0.028	0.033	0.0493	0.0542	0.117	0.0783
NH3 un-ion			0.00271					0.00093				0.00104
Chloride Ion	75.6		58.5	45.1	76.2	28.7	34.4	27	62.8	62.4	62.2	52.9
Orthophosphate	0.385		0.27	0.178	0.21	0.119	0.113	0.116	0.047	0.088	0.161	0.197
SiO2	11.5		10.7	10.7	11.6	8.48	7.8	6.75	2.58		3.6	8.49
Bentazone	0.0497		0.0578	0.0411	0.0361	0.0159	0.0176	0.0122				
Chlorophyll	2.8		10.2	2.9	2.5	4.7	3.2	5.9	20.4		11.9	21.6

River Blackwater Downstream - Sample point BL02

	02/01/2014	03/02/2014
Temperature		
pH		
Alkalinity pH 4_5		
Conductivity @ 25C	673	661
TurbidityNTU	105	37.4
Dissolved oxygen saturation %sat		
Dissolved oxygen		
Ammonia(N)		
N Oxidised		
Nitrate-N		
Nitrite-N		
NH3 un-ion		
Chloride Ion	37.7	31.8
Orthophosphate		

River Blackwater Upstream - Sample point BL03

Date	22/07/2014	06/08/2014	02/09/2014	09/10/2014	05/11/2014	02/12/2014	07/01/2015	06/02/2015	06/03/2015	01/04/2015	01/05/2015	05/06/2015
Temperature	21.3	17.6	15.6			8.3	5.1			7.8		
pH			7.94			8.13	8.1			8.19		
Alkalinity pH 4_5			243			301	272			242		
Conductivity @ 25C	743	874	848	748	881	840	790	889	874	885	864	885
TurbidityNTU	1.8	1.6	2	15.5	7	6.6	9.9	7.1	5.9	3	3.9	11.3
Suspended solids @ 105oC	3	3	3									
Dissolved oxygen saturation %sat	111.2	84.4	87.9			85.1	99.2			96.5		
Dissolved oxygen	9.83	8.03	8.72			9.98	12.6			11.5		
BOD ATU	1.52	1	1									
COD as O2	14	27	12									
Ammonia(N)	0.03	0.03	0.03			0.097	0.139			0.03		
N Oxidised	6.73	8.94	10.4			8.99	8.87			9.11		
Nitrate-N	6.69	8.92	10.4			8.94	8.79			9.07		
Nitrite-N	0.0399	0.019	0.0471			0.0519	0.0822			0.0428		
NH3 un-ion			0.00072			0.00156	0.00177			0.00047		
Chloride Ion	51.8	64.6	53.5	51.3	58	40.7	36.9	58.4	50.4	64.4	59.3	70.2
Orthophosphate	0.252	0.209	0.185			0.154	0.149			0.157		
SiO2	11.5	9.59	12.5									
Bentazone												
Chlorophyll	2	3.3	1.7	4.9	2.2	1.5	1.9	1.5	7.1	7.4	80.1	9.4

River Blackwater Downstream - Sample point BL02

Temperature
pH
Alkalinity pH 4_5
Conductivity @ 25C
TurbidityNTU
Dissolved oxygen saturation %sat
Dissolved oxygen
Ammonia(N)
N Oxidised
Nitrate-N
Nitrite-N
NH3 un-ion
Chloride Ion
Orthophosphate

River Blackwater Upstream - Sample point BL03

Date	10/07/2015	11/08/2015	14/09/2015	01/10/2015	06/11/2015	23/11/2015	13/01/2016	02/02/2016	16/05/2016	08/08/2016	08/11/2016	01/03/2017
Temperature	18.1			12.8				7.8	14	18.2	6.1	7.6
pH	8.09			8.06				8.25	8.3	8.41	8.09	8.32
Alkalinity pH 4_5	232			247				268	253	246	260	235
Conductivity @ 25C	896	952	917	935				941	890	1014	916	872
TurbidityNTU	2	1.2	1.8	2.1								
Suspended solids @ 105oC												
Dissolved oxygen saturation %sat	114.9			98.7				94.1	113.8	124.6	87.1	107.1
Dissolved oxygen	10.8			10.4				11.2	11.7	11.7	10.8	12.8
BOD ATU												
COD as O2												
Ammonia(N)	0.03			0.03				0.062	0.03	0.03	0.036	0.048
N Oxidised	7.99			9.92				10.2	9.55	8.8	8.76	11.4
Nitrate-N	7.92			9.9				10.1	9.51	8.78	8.72	11.3
Nitrite-N	0.0711			0.0231				0.056	0.0448	0.017	0.044	0.0535
NH3 un-ion	0.00099			0.00067				0.00096	0.00073	0.00099	0.00049	0.00073
Chloride Ion	72.2	76.1	72.6	69.1								
Orthophosphate	0.343			0.315				0.192	0.244	0.295	0.215	0.166
SiO2												
Bentazone												
Chlorophyll	10	7.1	2.2	2.1	5	1.2	6	2.3				

River Blackwater Downstream - Sample point BL02

Temperature
pH
Alkalinity pH 4_5
Conductivity @ 25C
TurbidityNTU
Dissolved oxygen saturation %sat
Dissolved oxygen
Ammonia(N)
N Oxidised
Nitrate-N
Nitrite-N
NH3 un-ion
Chloride Ion
Orthophosphate

River Blackwater Upstream - Sample point BL03

Date	05/09/2017	14/11/2017	21/11/2017	05/12/2017	02/01/2018	09/04/2018	17/04/2018	08/08/2018	02/10/2018	07/02/2019	01/04/2019	22/05/2019
Temperature	16.3	7.4	8.5	6.1	5.5	9.9	12.3	19.9	12.4	6.3	11	15.2
pH	8.1	8.11	8.13	8.04	8.02	7.91		7.94	8.03	8.06	8.45	8.21
Alkalinity pH 4_5	251	249	269	251	208	262		251	261	239	240	224
Conductivity @ 25C	909	896	940	1017	733	855		963	1151	1049	907	855
TurbidityNTU												
Suspended solids @ 105oC												
Dissolved oxygen saturation %sat	109	93.3	91.1	92.8	93.4		106.5	89	93.1	86.5	116.1	100.2
Dissolved oxygen	10.7	11.2	10.6	11.5	11.8		11.4	8.09	9.92	10.7	12.8	10
BOD ATU											2.35	1.29
COD as O2												
Ammonia(N)	0.03	0.03	0.03	0.15	0.11	0.128		0.03	0.03	0.102	0.03	0.036
N Oxidised	9.1	8.03	9.15	11.3	14.8	9.82		7.86	10.1	13.6	9.6	7.25
Nitrate-N	9.08	8	9.13	11.2	14.7	9.76		7.84	10.1	13.5	9.58	7.2
Nitrite-N	0.016	0.0343	0.0173	0.113	0.0595	0.065		0.0219	0.0281	0.073	0.0245	0.0461
NH3 un-ion	0.00087	0.00045	0.00049	0.00205	0.00144	0.00189		0.00098	0.00065	0.00142	0.00059	0.00096
Chloride Ion												
Orthophosphate	0.282	0.281	0.233	0.24	0.141	0.131		0.328	0.457	0.148	0.136	0.159
SiO2												
Bentazone												
Chlorophyll												

River Blackwater Downstream - Sample point BL02

Temperature
pH
Alkalinity pH 4_5
Conductivity @ 25C
TurbidityNTU
Dissolved oxygen saturation %sat
Dissolved oxygen
Ammonia(N)
N Oxidised
Nitrate-N
Nitrite-N
NH3 un-ion
Chloride Ion
Orthophosphate

