Former Carlton Colliery
Barnsley

Enabling Works
Remedial Implementation Plan

Document Ref: 173367/RIP/001

AA Environmental Limited
Units 4 to 8 Cholswell Court
Shippon
Abingdon
OX13 6HX
T 01235 536042
F 01235 532849
info@aae-llp.com
www.aae-llp.com

Report for:

Mr Robert Lunn
Portward Homes Ltd
Southgate
Southmoore Road
Brierley
Barnsley
S72 9EU

Former Carlton Colliery,
Shaw Lane,
Carlton,
Barnsley
S71 3HJ

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Prepared By

……..
Roger Dunn BSc (Hons), PhD

Reviewed By

……...
Matthew Lawman MSc BSc (Hons)

AA Environmental Limited (Registered Office)
Unit 4 to 8
Cholswell Court
Shippon
Abingdon
OX13 6HX

T 01235 536042
F 01235 532849
E info@aae-llp.com
W www.aae-llp.com

Company No. 8474322

Table of Revisions

Issue	Description of status
0	Final

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DRAWINGS

APPENDICES

1.0 INTRODUCTION

Overview

1.1 AA Environmental Limited (AAe) have been commissioned by Portward Homes Limited (PHL) to develop a Remedial Implementation Plan (RIP) for the former Carlton Colliery. The RIP has been developed in accordance with the Model procedures for the management of land contamination (CLR11). The proposed works are to be implemented in the enabling works phase in advance of the site being brought forward for residential development. The site location is shown in Drawing 173367/RIP/D/001.

1.2 The site has been subject to a number of ground investigations. The site was initially investigated by Fennell, Green and Bates (FGB) in March 2006 and subsequently by Cromwell Wood in April 2006. These investigations identified elevated levels of arsenic, lead, nickel and Poly Aromatic Hydrocarbons (PAH) exceeding residential criteria. As a result of these investigation, and in advance of development, a Remedial Plan was proposed for the sites development in 2008. This plan was submitted for planning as part of an enabling works and included revised levels. The plan and the revised levels have subsequently been approved. The approved Remedial Plan and approved levels from 2008 are attached in Appendix A.

1.3 The site is to be restored and developed as part of a residential led land use that extends to north and south of the site. As part of these development works and to provide a greater understanding of the characteristics of the Made Ground, the site has been the subject of further investigation and remedial works completed in a limited section of the north of the site. The 2019 factual investigation report is attached in Appendix B. The 2006 and 2019 site investigation locations are overlain on the historic land use plans for the proposed development area, as presented in Drawing 173367/RIP/D/002.

1.4 Following the 2019 AAE investigation and a review of the 2008 Remedial Plan, the developer has requested that AAe undertake an update of the former Remediation Plan to ensure it is in keeping with the contemporary standards. In addition, a proposed variation to the levels is proposed to ensure that the final landform can be suitably developed following these enabling works.

1.5 This revised RIP, summarises the key contamination risks at the site and provides a framework for the completion of the development platform across the site, up to the formation layer. The plan extends to all land remediation and landscaping up to the underside of any proposed hardstanding and/or soft landscaping for the future residential development. The details relating to the quality of the final landscaping will be set out in forth coming planning applications.

1.6 Portward Homes Ltd. currently have a Bespoke Permit (EPR/BB3103FE) for the use of waste in a deposit for recovery operation (Construction, reclamation, restoration or improvement of land other than by mobile plant). This was to cover the import of suitable wastes for capping the site. Under the remediation plan set out in this document we foresee a requirment to vary this existing permit to allow the addition of on-site processing and treatment of existing waste colliery and construction waste deposits for the purpose of recovery. This application for a permit variation will be pursued separately with the Environment Agency in support of the remediation plan.

Scope of the plan

1.7 This Plan sets out the enabling works proposal, to ensure the final land quality poses no significant risk to users of the site and the surrounding land users and environmental receptors. The Plan provides the following information:

- A Conceptual Site Model (CSM) in its partially remediated state;
- A Conceptual Site Model (CSM) as proposed;
- Establish the remedial measures required during the enabling works phase to permit the site to be safely progressed in accordance with a detailed planning application; and
- The next steps for development.

2.0 BASELINE CHARACTERSITICS

2.1 Table 2.1 summarises site environmental and baseline setting at the site and in the surrounding area.

Table 2.1. Environmental Setting	
Site Details	
Site Area	The site is approximately 9.40 ha in area.
Topography	The site is situated at approximately between 45 m and 50 m above Ordnance Datum (m AOD) (OS Explorer Map 180- Oxford 1:25,000 scale). The site slopes from south to north and west to east towards Shaw Lane.
Soils and Geology	
Topsoil	The walkover confirmed that the site has been fully stripped of topsoil.
Bedrock	The BGS record identifies the majority of the site being located over the solid bedrock of Oaks Rock Sandstone formation. The south western corner of the is over Pennine Middle Coal Measures Mudstone, Siltstone and Sandstone formation. Previous Site Investigations indicate the whole site is underlain by mudstone.
Superficial Deposits	There are no superficial deposits recorded on site.
BGS Borehole Records – Nearest record (ID and Location)	There is one historic British Geological Survey (BGS) Borehole record on the site, . The borehole is shown in the southeast corner of the site. The depth is unknown and does not record any superficial deposits. The nearest off-site borehole record is reference SE30NE1 located approximately 5 m from the southeast corner of the site. This site investigation records 1.5 m of made ground over Oaks Rock Sandstone formation. No superficial deposits were recorded.
Hydrogeology and Hydrology	
Aquifer Status Bedrock	The underlying bedrock geology is designated as a Secondary A Aquifer. The Environment Agency define Secondary A Aquifers as: *"permeable strata capable of supporting water supplies at a local rather than strategic scale and in some cases forming an important source of base flow to rivers".*
Aquifer Status Superficial Deposits	There are no superficial deposits recorded on site.
Groundwater Source Protection Zones (GSPZ)	There are no ground water source protection zones beneath the site or within 1000 m of the site.
Flood Zone	The site lies west of the Cudworth Dike floodplain. The site is assessed as being in Flood Zone 1 which us defined as an area that has a low risk of fluvial flooding.
Surface Waters	The nearest water course is an unnamed water course is a surface water drain that runs along the northern boundary external to the site. The drain for the most part drains to the east and culverts under the railway line and drains into Carlton Marsh. The western part of the drain enters the access road drainage system into the public sewer. Cudworth Dike, that flows north to south, is located approximately 225 m-245 m to the east of the site.
Water Abstractions	The closest water abstraction to the site is approximately 1.6 km to the north east of the site. The abstraction is from a groundwater source. The abstraction licence (licence number 2/27/08/137/R01) for single point abstraction, was obtained by Carlton Main Brickworks Ltd for industrial, commercial and public services.
Discharge Consents	There are no active discharge consents at the site with the closest located approximately 220 m to the east of the site. The consent was obtained by Yorkshire Water Services Ltd (NE/WRA7675/001).
Other Matters	
Ecosystems	Priority Deciduous Woodland habitat lies to the immediate south of the site. There is a local nature reserve, Carlton Marsh, located approximately 50 m east of the site. The nearest SSSI is Carlton Main Brickworks that is located approximately 3.5 km south east of the site. There is no evidence of European Protected Species, Special Area of Conservation, Special Protection Area, or Ramsar site within 1.5 km of the site.
Landfill	There are no active or historic landfills beneath the site. An active landfill, E J Lidster Construction Limited, is located approximately 730 m north of the site and accepts household commercial and industrial waste. There is a historic landfill, Cudworth North Junction, located approximately 650 m north of the site. The site operated between the years 1983 and 1995 and accepted the following wastes: inert, industrial, commercial, household, special, and liquids/ sludges.

Table 2.1. Environmental Setting	
Site Details	
Pollution incidents	There have been two significant and one major pollution incidents recorded at the Former Carlton Colliery site. The major incident occurred July 12, 2004 in the north east corner of the site where sewage materials caused a major impact to water. The first pollution incident occurred in the south western are of the site on 03/08/2005, the pollutant was biodegradable materials that caused significant impact to air and a minor impact to land. The second pollution incident occurred on 18/18/2005, in the south west area of the site where atmospheric pollutants and biodegradable materials caused a significant impact to land and a minor impact to air.
Mining	The site is in a mining reporting area but is not in a development high risk area.
Radon	The site has been recorded to have a maximum radon potential 10-30% above the action level. Therefore, all new homes and/or extensions should be fitted with suitable radon protection measures.

3.0 HISTORIC LAND USE, CONTAMINATION AND CONCEPTUAL SITE MODEL

3.1 The site comprises an area of land that was used as the former Carlton Colliery and Coking Works. The site is currently derelict and significant demolition and re-working of the site has been undertaken. The ground levels at the site have been significantly raised during the operation of the colliery and by subsequent import (by others). The spoil heap predominantly consists of a mudstone material. The investigations undertaken in 2006 and 2019 show that overlying the spoil heap is a variable thickness of Made Ground (typically 1.5 to 2 m thick), consisting of predominantly of brick, clinker, ashes, soil and spent burnt shale associated with the former colliery activities. The coking works and colliery have subsequently been demolished and there are significant residual stockpiles of demolition material, clinker and coke fines. The current topography at the site is shown in Drawing 173367/RIP/D/003.

3.2 The Made Ground at the site has been tested by AAE in 2019 in accordance with good industry practice and this data supplements the historic contaminated land data. The consolidated Made Ground results, including the 2006 data, are attached in Appendix C.

3.3 The results have been assessed against the industry accepted human health standards for residential land uses with plant uptake and Public Open Space (Residential), hereafter termed POS (res). The relevant guidance values are presented in Appendix D. The exceedances of the human standards are presented in drawings 173367/RIP/D/004a (Residential) and 4b (POS(Res)).

3.4 During the investigation, due to lack of suitable Respirable Protective Equipment, AAE did not sample observed suspected asbestos fragments; however, their presence was recorded and surveyed in. Drawing 173367/RIP/D/005 shows where our asbestos trained consultants identified suspected ACM.

3.5 Table 3.1 sets out the compounds exceeding the conservative Soil Guidance Values for residential land use (with plant uptake) and the POS (Residential).

3.6 Without remediation, the land is considered unsuitable for either use as public open space or residential development.

3.7 In addition, leaching tests were undertaken on each of the types of made ground material identified. The consolidated results are presented in Appendix C. The site is underlain by mudstone and the nearest receptor of concern is the Local Nature Reserves and wetlands to the east and north east of the site. As a consequence, the Environment Quality Standards have been used as a conservative screen to determine whether leachate could pose a risk to Controlled Waters and the associated habitat. The results show elevated levels of metals above the conservative Environmental Quality Standards within the leachate, most notably nickel, zinc and sulphate. Hydrocarbons in the form of tar were observed and tested. These are in free product state, albeit relatively solid. In 2019 the product was noted from a broken pipe. Anecdotal evidence from the developer is during initial works at the wider areas of tar and hydrocarbon contamination was observed.

Table: 2.2 Summary of Determinant Exceedances against Tier 1 Soil Guidance Values for the Human Health						
Determinant	**Number of Samples**	**Units**	**Maximum Recorded Concentration**	**Average Concentration**	**Number of Exceedances against Residential with Plant Uptake**	**Number of Exceedances against POS (Residential)**
Arsenic	71	mg/kg	260	30.98	17	3
Lead	71	mg/kg	1,670	85.31	3	1
Benzene	23	mg/kg	37	4	1	1
Asbestos	28	%	0.001	0.0005	1	1
TPH (sum)	71	mg/kg	130,000	2,121.82	N/A	N/A
Aromatic (12-16)	14	mg/kg	700	60.03	1	0
Aromatic (16-21)	14	mg/kg	2,700	235.28	1	0
Aromatic (21-35)	14	mg/kg	83,000	6,962.92	1	1
Aromatic (35-44)	14	mg/kg	11,000	919.33	1	1
Naphthalene	15	mg/kg	8.20	0.95	1	
Benzo[a]anthracene	15	mg/kg	9	0.73	1	0
Benzo[a]anthracene	15	mg/kg	9	0.73	1	0
Benzo[b]fluoranthene	15	mg/kg	10	0.75	1	1
Benzo[a]pyrene	15	mg/kg	7.4	0.58	1	1
Dibenzo(a,h)Anthracene	15	mg/kg	1.3	0.16	1	1

3.8 Without remediation the site could be a source of potential pollution to the local surface waters and associated habitat.

3.9 During the investigation, it was clearly apparent that the clinker and spent shale had elevated temperatures and some stockpiles were smouldering (in-situ combustion). This is an indication of a high calorific value and smouldering is likely to have occurred since placement from the furnaces. A conservative guide is that there is a risk of smouldering in mineral deposits where calorific value is greater than 2 MJ/kg. The risk of self-combustion is considered to become significant above 7 MJ/kg. To assess the risk of self combustion in the materials a standard of 4 MJ/Kg has been used. The clinker and shales at the site exceed this level and subsequently it is not considered suitable to leave these materials below the finished formation level.

4.0 ENABLING AND REMEDIATION WORKS

Overview

4.1 The enabling works will prepare the site for the follow-on residential development phase. The detail layout and proposals in the follow-on phase are subject to a planning application. The remedial aspects of the work seek to complete the following objectives:

- Recontouring the site to create screening from the industrial land to the west and drain and attenuate surface water run off to the north east.
- Provision of an engineered platform across the site formed from acceptable materials;
- Identify, remove and treat all areas of elevated contamination, in particular tars and leachable metals; and
- Remove any subsurface obstructions associated with the structures from the former colliery work operation.

Reprofiling the site

4.2 The existing approved levels are no longer considered to be appropriate for the follow-on development. It is proposed to amend the existing approved contours to provide a formation that integrates with the land to the south and east whilst providing a visual screen from the Premier Foods industrial site. The levels also enable surface water to be attenuated and drain to the north east. The proposed contours are set out in Drawing 173367/RIP/D/006.

Material standards and management

General principals

4.3 It is proposed that the enabling platform is constructed to provide a stable platform for the follow-on contractors. The material will be formed with Class 2 materials as specified in Series 600, Specification of Highway Works. The engineered platform will have a permeability less that $5x10^{-8}$ ms^{-1} to minimise infiltration into the recovered and imported fill. It is anticipated that this material will be imported to the site as the majority of the fill identified on site was granular.

