REVIEW OF THE

SITE PROTECTION AND MONITORING PROGRAMME

FOR LLAY MILL

2 Agriculture Ltd

IPPC PERMIT NO AP3337HF (formally RP3835SY)

WHERE REFERENCE DATA IS REQUIRED

First Phase Reporting: 23 April 07

Review: 09 October 09

2nd Review: 21 April 11

3rd Review: 23 April 13

Table of Content

Summary

This is a review of the first report of the Site Protection and Monitoring Programme (SPMP) for Llay Mill submitted to the Environment Agency in pursuance of Condition 2.10.10 of the Permit No. RP3835SY (the "Permit") authorising the operation of Llay Mill (the"installation").

As from 08/03/2011 the Permit was transferred to AP3337HF due to a company take over and name change from Cymru Country Feeds to VION Agriculture Ltd. VION Agriculture Ltd have now been taken over by 2 Agriculture Ltd and are in the process of transferring the permit, but all works and processes are as before.

Investigation

An intrusive investigation was undertaken to characterise substances identified as being present or potentially present in, on or under the ground in the Application Site Report (ASR) submitted with the Permit Application. The scope of the investigation is detailed within the Design SPMP submitted in pursuance of Condition 4.1.7 of the above mentioned Permit. This document should be read in conjunction with both documents.
This report sets the reference data for the installation that are summarised in Section 3 and Appendix C.

1.0 Introduction

The Application Site Report (ASR) for Llay Mill was prepared as part of the IPPC application process. The ASR was prepared by Enviros Consulting Ltd in conjunction with site personnel. The subsequent Site Protection and Monitoring Programme (SPMP) has been devised and implemented by site personnel. Reference data collection and analysis was undertaken and supervised by ENTEC UK Ltd with Alcontrol Laboratories carrying out analysis of the collected samples.

1.1 Site Location

The installation is located at Llay Industrial Estate, Miners Road, Llay, Wrexham LL12 0PJ. The centre of the site is at National Grid Reference 332880 356450. The site covers an area of 0.9 Ha and can be seen in Appendix A.

2.0 Intrusive Investigations

2.1 Investigation and Sampling Strategy

The following Sections detail variations to and deviations from the Design SPMP.

2.1.1 General

Site investigations took place between Tuesday 6th February and Wednesday 7th February 2007. Investigations were supervised by Will Allaway of Entec UK Ltd and were performed by personnel from ENTEC UK Ltd and Soil Mechanics.

2.1.2 Constraints on Investigations

A site walkover by Brian Parcesepe (GCFG now 2 Agriculture) and Will Allaway of Entec was carried out.

Proposed locations were scanned for services with a CAT and positioned so as to minimise disruption to the plant whilst still targeting the relevant zones. As a result of this inspection minimal adjustments to the positions which were stated in the original SPMP were made. The updated site layout drawing is attached in appendix A. This shows all locations in their final positions.

2.1.3 Soil Investigation and Sampling Techniques and Protocols

Other than the relocation of sample locations indicated in section 2.1.2, no other changes were made to the proposed sampling techniques identified in the original SPMP submission.

2.1.4 Groundwater Investigation and Sampling Techniques and Protocols

As noted in section 2.1.2, sample locations for groundwater and soil were slightly repositioned. Groundwater was only encountered in the bore hole at sample point c. The bore holes at Sample points A & B were found to be dry.

2.1.5 Soil-Gas and Vapour Investigation and Sampling Techniques and Protocols

The site Conceptual Model did not identify any volatile or semi-volatile organic chemicals or biodegradeable pollutants beneath the site. As indicated in the original SPMP submission, no Soil Gas and Vapour investigation or sampling was carried out.

2.1.6 Surface Water Investigation and Sampling Techniques and Protocols

Surface water was assessed in the original SPMP submission as being only a low sensitive receptor in the vicinity of the site. Accordingly, no Surface Water investigation or sampling was carried out.

2.1.7 Infrastructure Investigation and Sampling Techniques and Protocols

As indicated in the original SPMP submission, the site Conceptual Model did not identify any source – pathway- receptor links with regard to Infrastructure for the site. Accordingly, no infrastructure investigation or sampling was carried out.

2.2 Sample Locations

The following table lists all sample locations agreed in the Design SPMP. As noted in Section 2.1.2, no significant amendments to sample locations were made:

Sample Point A	**Bore Hole**	**Ref**	**BHA**
Sample Point B	**Bore Hole**	**Ref**	**BHB**
Sample Point C	**Bore Hole**	**Ref**	**BHC**

Samples have been referenced using the classification system detailed in the Design SPMP (Section 3.2)
The findings of investigations are discussed in Section 2.4 below and all physical ground results (borehole logs, trial pit logs, etc) are reproduced in Appendix B.