River Blackwater Upstream - Sample point BL03

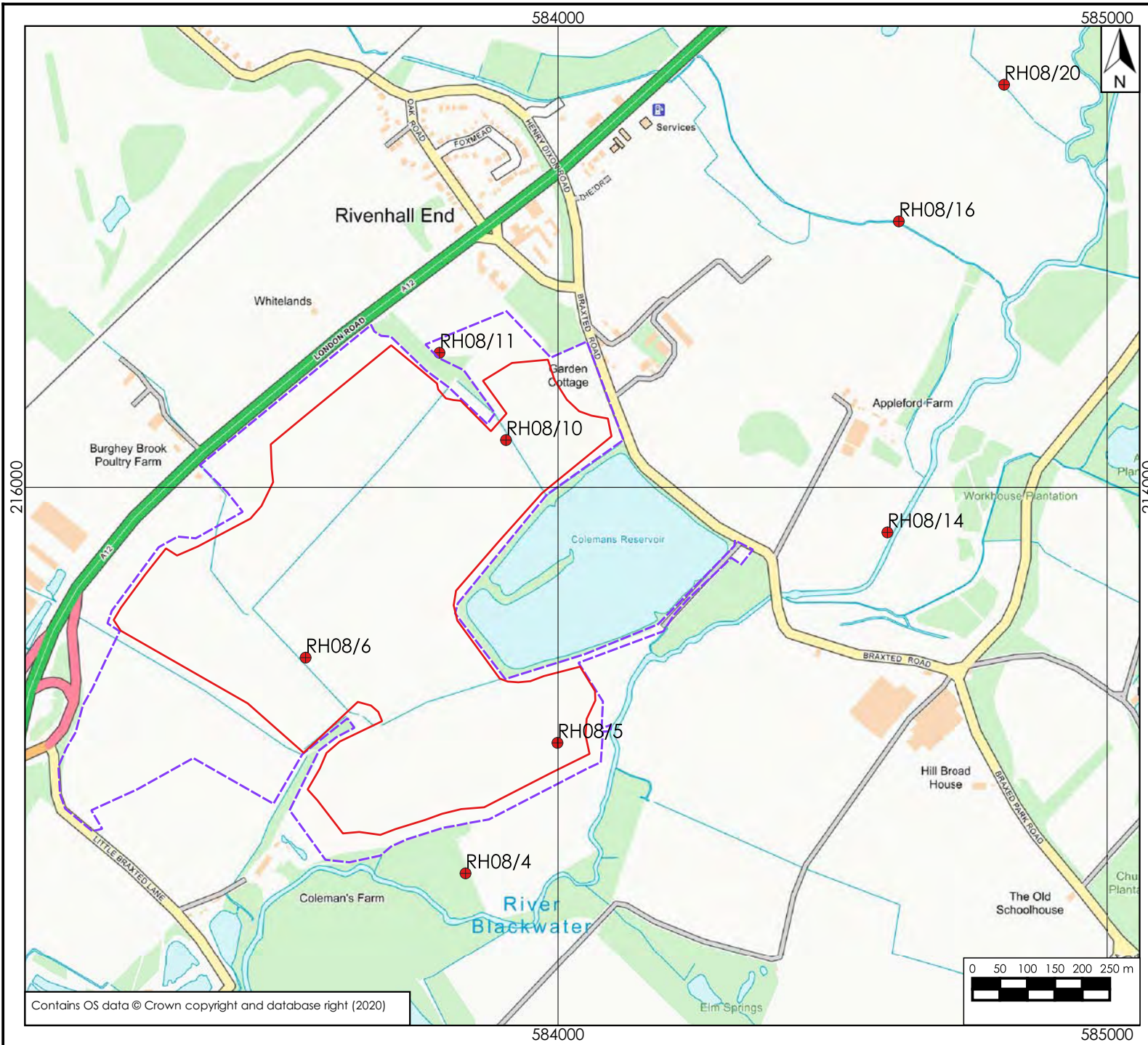
Date	02/07/2019	08/08/2019	05/09/2019	03/10/2019	11/11/2019	21/11/2019	02/12/2019	06/01/2020	03/02/2020	02/03/2020
Temperature	18.7	17.3	14.7	11.6	7.4	5.9	5	6.9	8.1	6.6
pH	8.12	8	7.94	7.93	8.06	7.98	8.03	8.02	8.01	8.07
Alkalinity pH 4_5	230	230	260	220	259	261	260	260	250	220
Conductivity @ 25C	839	995	1043	877	1000	995	978	921	860	727
TurbidityNTU										
Suspended solids @ 105oC										
Dissolved oxygen saturation %sat	92.4	76.3	68.5	78.9	83.8	81.3	90.3	95.2	95.3	99.1
Dissolved oxygen	8.6	7.31	6.93	8.56	10.1	10.1	11.5	11.6	11.2	12.1
BOD ATU	1	1	2.5	1	1	1.2	1.1	1.1	1.1	1.1
COD as O2										
Ammonia(N)	0.03	0.043	0.03	0.03	0.03	0.03	0.072	0.11	0.076	0.061
N Oxidised	6.2	8.7	8.1	6.4	9.07	10.3	12	13	14	14
Nitrate-N	6.18	8.68	8.09	6.38	9.01	10.2	11.9	12.9	13.9	14
Nitrite-N	0.019	0.017	0.011	0.022	0.0552	0.0684	0.089	0.098	0.083	0.035
NH3 un-ion	0.00103	0.00133	0.00067	0.00053	0.00045	0.00039	0.00091	0.0016	0.00121	0.00087
Chloride Ion										
Orthophosphate	0.25	0.3	0.3	0.33	0.229	0.206	0.17	0.16	0.15	0.11
SiO2										
Bentazone										
Chlorophyll										

River Blackwater Downstream - Sample point BL02

Temperature
pH
Alkalinity pH 4_5
Conductivity @ 25C
TurbidityNTU
Dissolved oxygen saturation %sat
Dissolved oxygen
Ammonia(N)
N Oxidised
Nitrate-N
Nitrite-N
NH3 un-ion
Chloride Ion
Orthophosphate

APPENDIX 2971/ESSD/A3

Groundwater level data, monitoring location plan & hydrograph



- Legend
- Proposed permit boundary
 - Proposed planning boundary
 - Monitoring boreholes

Scale correct at A4

Client Brice Aggregates Ltd.
 Colemans Farm Quarry
 Little Braxted Lane
 Witham, Essex
 CM8 3EX