4.4 All materials will be managed in accordance with the CL:AIRE Code of Practice: Definition of Waste. The plan will provide a cogent management regime for tracking the arisings from the excavated materials, treatment and reinstatement.

Environmental quality

4.5 The top 1 m of the engineered formation will meet with human health standards for Public Open Space (residential). These standards are termed as POS (res). These standards are set out in Appendix D. These standards are considered protective of workers and users of the site and amenity areas.

4.6 In addition to the human health standards, all material used in the recontouring of the site, including the human health cap, must comply with groundwater protection standards. These standards will be derived using industry accepted hydrogeological modelling software and informed by site specific data. Models include CONSIM and the Environment Agency Remedial Target Methodology (P20 Spreadsheets). These models will be informed by a further site investigation assessing the groundwater regime. Until the models are submitted and approved the leachate (LS 10:1) method must comply with at least Environmental Quality Standards. The Tier 1 Water Guidance Values are attached in Appendix D.

Excavation Management Regime

4.7 To ensure the site is fully remediated there will be a site wide excavation to the clay/mudstone stratum. In addition, all stockpiles will be broken out, inspected, tested and processed as required. Where the material is unacceptable to remain, it will be transferred from the site.

4.8 The excavation process and management of the different types of material will follow the following principals:

- Large concrete, brick structures will be fully removed from the underlying strata. It is anticipated that these materials will be stockpiled for onsite recovery. The recycled aggregate for use on site will accord with the WRAP aggregates protocol. The material will be used as granular fill for working platforms, capping and sub-base, haul routes and clean uncontaminated material for use in drainage;
- Unrecoverable materials, including timber, metals and green waste will be segregated, bulked up and transferred from site;
- All materials with potentially high calorific value (>4 MJ/Kg) or showing evidence of smouldering will be segregated and transferred from the site. The material may be screened to remove inert oversize from its matrix;
- Stratum showing signs of hydrocarbon impact will be excavated and treated in a designated permitted mineral management area;
- Mixed materials of unknown quality will be stockpiled and tested to determine the need for treatment or for use. These will be managed in batches of no more than 500 cu m. Treatment options include:
  - Biopiling;
  - Soil washing;
  - Stabilisation;
  - Segregation of unacceptable materials (including picking); and
  - Re-sizing.

4.9 The treated materials will be validated to demonstrate they are suitable for use as bulk fill (below the human health cap) or within the human health cap. Testing of these materials will be undertaken against the standards set out in Appendix X at a frequency of 1 test per 500 cu m.

4.10 The proposed topographical levels are presented in Drawing 173366/RIP/D/006. The Material Management Drawings are presented in Appendix F. The estimate material management volumes are presented in Table 4.1.below. At this stage the volumes provided are estimated and are provided for indicative purposes only.

Table 4.1 Summary of Anticipated Volumes of Enabling Works Materials

Activity	Est total volume	Treatment/re-use within remedial works or by follow on contractors	Imported / re-use of fill to form formation (cum)	Est. removal from site for onward use/recovery/ disposal
Materials in stockpiles	85,000	70,500		14,500
Remediation works of existing Made Ground	75,000	24,000		51,000
Import or re-use of on-site materials	117,000		117,000	

4.11 As set out in Appendix F, it is anticipated that the material management activities will generate over 45,000 cu m of aggregate, generated in accordance with the WRAP Aggregates Protocol. These materials will be stockpiled on site and made available for the follow-on developers for use in the infrastructure works.

4.12 Given the uncertainty regarding the quality of the existing Made Ground and subsequently treatability of materials, the Environmental Permit, will cover the placement of all materials, including those from on-site treatment operations.

Mineral Treatment and Remedial Area (MTRA)

4.13 The processing and treatment of minerals will be undertaken on an impermeable surface. The exact location on site is subject to be determined. The area will be integrated into the Environmental Permit.

4.14 The MTRA will be supervised by a Technically Competent Person (TCP), as certificated by the WAMITAB, the waste industry training and advisory service. The TCP will be on site for at least 1 day per week during remedial and treatment works.

Validation requirements

4.15 As part of the enabling works a validation report will be prepared once the works are completed. It is anticipated they will be complete 2 years following re-commencement of the works. The validation report will detail the following:

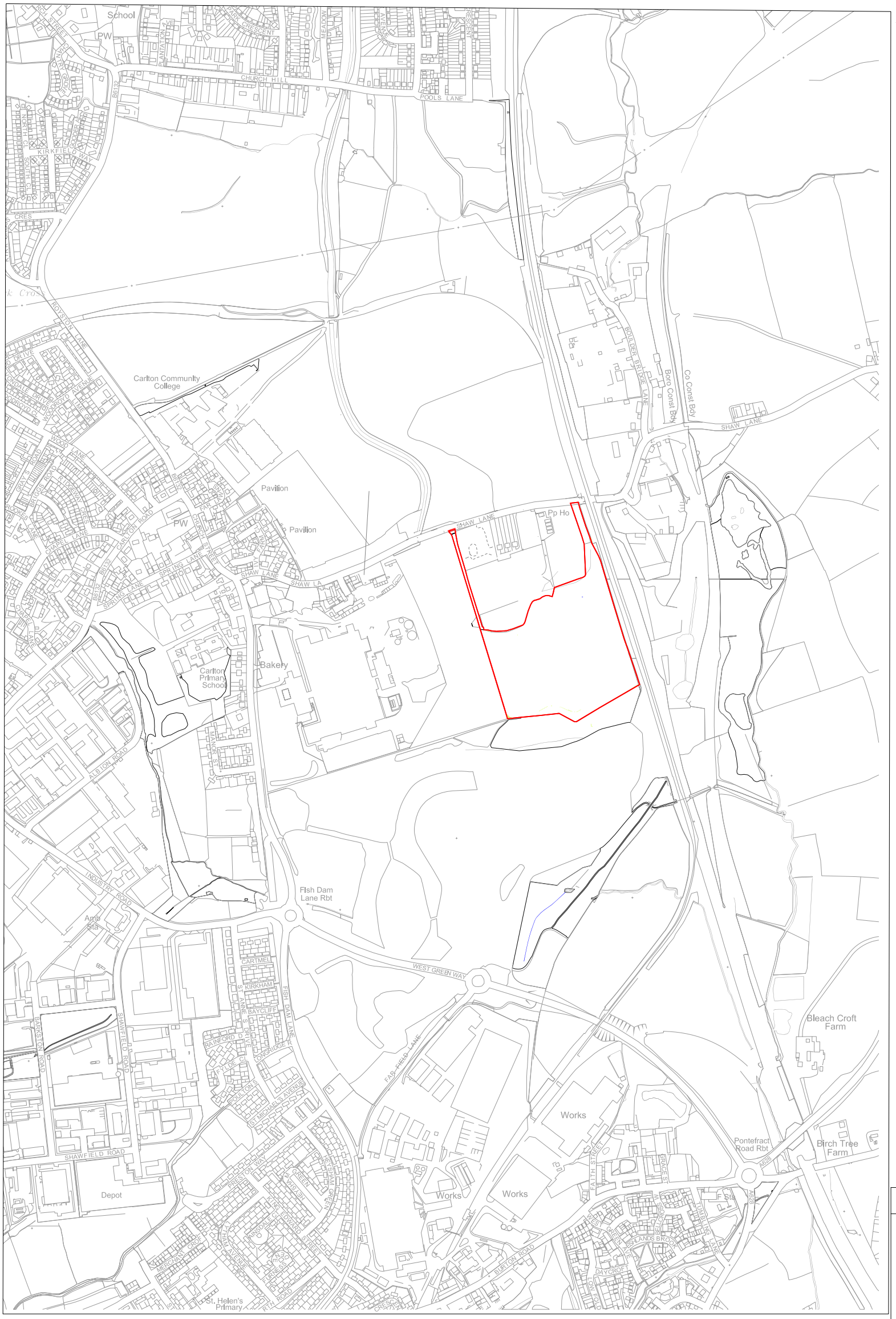
- Full details and volumes of material encountered and transferred off site. This will set out whether the materials were transferred for disposal or for on-site recovery;
- Test results showing material imported, recovered and placed meets the approved remedial criteria;
- Test data showing the thickness of the human health cap; and
- Final topographical of survey the finished formation levels.

Regulatory requirements

4.16 Prior to the works being completed the following regulatory requirements must be met:

- Planning Permission will be varied, increasing programme duration for the works, revising the finished enabling works formation levels and defining the material quality standards;
- The site-specific standards for the protection of controlled waters are to be developed and submitted to the Council for approval;
- The existing Environmental Permit varied adjusting for the required engineered fill requirements and the treatment activities to be undertaken at the site; and
- Pre-commencement conditions have been approved.

Drawings



Key:

Planning Application Boundary

Rev.	Details	Drawn / Chkd.	Date

Project

173367
Carlton Colliery Restoration
Barnsley

Title

Site Location Plan

AA Environmental Ltd
Units 4 to 8
Cholswell Court
Shippon
Abingdon
Oxon. OX13 6HX

T: (01235) 536042
F: (01235) 523849
info@aae-llp.com
www.aae-llp.com

Environmental Consultants

Scale	Date	Drg. No.	Rev.
1:10,000@A3	Sept '19	173367/RIP/D/001	
	Drawn: JM / Chkd.: ML		

Key:

- Planning Application Boundary
- AAe April 2019 Trial Pit Location
- AAe April 2019 Stockpile Sample Location
- Environ Trial Pit Location
- Environ Window Sample Location
- Environ Surface Sample Location

Notes:
1. The historic underlay shown is from an 1893 drawing.

Rev.	Details	Drawn / Chkd.	Date

Project

173367
Carlton Colliery Restoration
Barnsley

Title

Site Investigaion Plan

AA Environmental Ltd
Units 4-8
Cholswell Court
Shippon Abingdon
Oxon OX13 6HX

T:(01235) 536042
F:(01235) 523849
info@aae-llp.com
www.aae-llp.com

Environmental Consultants

Scale	Date	Drg. No.	Rev.
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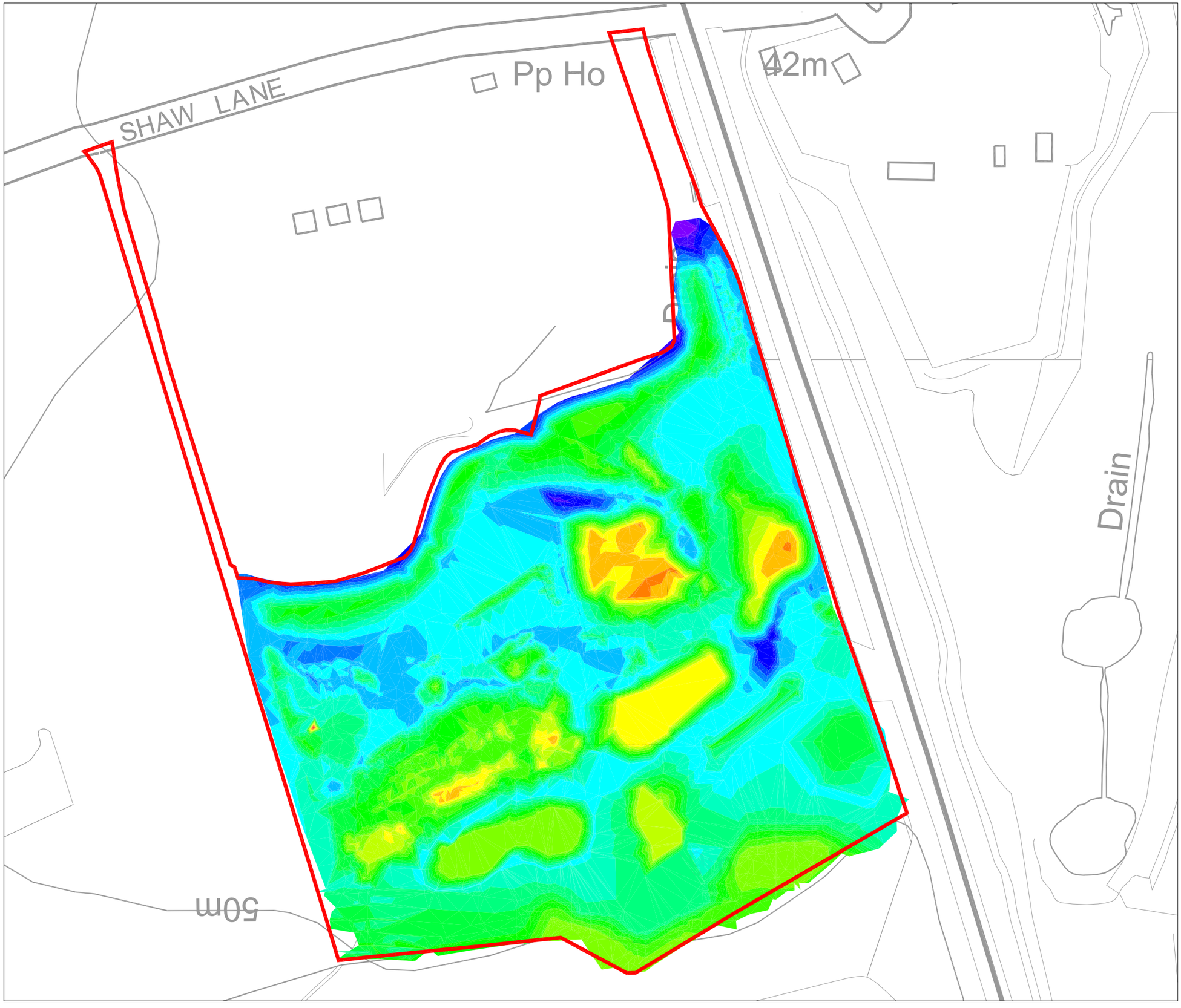

Key:

Planning Application Boundary

Colour, Band, Area

Colour, Band, Area				
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43.70	44.40	0.1%	95.87
44.40	45.10	0.2%	147.21
45.10	45.80	0.7%	561.98
45.80	46.50	1.0%	802.49
46.50	47.20	1.6%	1306.70
47.20	47.90	6.9%	5785.71
47.90	48.60	20.6%	17351.86
48.60	49.30	15.8%	13282.39
49.30	50.00	14.5%	12179.60
50.00	50.70	11.0%	9216.57
50.70	51.40	6.9%	5833.27
51.40	52.10	6.7%	5632.57
52.10	52.80	6.9%	5818.95
52.80	53.50	2.5%	2122.33
53.50	54.20	3.0%	2558.81
54.20	54.90	1.6%	1306.69
54.90	55.60	0.2%	151.89
55.60	56.30	0.0%	1.01
56.30	57.00	0.0%	0.32

Notes:

1. Topographical levels were interpreted from a survey carried out by an AA Environmental operative in April 2019 as well as previous topographical data including third party data.