2.3 Analytical Strategy

2.3.1 Justification of Analytical Suites

The analytical suites agreed in the Design SPMP were used in the analysis of samples from the investigation to collect reference data.

2.3.2 Justification of Analytical / Field Technique and Detection Limits

The laboratory / field analytical techniques and detection limits for each analysis were as agreed in the Design SPMP.

2.3.3 Laboratory Accreditation / Quality Assurance and Quality Control

2.3.3.1 Laboratory Accreditation

All laboratory analytical techniques undertaken are within UKAS Accreditation.

2.3.3.2 Quality Control

There were no modifications to the agreed sampling and analytical quality assurance and quality control plan.

2.4 Findings of the Ground Investigation

2.4.1 Summary of Site Physical Conditions and Refinement of Conceptual Site Model.

The findings of the ground investigations supported the assumptions which were made in the site conceptual model. Details from the bore logs are contained in appendix B. As a result no amendments are proposed to the original site conceptual model.

2.4.2 Zone 1

As stated in the Design SPMP, the site was classified as a single zone. Sampling took place at 3 points, indicated on the site plan in appendix A.
A summary of the data collected, with relevant conclusions, is detailed below.

Summary of Soil Analysis

Hydrocarbons

The results indicate that hydrocarbons are present within the Made Ground across the site. The highest concentration was detected in the Made Ground at BHA (570mg/kg), this may be associated with the vehicle wash and waste oil storage located within the vicinity of BHA. Hydrocarbon concentrations of 310mg/kg were also recorded within the Made Ground at BHC, located to the north of the bulk diesel tanks. A concentration of 84mg/kg was detected in BHB.

At all locations hydrocarbons were not detected in the natural ground, indicating that the risk associated with vertical migration of hydrocarbons are negligible beneath the site.

Ammoniacal Nitrogen, Nitrate and Nitrite (SOILS)

These parameters were tested to provide an indication of food wastes utilised on site and which could be present in the installation drainage system. The data indicates that no significant impact to the underlying soils has occurred from this potential source.

pH

Soil pH beneath the installation ranged from 7.6 to 9.37 across the site, indicating neutral to slightly alkali conditions. The reading of 9.37 was detected in the Made Ground at BHB, where the presence of clinker and fill materials may be the source of the alkali conditions.

Anionic Surfactant

Anionic Surfactants are present within the installation cleaning chemicals and as a result have the potential to be present within the drainage system. Within BHB concentrations ranged from 58mg/kg in the Made Ground to 110mg/kg within the natural strata at 3.5m bgl. Surfactants were not detected at 9.2 mg/l.

Within BHC, surfactants were not detected in the Made Ground but were present at concentrations of 37mg/kg and 38mg/kg in the natural ground at 5m and 8m bgl respectively. No surfactants were present within BHA.

The presence of surfactants within the clay soils at depth beneath the installation would suggest that these are naturally occurring concentrations.

Summary of Groundwater Analysis

Groundwater was only encountered within BHC during the monitoring event. Results from the sampling analysis proved the absence of hydrocarbons and no significant concentrations of other contaminants were noted. The Chemical Oxygen Demand of the water was recorded at 610mg/l.

2.5 Data Interpretation

2.5.1 Statistical Analysis of Data

2.5.1.1 Zone 1

Given the compact nature of the site and lack of any apparent horizontal or vertical migration of substances, it is concluded that no further subdivision of the single zone is required.

2.5.2 Confirmed Sources of Identified Elevated Levels of Pollutants

The minimal levels of pollutants detected in the collected samples could all be attributed to activities that will continue under the terms of the permit. These activities were identified as:

- Vehicle movement on site
- Vehicle fuelling on site
- Vehicle and site cleaning

Detection of pollutants were all localised in the areas of their related activities.
It is considered that the controls, monitors and inspections which are carried out as part of the site EMS are sufficiently effective to control any further significant pollution risk. Given the lack of evidence of any potential migration on or off site, it is proposed that ongoing groundwater and soil sampling and analysis are not necessary.

2.5.3 Unknown Sources of Identified Elevated Levels of Pollutants

The sources of all elevated levels of pollutants within the ground or groundwater have been identified and attributed within Section 2.5.2 above.

3.0 Statement of Reference Data

Reference Data for the site have been collected by this report and are presented in summary as Appendix C.

4.0 Inspection and Monitoring Programme

The investigations to collect reference data have not led to any amendments to the monitoring and inspection programme.

4.1 Objectives of the Monitoring Programme

4.1.1 Objectives of the Environmental Monitoring Programme

No modifications are proposed to the objectives of the Environmental Monitoring Programme.
These objectives are :

- To monitor the effectiveness of infrastructure and management procedures and provide a warning of loss of containment.