Title Groundwater monitoring locations

Project Colemans Farm Quarry

Drawing 2971/ESSD/A3.1 Version 1

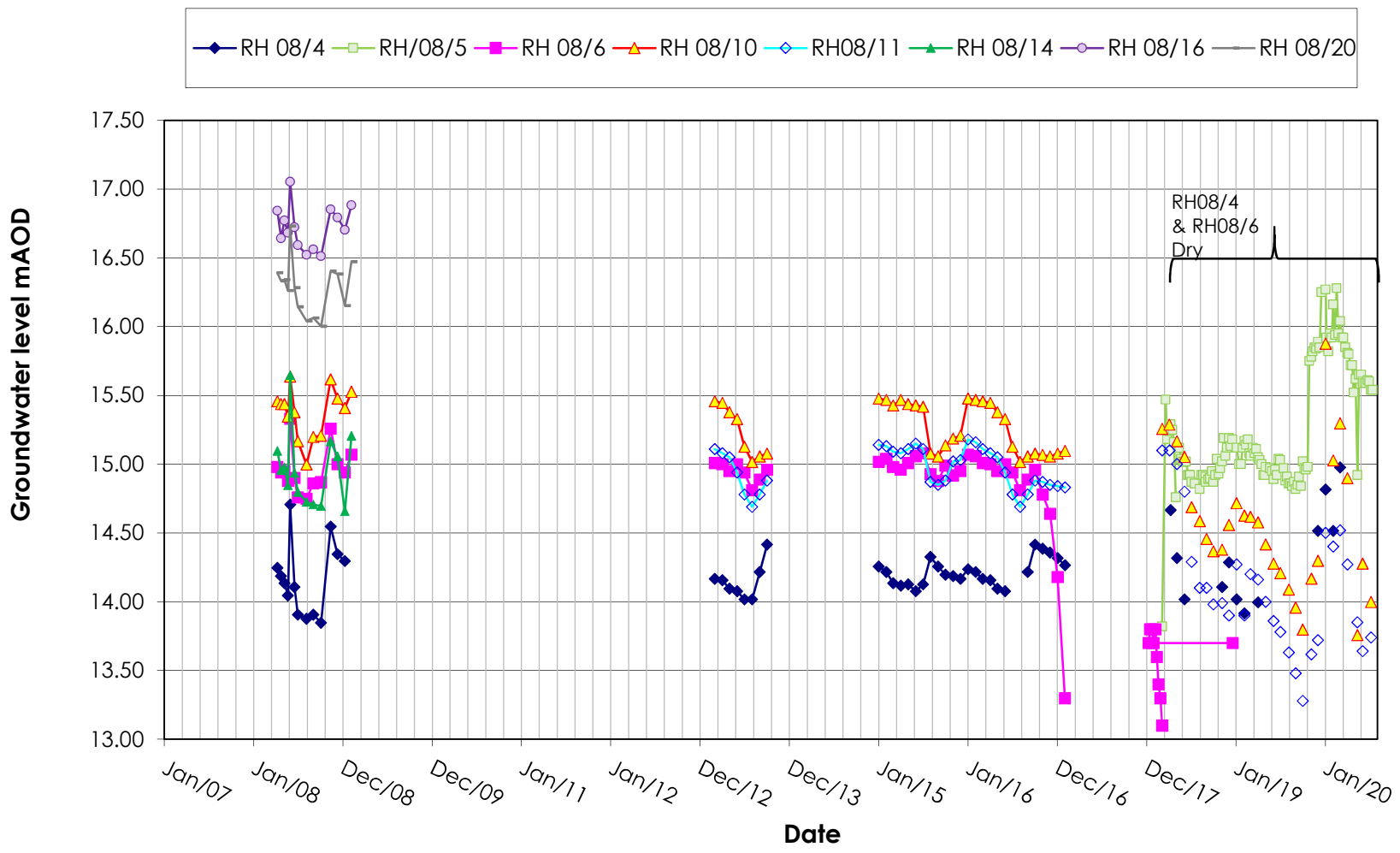
Date Jan 2021 Scale 1:10000

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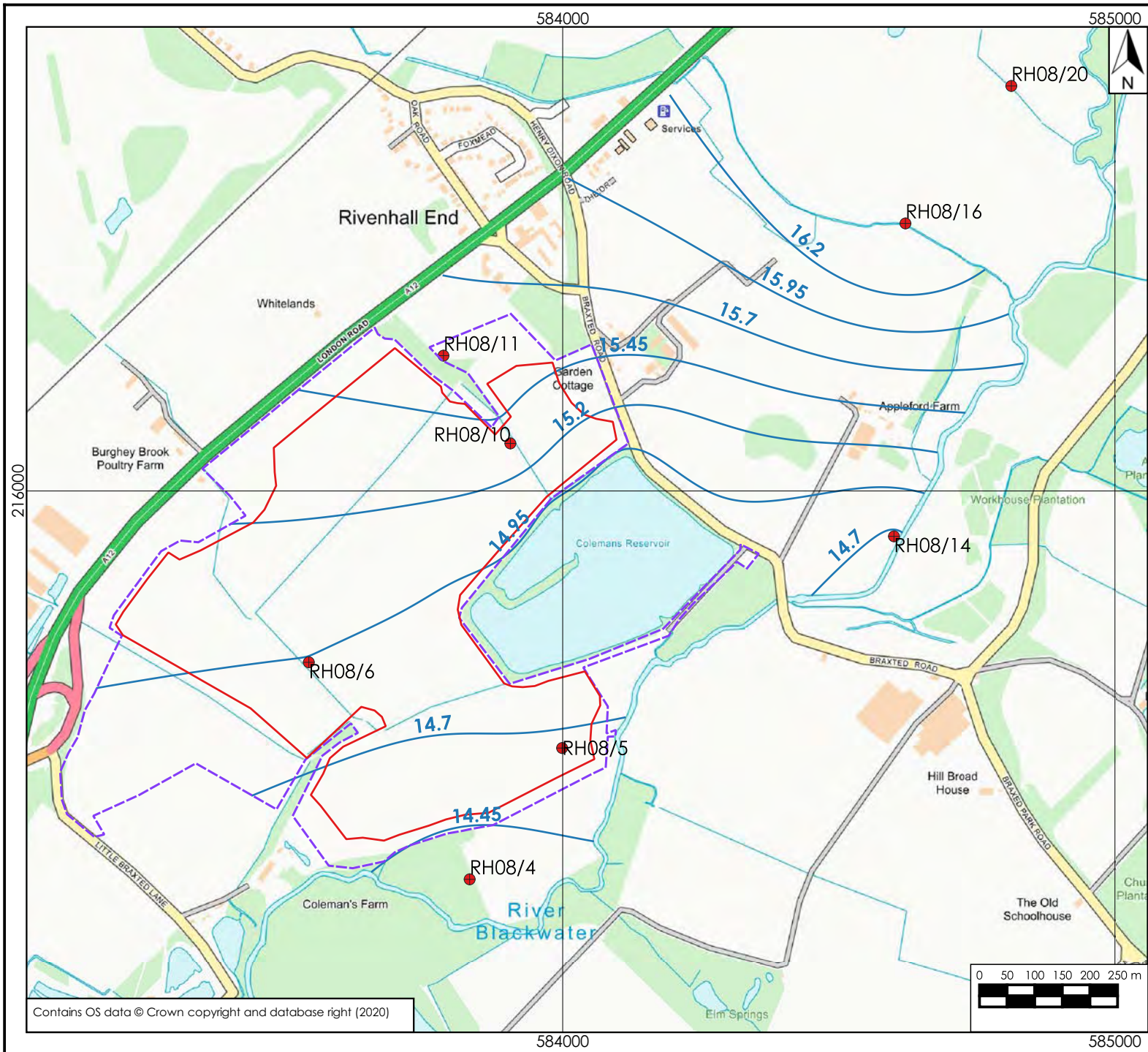
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Client
 Brice Aggregates Ltd.
 Colemans Farm Quarry
 Little Braxted lane
 Witham, Essex
 CM8 3EX

Title		Groundwater level hydrograph	
Project		Colemans Farm Quarry	
Drawing	2971/ESSD/A3.2	Version	1
Date	Dec-20	Scale	NTS



- Legend
- Proposed permit boundary
 - Proposed planning boundary
 - Monitoring boreholes
 - Groundwater level (mAOD)

Scale correct at A4

Client Brice Aggregates Ltd.
 Coleman's Farm Quarry
 Little Braxted Lane
 Witham, Essex
 CM8 3EX

Title Groundwater level contours
 (January 2009 levels)

Project Coleman's Farm Quarry

Drawing 2971/ESSD/A3.3 Version 1

Date Jan 2021 Scale 1:10000

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APPENDIX 2971/ESSD/A4

Site investigation data

	Description	Hydraulic Conductivity m/d		Sample Depth (m)	
		geometric mean	arithmetic mean	From	To
RH08/02	Poorly sorted sandy gravel low in fines	18.9	110.8	1	2.3
RH08/03	Poorly sorted sandy gravel low in fines	58.5	268.4	1.3	3.5
RH08/03 Sample 2	Poorly sorted sandy gravel low in fines	44.5	463.1	3.5	7.5
RH08/04P	Poorly sorted gravel low in fines	607.5	3019.9	1.6	3
RH08/04P Sample 2	Poorly sorted sandy gravel low in fines	170.3	1309.7	3	5.5
RH08/05	Poorly sorted sandy gravel low in fines	59.2	325.5	1	3.3
RH08/06P	Poorly sorted sandy gravel low in fines	19.6	102.9	1.2	3
RH08/06P Sample 2	Poorly sorted sandy gravel low in fines	66.1	582.1	3	6.9
RH08/08	Poorly sorted sandy gravel low in fines	19.4	102.4	0.7	1.8
RH08/08 Sample 2	Poorly sorted sandy gravel low in fines	84.8	1043.1	2	4.8
RH08/09	Poorly sorted sandy gravel low in fines	75.3	614.0	1.2	3.5
RH08/09 Sample 2	Poorly sorted sandy gravel low in fines	71.5	494.9	3.5	5
RH08/10P	Poorly sorted gravelly sand low in fines	17.4	66.9	1.2	3
RH08/10P Sample 2	Poorly sorted sandy gravel low in fines	63.4	410.6	3	5.8
RH08/10P Sample 3	Poorly sorted sand low in fines	0.8	7.1	5.8	7
RH08/11	Poorly sorted sandy gravel low in fines	38.2	325.9	1.7	3.2
RH08/12	Poorly sorted sandy gravel low in fines	63.5	484.8	1	3
RH08/12 Sample 2	Poorly sorted sandy gravel low in fines	32.0	224.5	3	6
RH08/14P	Poorly sorted sandy gravel low in fines	184.5	929.5	0.3	1.8
RH08/15	Poorly sorted sandy gravel low in fines	186.7	1500.5	0.9	2.6
RH08/16P	Poorly sorted sandy gravel low in fines	70.3	2084.8	2.5	4.3
RH08/17	Poorly sorted gravelly sand low in fines	9.2	29.5	3	5.2
RH08/18	Poorly sorted sandy gravel low in fines	69.0	719.1	1	2
RH08/18 Sample 2	Poorly sorted gravelly sand low in fines	15.7	41.5	2	2.7
RH08/18 Sample 3	Poorly sorted gravelly sand low in fines	10.9	29.0	3.6	4.5
RH08/18 Sample 4	Moderately well sorted gravelly sand low in fines	21.6	31.8	4.5	10
RH08/18 Sample 5	Moderately well sorted sand low in fines	17.7	26.6	10	13
RH08/19	Poorly sorted sandy gravel low in fines	171.5	1334.5	0.9	3
RH08/20P	Poorly sorted sandy gravel low in fines	150.7	971.0	0.25	2.5
RH08/20P Sample 2	Poorly sorted sandy gravel low in fines	26.2	42.5	3	3.5
RH08/20P Sample 3	Moderately well sorted gravelly sand low in fines	13.5	18.1	3.5	3.5
RH08/20P Sample 4	Moderately well sorted gravelly sand low in fines	17.8	22.2	5.5	11.1
	max	607.5	3019.9		
	min	0.8	7.1		
	mean	77.4	554.3		
	90%ile	171.4	1332.0		
	75%ile	72.5	771.7		
	50%ile	51.5	325.7		
	25%ile	18.7	42.2		
	10%ile	13.8	26.8		
	Geometric mean	41.0	213.2		