Rev.	Details	Drawn / Chkd.	Date

Project

173367
Carlton Colliery Restoration
Barnsley

Title

Existing Topography

AA Environmental Ltd
Units 4-8
Cholswell Court
Shippon Abingdon
Oxon OX13 6HX

T:(01235) 536042
F:(01235) 523849
info@aae-llp.com
www.aae-llp.com

Environmental Consultants

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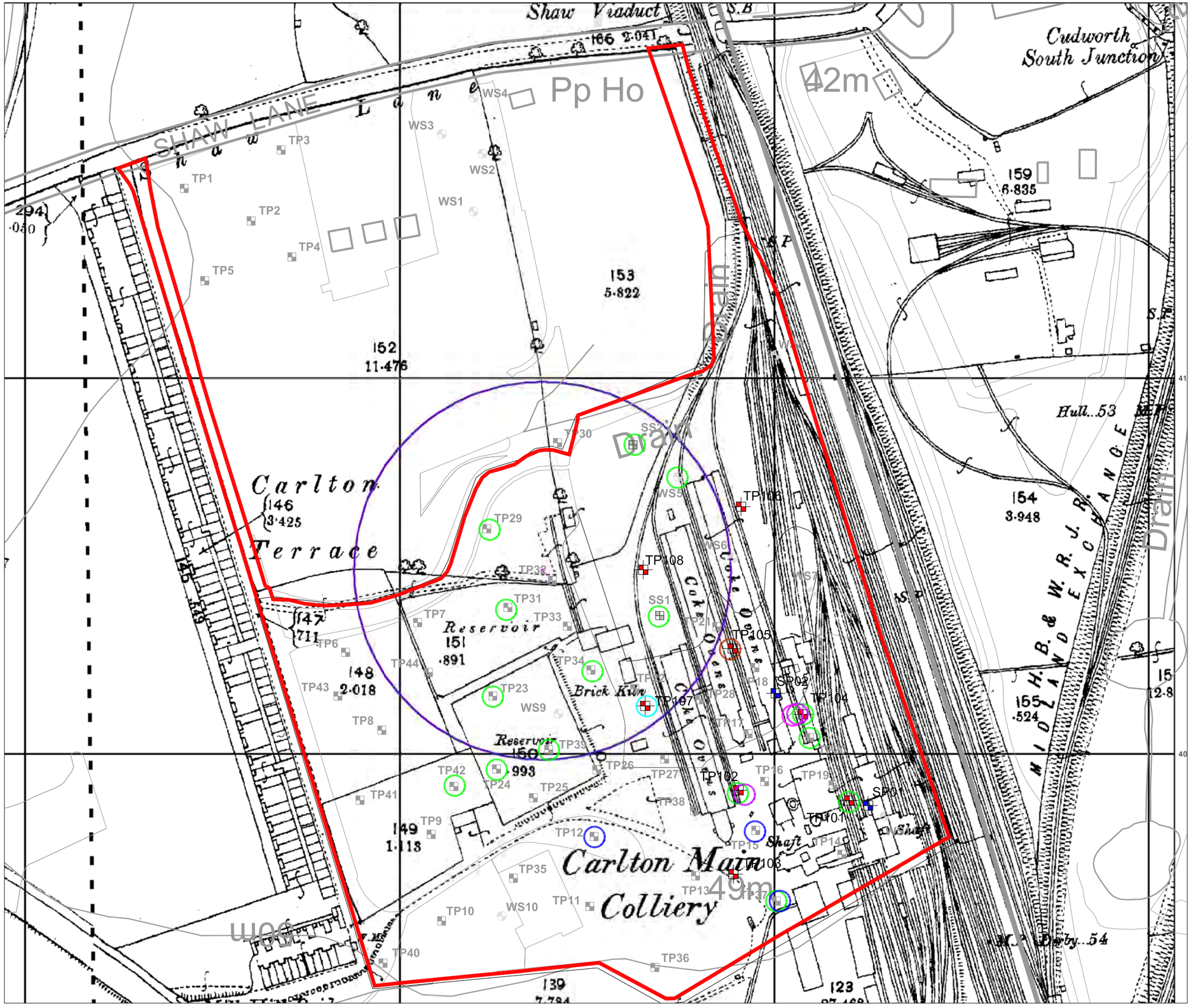

Key:

- Site Boundary
- AAe April 2019 Trial Pit Location
- AAe April 2019 Stockpile Sample Location
- Environ Trial Pit Location
- Environ Window Sample Location
- Environ Surface Sample Location
- Arsenic Exceedance
- Lead Exceedance
- TPH Exceedance
- PAH Exceedance
- Quantified Asbestos Exceedance
- Benzene Exceedance

Notes:

1. The historic underlay shown is from an 1893 drawing.

Rev.	Details	Drawn / Chkd.	Date

Project

173367
Carlton Colliery Restoration
Barnsley

Title

Land Quality Exceedances
Residential with Plant Uptake

AA Environmental Ltd
Units 4-8
Cholswell Court
Shippon Abingdon
Oxon OX13 6HX

T:(01235) 536042
F:(01235) 523849
info@aae-llp.com
www.aae-llp.com

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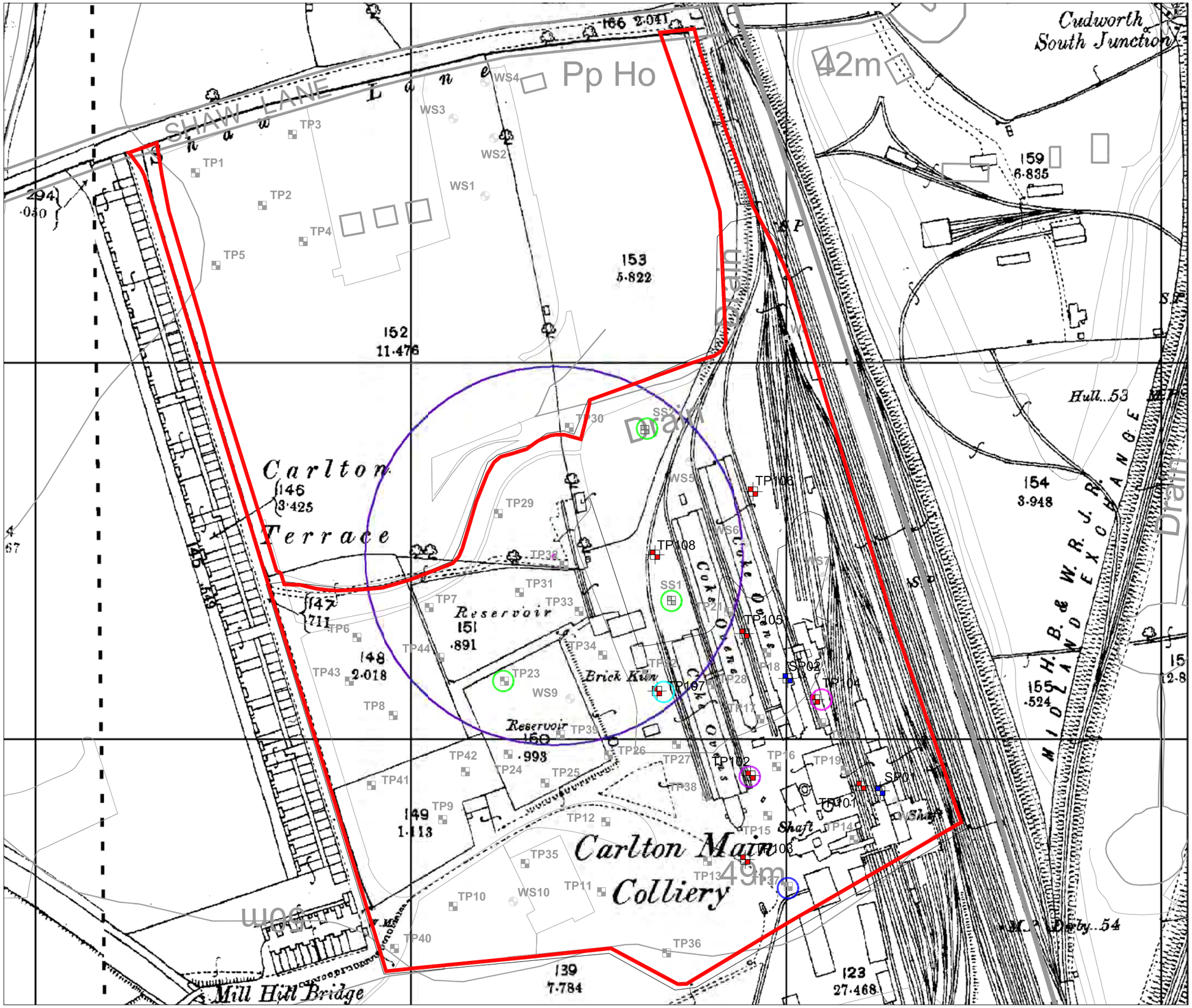

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- PAH Exceedance
- Quantified Asbestos Exceedance

Notes:

1. The historic underlay shown is from an 1893 drawing.

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Project

173367
Carlton Colliery Restoration
Barnsley

Title

Land Quality Exceedances
Public Open Space, Residential (POS RES)

AA Environmental Ltd
Units 4-8
Cholswell Court
Shippon Abingdon
Oxon OX13 6HX

T:(01235) 536042
F:(01235) 523849
info@aae-llp.com
www.aae-llp.com

Environmental Consultants

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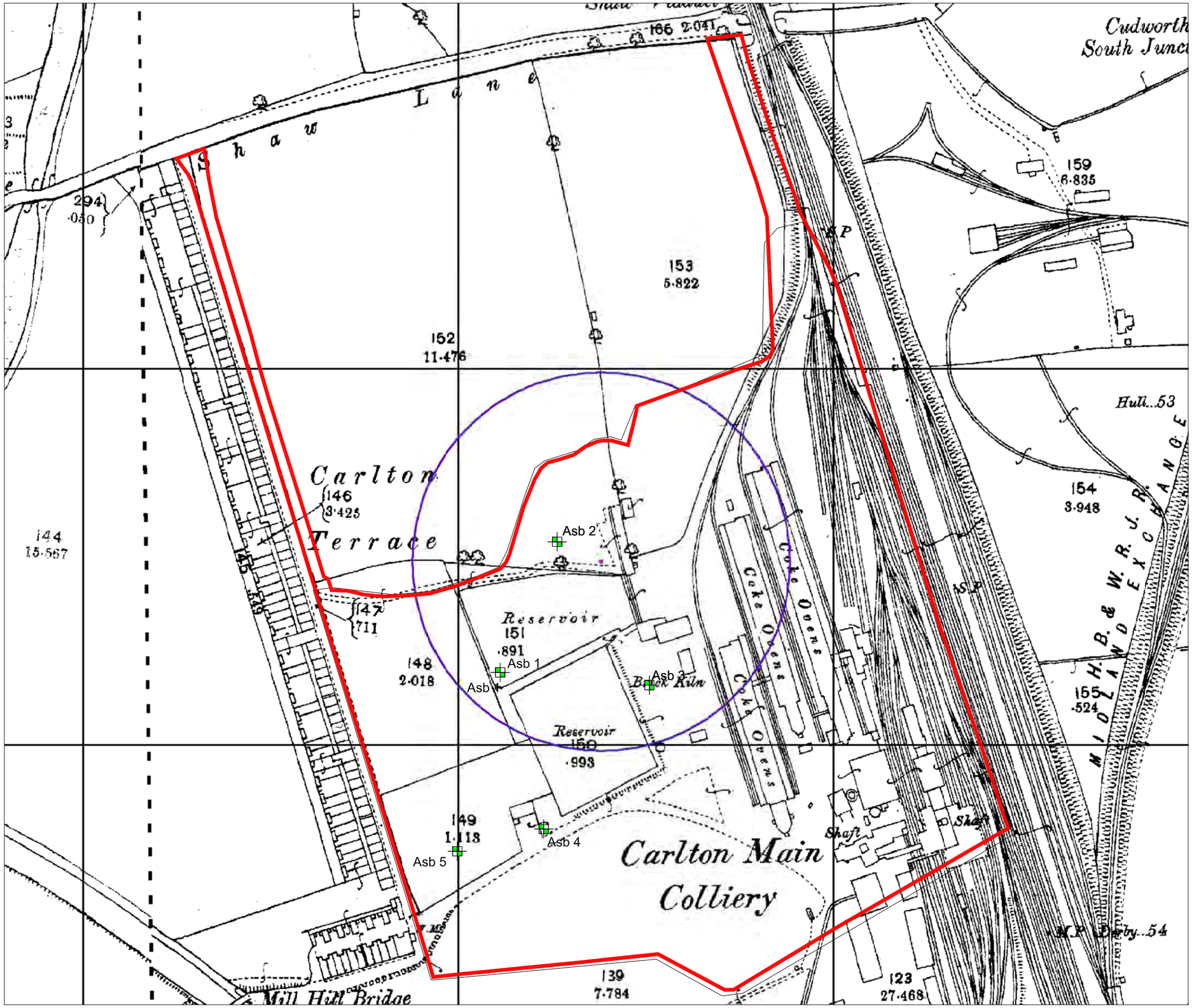

Key:

- Planning Application Boundary
- AAe Suspected ACM Location (April 2019)

Notes:

1. The locations of potential ACM were surveyed in by an AAe Operative during a topographical survey of the site in April 2019.
2. The historic underlay is from an 1893 drawing of the site.