4.1.2 Objectives of the Infrastructure Monitoring Programme

No modifications are proposed to the objectives of the Infrastructure Monitoring Programme.
These objectives are :

- To monitor and control the sites activities with regard to the defined environmental aspects and impact.
- To ensure that the sites activities have a minimal impact on the environment

These objectives will be achieved through the implementation of an Environmental Management System.
This system contains procedures for :

- Daily Visual Checks

- Preventative Maintenance Programme
- Emergency Spill Procedure
- Bund Integrity Inspections
- Incident Reporting and Investigations

A periodic audit of the Environmental Management System is carried out to ensure its ongoing effectiveness.

4.2 Environmental Monitoring Infrastructure

4.2.1 Location

As indicated in section 2.5.2 no ongoing groundwater or soil monitoring is proposed for the site.

4.2.2 Groundwater monitoring

As indicated in section 2.5.2 no ongoing groundwater is proposed for the site.

4.2.3 Soil Vapour Monitoring

No on-going soil vapour monitoring will occur at the installation during the life of the permit.

4.2.4 Soil Monitoring

No on-going soil monitoring will occur at the installation during the life of the permit.

4.2.5 Procedure for the Inspection and Maintenance of Monitoring Infrastructure

All issues relating to the effectiveness site infrastructure (ie bund inspections, integrity testing, maintenance programmes) are addressed by the site Environmental Monitoring System.

A periodic audit and review of the Environmental Management System is carried out to ensure its ongoing effectiveness.

4.3 Monitoring Programme

4.3.1 Monitoring Frequency

As indicated in section 2.5.2 no ongoing groundwater or soil monitoring is proposed for the site.

4.3.2 Sampling and Analysis Protocols

As indicated in section 2.5.2 no ongoing groundwater or soil monitoring is proposed for the site.

4.3.3 Personnel Issues

As indicated in section 2.5.2 no ongoing groundwater or soil monitoring is proposed for the site.

4.4 Infrastructure Monitoring Programme

The existing inspection, testing and maintenance of pollution prevention infrastructure programme meets the objectives identified within Section 4.1.2 above and thus there are no changes to the EMS programme for the installation summarised within the Permit Application.

4.4.1 Personnel Issues

Personnel responsible for the inspection, testing and maintenance of pollution prevention infrastructure are to be trained to an appropriate level to ensure compliance with the Infrastructure Monitoring Programme. Roles and responsibilities for undertaking the Programme (including reporting) and ensuring adequate competence of staff are detailed within the site EMS.

4.5 Assessment and Reporting Procedures

4.5.1 Assessment Procedure

All recording of visual checks and inspections are reviewed by senior site management. New forms have been produced to keep record of management inspections.

4.5.2 Reporting Procedure

Summaries of the monitoring data will be sent to the Agency on the 31st of January each year along with the results of the data assessment, and any recommendations for amendments to the monitoring programme.
All reporting requirements and protocols are detailed in the site EMS.

4.5.3 Recording and Data Management

Procedures are defined within the Environmental Management System with regards to records and document control.
The main elements are as follows:

- All specific environmental records are retained for a minimum of five years.
- The storage location of records is defined within the Environmental Management System.
- Where other systems or documents form part of the environmental controls or records cross references are provided to the existing documents and systems.

5.0 Other Issues

No other issues were determined as being relevant to the site.

Appendix D Monitoring Protocols

D1 Infrastructure Monitoring Protocols

Infrastructure Monitoring Protocols are contained within the following documents:

EMS Manual : Section 5.5	Operational Control
EMS Manual : Section 6.1	Measuring and Monitoring
EMS Manual : Section 6.2	Investigation Correction and Prevention
EMS Manual : Section 7.0	Management Review
EMS Manual : Section 8.0	Risk Assessment and Accident Management Plan
EMS Manual : Section 9.0	Site Environmental Aspects
EMS Manual : Section 11.0	Site Monitoring Schedule
EMS Manual : Appendix 4	Emergency Spill Procedure

Details of the site monitoring schedule contained in section 11.0 of the site EMS are detailed

below:

Item	Frequency	Related Documents	Document Location
Forklift Operator Checks	Daily	Defect sheets and maintenance records	Main Office
Boiler Blow Down	Daily	Maintenance Log	Maintenance Office
Boiler Service	Annually	Service Record	Maintenance Office
Boiler Safety Checks	Every 14 Months	Safety Report (Allianz)	Maintenance Office
Plant Lubrication Schedule	Daily	Maintenance Schedule and Log	Maintenance Office
Emission Visual Check	Daily	Daily Environmental Check Sheet	Main Office
Odour Check	Daily	Daily Environmental Check Sheet	Main Office
Stock Liquid Tank Visual Check	Before Each Delivery	Authority to Discharge Form	Weighbridge Office
Fire Alarm Test	Weekly	Fire Book Log	Main Office
Liquid Bunding Integrity Inspection	Monthly	Bunding Check Sheet	Maintenance Office
Plant Hygiene Inspection	Weekly	Cleaning Schedule	Cleaner's Office
Stock Check and Yield Review	Weekly	Yield Gain Analysis Sheets	Network Drive (I:/)
Emission Monitoring	Annually	Monitoring Report (PCME)	Maintenance Office
Particulate Emission Monitoring	Daily	Daily Environmental Check Sheet	Main Office
Skip Disposal Monitoring	Monthly	Skip Collection Log	Main Office
Bag Filter Check	Monthly	Maintenance Programme	Maintenance Office
Local Exhaust Ventilation Inspection	Every 14 Months	Contractor Report (Allianz)	Maintenance Office
Local Exhaust Ventilation Inspection	Every Month	Maintenance Programme	Maintenance Office
Scrubber Cleaning and Effluent Disposal	Quarterly or when required	Cleaning Schedule, Effluent Disposal Record	Main Office
Bin Level Alarm Check	Weekly	High Level Alarm Check Sheet	Main Office
Interceptor Cleaning Schedule	Monthly	Inspection and Cleaning Record	Main Office
Yard Cleaning Records	Weekly	Yard Cleaning Record	Main Office

D2 Data Recording and Reporting Procedures

Data Recording and Reporting Procedures are contained within the following documents:

EMS Manual : Section 5.4	System Documentation
EMS Manual : Section 6.3	Records
EMS Manual : Appendix 4	Mill Reporting Procedures