BGS ID: 552335 : BGS Reference: TL81NW65
 British National Grid (27700) : 583860,216210

<< < Prev Page 1 of 10 Next > >>

Report an issue with this borehole

TL 81 NW/65

No. 1.

For Survey use only Licence No. L/11/90
8386.1621 N.M.

RECORD OF WELL

At ROSE COTTAGE FARM
RIVENHALL END
 Town or Village WALTHAM
 County ESSEX

EXACT SITE OF WELL
 Six-inch sheet 48 NE/6 Six-inch National Grid sheet TL 81 NW/5
 For R. A. BRICE, ESQ. State whether owner, tenant, builder, contractor, consultant, etc. —

Address (if different from above).....
 Level of ground surface above sea level (O.D.).....ft. If well top is not at ground level, state how far } above: *ft.
 } below;ft.

SHAFT.....ft.; diameter.....ft.; HEADINGS (please attach details—dimensions and directions)
 BORE 17 ft.; diameter of bore: at top 4.8 in.; at bottom.....in.

Full details of permanent lining tubes (position, length, diameter, plain, slotted etc.).....
15 ft. of 4 ft. dia. cylinder cbs. a 3 ft. deep x 3 ft. dia. ring extending 2 ft. below base of 4 ft. dia. structure & projecting 1 ft. into it.

Water struck at depths offt. below well top.

* Rest level of water 2' 6" above well top. Suction at.....ft. Yield on.....hours* test days' pumping at 8.66 galls. per hour with depression to 16 ft. below well top.
 Recovery to rest level in.....mins.* Capacity of pump.....g.p.h. Date of measurements.....

TEST CONDITIONS

DESCRIPTION OF PERMANENT PUMPING EQUIPMENT:

NORMAL CONDITIONS
 Make and/or type.....Motive power.....
 Capacity.....galls. per hour. Suction at.....ft. below well top.
 Amount pumped.....galls. per day. Estimated consumption.....galls. per week.
 Well made by J. J. GOSLING & Co Date of sinking 1963
 Information from..... (letter 12.6.64)

ADDITIONAL NOTES ANALYSIS (please attach copy if available)
 * 49,000 galls. pumped under 6 hour test.

For Survey use only
 Date Received 12.6.64
 Section #
 Pumping test
 Observ. well
 Recorder
 E.R. log
 Site marked on
 1" map Q. 12
 6" map Q. 3.1.69 (use symbol)
 Record forwarded
 to
 date

LOG OF STRATA OVERLEAF.

BRITISH GEOLOGICAL SURVEY

APPENDIX 2971/ESSD/A5
Post-settlement contours

NOTES

HABITAT ESTABLISHMENT AND MAINTENANCE PRESCRIPTIONS TO BE AS PER APPROVED BEP AND LHMP. EXTENDED AFTERCARE FOR NATURE CONSERVATION HABITATS SECURED THROUGH A S106 AGREEMENT.

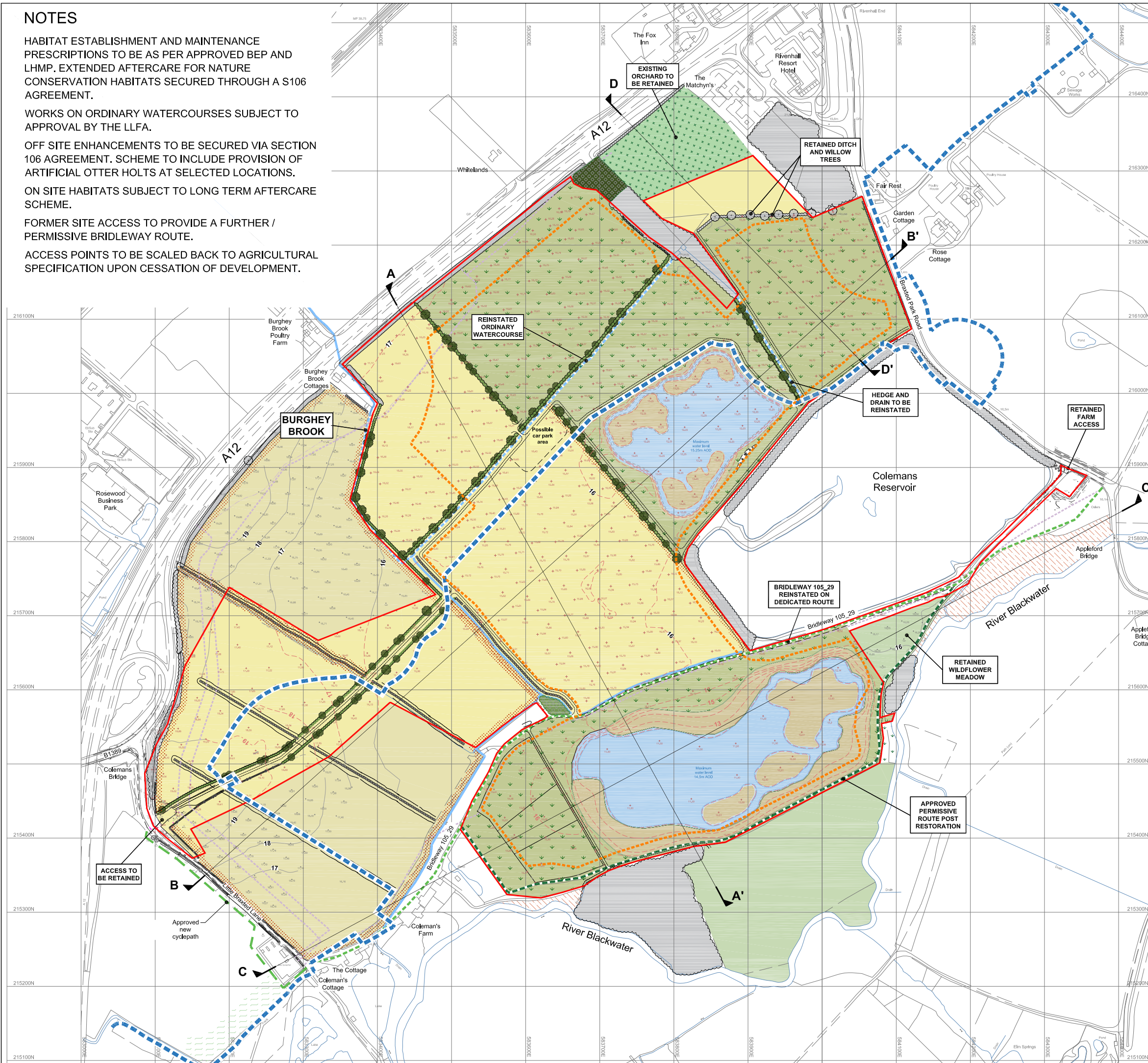
WORKS ON ORDINARY WATERCOURSES SUBJECT TO APPROVAL BY THE LLFA.

OFF SITE ENHANCEMENTS TO BE SECURED VIA SECTION 106 AGREEMENT. SCHEME TO INCLUDE PROVISION OF ARTIFICIAL OTTER HOLTS AT SELECTED LOCATIONS.

ON SITE HABITATS SUBJECT TO LONG TERM AFTERCARE SCHEME.