Rev.	Details	Drawn / Chkd.	Date

Project

173367
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Suspected Asbestos Location Plan

AA Environmental Ltd
Units 4-8
Cholswell Court
Shippon Abingdon
Oxon OX13 6HX

T:(01235) 536042
F:(01235) 523849
info@aae-llp.com
www.aae-llp.com

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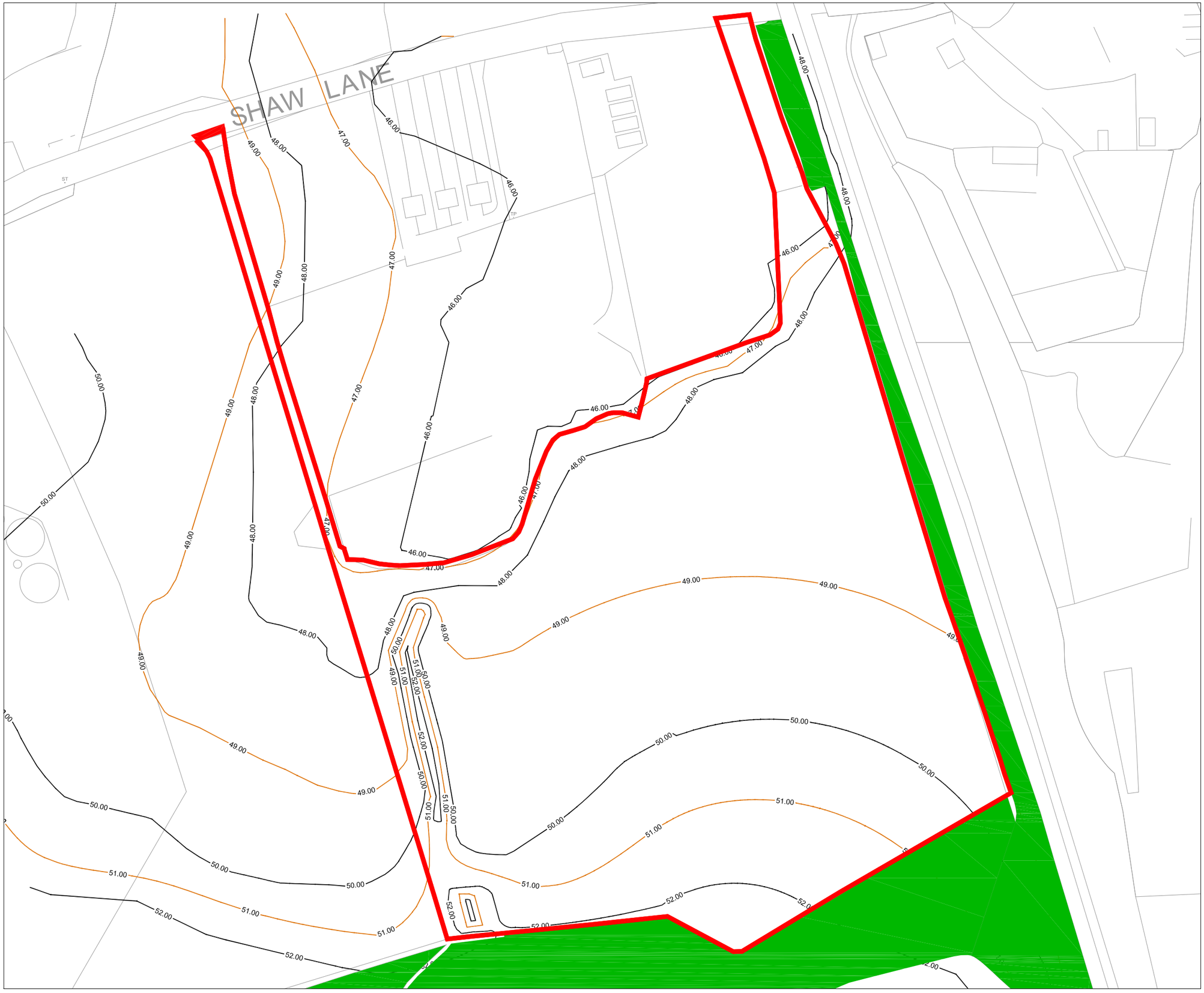
1:2000@A3	Sept '19	173367/RIP/D/005	
	Drawn: JM / Chkd.: ML		



Key:

- Planning Application Boundary
- Proposed Finished 1 m Contours (m AOD)
- Proposed Finished 2 m Contours (m AOD)
- Existing Woodland Feature

Rev.	Details	Drawn / Chkd.	Date

Project

173367
Carlton Colliery Restoration
Barnsley

Title

Proposed Development Platform (Levels)

AA Environmental Ltd
Units 4-8
Cholswell Court
Shippon Abingdon
Oxon OX13 6HX

T:(01235) 536042
F:(01235) 523849
Info@aae-llp.com
www.aae-llp.com

Environmental Consultants

Scale	Date	Drg. No.	Rev.
1:2000@A3	Sept '19	173367/RIP/D/006	
	Drawn: JM / Chkd.: ML		

APPENDIX A

2008 – 2014 Remediation Strategy & Planning Approval

FGB Fennell, Green & Bates
MINING ENGINEERS, SURVEYORS & ENVIRONMENTAL CONSULTANTS

REMEDIATION STRATEGY

FOR

FORMER CARLTON COLLIERY

PLANNING REF: 2007/1365

ON BEHALF OF

DTS ENVIRONMENTAL LTD

DECEMBER 2008

Produced By:

Fennell Green and Bates
25 Smyth Street
Wakefield
WF1 1ED

Tel: 01924 372197
Fax: 01924 385559

REMEDIATION STRATEGY
FORMER CARLTON COLLIERY

CONTENTS

REMEDIATION STRATEGY: FORMER CARLTON COLLIERY, SHAW LANE, CARLTON

1. INTRODUCTION

1.1 Fennell Green & Bates have been instructed by the owners of the land, DTS Environmental to provide a report to discharge planning condition 32 of planning permission 2007/1365 which relates to a remediation scheme to be submitted which should provide a general overview of the remediation objectives to ensure that the site is remediated suitable for the proposed use.

Document Reviews

1.2 Previous documents relating to the site have been reviewed in order to develop the remediation strategy. The documents available comprise:

- FGB's Phase I & II Contamination Audit - March 2006
- Cromwell Wood Site Investigation – April 2006

Objectives

1.3 The objective of the remediation strategy is to outline the remediation works required to ensure that the development site can be considered 'suitable for use'. The remediation works are to be designed, implemented and validated to clean-up standards based on published UK guidelines and quantitative risk assessment criteria in accordance with current Environment Agency Guidelines.

1.4 This remediation strategy describes the objectives of the remediation works, methodology for the works, health, safety and environmental control measures and the validation procedures.

2. BACKGROUND

Site Details

2.1 The site, which lies to the western flank of the former main Leeds to Sheffield line, and to the east of Manor Bakeries in Carlton near Barnsley, is situated to the south of Shaw Lane and comprises of an area of land that is derelict and in some places bare.

2.2 The scheme proposes the comprehensive restoration of the site, involving several operations which will involve the removal of approximately 30,000 cubic metres of red shale and the capping of the colliery spoil with clay material.

2.3 The review of previous land uses indicated that a number of contaminative uses had occurred on the site. These included a colliery, coking plant, spoil heaps, railways and railway sidings and infilled reservoirs. Contaminants associated with these uses may include organic residues (eg PAH, metals, oils, solvents tars, phenols, cyanides, sulphur compounds and asbestos)

3. GEOLOGY, HYDROLOGY & HYDROGEOLOGY

3.1 Superficial Geology

The proposed Shaw Lane development site is located on quaternary alluvium (i.e. river lain deposits) comprised of clays, sands, silts and gravels.

3.2 Major underlying Geology

The district of Barnsley lies on the Carboniferous Middle Coal Measures. The locality is situated on mudstone and shale sequence, between the Warmfield Rock and Oaks Rock, towards the base of the succession. The area, as is typical of the Carboniferous, is highly faulted. Three large north east-southwest striking faults can be observed on the geological plan. Two are north of the site, the other south. The Shaw Lane site is on the downthrow side of the northern fault and the up throw side of the southern. Out crops of the Warmfield Marine band and Oaks Rock sandstone occurs in the western corner of the site.

3.3 Hydrology

The nearest ground water courses are the two dikes, the first of which flows eastwards into Shaw dike which then flows south and feeds Carlton Marsh. This is joined just below the site by Boulder Bridge dike. The marsh obviously has high levels of surface water courses draining from the surrounding land to the east and north. The confluence of dikes leave the marsh as Cudworth dike and flows southward. Drains around the area all feed into the dykes. Surface water flow occurs down slope towards the east of the site into the installed drainage system. Previous investigation indicates that these drain then pass beneath the embankment and into the Carlton Marsh.

3.4 Hydrogeology

The sandstones found within the coal measures are generally fine grained and well cemented and therefore demonstrate low levels of the porosity or intergranular permeability often observed in other sandstones. Ground water movement in the area is therefore likely to occur along faults and fractures and between horizons with less permeable mudstone and shale layers. Groundwaters, moving along impermeable horizons will move down dip. The direction of the younger rocks of the succession, shown on the geological map, would suggest a northeast dip direction (there is no indication of degree of dip). Any water travelling between horizons would therefore flow northeast towards the dikes.

The strata immediately beneath the area has been classified as being a minor aquifer with intermediate permeability whilst the adjacent area, on which the marsh is located, is defined as having very low permeability-hence it's ability to retain surface water and form a marsh. Due to the substantial lateral variation of lithological groups within the Coal Measures, any groundwater movement can vary over a relatively short distance. The heterogeneity within the sandstone also means that, when an aquifer is present, it is unlikely to be wide spread. Borehole data taken from a shaft in Carlton Main Colliery shows water strikes within the Oaks Rock. The exact depth of these strikes is not supplied but this would be indicative of an aquifer being present somewhere between the top and base of this sequence i.e. between 6.83m and 30.7m depth.

4. PREVIOUS INVESTIGATIONS

4.1 23 soil samples were taken for analysis for the following metals and other compounds. Full trial pit logs can be found in Appendix A of the report.

TABLE PIIA1 Contaminants Tested For	
Metal	**Hydrocarbons**
Arsenic	BTEX
Cadmium	individual PAHs
Chromium	Total PAH
Copper	PCB's
Lead	Phenols
Mercury	Phythalates
Nickel	Ethers
Selenium	Benzenes
Zinc	Other Chlorinated Solvents

All pre existing sample analysis was carried out TechniChem Laboratories Ltd on the 24th January 2001
The full analytical report from this sampling is included in Appendix B of this report and the results were assessed using the guidelines being used at the time, i.e. the early SGV's and the Dutch List of Trigger Values.

Soil Sampling Results

4.2 Soil Guideline Values
Soil guideline values are a screening tool for use in the assessment of land affected by contamination. They can be used to assess the risks posed to human health from exposure to soil contamination in relation to land use. They provide trigger values for the contaminant being considered that may pose a risk to human health if samples are found to exceed them. Current published SGV's are reproduced in the table below.

Soil guideline values (mg kg^{-1} dry weight soil)									
	Residential with plant uptake			Residential without plant uptake			Industrial		
Arsenic	20			20			500		
Cadmium	pH6	pH7	pH8	30			100		
	1	2	8						
Chromium	130			200			5000		
Mercury	8			15			480		
Nickel	50			75			500		
Selenium	35			260			8000		
Lead	450			450			750		
Toluene *	1% som	2.5% som	5% som	1% som	2.5% som	5% som	1% som	2.5% som	5% som
	3	7	14	3	8	15	150	350	680
Ethylbenzene *	1% som	2.5% som	5% som	1% som	2.5% som	5% som	1% som	2.5% som	5% som
	9	21	41	16	41	80	48000		

* %SOM = percentage of soil organic matter

The Phase 1 investigation undertaken by Fennell Green & Bates highlighted the likely presence of various heavy metals and related contaminants. the results obtained from the samples taken do, as expected show elevated levels of metals such as lead and Chromium as well as the presence of PAHs and other hydrocarbons.

The samples show elevated levels of the following:

i) Arsenic
ii) Lead
iii) Nickel
iv) Various Polycyclic Aromatic Hydrocarbons (PAHs)

5. REMEDIATION STRATEGY

Outline

5.1 The remediation works are required to be undertaken for the following reasons:

- To reduce liabilities associated with ground conditions by reclaiming the site within a framework of risk assessment;
- To facilitate successful redevelopment of the site for proposed industrial use within the existing constraints;
- To ensure that the public and residents on or around the site are not exposed to contamination;
- To make the site safe for future occupants;
- To comply with current UK environmental legislation; and
- To provide a sustainable and cost effective solution.

Type, form and scale of contamination

Breakdown of Contaminants

Arsenic

5.2 Arsenic is a common contaminant through mining and ore processing but it is also prevalent within the Coal Measures due to common presence of the accessory mineral arseno pyrite. This pyrite (fools gold) is concentrated during coal processing and the higher concentrations are usually found on the tip where the wasted spoil or material from the screen has been placed.

5.3 The results showed that arsenic levels exceeded the recommended SGV's of 20mg kg^{-1} in 18 of the soil samples. The results produced a range of 2mg -260mg kg^{-1} with a calculated mean is 31mg. However, these are still within an acceptable range given that the land is to be developed for industrial use.

5.4 The two common oxides of arsenic; arsenate and arsenite, are strongly absorbed onto iron oxides, clay minerals and organic compounds. All 3 of the above being present on site would explain why the attenuation of arsenic to such high levels. It also means that whilst remedial work needs to be carried out to remove the pathway for the arsenic migration so it no longer poses a threat to human health; it is unlikely to pose any risk to the local ground or surface water.

5.5 The dominant exposure pathway of arsenic is inhalation and ingestion of arsenic bearing soil and dust

Lead

5.6 Lead levels within the soil samples are raised but only actually exceed the SGV in one sample. This however is nearly 3 times greater than the recommended 450mg kg^{-1} the fact that this level is not reflected by any of the other results would suggest it is localised and could be due to works carried out in the rope shop at the colliery.

Due to its neurotoxic affects, lead contamination is an important consideration in residential developments due to the likely presence of children in some period of its future usage.

Nickel

5.7 The nickel concentrations within the samples are raised but only exceed the SGV limit for residential use with plant uptake in 2 of the samples.

The pathway of uptake is highly important when considering nickel as the toxic affects differ accordingly. Ingestion can cause foetotoxic and reproductive effects, inhalation has major repercussions for the respiratory system whilst dermatological absorption/ contact can cause major allergy related problems.

No future residential development is considered at this present time and the proposed remediation strategy will ensure severance of any pollutant linkage between the human source and receptors.