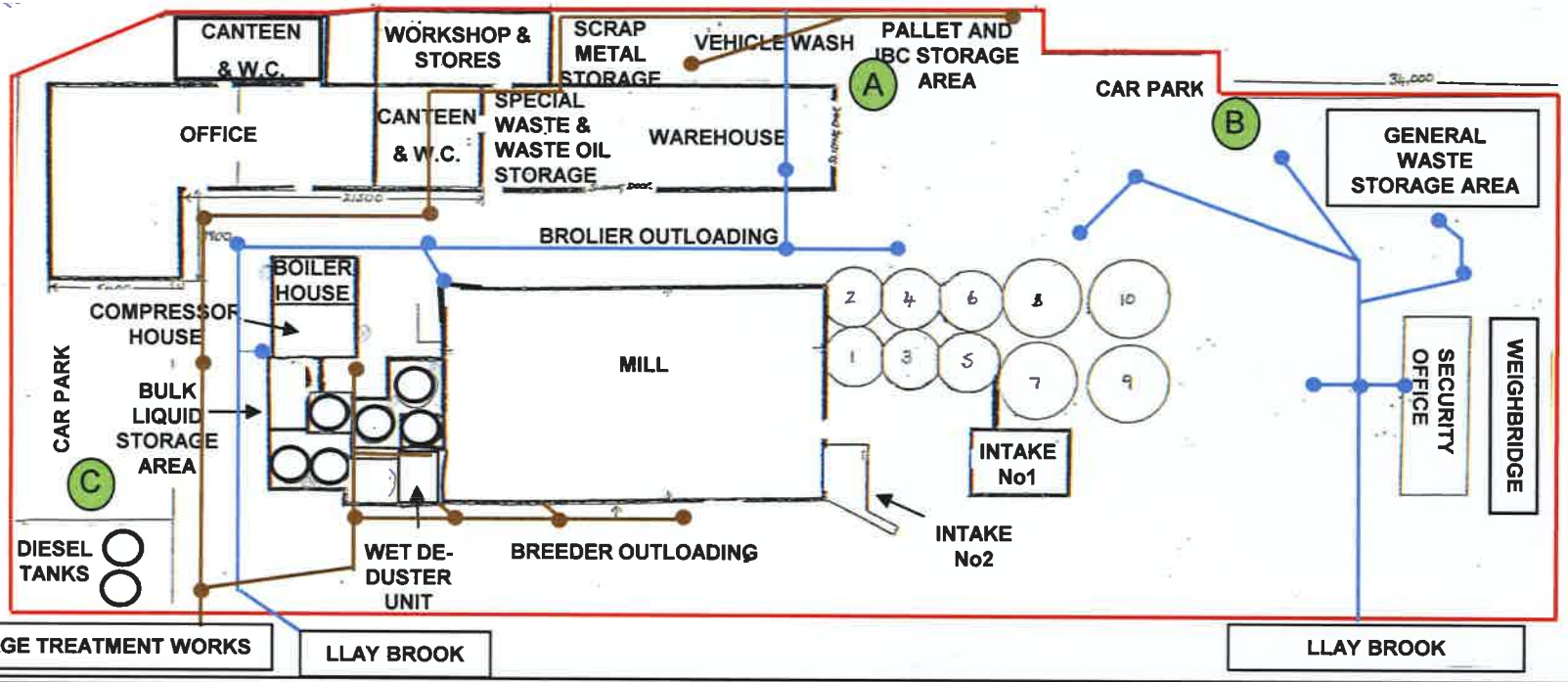
KEY

Installation Boundary

Surface Water Drains

Foul Water Drains

Sampling Point



ENVIROS

CYMRU COUNTRY FEEDS, Wrexham

SCALE:	N/A	CAN	AN055 0001
CONTENT:	VLH	DRAWN	N/A
CHECKED:	DJC	DATE	Sep 06

FIGURE 1.3D

INSTALLATION LAYOUT; SHOWING SITE BOUNDARY AND POINT SOURCE EMISSIONS TO WATER

Entec

Project: **Llay Mill Intrusive Investigation**	Borehole **BHA**
Client:	Sheet **1** of **2**
Project No: **19824**	Ground Level m AOD
Contractor : **Soil Mechanics** Diameter: **50mm**	Co-Ordinates: E N
Method : **Cable Percussion** Rig Type: **Dando**	Date Drilled: **06/02/07 - 07/02/07**

Depth mbgl	Borehole Log – Strata Description	Legend	Depth (Thick-ness)	mAOD	Water Strikes	Sample Type	Sample Data	Monitoring Well
	MADE GROUND: Concrete		0.20					
1	MADE GROUND: Black sand and gravel. Sand is coarse of ash. Gravel is fine to medium angular coal, cinder occasional fine housebrick.		1.10				1.5ppm	
	MADE GROUND: Soft brown gravelly clay. Gravel is fine to medium coal, cinders, red housebrick.		1.50					
2	Soft brown sandy gravelly CLAY. Gravel is fine to medium, sub-angular to rounded of coal, quartz, sandstone.						1.2ppm	
3								
4								
5								
6								
7								
8			8.50					
9	Brown/orange slightly clayey SAND. Sand is medium.							
10	Borehole terminated at 10.00m bgl.		10.00					

General Remarks: **No groundwater encountered.**

Logged By: **ALLAW**	All Dimensions in Metres	Scale: **1:50**

Entec

Project: **Llay Mill Intrusive Investigation**	Borehole **BHA**
Client:	Sheet **2** of **2**
Project No: **19824**	Ground Level m AOD
Contractor : **Soil Mechanics** Diameter: **50mm**	Co-Ordinates: E N
Method : **Cable Percussion** Rig Type: **Dando**	Date Drilled: **06/02/07 - 07/02/07**

Depth mbgl	Borehole Log: Strata Description	Legend	Depth (Thick-ness)	mAOD	Water Strikes	Sample: Type	Sample: Data	Monitoring Well
							1 5ppm	
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

General Remarks: **No groundwater encountered.**

Logged By: **ALLAW**	All Dimensions in Metres	Scale: **1:50**

Entec

Project: **Llay Mill Intrusive Investigation**	Borehole **BHA**
Client:	Sheet **2** of **2**
Project No: **19824**	Ground Level m AOD
Contractor : **Soil Mechanics** Diameter: **50mm**	Co-Ordinates: E N
Method : **Cable Percussion** Rig Type: **Dando**	Date Drilled: **06/02/07 - 07/02/07**

Depth mbgl	Borehole Log / Strata Description	Legend	Depth (Thick -ness)	mAOD	Water Strikes	Sample Type	Sample Data	Monitoring Well
							1.5ppm	
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

General Remarks: **No groundwater encountered.**

Logged By: **ALLAW**	All Dimensions in Metres	Scale: **1:50**

Entec

Project: **Llay Mill Intrusive Investigation**	Borehole **BHA**
Client:	Sheet **1** of **2**
Project No: **19824**	Ground Level m AOD
Contractor : **Soil Mechanics**	Co-Ordinates: E N
Diameter: **50mm**	Date Drilled: **06/02/07 - 07/02/07**
Method : **Cable Percussion**	
Rig Type: **Dando**	

Depth mbgl	Borehole Log / Strata Description	Legend	Depth (Thick-ness)	mAOD	Water Strikes	Sample Type	Sample Data	Monitoring Well
	MADE GROUND: Concrete		0.20					
1	MADE GROUND: Black sand and gravel. Sand is coarse of ash. Gravel is fine to medium angular coal, cinder occasional fine housebrick.		1.10				1 5ppm	
	MADE GROUND: Soft brown gravelly clay. Gravel is fine to medium coal, cinders, red housebrick.		1.50					
2	Soft brown sandy gravelly CLAY. Gravel is fine to medium, sub-angular to rounded of coal, quartz, sandstone.						1 2ppm	
3								
4								
5								
6								
7								
8			8.50					
	Brown/orange slightly clayey SAND. Sand is medium.							
9								
10	Borehole terminated at 10.00m bgl.		10.00					