FORMER SITE ACCESS TO PROVIDE A FURTHER / PERMISSIVE BRIDLEWAY ROUTE.

ACCESS POINTS TO BE SCALED BACK TO AGRICULTURAL SPECIFICATION UPON CESSATION OF DEVELOPMENT.



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LEGEND

- PERMISSION SITE
- EXTENT OF A12 WORKS
- GAS MAINS
- BRIDLEWAY 105_29
- APPROVED PERMISSIVE ROUTE
- APPROVED NEW CYCLEPATH
- MAINTENANCE ACCESS TRACK
- RESTORATION CONTOURS AT 1m INTERVALS
- EXISTING VEGETATION TO BE RETAINED
- EXISTING ARABLE LAND TO BE RETAINED
- LAND REINSTATED TO ARABLE FARMLAND
- LAND RESTORED TO LOWLAND MEADOW
- LAND RESTORED TO REEDBED
- PROPOSED HEDGEROW
- LAND RESTORED TO WOODLAND
- EXISTING ORCHARD
- LAND RESTORED TO OPEN MOSAIC HABITAT
- LAND RESTORED TO OPEN WATER
- REINSTATED ORDINARY WATERCOURSES
- BURGHEY BROOK & OTHER ORDINARY WATERCOURSES WITHIN THE SITE
- PROPOSED CROSS SECTIONS (SEE PLAN C45/08/06)

OFF SITE ENHANCEMENT AREAS

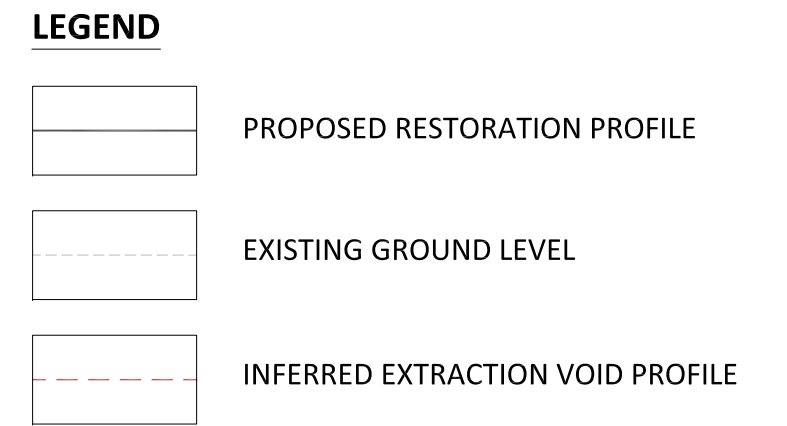
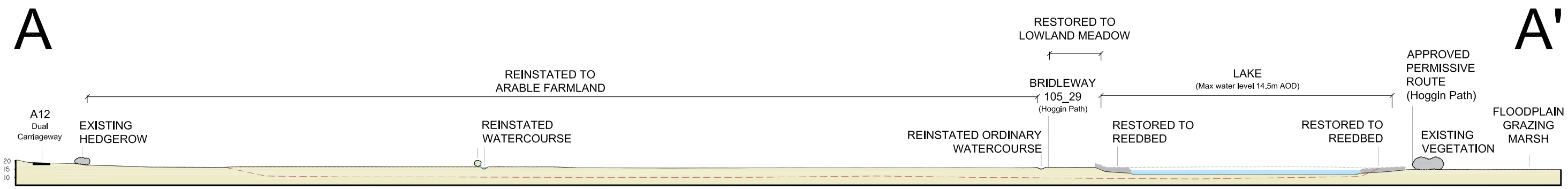
- AREA OF FLOODPLAIN GRAZING MARSH
- AREA OF REEDBED
- AREA OF LOWLAND MEADOW
- ARABLE MARGIN

0 100 200
Meters

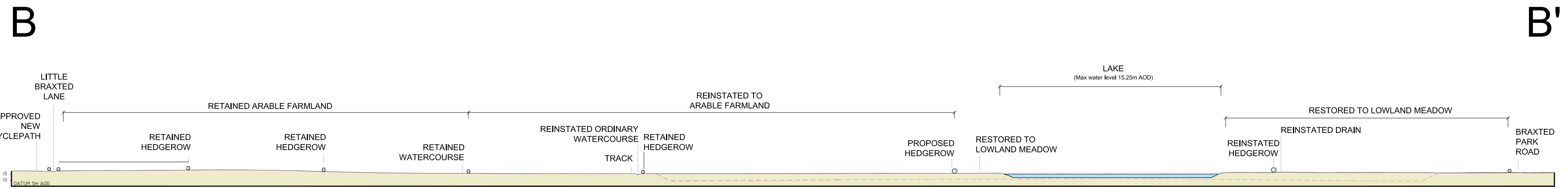
Project **COLEMAN'S FARM QUARRY WITHAM, ESSEX**

Title **REVISED RESTORATION PLAN**

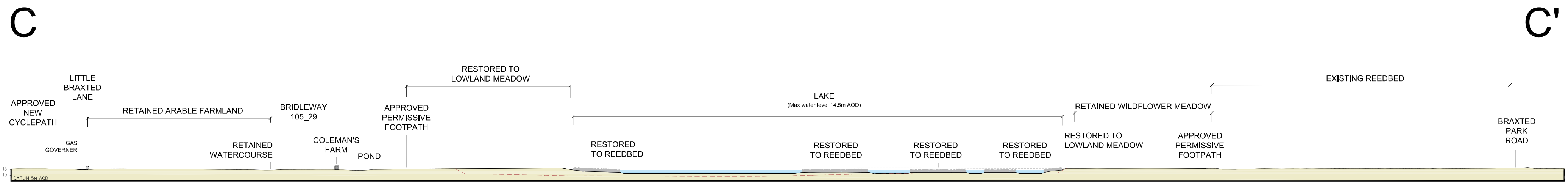
Scale 1:5000 @ A3	Date July 2021	Drawing No.
Drawn by DJA	Checked by OB	C45/08/05A



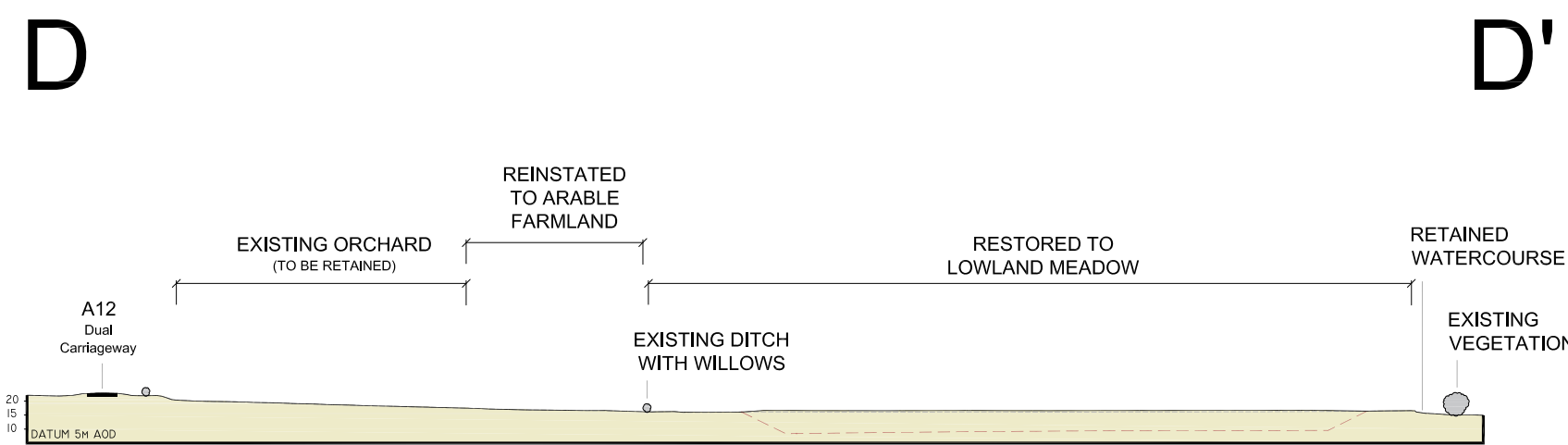
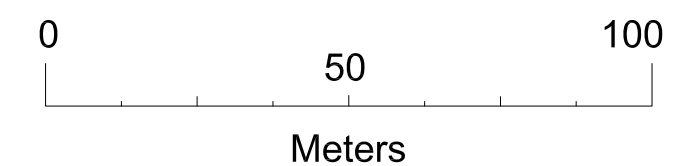
SECTION A - A'



SECTION B - B'



SECTION C - C'



SECTION D - D'



Project		
COLEMAN'S FARM QUARRY WITHAM, ESSEX		
Title		
SITE CROSS SECTIONS		
Scale	1:2500 @ A2	Date
		July 2021
Drawn by	DJA	Checked by
		OB
Drawing No.		C45/08/06A



Appendix 10

Site Condition Report



[Guidance: Complete sections 1-3 and submit with application]

1.0 Site details	
Name of the applicant	Brice Aggregates
Activity address	Colemans Quarry Little Braxted Ln Witham CM8 3EX
National grid reference	TL 83455 15300
Document reference and dates for Site Condition Report at permit application and surrender	Permit Application – EPR/JB3508TG/A001
Document references for site plans (including location and boundaries)	Permit Boundary Plan, Drawing No. 20/016d 001. Green line boundary referred to as the ‘Site’.