5.8 PAH's

PAH's were found to be elevated in trial pits 14 and 16. Reference has been made to the original trial pit location and logs. These trial pits were located near to the adjacent railway land. In trial pit 14, a railway sleeper was encountered. This is considered to be the likely source of the contamination although it is not inconceivable that some of the hydrocarbons are coal derived.

Leachate Results

5.9 Leachate testing was carried out on 4 soil samples, the results showed slightly raised levels of Arsenic, zinc and nickel but these were below the UK DWS (drinking water Standard) and therefore indicate low risk of the production of a contaminate containing leachate.

Water sampling results

5.10 Four water samples were taken and analysed. The results showed only raised levels in nickel and this was only within one sample which contained 53µg which is above the UK Drinking Water Standard (DWS).

Remediation Works to be Undertaken

5.11 The remediation and development of a site should incorporate a programme of works through good management techniques and encapsulating waste or contaminating materials to sever any pathways between contaminants and the surface, both off and on site, or to groundwater on the surface or via drains or spring lines.

5.12 The receptors to be considered are those persons involved in the construction and development of the site and the person or persons who make future use of it upon its completion.

5.13 The only contaminants present in amounts extensive or high enough to possibly cause future problems is lead and PAH's.

5.14 The risks and effects of a contaminant are dependent on length of exposure as well as the quantity of contaminant exposed too. The workers will only be exposed for a short space of time and therefore should be at minimal risk. They will however be required to observe strict hygiene regimes to ensure that this risk is reduced as much as is possible. This would include the use of dust masks when working on the site and the careful washing of hands before contact with food or other possible source: receptor bridging objects.

5.15 The remediation will need to sever the source from the receptor in the areas of soft landscaping as these pose the greatest risk and are the most likely pathway. The site will be regraded and levelled up to provide a cross fall for drainage to the sealed and drained former colliery access road. The site should be overlain by a 2m thick barrier consisting of inert construction and demolition material and 1m of clay with a permeability of 1 $x10^{-7}ms^{-1}$. This will then be finished with 0.5m of subsoil and in places overlain by 0.2m of topsoil made material.

5.16 The material should be laid in layers of 0.25m, for the coarser sized material, and the final 1m layer of the clay material should be lain in the 0.25m layers and compacted with earthmoving plant.

5.17 The above should effectively sever all pathways from contaminant to receptor and also prevent the downward percolation of water through the contaminated soil thus also severing the pathway from contaminant to groundwater.

6. SITE MANAGEMENT PROCEDURES

6.1 Appropriate paperwork for all excavators and drivers will be checked to ensure fit for use equipment and appropriately trained personnel.

Imported Material and Backfilling

6.2 It is not anticipated that there will be a requirement for any additional fill, other than clean imported crushed limestone for the maintenance of the access roads, clean, excavation material and soils, clay to cap off the colliery spoil and green shredded waste for the restoration scheme. . However, should any fill material subsequently be deemed necessary the imported material shall NOT contain the following:

- Colliery Shales;
- Ironstone Shales;
- Materials containing sulphates;
- Materials susceptible to frost damage, weathering or mechanical damage;
- Biodegradable materials such as wood.

6.6 Any fill areas shall be built up evenly over the entire area, unless the contract requires otherwise, and sufficient camber shall be maintained at all times to enable

surface water to drain from them. The containment or disposal of surface water during the construction period shall be the Company's responsibility. The Company shall ensure that excavations and areas to be filled are free from organic material, loose soil, rubbish and standing water.

Health and Safety

6.7 The works should be carried out under the supervision of the Principle Contractor in accordance with the Construction (Design & Management) Regulations 2007(CDM Regulations).

7. MATTERS ARISING DURING REMEDIATION

7.1 The reasons for any deviation from the planned remediation strategy will be discussed with the Environmental Engineer.

7.2 Additional contamination arising during the course of remediation or the construction phase will be inspected by the Environmental Engineer for extent, magnitude and risk. All details will be recorded for the purposes of validation and samples taken if necessary.

7.3 The Environmental Engineer will notify the Planning Officer of any necessary deviation from the Proposed Remediation Strategy or additional remediation requirements that may become apparent arising as a result of unexpected ground conditions or contamination being encountered.

8. VALIDATION OF REMEDIATION

8.1 To ensure that the remediation objectives are met the works will be validated for the duration of the redevelopment as follows:

- Works undertaken will be visually inspected and photographed;
- The source, type and quantity of material brought on to site will be recorded;
- Soils brought on to site will be sampled and tested appropriately and will not exceed the following clean-up standards:

Contaminant	Quantity (plant uptake)	Quantity (without plant uptake)	Units
Arsenic	20	20	mg/kg
Cadmium	2	30	mg/kg
Chromium	130	200	mg/kg
Copper	111	2080	mg/kg
Mercury	8	15	mg/kg
Nickel	50	75	mg/kg
Lead	450	450	mg/kg
Selenium	35	260	mg/kg
Zinc	330	8250	mg/kg

Ethyl benzene	41	80	mg/kg
Toluene	14	15	mg/kg
Benzo-a-pyrene	1.09	1.32	mg/kg
Dibenzo[a,h]anthracene	1.1	1.32	mg/kg
Fluorene	184	2700	mg/kg
Napthalene	17	33.7	mg/kg
Petroleum Hydrocarbons Aliphatic/Aromatic	As per LQM CIEH GACs	As per LQM CIEH GACs	

8.2 It should be noted, however, that the site is located within a coal mining area in close proximity to coal burning power stations and industries connected with coal. Many of the soils within the district contain greater concentrations of organic compounds, such as benzo[a]pyrene and metals, such as arsenic and copper, than other parts of the country. Soils imported from the local area may contain coal fragments which can increase the level of these compounds in the soil without necessarily increasing the risk to human health due to the compounds being chemically bonded within the coal fragments.

8.3 A validation report will be issued upon complete of works that complies with the Environment Agency Guidance on the requirements for Contaminated Land Reports – Version 1 July 2005 and includes the following elements:

- A description of the site background;
- A summary of all relevant site investigation reports;
- A statement of the remediation objectives;
- A description of the remediation works;
- Any further sample locations, chemical testing;
- Summary data plots and tables relating to clean-up criteria;
- Project photographs;
- As built drawings;
- Records of imported materials.
- Confirmation that remediation objectives have been met

9. LIMITS AND LIABILITY

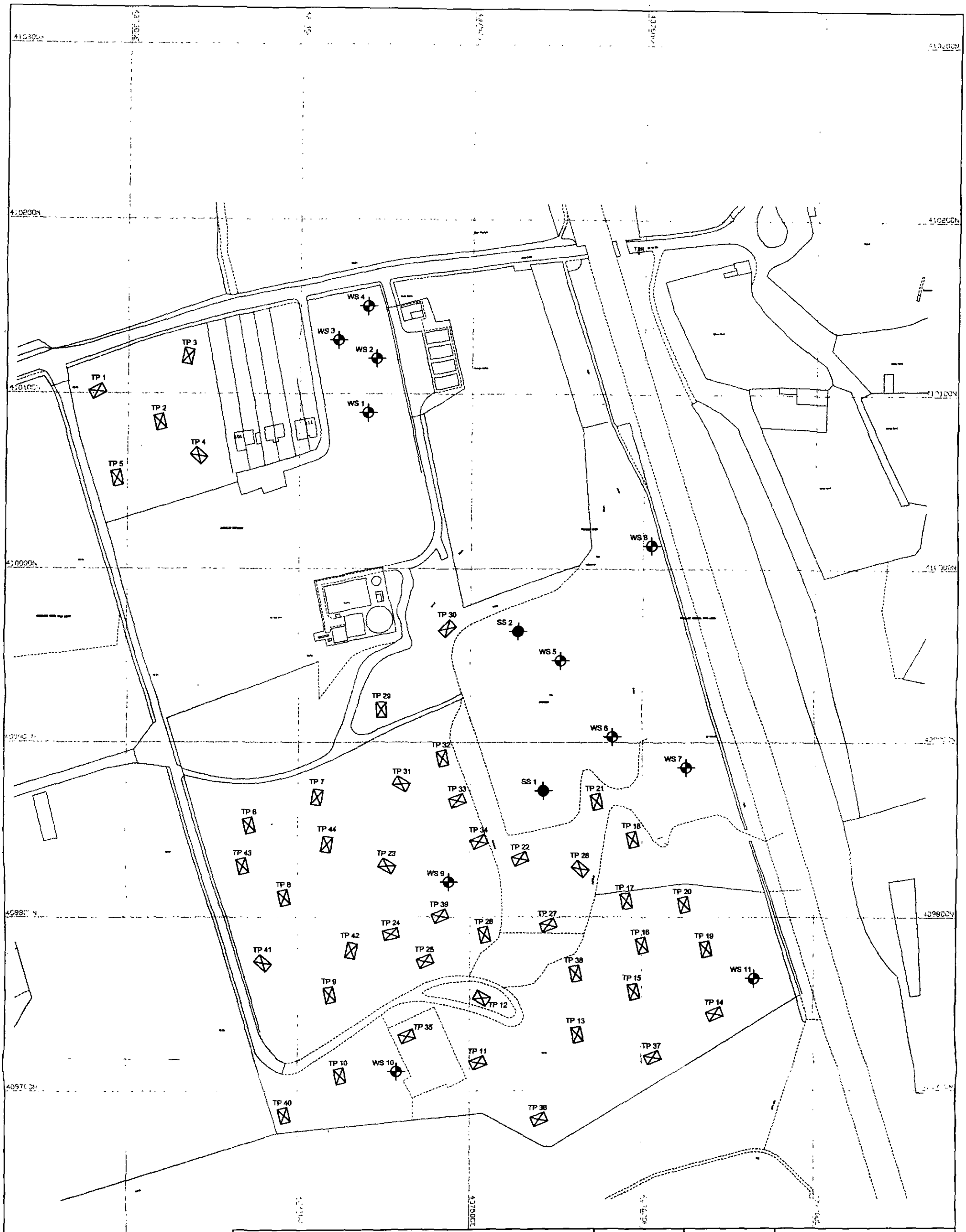
9.1 Fennell, Green and Bates have produced this report on the site at Carlton Colliery solely for the use of the client and his professional advisors on matters appertaining to the application for discharging planning conditions for the redevelopment of the aforementioned site. Both the findings and opinions expressed within the report are relevant to the period of the site visit for the part of the site indicated on the boundary plan. The site may be subject to change over time and the report *therefore should not be relied upon for investigations or remediation undertaken at* a later date.

9.2 No part of the report may be reproduced or relied upon by a third party who may subsequently advise of the client or undertake his own investigation within the prior written consent of Fennell, Green and Bates. It is recommended that any other potential developer consult with the writer of this report prior to undertaking any site investigation work.

Author:

John Carlon BEng (Hons) CEng MIMM MRICS MIQ MCIWM
Principal Consulting Engineer
December 2008

APPENDIX A



DTS

Trial Pit Locations

SS	JC	
DTS/TPL-2008-01	March 2006	1:2000

FENNELL GREEN & BATES
25 Smyth Street
Wakefield
West Yorkshire
WF1 1ED
Tel - 01924 372197
Fax - 01924 385559
Email - fgb@fgb-surveyors.co.uk

Trial Pit Number	TP1	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	03/01/01	Excavation Method:	Mechanical Excavator	Logged By: DD
Ground Level:		Trial Pit Dimensions:		

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend	Description
	ND	0.40	D			0.40	Loose brown clayey TOPSOIL.
							Orange/grey CLAY, becoming grey with depth.
	ND	1.10	D	1		1.10	Black laminated CLAY.
						1.50	
						1.60	Grey medium grained SANDSTONE.
	ND	2.10	D	2			Loose grey MUDSTONE.
				3		3.20	End of Trial Pit
				4			
				5			
				6			
				7			
				8			
				9			

Remarks: 1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP2	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	03/01/01	Excavation Method:	Mechanical Excavator	Logged By: DD
Ground Level		Trial Pit Dimensions:		

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend	Description
	ND	0.30	D			0.30	Grass overlying loose brown clayey TOPSOIL.
							Brown CLAY with dark brown organic material.
	ND	0.90	D	1		0.90	Black laminated CLAY.
						1.20	
	ND	1.40	D			1.30	Very stiff grey MUDSTONE.
				2			Loose grey MUDSTONE recovered as silt.
				3		3.00	End of Trial Pit
				4			
				5			
				6			
				7			
				8			
				9			

Remarks:
1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP3	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	03/01/01	Excavation Method:	Mechanical Excavator	Logged By: DD
Ground Level		Trial Pit Dimensions:		

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend		Description
							0.20	Brown clayey TOPSOIL.
	ND	0.40	D				0.50	Orange-brown CLAY with occasional coal-like gravel.
								Firm grey CLAY.
	ND	1.00	D	1			0.90	
							1.20	Laminated black CLAY.
								Very stiff MUDSTONE. Recovered as silt towards base of pit.
	ND	2.20	D	2				
				3			3.00	End of Trial Pit
				4				
				5				
				6				
				7				
				8				
				9				

Remarks: 1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP4	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	03/01/01	Excavation Method:	Mechanical Excavator	Logged By
Ground Level		Trial Pit Dimensions:		DD

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend		Description
							0.20	Light-dark brown clayey TOPSOIL.
	ND	0.40	D					Firm grey silty CLAY.
	ND	1.00	D	1			1.10	
								Loose grey SILT.
	ND	2.40	D	2				
				3			3.00	End of Trial Pit
				4				
				5				
				6				
				7				
				8				
				9				

Remarks:
1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP5	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	03/01/01	Excavation Method:	Mechanical Excavator	Logged By: DD
Ground Level:		Trial Pit Dimensions:		

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend		Description
	ND	0.20	D				0.20	Brown-dark brown loose clayey TOPSOIL.
								Fairly firm orange/light grey CLAY.
							0.60	
	ND	1.00	D					Very firm light grey CLAY.
							1.60	
								Grey MUDSTONE recovered as silt towards base of trial pit.
	ND	2.70	D					
							3.00	
								End of Trial Pit

Remarks:
1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number: TP6	Job Number: 61-C4594	ENVIRON	
	Project: CARLTON, BARNSLEY		
Date(s): 03/01/01	Excavation Method: Mechanical Excavator		Logged By: DD
Ground Level:	Trial Pit Dimensions:		

Lab. Tests	Soil Gas (ppmv)	Samples: Depth (m)	Samples: Type	Depth (m)	Well Installation	Legend	Description
	ND	0.20	D			0.30	MADE GROUND Loose dark brown/black slightly clayey topsoil with very occasional brick, glass and rubber.
							Firm orange/brown CLAY.
	ND	1.00	D	1			
						1.70	
						1.75	Very firm MUDSTONE.
				2			Loose grey/brown silty CLAY.
	ND	2.40	D			2.90	
				3		3.00	Laminated grey MUDSTONE.
							End of Trial Pit
				4			
				5			
				6			
				7			
				8			
				9			

Remarks:
1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP7	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	03/01/01	Excavation Method:	Mechanical Excavator	Logged By
Ground Level		Trial Pit Dimensions:		DD

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend		Description
	ND	0.20	D				0.20	Grass overlying dark brown clayey TOPSOIL with rootlets.
								Fairly firm orange silty CLAY becoming brown and then grey with depth.
	ND	1.80	D				1.80	
							1.90	Laminated grey MUDSTONE.
								Loose grey/brown SILT.
	ND	2.40	D				2.40	
								Very firm brittle fine grained SANDSTONE with clay.
							3.00	
								End of Trial Pit

Remarks:
1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP8	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	03/01/01	Excavation Method:	Mechanical Excavator	Logged By: DD
Ground Level		Trial Pit Dimensions:		

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend	Description
							Dark brown/black clayey TOPSOIL. (0.20)
							Fairly firm orange CLAY. (0.40)
	ND	0.50	D				Fairly firm grey/brown CLAY.
				1			
	ND	1.90	D				(1.90)
				2			Loose brown silty CLAY. (2.00)
							Laminated brown/grey CLAY.
	ND	2.90	D			▽	(2.90)
				3			Moderately strong light grey SANDSTONE.
							(3.40)
							End of Trial Pit
				4			
				5			
				6			
				7			
				8			
				9			

Remarks:
1. ND - Not Detected.
2. Installation diameter - 19mm.