General Remarks: **No groundwater encountered.**

Logged By: **ALLAW**	All Dimensions in Metres	Scale: **1:50**

Entec

Project: **Llay Mill Intrusive Investigation**	Borehole **BHB**
Client:	Sheet **1** of **1**
Project No: **19824**	Ground Level m AOD
Contractor : **Soil Mechanics** Diameter: **50mm**	Co-Ordinates: E N
Method : **Cable Percussion** Rig Type: **Dando**	Date Drilled: **07/02/07 - 07/02/07**

Depth mbgl	Borehole Log – Strata Description	Legend	Depth (Thick-ness)	mAOD	Water Strikes	Sample Type	Sample Data	Monitoring Well
	MADE GROUND: Concrete		0.20					
	MADE GROUND: Light brown gravelly sandy clay. Gravel is frequent fine to medium angular of limestone.		0.30					
	MADE GROUND: Loose black sand and gravel. Sand is course of ash. Gravel is fine to medium, angular of cinders, charcoal, slag.		0.60				2.1ppm	
1	Firm brown sandy gravelly CLAY. Gravel is fine angular to sub-rounded of sandstone, quartz, coal.							
2								
3								
			3.80				1.8ppm	
4	Orange coarse SAND.							
5								
6								
7								
8								
9							1.6ppm	
10	Borehole terminated at 10.00m bgl.		10.00					

General Remarks: **No groundwater encountered.**

Logged By: **ALLAW**	All Dimensions in Metres	Scale: **1:50**

Entec

Project: **Llay Mill Intrusive Investigation**	Borehole **BHC**
Client:	Sheet **1** of **1**
Project No: **19824**	Ground Level m AOD
Contractor : **Soil Mechanics** Diameter: **50mm**	Co-Ordinates: E N
Method : **Cable Percussion** Rig Type: **Dando**	Date Drilled: **06/02/07 - 06/02/07**

Depth mbgl	Borehole Log – Strata Description	Legend	Depth (Thick-ness)	mAOD	Water Strikes	Sample Type	Sample Data	Monitoring Well
	MADE GROUND: Tarmac		0.05					
	MADE GROUND: Concrete		0.20					
1	MADE GROUND: Loose black sand and gravel. Sand is course, gravel is fine to coarse angular of shale, charcoal, traces of red housebrick (colliery spoil).						0.2ppm	
2								
3								
4								
			4.90					
5	MADE GROUND: Soft brown/black gravelly sandy clay. Gravel is fine to medium of shale, charcoal, trace of housebrick.		5.00				0.2ppm	
	Firm brown/orange gravelly sandy CLAY with grey mottling. Gravel is fine to medium sub-rounded to rounded of quartz, sandstone, charcoal.							
6								
7								
8							0.2ppm	
			8.60					
	Sandstone cobble		8.80					
9	Soft/firm brown/orange gravelly sandy CLAY. Gravel is fine to medium sub-rounded to rounded of quartz, sandstone, charcoal.							
10	Borehole terminated at 10.00m bgl.		10.00					

General Remarks: **No groundwater encountered.**

Logged By: **ALLAW**	All Dimensions in Metres	Scale: **1:50**

Validated ☑
Preliminary ☐

ALcontrol Geochem Analytical Services
Table Of Results

ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 07/02367/02/01
Client: Entec
Client Ref. No.: 19824
Matrix: LIQUID
Location: Not Specified
Client Contact: Will Allaway

Sample Identity	BHC									Method Code	LoD/Units
Depth (m)											
Sample Type	LIQUID										
Sampled Date	07.02.07										
Sample Received Date	09.02.07										
Batch	2										
Sample Number(s)	28-32										
COD	610									TM107#	<10 mg/l
Conductivity (at 25 deg.C)	1.8									TM120#	<0.014 mS/cm
Sodium Dissolved	140									TM083#	<0.2 mg/l
Nitrate as NO3	1.8									TM102#	<0.3 mg/l
Nitrite as NO2	<0.05									TM103#	<0.05 mg/l
Ammoniacal Nitrogen as N	<0.2									TM099#	<0.2 mg/l
Anionic Surfactant *	0.16										mg/l
pH Value	7.72									TM133#	<1.00 pH Units
EPH (DRO) (C10-C40)	<10									TM172#	<10 ug/l
GRO (C4-C10)	<10									TM089#	<10 ug/l
GRO (C10-C12)	<10									TM089#	<10 ug/l
Benzene	<10									TM089#	<10 ug/l
Toluene	<10									TM089#	<10 ug/l
Ethyl benzene	<10									TM089#	<10 ug/l
m & p Xylene	<10									TM089#	<10 ug/l
o Xylene	<10									TM089#	<10 ug/l
Sum m&p and o Xylene	<10									TM089#	<10 ug/l
Sum of BTEX	<10									TM089#	<10 ug/l
MTBE	<10									TM089#	<10 ug/l