2.0 Condition of the land at permit issue	
<p>Environmental setting including:</p> <ul style="list-style-type: none"> • geology • hydrogeology • surface waters 	<p><u>Geology</u> Bedrock geology: The quarry is immediately underlain by a layer of London Clay, below which are Thanet Sands and thereafter Chalk. Thanet Formation underlies the Site in the southwest corner. The rest of the Site is underlain by London Clay Formation.</p> <p>Superficial geology: The London Clay is overlain with layers of diamicton till (Lowestoft formation), followed by River Terrace Deposits, Alluvium and Glaciofluvial sand and gravel. The River Terrace Deposits are considered to be the target mineral of the quarry (and thus the extent of much of the quarry void). The underlying Lowestoft formation (formally known as Boulder Clay) was recorded to be between 16 and 23m thick in the southernmost extents of the Site.</p> <p><u>Hydrogeology</u> The Chalk bedrock at depth is classed as a Principal Aquifer. The bedrock sands are classed as Secondary ‘A’ aquifers. However these are overlain by the London Clay, present beneath the superficial deposits across the majority of the Site, which is classed as an unproductive unit, not capable of transmitting groundwater.</p> <p>The superficial River Terrace, Alluvium and Glaciofluvial Deposits are classified by the Environment Agency as Secondary ‘A’ Aquifers.</p> <p>The Site is not located within a Groundwater Protection Zone (SPZ).</p> <p><u>Hydrology</u> Colemans Reservoir immediately borders the Site to the east.</p> <p>The River Blackwater is located within 50m of the Site boundary to the south.</p>



2.0 Condition of the land at permit issue	
	<p>Two ordinary watercourses (as defined by the Environment Agency) cross the Site. Both flow from northwest to southeast through the Site, to their confluence with the River Blackwater. The northeastern watercourse is known as the Burghey Brook and the southernmost watercourse is unnamed.</p> <p>Two further 'ordinary watercourses' rise from the northeastern corner of the Site. One passes southwestward through the northern portion of the Site before joining Burghey Brook close to the Site's western boundary. The second flows south to discharge into Colemans Reservoir. These ordinary watercourses were observed to be little more than field drains in reality and reportedly, often dry.</p>
<p>Pollution history including:</p> <ul style="list-style-type: none"> • pollution incidents that may have affected land • historical land-uses and associated contaminants • any visual/olfactory evidence of existing contamination • evidence of damage to pollution prevention measures 	<p>No information of any pollution incidents has been identified which may have affected the state of the land at the Site.</p> <p>Prior to quarrying activities, the Site was originally agricultural farmland. There is no evidence of existing contamination present on the Site.</p> <p>No visual or olfactory evidence of existing contamination.</p> <p>No evidence of damage to pollution prevention measures.</p> <p>A single pollution incident, relating to a spill of organic chemicals, is registered within the industrial estates to the northwest of the site.</p> <p>A single historical (inactive) waste management licence has been identified just over 500m west of the Permit Area; Danbury Haulage (Landfill) Limited have historically operated an inert waste management activity under permit EA/EPR/GP3137PY/V003.</p> <p>Both of the above nearby sources of contamination are unlikely to have impacted the Site due to the groundwater gradient to the southwest.</p>
Evidence of historic contamination, for example, historical site investigation, assessment, remediation and verification reports (where available)	No records of historical site investigations, reports or remediation were available for this Site.
Baseline soil and groundwater reference data	No baseline soil and groundwater quality data were available at the time of writing this report.
Supporting information	N/A



Site Reconnaissance Report (October 2020)	
Access arrangements	The Site was accessed off Little Braxted Ln to the southwest. Grid reference TL 83095 15424.
Site layout including presence and condition of above and below ground buildings/structures etc.	The proposed Permit Boundary does not include any buildings / structures.
Evidence of disturbed land, discoloured soil or water, subsidence, above ground deposits etc.	Above ground deposits of site derived material.
Vegetation type and signs of distress or absence where it might be expected.	Absence of vegetation in areas where site derived material had been excavated.
Detectable odours from the land.	No odours detected.
Liquid discharges from the site.	There is a water discharge from sumps located within the boundaries of phase 1 and 2 of the restoration works on the Site to the River Blackwater.
Direction and flow of surface water run-off and presence of ponding.	There two silt lagoons located on site, located in the southwestern section of the Site. Dewatering of the void occurs via these silt lagoons prior to discharge off site. The site contours generally fall from north to south towards the Burghey Brook.
Presence and condition of surface water features.	There are two silt lagoons located on the Site and ponding where the derived material has been extracted.
Presence and condition of surface water features.	Two tributary watercourses of the River Blackwater cross the Site. Both flow from northwest to southeast through the Site, to their confluence with the River Blackwater. The northeastern watercourse is known as the Burghey Brook and the southernmost watercourse is unnamed. Two further 'ordinary watercourses', effectively field drains, rise from the northeastern corner of the Site. There are two silt lagoons located on the Site, which are in active use for the washing of excavated sand and gravel.
Evidence of any accidental/uncontrolled released at the Site (previous or current).	No visual or other evidence of accidental/uncontrolled released on the Site.
Identify potential access constraints e.g. overhead cables, located of machinery, operations at the site.	No access constraints identified on Site.
Evidence of historic contamination, for example, historical site investigation, assessment, remediation, and verification reports (where available).	No records of historical site investigations, reports or remediation were available for this Site.
Baseline soil and groundwater reference data.	None are available for this Site.

3.0 Permitted activities	
Permitted activities	The extent of proposed waste deposit and treatment activities are shown on the proposed Permit boundary, see Permit Boundary Plan Drawing No. 20/016d 002.
Non-permitted activities undertaken	Quarrying and washing of excavated sand and gravel.
Document references for: <ul style="list-style-type: none"> • plan showing activity layout; and • environmental risk assessment. 	<ul style="list-style-type: none"> • Permit Boundary Plan No. 20/016d 001 • Environmental Risk Assessment



[Guidance: During the life of the permit: maintain sections 4-7]

4.0 Changes to the activity	
Have there been any changes to the activity boundary?	<i>If yes, provide a plan showing the changes to the activity boundary.</i>
Have there been any changes to the permitted activities?	<i>If yes, provide a description of the changes to the permitted activities</i>
Have any 'dangerous substances' not identified in the Application Site Condition Report been used or produced as a result of the permitted activities?	<i>If yes, list of them</i>
Checklist of supporting information	<ul style="list-style-type: none"> • <i>Plan showing any changes to the boundary (where relevant)</i> • <i>Description of the changes to the permitted activities (where relevant)</i> • <i>List of 'dangerous substances' used/produced by the permitted activities that were not identified in the Application Site Condition Report (where relevant)</i>

5.0 Measures taken to protect land	
<i>Use records that you collected during the life of the permit to summarise whether pollution prevention measures worked. If you can't, you need to collect land and/or groundwater data to assess whether the land has deteriorated.</i>	
Checklist of supporting information	<ul style="list-style-type: none"> • <i>Inspection records and summary of findings of inspections for all pollution prevention measures</i> • <i>Records of maintenance, repair and replacement of pollution prevention measures</i>

6.0 Pollution incidents that may have had an impact on land, and their remediation	
<i>Summarise any pollution incidents that may have damaged the land. Describe how you investigated and remedied each one. If you can't, you need to collect land and/or groundwater reference data to assess whether the land has deteriorated while you've been there.</i>	
Checklist of supporting information	<ul style="list-style-type: none"> • <i>Records of pollution incidents that may have impacted on land</i> • <i>Records of their investigation and remediation</i>

7.0 Soil gas and water quality monitoring (where undertaken)	
<i>Provide details of any soil gas and/or water monitoring you did. Include a summary of the findings. Say whether it shows that the land deteriorated as a result of the permitted activities. If it did, outline how you investigated and remedied this.</i>	
Checklist of supporting information	<ul style="list-style-type: none"> • <i>Description of soil gas and/or water monitoring undertaken</i> • <i>Monitoring results (including graphs)</i>



[Guidance: At surrender: add new doc reference in 1.0; complete sections 8-10; & submit with your surrender application.]