Key		Date	Depth to Water (m)
Water Strike	▽	03/01/01	2.90
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP9	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	03/01/01	Excavation Method:	Mechanical Excavator	Logged By: DD
Ground Level		Trial Pit Dimensions:		

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend	Description
	ND	0.20	D				Grass overlying MADE GROUND comprising gravelly sandy red ash.
						0.80	MADE GROUND comprising dark brown clayey fill with occasional glass.
	ND	1.80	D			1.70	MADE GROUND comprising yellow/orange slightly sandy clay.
						2.00	MADE GROUND comprising reworked shattered grey sandstone.
						2.20	Laminated light brown/grey SILTSTONE with clay.
	ND	3.00	D			2.90	Grey medium grained SANDSTONE becoming stronger with depth.
						3.20	End of Trial Pit

Remarks: 1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP10	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	03/01/01	Excavation Method:	Mechanical Excavator	Logged By
Ground Level		Trial Pit Dimensions:		DD

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend	Description
							Grass overlying MADE GROUND comprising loose light-dark brown fill. .
	ND	0.40	D			0.20	MADE GROUND comprising sandy gravelly red ash.
						0.70	MADE GROUND comprising brown slightly sandy CLAY.
						1.50	MADE GROUND comprising yellow/brown reworked sandstone in slightly clayey sand.
	ND	1.90	D			2.00	Brown MUDSTONE in loose brown silty matrix.
	ND	2.60	D			2.80	
						3.00	Brittle grey SANDSTONE.
							End of Trial Pit

Remarks:
1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP11	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	04/01/01	Excavation Method:	Mechanical Excavator	Logged By
Ground Level		Trial Pit Dimensions:		DD

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend		Description
							0.10	CONCRETE.
	ND	0.30	D				0.30	MADE GROUND comprising dark brown loose gravel with occasional red brick.
							0.70	Orange/brown very loose slightly clayey SILT.
	ND	0.90	D	1				Yellow/brown slightly clayey SILT.
							1.10	Weathered grey/orange SANDSTONE.
							1.50	Orange brown weathered SILTSTONE. Sweet odour at 2.1m.
	ND	2.10	D	2				
							2.60	Weathered orange/grey SANDSTONE.
				3			3.00	End of Trial Pit
				4				
				5				
				6				
				7				
				8				
				9				

Remarks:
1. ND - Not Detected.
2. Installation diameter - 19mm.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP12	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	04/01/01	Excavation Method:	Mechanical Excavator	Logged By
Ground Level		Trial Pit Dimensions:		DD

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend	Description
							Grass over brown slightly clayey TOPSOIL.
	ND	0.50	D			0.40	
						0.60	MADE GROUND comprising dark grey/black clayey fill with occasional brick.
						0.80	Dark grey/black CLAY.
				1		1.00	Yellow/brown clayey SILT.
						1.20	Orange clayey SILT.
							Grey clayey SILT.
						1.60	
							Grey/brown clayey SILT.
	ND	2.20	D	2			
						2.60	
							Grey/brown MUDSTONE.
	ND	3.10	D	3			
						3.50	
							End of Trial Pit
				4			
				5			
				6			
				7			
				8			
				9			

Remarks: 1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP13	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	04/01/01	Excavation Method:	Mechanical Excavator	Logged By
Ground Level		Trial Pit Dimensions:		DD

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend		Description
	ND	0.20	D				0.40	MADE GROUND comprising brick and concrete.
							0.80	MADE GROUND comprising dark brown/black fill with rubble, ash and occasional clinker.
	ND	1.40	D	1				MADE GROUND comprising black silty clay.
							1.70	
	ND	2.00	D	2				Red silty CLAY with yellow mottling.
							2.70	
				3				Laminated dark brown/grey CLAY.
							3.50	
				4				End of Trial Pit
				5				
				6				
				7				
				8				
				9				

Remarks: 1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP14	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	04/01/01	Excavation Method:	Mechanical Excavator	Logged By: DD
Ground Level:		Trial Pit Dimensions:		

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend		Description
	ND	0.30	D				0.20	Grass over yellow/brown clayey TOPSOIL.
							0.80	MADE GROUND comprising brown/black sandy gravel with wood (railway sleepers) and occasional brick and cables.
							0.70	MADE GROUND comprising red brick.
								MADE GROUND comprising brown/black slightly clayey sandy gravel. Wet at 3.0m.
	ND	2.00	D	1, 2				
	ND	3.00	D	3		▽	3.00	End of Trial Pit
				4, 5, 6, 7, 8, 9				

Remarks:
1. ND - Not Detected.
2. Two walls in the trial pit resricted excavation.
3. Trial pit caving in.

Key		Date	Depth to Water (m)
Water Strike	▽	04/01/01	3.00
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP15	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	04/01/01	Excavation Method:	Mechanical Excavator	Logged By
Ground Level		Trial Pit Dimensions:		DD

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend		Description
							0.10	Grass over dark brown clayey TOPSOIL.
	ND	0.50	D					MADE GROUND comprising red brick/concrete rubble and metal in a brown clayey matrix.
	ND	1.30	D	1			1.50	End of Trial Pit
				2				
				3				
				4				
				5				
				6				
				7				
				8				
				9				

Remarks:

1. ND - Not Detected.
2. Cables exposed at 1.3m. Presumed to be dead but trial pit stopped.
3. Brick wall exposed in trial pit.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP16	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	04/01/01	Excavation Method:	Mechanical Excavator	Logged By: DD
Ground Level:		Trial Pit Dimensions:		

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend	Description
	ND	0.40	D				Grass over light brown slightly gravelly clayey TOPSOIL.
						0.80	
				1			MADE GROUND comprising red brick fill in a dark brown clayey matrix.
						1.50	
	ND	1.90	D	2			MADE GROUND comprising black coarse sandy gravel with occasional brick. Hydrocarbon odour.
						2.50	
	ND	2.90	D	3			Yellow/orange/grey CLAY. Slight hydrocarbon odour. Damp at 2.9m.
						3.00	End of Trial Pit
				4			
				5			
				6			
				7			
				8			
				9			

Remarks: 1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP17	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	04/01/01	Excavation Method:	Mechanical Excavator	Logged By
Ground Level		Trial Pit Dimensions:		DD

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend	Description
							Grass over brown clayey TOPSOIL.
	ND	0.40	D			0.40	MADE GROUND comprising dark brown/black sandy gravel with ash.
						0.70	
						0.80	MADE GROUND comprising red brick.
				1			MADE GROUND comprising black sandy gravel with ash and clinker.
	ND	1.70	D				
				2		2.00	
	ND	2.40	D				MADE GROUND comprising loose red ash with large cobbles/boulders.
				3		3.00	End of Trial Pit
				4			
				5			
				6			
				7			
				8			
				9			

Remarks: 1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP18	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	04/01/01	Excavation Method:	Mechanical Excavator	Logged By: DD
Ground Level		Trial Pit Dimensions:		

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend	Description
	ND	0.50	D			0.50	Grass over dark brown clayey TOPSOIL.
						1.10	MADE GROUND comprising black gravelly sandy ash.
	ND	1.60	D				MADE GROUND comprising red gravelly sandy ash. Brick and clinker at 2.8m.
	ND	3.00	D			3.20	End of Trial Pit

Remarks: 1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP19	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	04/01/01	Excavation Method:	Mechanical Excavator	Logged By: DD
Ground Level:		Trial Pit Dimensions:		

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend	Description
							Grass over MADE GROUND comprising dark brown sandy gravel with ash and brick.
	ND	0.50	D				0.40 MADE GROUND comprisingred/brown ashy gravelly sand with brick.
							0.80 MADE GROUND comprising red ash.
							1.40
							1.60 MADE GROUND comprising light brown/brown ash.
							1.70 Red slightly clayey SAND.
	ND	1.90	D				Light brown/yellow SAND and GRAVEL.
							2.50
	ND	2.60	D				2.60 Black SAND and GRAVEL. Wet.
							Grey brown silty CLAY.
							3.70
							End of Trial Pit

Remarks:
1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽	04/01/01	2.50
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP20	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	04/01/01	Excavation Method:	Mechanical Excavator	Logged By: DD
Ground Level		Trial Pit Dimensions:		

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend		Description
							0.50	Grass over loose brown clayey TOPSOIL.
	ND	0.50	D					MADE GROUND comprising black/brown clayey sandy gravel and ash.
							1.20	
	ND	1.60	D					MADE GROUND comprising red clayey sandy gravel and ash with clinker. Brick at 2.3m.
	ND	2.20	D					
							3.00	End of Trial Pit

Remarks:
1. ND - Not Detected.
2. Evidence of brick wall 2.2-3.0m.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP21	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	04/01/01	Excavation Method:	Mechanical Excavator	Logged By: DD
Ground Level		Trial Pit Dimensions:		

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend		Description
							0.40	Grass over dark brown TOPSOIL with brick and concrete rubble.
								MADE GROUND comprising dark brown clayey sandy gravel.
	ND	1.00	D	1			1.00	
							1.10	MADE GROUND comprising laminated dark grey clay.
								MADE GROUND comprising dark brown clayey gravel with a little sand and some clinker.
	ND	2.00	D	2			2.10	
								MADE GROUND comprising purple sandstone and ash. Becoming red/brown with depth.
	ND	3.10	D	3			3.40	
								End of Trial Pit
				4				
				5				
				6				
				7				
				8				
				9				

Remarks:

1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP22	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	04/01/01	Excavation Method:	Mechanical Excavator	Logged By: DD
Ground Level		Trial Pit Dimensions:		

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend	Description
							Grass over TOPSOIL. (0.30)
							MADE GROUND comprising brickwork. (1.00)
	ND	1.00	D	1			MADE GROUND comprising slightly damp black clayey sandy gravel. (1.10)
	ND	1.50	D				MADE GROUND comprising brown loose clayey sand with occasional ash. (1.50)
							MADE GROUND comprising reworked coal deposits with coal, silt and mudstone. (1.80)
				2			MADE GROUND comprising brown/black clayey sandy gravel with ash. (2.70)
	ND	2.60	D				Light brown/grey firm silty CLAY. (3.00)
				3			*Laminated grey CLAY becoming looser with depth.* (3.90)
				4			End of Trial Pit
				5			
				6			
				7			
				8			
				9			

Remarks: 1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP23	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	05/01/01	Excavation Method:	Mechanical Excavator	Logged By
Ground Level		Trial Pit Dimensions:		DD

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend		Description
							0.10	Grass over grey/brown clayey TOPSOIL.
	ND	0.50	D				0.50	MADE GROUND comprising brick and black ashy sand.
								MADE GROUND comprising slightly sandy grey gravelly clay with coal. Wet at 2.6m.
	ND	1.60	D					
	ND	2.60	D					
							3.40	Brown/grey laminated MUDSTONE with clay.
							3.80	End of Trial Pit

Remarks:
1. ND - Not Detected.
2. Installation Diameter - 19mm.