Date 01.03.2007

ALcontrol Geochem Analytical Services
Table Of Results - Appendix

Job Number: 07/02367/02/01
Client: Entec
Client Ref. No.: 19824

Report Key :

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03×10^{-7}

NDP	No Determination Possible	*	Subcontracted test
NFD	No Fibres Detected	»	Result previously reported (Incremental reports only)
#	ISO 17025 accredited	M	MCERTS Accredited
PFD	Possible Fibres Detected	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control.

Summary of Method Codes contained within report :

Method No.	Reference	Description	ISO 17025 Accredited	MCERTS Accredited	Wet/Dry Sample [1]	Surrogate Corrected
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium in soil samples	✓	✓	WET	
TM083	Method 3111, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 7610	Determination of Sodium and Potassium by Flame Photometer	✓		DRY	
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)	✓		NA	
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser	✓		NA	
TM102	Method 4500H, AWWA/APHA, 20th Ed., 1999	Determination of Total Oxidised Nitrogen using the Kone Analyser	✓		DRY	
TM103	Method 4500H, AWWA/APHA, 20th Ed., 1999	Determination of Nitrite using the Kone Analyser	✓		DRY	
TM107	ISO 6060-1989	Determination of Chemical Oxygen Demand using COD Dr Lange Kit	✓		NA	
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter	✓		DRY	
TM133	BS 1377: Part 3 1990	Determination of pH in Soil and Water using the GLpH pH Meter	✓		NA	
TM133	BS 1377: Part 3 1990	Determination of pH in Soil and Water using the GLpH pH Meter	✓	✓	WET	
TM154	In - house Method	Determination of Petroleum Hydrocarbons by EZ Flash GC-FID in the Carbon range C6- C40	✓		WET	
TM172		EPH in Waters	✓		NA	

[1] Applies to Solid samples only. **DRY** indicates samples have been dried at 35°C. **NA** = not applicable.

ALcontrol Geochem Analytical Services
Sample Descriptions

Job Number: 07/02367/02/01
Client: Entec
Client Ref : 19824

Grain sizes

<0.063mm	Very Fine
0.1mm - 0.063mm	Fine
0.1mm - 2mm	Medium
2mm - 10mm	Coarse
>10mm	Very Coarse

Sample Identity	Depth (m)	Colour	Grain Size	Description	Batch
BHB	0.40-0.50	Black	0.1mm - 0.063mm	Silt with some Stones	2
BHB	3.50-3.70	Light Brown	0.1mm - 0.063mm	Clay	2
BHB	9.20-9.30	Light Brown	0.1mm - 0.063mm	Sand	2

* These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials-whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.
Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.
[1] Sample Description supplied by client

Validated ☑
Preliminary ☐

ALcontrol Geochem Analytical Services
Table Of Results

ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 07/02367/02/01 **Matrix:** SOLID
Client: Entec **Location:** Not Specified
Client Ref. No.: 19824 **Client Contact:** Will Allaway

Sample Identity	BHB	BHB	BHB							Method Code	LoD/Units
Depth (m)	0.40-0.50	3.50-3.70	9.20-9.30								
Sample Type	SOLID	SOLID	SOLID								
Sampled Date	07.02.07	07.02.07	07.02.07								
Sample Received Date	09.02.07	09.02.07	09.02.07								
Batch	2	2	2								
Sample Number(s)	19-21	22-24	25-27								
Conductivity (at 25 deg.C)	2.7	2.6	2.6							TM120#	<0.014 mS/cm
Sodium	950	290	190							TM083#	<4 mg/kg
Nitrate (soluble) as NO3	23	3	2							TM102#	<1 mg/kg
Nitrite (soluble) as NO2	0.3	0.5	0.4							TM103#	<0.1 mg/kg
Ammoniacal Nitrogen as N	<15	<15	20							TM024#M	<15 mg/kg
Anionic Surfactant*	58	110	<10								mg/kg
pH Value	9.37	8.57	8.82							TM133#M	<1.00 pH Units
TPH C6-40	84	<10	<10							TM154#	<10 mg/kg

All results expressed on a dry weight basis.