8.0 Decommissioning and removal of pollution risk	
Describe how the site was decommissioned. Demonstrate that all sources of pollution risk have been removed. Describe whether the decommissioning had any impact on the land. Outline how you investigated and remedied this.	
Checklist of supporting information	<ul style="list-style-type: none"> • Site closure plan • List of potential sources of pollution risk • Investigation and remediation reports (where relevant)

9.0 Reference data and remediation (where relevant)	
Say whether you had to collect land and/or groundwater data. Or say that you didn't need to because the information from sections 3, 4, 5 and 6 of the Surrender Site Condition Report shows that the land has not deteriorated.	
If you did collect land and/or groundwater reference data, summarise what this entailed, and what your data found. Say whether the data shows that the condition of the land has deteriorated, or whether the land at the site is in a "satisfactory state". If it isn't, summarise what you did to remedy this. Confirm that the land is now in a "satisfactory state" at surrender.	
Checklist of supporting information	<ul style="list-style-type: none"> • Land and/or groundwater data collected at application (if collected) • Land and/or groundwater data collected at surrender (where needed) • Assessment of satisfactory state • Remediation and verification reports (where undertaken)

10.0 Statement of site condition	
Using the information from sections 3 to 7, give a statement about the condition of the land at the site. This should confirm that:	
<ul style="list-style-type: none"> • the permitted activities have stopped • decommissioning is complete, and the pollution risk has been removed the land is in a satisfactory condition. 	



Appendix 11

Evidence of Technically Competent Management



The Chartered Institution of Wastes Management

In partnership with



This certificate is jointly awarded by CIWM and WAMITAB and provides evidence to meet the Operator Competence requirements of the Environmental Permitting (England & Wales) Regulations 2016 in accordance with the CIWM/WAMITAB Operator Competence Scheme.

Certificate Number:

2350

This is to certify that

Oliver Brice

Attended and satisfactorily completed the
Environmental Permitting Operators Certificate (EPOC)

Held on **13-14 November 2019**

CIWM President

From: ben.saville@hsecservices.co.uk <ben.saville@hsecservices.co.uk>
Sent: 27 January 2021 14:24
To: Oliver Brice <oliver@briceaggregates.co.uk>
Cc: admin@hsecservices.co.uk
Subject: WAMITAB Level 4 - Joining Instructions - HSEC Services - www.hsecservices.co.uk

Good afternoon Oliver,

I hope you're well. Please find attached, the joining instructions for the WAMITAB Level 4 Certificate in Waste and Resource Management – VRQ qualification.

Course Date(s): 16th, 17th and 18th of February & 3rd and 4th of March (Split Course) 2021

We will be providing a separate email shortly; requesting one final document that we require completing and returning; in order to allow us to register you with the awarding body WAMITAB.

We will also be providing you with an invoice shortly.

Should you have any questions on anything at all, don't hesitate to contact us.

Kind Regards
Ben Saville
Director

Health, Safety & Environmental Compliance Services Limited
Email : ben.saville@hsecservices.co.uk
Website : www.hsecservices.co.uk
Centre : 01502 712209
Mobile : 07494 242960
Address: No.6b The Walk, Beccles, Suffolk, England, NR34 9AJ



Award-Winning
wamitab
Approved Centre

 01502 712209  info@hsecservices.co.uk

mpawards
maintaining professional standards.

Qualifications

SHE Qualifications

- MPQC Level 7 Diploma in Safety, Health and Environmental Management
- MPQC Level 6 Diploma in Safety, Health and Environmental Management
- MPQC Level 4 Diploma in Safety, Health and Environmental Management

Weighbridge Qualifications


- MPQC Level 3 Diploma in Weighbridge Operations

Mobile Plant Qualifications

- MPQC Level 2 Diploma in Mineral Products Mobile Plant Operations

 01502 712209  info@hsecservices.co.uk

A common issue many people in the waste industry can relate too, is failing to take their continuing competence on time! We provide all our customers with free alerts in advance, for life, to ensure they don't miss theirs!

		Health, Safety & Environmental Compliance Services Limited Integrated Management System	
Document Title: Joining Instructions VRQ - Online		Mandatory	
		Guidance	
		CPD / Professional Update	
1.Document Number	J0001	2. Relevant Documents	
3.Target Audience	Customers / Centre Staff / IQA / Candidates / Tutor / Trainer	4.Version Number	002
5.Latest Document Review Date:	07/04/2020	6.Next Document Review Date:	07/04/2021
7.Developed By	B.Saville		

Welcome

Welcome and thank you for choosing, Health, Safety & Environmental Compliance Services Limited.

Please see below joining instructions, for the WAMITAB Level 4 Certificate in Waste and Resource Management VRQ qualification.

Please ensure you read these instructions in full, prior to joining your chosen online course.

- ✓ **Delegate(s):** Oliver Brice
- ✓ **Booking / Unique Learner number:** H00273S
- ✓ **Course:** Level 4 Certificate in Waste and Resource Management – VRQ
- ✓ **Optional Unit(s):** VRQ406 – Principles and practices of managing a physical treatment processing facility (Transfer and Treatment of non-hazardous waste) & VRQ410 – Principles and practices of managing an inert landfill (Inert Landfill & Recovery with Deposit)

Note: Depending on the number of optional units selected by Delegates, the most popular optional unit(s) will be delivered on course day 5, with all other optional units being scheduled to run on additional course days. Optional units take ½ a day each to deliver.

- ✓ **Course Date(s):** 16th, 17th and 18th of February & 3rd and 4th of March (Split Course) 2021
- ✓ **Venue:** Online Delivery
- ✓ **Starting At:** 08:45
- ✓ **Finishing At:** 16:00

If there are any queries regarding this booking, or if you would like to talk to us about further training requirements, please do not hesitate to contact us on 01502 712209 or email info@hsecservices.co.uk.

Please do be aware that if payment is overdue to Health, Safety & Environmental Compliance Services Limited, we regretfully reserve the right to refuse attendance on any course, until the overdue amount is settled in full.

Yours sincerely,

B. Saville

Ben Saville
Centre Manager

Index

- 1.Course Details
- 2.Guidance
- 3.Attendance
- 4.Equipment
- 5.Prerequisites
- 6.Centre Contact

1.Course Details

The VRQ is a taught and tested qualification and is an ideal way of gaining the appropriate qualification, as the Delegate is taught everything they require!

The end result is the same - a WAMITAB Level 4 award, but by doing the VRQ you will have confidence, know the laws and regulatory powers, be able to make important site decisions based on actual knowledge. You will leave the course enlightened, knowledgeable and above all confident to run a permitted waste site.

The course material is delivered online via power point presentation; however, this will not be death by power point, this will be a live, interactive and fun learning process, with various exercises, question and answer sessions and much more!

You will sit through the 5 "Mandatory units" of the award, covering Health & Safety, Environmental Protection, Sustainable Waste and Resource Management, Legislation and Non-Legislative factors. You will then sit your optional unit(s) which are specific to the permitted facility in which you are looking to operate.

After the course, you will complete a question paper for each of the "Mandatory Units" and then a question paper for each "Optional Unit" you have selected. These are to be completed in your own time away from the course at work or at home, providing additional flexibility.

Once completed, they are to be submitted to admin@hsecservices.co.uk.

Once you have completed a question paper, we advise you leave it for a period ideally one day, and then review your answers! Then get them submitted for marking, as feedback on the first submission is vital and will allow you to learn from potential mistakes or issues, which otherwise might be replicated throughout the process.

Once your questions have been submitted to the centre, we will then send them to the Trainer for review, prior to them being sent to the Marker.

As the name suggests, he / she will then mark your question papers, against the standard set out by the awarding body WAMITAB.

If your questions don't meet the standard, we will return them to you along with the feedback from the Marker.

You will then be required to review and make the required amendments to any question(s), which the Marker has highlighted as not reaching the standard required.