Key		Date	Depth to Water (m)
Water Strike	▽	05/01/01	2.60
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP24	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	05/01/01	Excavation Method:	Mechanical Excavator	Logged By
Ground Level		Trial Pit Dimensions:		DD

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend	Description
	ND	0.50	D				Grass over grey gravelly CLAY.
						0.60	
				1			Orange/brown/grey gravelly CLAY becoming browner with depth.
	ND	1.70	D				
				2			
	ND	2.40	D				
						2.60	
				3			Laminated clayey MUDSTONE.
						3.00	
							End of Trial Pit
				4			
				5			
				6			
				7			
				8			
				9			

Remarks:

1. ND - Not Detected.
2. Water inflow at 0.5m - linked to nearby standing surface water.
3. Slight organic sulphurous smell.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP25	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	05/01/01	Excavation Method:	Mechanical Excavator	Logged By: DD
Ground Level		Trial Pit Dimensions:		

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend	Description
						0.10	Grass over TOPSOIL.
	ND	0.50	D				MADE GROUND comprising brown gravelly sandy clay with glass, pottery, and occasional brick, becoming gravelly with depth.
	ND	1.30	D	1		▽ 1.30	
							MADE GROUND comprising grey silty clayey gravel with occasional mudstone.
	ND	2.60	D	2			
				3		3.20	
						3.40	Brown CLAY.
						3.60	Laminated clayey MUDSTONE with occasional sand specks.
				4			End of Trial Pit
				5			
				6			
				7			
				8			
				9			

Remarks:
1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽	05/01/01	1.30
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP26	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	05/01/01	Excavation Method:	Mechanical Excavator	Logged By: DD
Ground Level:		Trial Pit Dimensions:		

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend	Description
							Grass over MADE GROUND comprising sandy gravelly clay.
						0.30	
	ND	0.50	D			0.50	MADE GROUND comprising red ashy clay with sand and gravel.
							Made ground comprising Grey gravelly clay with occasional lustrous coal.
	ND	1.50	D	1			
				2			
	ND	2.50	D			2.40	Very firm grey/brown/yellow CLAY.
	ND	2.80	D			2.80	
				3		3.10	Black silty CLAY.
							Very firm grey/brown/yellow CLAY.
						3.60	
						3.90	Orange/brown/grey laminated CLAY.
				4			End of Trial Pit
				5			
				6			
				7			
				8			
				9			

Remarks: 1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP27	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	05/01/01	Excavation Method:	Mechanical Excavator	Logged By: DD
Ground Level:		Trial Pit Dimensions:		

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend	Description
	ND	0.50	D				Grass over MADE GROUND comprising black gravelly sandy ash.
						0.70	MADE GROUND comprising red ash with gravels. Winch cables at 0.7m. Red brickwork at 1.4m.
	ND	1.70	D	1			
				2		2.20	
						2.30	MADE GROUND comprising large yellow brown stones and metal. Winch cables.
	ND	2.70	D	3			Brown/grey CLAY.
						3.20	Wet black/grey clayey GRAVEL with hydrocarbon odour and staining.
	ND	3.90	D	4		3.90	End of Trial Pit
				5			
				6			
				7			
				8			
				9			

Remarks:
1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽	05/01/01	3.20
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP28	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	05/01/01	Excavation Method:	Mechanical Excavator	Logged By: DD
Ground Level		Trial Pit Dimensions:		

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend		Description
							0.10	Grass over TOPSOIL.
	ND	0.50	D					MADE GROUND comprising red brown slightly gravelly sand.
							0.70	
				1				MADE GROUND comprising black sandy gravel, ash and clinker.
	ND	1.40	D				1.40	
								MADE GROUND comprising grey/pink sandstone cobbles and boulders in a grey/brown ashy matrix.
				2			2.10	
	ND	2.40	D					MADE GROUND comprising red ash, cobbles and boulders in a brown/red sandy ash matrix.
				3		▽		
				4			4.30	
							4.40	Grey/yellow silty CLAY. Dry.
								End of Trial Pit
				5				
				6				
				7				
				8				
				9				

Remarks: 1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽	05/01/01	3.10
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP29	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	05/01/01	Excavation Method:	Mechanical Excavator	Logged By
Ground Level		Trial Pit Dimensions:		DD

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend	Description
							Grass over MADE GROUND comprising grey/brown/yellow clay.
	ND	0.60	D			0.40	MADE GROUND comprising black sandy ash with occasional brick fragments.
				1			
						1.40	
	ND	1.70	D				Firm grey/brown silty CLAY.
				2			
						2.80	
	ND	2.90	D				Very firm grey CLAY with orange mottling.
				3			
						3.60	
						3.80	Loose brown clayey SILT with grey laminated clay bands.
							End of Trial Pit
				4			
				5			
				6			
				7			
				8			
				9			

Remarks:

1. ND - Not Detected.
2. Very slow water ingress at 1.4m.

Key		Date	Depth to Water (m)
Water Strike	▽	05/01/01	1.40
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP30	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	05/01/01	Excavation Method:	Mechanical Excavator	Logged By: DD
Ground Level:		Trial Pit Dimensions:		

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend		Description
	ND	0.30	D				0.10	Grass over grey/red clayey TOPSOIL.
								MADE GROUND comprising red shaley ash.
							0.60	MADE GROUND comprising black clayey sandy gravelly ash.
	ND	1.20	D	1			1.10	
							1.40	MADE GROUND comprising grey clayey fill with occasional coal fragments.
								Light brown/yellow CLAY.
	ND	2.10	D	2			2.00	
								Laminated grey occasionally brown CLAY. Black from 3.7m.
				3				
				4			4.00	End of Trial Pit
				5				
				6				
				7				
				8				
				9				

Remarks:
1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP31	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	05/01/01	Excavation Method:	Mechanical Excavator	Logged By: DD
Ground Level		Trial Pit Dimensions:		

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend		Description
	ND	0.30	D				0.30	Grass/moss over grey gravelly clayey TOPSOIL, with brick, glass and rubble.
								MADE GROUND comprising grey clayey spoil with occasional mudstone and lustrous coal fragments.
	ND	1.50	D	1				
				2				
	ND	2.90	D	3				
				4			4.00	End of Trial Pit
				5				
				6				
				7				
				8				
				9				

Remarks: 1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP32	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	05/01/01	Excavation Method:	Mechanical Excavator	Logged By: DD
Ground Level		Trial Pit Dimensions:		

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend	Description
	ND	0.50	D				Grass over MADE GROUND comprising brick rubble in brown clayey sand matrix.
	ND	1.00	D			0.60	MADE GROUND comprising grey clayey gravelly spoil.
	ND	2.70	D			3.10	Firm grey/orange mottled CLAY.
						3.80	End of Trial Pit

Remarks:
1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP33	Job Number:	81-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	05/01/01	Excavation Method:	Mechanical Excavator	Logged By: DD
Ground Level:		Trial Pit Dimensions:		

Lab. Tests	Soil Gas (ppmv)	Samples: Depth (m)	Samples: Type	Depth (m)	Well Installation	Legend	Description
	ND	0.40	D				MADE GROUND comprising grey clayey spoil with gravel and mudstone/siltstone fragments.
	ND	1.50	D				
	ND	3.50	D				
							3.80 End of Trial Pit

Remarks:
1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP34	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	05/01/01	Excavation Method:	Mechanical Excavator	Logged By: DD
Ground Level:		Trial Pit Dimensions:		

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend	Description
	ND	0.40	D				Grass over MADE GROUND comprising grey/black clayeyspoil with mudstone/shale.
						1.00	
	ND	1.40	D				Fairly firm orange/brown CLAY.
						1.50	
							Firm orange/grey mottled CLAY. Looser at 2.3m and laminated at 3.0m.
	ND	2.50	D				
						3.50	
							End of Trial Pit

Remarks:
1. ND - Not Detected.
2. Bricks at eastern end of trial pit between 1.3m and 2.0m.
3. Water seepage at 2.0m.

Key		Date	Depth to Water (m)
Water Strike	▽	05/01/01	2.00
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP36	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	09/01/01	Excavation Method:	Mechanical Excavator	Logged By: DD
Ground Level		Trial Pit Dimensions:		

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend		Description
							0.20	CONCRETE over red brick building foundation.
								MADE GROUND comprising grey/black sandy gravelly ash with red brick fragments.
	ND	0.80	D				0.80	
				1				Brown/orange silty CLAY.
	ND	1.20	D				1.20	
								Grey/orange sandy SILT with weathered sandstone/siltstone.
				2				
	ND	2.50	D				2.50	
								Weathered brown/grey SANDSTONE.
							2.80	
				3				End of Trial Pit
				4				
				5				
				6				
				7				
				8				
				9				

Remarks: 1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP37	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	09/01/01	Excavation Method:	Mechanical Excavator	Logged By: DD
Ground Level:		Trial Pit Dimensions:		

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend		Description
							0.20	Grass over light brown clayey sand TOPSOIL.
							0.40	Reinforced CONCRETE.
	ND	0.50	O					MADE GROUND comprising red brick rubble in brown clayey sand matrix.
				1			1.20	
							1.50	Fairly firm light brown/yellow silty CLAY.
	ND	2.00	D	2				Loose brittle orange/brown mottled silty CLAY.
	ND	3.00	D	3			2.90	
							3.30	Firm laminated light brown/grey CLAY in a silty matrix.
							3.50	Weathered grey/brown SANDSTONE.
				4				End of Trial Pit
				5				
				6				
				7				
				8				
				9				

Remarks:
1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP38	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	09/01/01	Excavation Method:	Mechanical Excavator	Logged By
Ground Level		Trial Pit Dimensions:		DD

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend		Description
								MADE GROUND comprising concrete over red brick in loose light brown sandy matrix.
	ND	0.60	D				0.60	MADE GROUND comprising light brown/grey sandy silty shaly angular gravel with occasional red brick fragments. Becoming gravel at 0.9m.
	ND	1.60	D	1			1.70	Firm grey/orange mottled CLAY.
				2			2.10	
							2.30	Loose grey silty CLAY.
	ND	2.80	D	3				Laminated brown clayey MUDSTONE.
							3.70	
				4			3.80	Weathered orange/grey/brown SANDSTONE.
								End of Trial Pit
				5				
				6				
				7				
				8				
				9				

Remarks:
1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP39	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	09/01/01	Excavation Method:	Mechanical Excavator	Logged By
Ground Level		Trial Pit Dimensions:		DD

Lab. Tests	Soil Gas (ppmV)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend	Description
							Grass over MADE GROUND comprising grey clay fill with concrete rubble, metal and brick.
	ND	0.70	D			0.70	
							Grey CLAY becoming grey/brown and laminated with depth.
	ND	2.20	D				
	ND	3.70	D			3.70	
							Firm grey MUDSTONE.
						4.20	
							End of Trial Pit

Remarks:

1. ND - Not Detected.

Key	Date	Depth to Water (m)
Water Strike ▽		
Standing Water ▼		
Disturbed Sample D		
Bulk Sample B		

Trial Pit Number	TP40	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	09/01/01	Excavation Method:	Mechanical Excavator	Logged By: DD
Ground Level:		Trial Pit Dimensions:		

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend	Description
	ND	0.30	D				Grass over dark brown sandy TOPSOIL with occasional red brick.
						0.60	
							Orange/brown CLAY.
	ND	2.00	D			1.90	
							Weathered grey/yellow/brown SANDSTONE in fine sand matrix.
		2.70	D			2.70	
							Yellow/brown/grey SANDSTONE.
						3.00	
							End of Trial Pit

Remarks: 1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP41	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	09/01/01	Excavation Method:	Mechanical Excavator	Logged By: DD
Ground Level		Trial Pit Dimensions:		

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend		Description
	ND	0.30	D				0.30	Grass over brown clayey TOPSOIL.
								MADE GROUND comprising red gravelly sandy ash.
				1			1.00	
	ND	1.40	D				1.40	Brown silty CLAY.
							1.80	Yellow/brown silty CLAY.
				2				Laminated grey CLAY.
							2.70	
	ND	2.90	D			▽	2.90	Weathered brown/yellow/grey SANDSTONE.
				3				Brown/yellow/grey SANDSTONE. Wet.
							3.20	End of Trial Pit
				4				
				5				
				6				
				7				
				8				
				9				

Remarks: 1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽	09/01/01	2.90
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP42	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	09/01/01	Excavation Method:	Mechanical Excavator	Logged By: DD
Ground Level		Trial Pit Dimensions:		

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend	Description
	ND	0.30	D				Grass over MADE GROUND comprising red gravelly sandy ash.
	ND	0.80	D			0.60	Loose soft brown CLAY.
	ND	2.00	D			1.20	Orange/grey mottled CLAY, becoming laminated grey/brown in a silty matrix.
	ND	3.10	D			2.90	Weathered grey/orange SANDSTONE.
						3.20	End of Trial Pit

Remarks:
1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Trial Pit Number	TP44	Job Number:	81-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	09/01/01	Excavation Method:	Mechanical Excavator	Logged By: DD
Ground Level:		Trial Pit Dimensions:		

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend	Description
							Grass over MADE GROUND comprising red gravelly sandy ash and brick fill.
						0.30	
	ND	0.50	D				Yellow/brown CLAY.
						0.60	
							Orange/grey mottled CLAY.
				1			
						1.80	
	ND	2.10	D	2			Laminated grey clayey MUDSTONE in a silty clay matrix.
						2.70	
	ND	3.00	D	3			Very firm grey MUDSTONE.
						3.10	
							End of Trial Pit
				4			
				5			
				6			
				7			
				8			
				9			

Remarks: 1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Borehole Number: WS1	Job Number: 61-C4594	ENVIRON
	Project: CARLTON, BARNSLEY	
Date(s): 08/01/01	Drilling Method: Window Sampler	Logged By: DD
Ground Level	Borehole Dimensions:	

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend	Description
	ND	0.20-0.40	D				Grass overlying brown clayeyTOPSOIL
						0.50	
							Orange/grey firm CLAY. Becoming brown with depth.
	ND	1.20-1.40	D	1			
						1.45	
						1.50	Light grey fine grained SANDSTONE.
							End of borehole
				2			
				3			
				4			
				5			
				6			
				7			
				8			
				9			

Remarks: 1 ND - Not Detected

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Borehole Number:	WS2	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	08/01/01	Drilling Method:	Window Sampler	Logged By
Ground Level		Borehole Dimensions:		DD

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend		Description
	ND	0.50-0.70	D				0.50	Grass overlying brown clayey TOPSOIL.
				1				Grey/orange firm CLAY becoming brown with depth.
	ND	1.60-1.80	D				1.60	
							1.65	Brown slightly silty MUDSTONE.
				2			1.95	Grey/brown fairly soft CLAY.
							2.00	Dark brown very firm MUDSTONE.
								End of borehole
				3				
				4				
				5				
				6				
				7				
				8				
				9				

Remarks:

1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Borehole Number:	WS3	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	08/01/01	Drilling Method:	Window Sampler	Logged By: DD
Ground Level:		Borehole Dimensions:		

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend	Description
	ND	0.30-0.50	D				Grass overlying brown clayey TOPSOIL.
							0.40
							0.50 Brown slightly silty CLAY.
							Grey/orange fairly firm CLAY.
				1			1.00
	ND	1.30-1.50	D				Grey firm CLAY
				2			
	ND	2.20-2.40	D				2.20
							2.40 Dark grey firm MUDSTONE.
							2.60 Grey firm CLAY.
							2.70 Dark brown firm MUDSTONE.
				3			End of borehole
				4			
				5			
				6			
				7			
				8			
				9			

Remarks:
1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Borehole Number:	WS4	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	08/01/01	Drilling Method:	Window Sampler	Logged By
Ground Level		Borehole Dimensions:		DD