Date 01.03.2007

ALcontrol Geochem Analytical Services
Table Of Results - Appendix

Job Number: 07/02367/02/01
Client: Entec
Client Ref. No.: 19824

Summary of Coolbox temperatures

Batch No.	Coolbox Temperature (°C)
2	2.6

ALcontrol Geochem Analytical Services
Sample Descriptions

Job Number: 07/02367/02/01
Client: Entec
Client Ref : 19824

Grain sizes

<0.063mm	Very Fine
0.1mm - 0.063mm	Fine
0.1mm - 2mm	Medium
2mm - 10mm	Coarse
>10mm	Very Coarse

Sample Identity	Depth (m)	Colour	Grain Size	Description	Batch
BHA	0.7-0.8	Dark Brown	0.1mm - 2mm	Silt with some Stones	1
BHA	2.0-2.1	Brown	0.1mm - 0.063mm	Clay with some Stones	1
BHA	9.9-10.0	Brown	0.1mm - 2mm	Sandy Clay	1
BHC	1.1-1.2	Dark Brown	0.1mm - 0.063mm	Clay with some Stones	1
BHC	5.0-5.1	Brown	0.1mm - 0.063mm	Clay with some Stones	1
BHC	8.0-8.1	Dark Brown	0.1mm - 0.063mm	Clay with some Stones	1

* These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials-whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.
Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.
[1] Sample Description supplied by client

Validated ☑
Preliminary ☐

ALcontrol Geochem Analytical Services
Table Of Results

ISO 17025 accredited
M MCERTS accredited
* Subcontracted test
» Shown on prev. report

Job Number: 07/02367/02/01 **Matrix:** SOLID
Client: Entec **Location:** Not Specified
Client Ref. No.: 19824 **Client Contact:** Will Allaway

Sample Identity	BHA	BHA	BHA	BHC	BHC	BHC				Method Code	LoD/Units
Depth (m)	0.7-0.8	2.0-2.1	9.9-10.0	1.1-1.2	5.0-5.1	8.0-8.1					
Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID					
Sampled Date	06.02.07	06.02.07	06.02.07	06.02.07	06.02.07	06.02.07					
Sample Received Date	07.02.07	07.02.07	07.02.07	07.02.07	07.02.07	07.02.07					
Batch	1	1	1	1	1	1					
Sample Number(s)	1-3	4-6	7-9	10-12	13-15	16-18					
Conductivity (at 25 deg.C)	2.8	2.6	2.6	2.7	2.7	2.7				TM120#	<0.014 mS/cm
Sodium	1000	380	200	440	580	340				TM083#	<4 mg/kg
Nitrate (soluble) as NO3	12	1	<1	5	<1	<1				TM102#	<1 mg/kg
Nitrite (soluble) as NO2	0.2	0.5	0.7	0.4	1.5	1.3				TM103#	<0.1 mg/kg
Ammoniacal Nitrogen as N	<15	31	<15	<15	<15	<15				TM024#M	<15 mg/kg
Anionic Surfactant*	<10	<10	<10	<10	37	38					mg/kg
pH Value	8.06	7.61	8.33	7.95	8.02	8.22				TM133#M	<1.00 pH Units
TPH C6-40	570	<10	<10	310	<10	<10				TM154#	<10 mg/kg

All results expressed on a dry weight basis.

Date 14.02.2007

ALcontrol Geochem Analytical Services
Table Of Results - Appendix

Job Number: 07/02367/02/01
Client: Entec
Client Ref. No.: 19824

Report Key :

			Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03×10^{-7}
NDP	No Determination Possible	*	Subcontracted test
NFD	No Fibres Detected	»	Result previously reported (Incremental reports only)
#	ISO 17025 accredited	M	MCERTS Accredited
PFD	Possible Fibres Detected	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control.

Summary of Method Codes contained within report :

Method No.	Reference	Description	ISO 17025 Accredited	MCERTS Accredited	Wet/Dry Sample [1]	Surrogate Corrected
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium in soil samples	✓	✓	WET	
TM083	Method 3111, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 7610	Determination of Sodium and Potassium by Flame Photometer	✓		DRY	
TM102	Method 4500H, AWWA/APHA, 20th Ed., 1999	Determination of Total Oxidised Nitrogen using the Kone Analyser	✓		DRY	
TM103	Method 4500H, AWWA/APHA, 20th Ed., 1999	Determination of Nitrite using the Kone Analyser	✓		DRY	
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter	✓		DRY	
TM133	BS 1377: Part 3 1990	Determination of pH in Soil and Water using the GLpH pH Meter	✓	✓	WET	
TM154	In - house Method	Determination of Petroleum Hydrocarbons by EZ Flash GC-FID in the Carbon range C6- C40	✓		WET	

[1] Applies to Solid samples only. **DRY** indicates samples have been dried at 35°C. **NA** = not applicable.

ALcontrol Geochem Analytical Services
Table Of Results - Appendix

Job Number: 07/02367/02/01
Client: Entec
Client Ref. No.: 19824

Summary of Coolbox temperatures

Batch No.	Coolbox Temperature (°C)
1	7