If you get to a third submission, we will then organise for you to speak to the course presenter to re explain elements and point you in the right direction.

To assist you further, we will provide you with an Amazon Fire Tablet; which is preloaded with 100's of guidance documents on health and safety, planning and the environment, which can be used to not only continue to research and learn in order to achieve the award, but it's also the ideal on site resource when carrying out your daily duties!

The centre has remote access to the information provided, which allows us to update and add information over time, resulting in an ever-expanding resource at your fingertips!

Once the Marker is satisfied that all of your unit questions papers have met the standard, they will then be passed to an internal Moderator, who will check responses to questions align with the standard and that the Moderator agrees with decisions made by the Marker.

Once he / she is satisfied, the work will then be passed to an external Moderator, who will check that the questions align with the standard and that the external moderator agrees with the decisions made.

After this process we can then claim your certificate!

Predicted Schedule (Depending on the number of optional units selected, the most popular optional unit(s) will be delivered on course day 5, with all other optional units being scheduled to run on additional course days. Optional units take ½ a day each to deliver).

Day 1

- ✓ 0845 – 0945 Registration / Induction
- ✓ 0945 – 1430 VRQ303 Principles of sustainable waste and resource management
- ✓ 1430 – 1600 VRQ402 Environmental protection in the waste and resource management industry

Day 2

- ✓ 0845 – 0900 Registration
- ✓ 0900 – 1600 VRQ401 Health and safety in the waste and resource management industry

Day 3

- ✓ 0845 – 0900 Registration
- ✓ 0900 – 1600 VRQ404 Legislation for the operation of a waste management facility

Day 4

- ✓ 0845 – 0900 Registration
- ✓ 0900 – 1130 VRQ404 Legislation for the operation of a waste management facility
- ✓ 1130 – 1600 VRQ405 Stakeholder communication and other non-legislative factors affecting the waste and resource management industry

Day 5

- ✓ 0845 – 0900 Registration
- ✓ 0900 – 1600 Optional Units

Note: Depending on the number of optional units selected by Delegates, the most popular optional unit(s) will be delivered on course day 5, with all other optional units being scheduled to run on additional course days. Optional units take ½ a day each to deliver.

Please see below the full list of Mandatory Units, and Optional Units.

Mandatory Units

Ofqual Code	Title	Level	WAMITAB Unit Code
M/617/2098	Health and safety in the waste and resource management industry	4	VRQ401
T/617/2099	Environmental protection in the waste and resource management industry	4	VRQ402
D/617/2100	Principles of sustainable waste and resource management	4	VRQ403
H/617/2101	Legislation for the operation of a waste management facility	4	VRQ404
K/617/2102	Stakeholder communication and other non-legislative factors affecting the waste and resource management industry	4	VRQ405

Optional Units

Ofqual Code	Title	Level	WAMITAB Unit Code
M/617/2103	Principles and practices of managing a physical treatment processing facility	4	VRQ406
T/617/2104	Principles and practices of managing a biological treatment processing facility	4	VRQ407
A/617/2105	Principles and practices of managing a thermal treatment processing facility	4	VRQ408
F/617/2106	Principles and practices of managing land remediation activities	4	VRQ409
J/617/2107	Principles and practices of managing an inert landfill	4	VRQ410
L/617/2108	Principles and practices of managing a mechanical biological treatment facility	4	VRQ411
R/617/2109	Principles and practices of managing an end of life vehicle facility	4	VRQ412
J/617/2110	Principles and practices of managing a metals recycling facility	4	VRQ413
F/618/1159	Principles and practices of managing a hazardous waste storage facility	4	VRQ414
T/618/1160	Principles and practices of managing land spreading activities	4	VRQ415

2.Guidance

We have produced and provided below, some links to some "How to" videos to assist with a range of tasks, from joining your chosen course to submitting question papers for marking.

Videos

Video Name:	HW2 - 1 PDF Editing
About:	This video will explain, how to edit a PDF to allow you to add comments as well as signatures to the required documentation, prior to sending them to the centre for marking.
Link:	HSEC "How to" Video - HW2 - 1 PDF Editing Video

Video Name:	HW2 - 2 Saving and Submitting a Question Paper
About:	This video will explain, how to save a word document as a PDF in order to submit your completed question papers for marking.
Link:	HSEC "How to" Video - HW2 - 2 Saving and Submitting a Question Paper

Video Name:	HW2 - 3 How to Join Your Online Course
About:	This video explains how to access and use the features within the online platform "Zoom" used to deliver your chosen online qualification or training.
Link:	HSEC "How to" Video - HW2 - 3 How to Join Your Online Course

Documents

File Name:	Delegate VRQ Guidance
About:	This document covers a range of topics from general questions with answers; how to submit a question paper for marking, saving documents as PDF's and how to make amendments to question papers. You can find a hard copy of this document, in section 2 of your portfolio.
Link:	HSEC0281 - Delegate VRQ Guidance V007 07092019

3.Attendance

You will receive an email from us the day prior to the course; containing information on the course to include a website link to join your chosen course; along with the required password.

We will also contact you early on the morning of the course, to re-provide the required information.

We will be using both Zoom and Gotomeeting to deliver the training. Zoom will be the primary platform used and we have provided a "How to" video in section 2 of these instructions, for those who have never used this platform.

Gotomeeting, will be used as backup should there be any technical issues with the Zoom platform, caused through additional usage during the COVID-19 outbreak. A "How to" video is in the process of being produced for this platform, however if you have any technical issues, please contact the centre (See Section 6).

4.Equipment



You will receive a parcel containing all the course materials and equipment required to achieve your qualification, through our trusted courier DHL.

This will be delivered to a prearrange location, either home, work or another suitable location.

Your parcel will contain a portfolio, which includes Learner guidance, slides for all of the mandatory units as well as your chosen optional unit(s).

It will also contain hard copies of the question papers for each unit, to allow you to make notes while the information is still fresh in your mind.

It will also provide an opportunity to look through the questions, at which point you can also ask the trainer questions if you are unsure.

You will also receive a 10inch tablet containing electronic copies of all documents provided in hardcopy, which includes an archive of some 400 guidance documents on Health, Safety, Waste Management, Planning and the Environment.

More importantly it contains your question papers in a word document format; it's these question papers you will need to complete and submit to the centre in order to achieve your qualification.

5.Prerequisites

It is very important that any Delegate understands the course objectives and complies with the course prerequisites before attending the course, in order to gain maximum value from the training.

Details of the prerequisites for this course are as follows:

Registration and course timings

The online training room will be open from 08:45. You should aim to join the training at 08:45 to allow for any technical issues and to allow time to ensure you are ready to start your chosen course.

Courses will start promptly at 09:00. There will be plenty of breaks through the day to include a lunch break around 12:30. The course will finish at approx. 16:00 each day.

Depending upon the course content, the presenter may require the course to start and finish at different times on subsequent course days (if any).

Depending on the number of optional units selected, the most popular optional unit(s) will be delivered on course day 5, with all other optional units being scheduled to run on additional course days. Optional units take ½ a day each to deliver.

Cancellation and Other Instructions

We reserve the right to change course schedules, change course content, discontinue courses, limit class size and cancel courses in which event we will notify you 10 days prior to the course start date.

Identification

The Centre will require you to provide a copy of a photographic form of identification, in order to register you with the awarding body WAMITAB. This will be requested in a separate email and should be password protected before being returned to the centre.

If you do not have any form of photographic identification, please contact the Centre.

Security

The online training rooms will be secure, with access restricted to only Health, Safety & Environmental Compliance Services Limited employee's / contractors. The online training rooms will be password protected; you will be provided this password via email along with a link to join your chosen course.

Mobile Phones

Mobile phones are permitted during online courses / training providing they remain on silent and use is kept to a minimum; and is not disruptive. Should the presenter feel the use of mobile phones is being disruptive and is having an impact on the course and people's ability to learn, you will be asked to turn your phone off or leave the online training.

Health, Safety & Environmental Compliance Services Limited will not be held liable for any cost's incurred for any Delegate who has been asked to leave a course, due to being disruptive and or abusive to other Delegates or Centre employee's or contractors.

Dress code

Business Casual / casual for all online courses / training provided.

6. Centre Contact

Should you have any issues or wish to discuss anything with the centre, please contact us on the following:

Email: admin@hsecservices.co.uk

Phone: 01502 712209

A member of the team will be available at all times; to assist you with every aspect of the course, and completion of your chosen qualification.