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend	Description
	ND	0.20-0.40	D			0.20	Grass overlying brown clayey TOPSOIL.
						0.50	Brown/orange slightly silty firm CLAY.
							Orange/grey fairly firm CLAY. Becoming greyer with depth.
	ND	1.40-1.70	D	1			
				2			
	ND	2.50-2.70	D			2.40	
						2.70	Very firm grey MUDSTONE.
				3			End of borehole
				4			
				5			
				6			
				7			
				8			
				9			

Remarks: 1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Borehole Number: WS5	Job Number: 61-C4594	ENVIRON
	Project: CARLTON, BARNSLEY	
Date(s): 08/01/01	Drilling Method: Window Sampler	Logged By: DD
Ground Level	Borehole Dimensions:	

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend		Description
	ND	0.20-0.40	D				0.20	Grass overlying brown clayey gravelly TOPSOIL.
							0.50	MADE GROUND comprising sandy gravelly red ash.
	ND	1.00-1.20	D	1				MADE GROUND comprising slightly clayey sandy gravel spoil with ash. Becoming wet with depth.
							1.20	Dark grey firm MUDSTONE.
	ND	2.10-2.30	D	2			2.40	End of borehole
				3				
				4				
				5				
				6				
				7				
				8				
				9				

Remarks: 1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽	08/01/01	0.80
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Borehole Number: WS6	Job Number: 61-C4584	ENVIRON
	Project: CARLTON, BARNSLEY	
Date(s): 08/01/01	Drilling Method: Window Sampler	Logged By: DD
Ground Level	Borehole Dimensions:	

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend		Description
							0.20	MADE GROUND comprising sandy gravel red ash.
	ND	0.50-0.70	D				0.50	MADE GROUND comprising grey clayey gravel spoil.
								MADE GROUND comprising black fine sand.
							1.00	
								MADE GROUND Black sandy gravelly ash.
	ND	1.60-1.80	D					
							2.00	
								MADE GROUND comprising gravelly sand red ash.
	ND	2.40-2.50	D					
							2.80	
							3.00	Light brown very firm CLAY.
								End of borehole

Remarks:
1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Borehole Number: WS7	Job Number: 61-C4594	ENVIRON
	Project: CARLTON, BARNSLEY	
Date(s): 08/01/01	Drilling Method: Window Sampler	Logged By: DD
Ground Level:	Borehole Dimensions:	

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend	Description
	ND	0.10-0.30	D			0.30	Grass overlying MADE GROUND comprising grey sandy gravelly ash.
						0.50	MADE GROUND comprising fairly firm grey clay.
						0.80	MADE GROUND comprising dark grey sandy gravelly ash.
				1			MADE GROUND comprising light grey silty clay with occasional gravels.
	ND	1.90-2.10	D	2		2.20	
							End of borehole
				3			
				4			
				5			
				6			
				7			
				8			
				9			

Remarks:
1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Borehole Number: WS8	Job Number: 61-C4594	ENVIRON	
	Project: CARLTON, BARNSLEY		
Date(s): 08/01/01	Drilling Method: Window Sampler		Logged By: DD
Ground Level	Borehole Dimensions:		

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend	Description
	ND	0.10-0.30	D				Grass overlying MADE GROUND comprising black sandy gravel ash with clinker.
	ND	1.50-1.70	D				
				2.00			MADE GROUND comprising grey silty clay with occasional gravel.
	ND	2.60-2.80	D				
				3.00			End of borehole

Remarks:
1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Borehole Number:	WS9	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	08/01/01	Drilling Method:	Window Sampler	Logged By
Ground Level		Borehole Dimensions:		DD

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend	Description
	ND	0.20-0.40	D				Grass overlying MADE GROUND comprising grey silty clayey gravelly spoil. Becoming very firm towards base.
	ND	1.20-1.90	D				
	ND	2.80-3.00	D				
						3.00	End of borehole

Remarks:
1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Borehole Number: WS10	Job Number: 61-C4594	ENVIRON
	Project: CARLTON, BARNSLEY	
Date(s): 08/01/01	Drilling Method: Window Sampler	Logged By: DD
Ground Level	Borehole Dimensions:	

Lab. Tests	Soil Gas (ppmv)	Samples: Depth (m)	Samples: Type	Depth (m)	Well Installation	Legend	Description
						0.20	Grass overlying brown clayey TOPSOIL.
						0.30	MADE GROUND comprising red brick.
	ND	0.50-0.70	D			0.40	CONCRETE.
						0.50	MADE GROUND comprising reworked brown clay.
						0.70	Orange/brown fairly firm CLAY.
				1			Grey/orange weathered SANDSTONE.
	ND	1.30-1.50	D				
						1.60	End of borehole
				2			
				3			
				4			
				5			
				6			
				7			
				8			
				9			

Remarks:

1. ND - Not Detected.

Key		Date	Depth to Water (m)
Water Strike	▽		
Standing Water	▼		
Disturbed Sample	D		
Bulk Sample	B		

Borehole Number:	WS11	Job Number:	61-C4594	ENVIRON
		Project:	CARLTON, BARNSLEY	
Date(s):	08/01/01	Drilling Method:	Window Sampler	Logged By: DD
Ground Level:		Borehole Dimensions:		

Lab. Tests	Soil Gas (ppmv)	Samples Depth (m)	Samples Type	Depth (m)	Well Installation	Legend	Description
	NO	0.50-0.70	D	0.50			Grass overlying MADE GROUND comprising red brick in a brown/dark brown clayey matrix.
				1.50			MADE GROUND comprising black sandy clayey gravelly ash with coal fragments.
				2.60			Yellow brown weathered SANDSTONE in a sandy matrix.
	ND	2.80-3.00	D	3.00			Firm orange/grey mottled CLAY.
							End of borehole

Remarks:
1. ND - Not Detected.

Key	Date	Depth to Water (m)
Water Strike ▽		
Standing Water ▼		
Disturbed Sample D		
Bulk Sample B		

APPENDIX B

TECHNICHEM LAB

Analytical and Consulting Chemists - Soil, Water and Environmental Scientists

TechniChem Laboratories Ltd.
Brunel Science Park, Kingston Lane,
Uxbridge, Middlesex. UB8 3PQ
Tel: 01895 271271 Fax: 01895 271272 E-mail: enquiries@technichem.co.uk

UKAS TESTING
1141

Dominic Daly
ENVIRON UK Ltd
4a Queens Street
Leeds
LS1 2TW

22nd January 2001

TEST REPORT

Our Report No: 1102

Your Order No: Instns. of 04.01.2001

35 no. soil & 4 no. water samples submitted for analysis on 04.01.2001

Project Name: Carlton

Project Code: 61-C4594

Results enclosed: Pages 2-12

Dr. Andy Dengel
Operations Manager
TECHNICHEM LABORATORIES LTD.

Tracy Gibbs
Technical Manager
TECHNICHEM LABORATORIES LTD.

Test Methods are Documented In House Procedures or where appropriate Standard Methods

All samples connected with this report, including any 'on hold', will be stored and disposed of according to Company policy. A copy of this policy is available on request.

TABLE XXX SOIL ANALYTICAL RESULTS - GENERAL SUITE

Our Report No: 1152 Re-Issue No.1 Dated 25/01/01

Your Order No: Instns. of 09.01.2001

CLIENT: ENVIRON UK Ltd

23 no. soil samples submitted for analysis on 10.01.2001

DATE OF ISSUE: 24th January 2001

Project Name: Carlton

Project Code: 61-C4594

Lab Ref No.	E855	E856	E857	E858	E859	E860	E861	E862	E863	E864	Guide Value
Sample Depth (m)	0.2-0.4	1.6-1.8	2.2-2.4	0.2-0.4	1.0-1.2	0.5-0.7	1.9-2.1	0.1-0.3	1.2-1.9	0.5-0.7	
Sample No.	WS1	WS2	WS3	WS4	WS5	WS6	WS7	WS8	WS9	WS10	
Sample Description	S	S	S	S	S	S	S	S	S	S	
009 pH	6.6	6.2	7.4	6.7	4.7	5.8	4.9	5.1	3.9	6.3	>9(2)
*025a Total (acid soluble) Sulphate as SO_4	650	2700	1100	470	6200	5200	500	820	12000	370	2000#/50000+
014 Monohydric Phenol	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	5#/1000+
005 Total Cyanide	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	250(1)/5000+
012 TEM											5000(2)
032 PAH Screen by HPLC											1000*
030 Hydrocarbon Oils by IR											
*TPH Screen by Flash GC	<20	<20	<20	<20	<20	<20	<20	59	<20	<20	
*PAH Screen by Flash GC								<20			
*001a Asbestos Screen	ND							ND		ND	
*043 Radiation Screen											
016 Arsenic	33	64	8	27	68	8	9	19	32	6	40*
016 Cadmium	0.9	4.8	4.0	0.7	0.9	<0.5	<0.5	0.5	0.5	<0.5	15*
016 Chromium	17	49	26	22	7	9	8	8	7	7	1000*
016 Lead	90	160	53	64	35	44	28	18	36	21	2000*
016 Mercury	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	20*
016 Selenium	4.0	22	10	1.9	1.5	2.9	1.6	2.6	2.1	2.2	
016 Copper	66	180	74	52	61	100	45	84	52	14	130*
016 Nickel	18	180	72	18	25	42	30	36	19	11	70*
016 Zinc	180	190	160	71	35	20	91	70	68	68	300*

*Denotes analysis outside the scope of our UKAS accreditation.

All results expressed in mg/kg dry weight basis except for pH.

-	=	No Analysis Undertaken	ND	=	Not detected above Analytical Detection Limit
#	=	ICRCL Industrial Threshold			(<0.01% for Asbestos & <2 c/s for Radiation)
*	=	ICRCL *"open space" Threshold*	+	=	ICRCL *Industrial Action Guideline*
1	=	Guideline for Complex Cyanide	2	=	Widely Accepted Guideline
3	=	Dutch B Guideline	4	=	Dutch I Guideline

A. C. Lloyd

TABLE XXX SOIL ANALYTICAL RESULTS - GENERAL SUITE

Our Report No: 1152 Re-Issue No.1 Dated 25/01/01

Your Order No: Instns. of 09.01.2001

CLIENT: ENVIRON UK Ltd

23 no. soil samples submitted for analysis on 10.01.2001

DATE OF ISSUE: 24th January 2001

Project Name: Carlton

Project Code: 61-C4594

Lab Ref No.	E865	E866	E867	E868	E869	E870	E871	E872	E873	E874	Guide Value
Sample Depth (m)	*0.5-0.7*	*0.5*	*1.2*	*0.5*	*1.6*	*0.7*	*0.3*	*1.4*	*0.8*	*0.5*	
Sample No.	WS11	TP35	TP36	TP37	TP38	TP39	TP40	TP41	TP42	TP43	
Sample Description	S	S	S	S	S	S	S	S	S	S	
009 pH	6.9	6.9	7.4	8.7	7.6	6.2	7.2	5.7	6.1	6.8	>9(2)
*025a Total (acid soluble) Sulphate as SO_4	2100	<200	730	2100	8800	7000	660	320	720	250	2000#/50000+
014 Monohydric Phenol	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	5#/1000+
005 Total Cyanide	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	250(1)/5000+
012 TEM											*5000(2)*
032 PAH Screen by HPLC											1000*
030 Hydrocarbon Oils by IR											
*TPH Screen by Flash GC	56	<20	<20	58	73	<20	<20	<20	<20	<20	
*PAH Screen by Flash GC	<20			<20	<20						
*001a Asbestos Screen	*ND*	*ND*		*ND*		*ND*					
*043 Radiation Screen											
016 Arsenic	28	6	9	45	23	39	22	9	56	8	40*
016 Cadmium	0.6	<0.5	<0.5	1.4	<0.5	0.6	<0.5	<0.5	1.0	<0.5	15*
016 Chromium	<2	10	9	10	14	10	9	7	17	13	1000*
016 Lead	66	17	25	1670	140	41	120	30	89	24	2000*
016 Mercury	<0.3	<0.3	<0.3	<0.3	0.5	0.3	<0.3	<0.3	<0.3	<0.3	20*
016 Selenium	3.6	1.5	1.4	2.0	1.9	2.3	1.9	1.4	1.9	1.7	
016 Copper	71	14	15	820	46	53	61	15	68	12	130*
016 Nickel	20	17	9	26	27	15	25	8	31	10	70*
016 Zinc	93	46	57	850	83	69	51	66	140	43	300*

*Denotes analysis outside the scope of our UKAS accreditation.

All results expressed in mg/kg dry weight basis except for pH.

-	=	*No Analysis Undertaken*	ND	=	Not detected above Analytical Detection Limit (<0.01% for Asbestos & <2 c/s for Radiation)
#	=	ICRCL Industrial Threshold			
*	=	ICRCL *"open space" Threshold*	+	=	ICRCL Industrial Action Guideline
1	=	Guideline for Complex Cyanide	2	=	Widely Accepted Guideline
3	=	Dutch B Guideline	4	=	Dutch I Guideline

A. C. Lloyd

TABLE XXX SOIL ANALYTICAL RESULTS - GENERAL SUITE

Our Report No: 1152 Re-Issue No.1 Dated 25/01/01

Your Order No: Instns. of 09.01.2001

CLIENT: ENVIRON UK Ltd

23 no. soil samples submitted for analysis on 10.01.2001

DATE OF ISSUE: 24th January 2001

Project Name: Carlton

Project Code: 61-C4594

Lab Ref No.	E875	E876	E877								Guide Value
Sample Depth (m)	**2.1**	**Surface**	**0.0**								
Sample No.	**TP44**	**SU1**	**SU2**								
Sample Description	**S**	**S**	**S**								
009 pH	6.5	3.4	4.1								>9(2)
*025a Total (acid soluble) Sulphate as SO_4	280	15000	53000								2000#/50000+
014 Monohydric Phenol	<3	<3	<3								5#/1000+
005 Total Cyanide	<5	<5	<5								250(1)/5000+
012 TEM											*5000(2)*
032 PAH Screen by HPLC											1000*
030 Hydrocarbon Oils by IR											
*TPH Screen by Flash GC	<20	<20	<20								
*PAH Screen by Flash GC											
*001a Asbestos Screen											
*043 Radiation Screen											
016 Arsenic	7	84	120								40*
016 Cadmium	<0.5	1.1	1.5								15*
016 Chromium	20	7	21								1000*
016 Lead	20	54	33								2000*
016 Mercury	<0.3	<0.3	<0.3								20*
016 Selenium	1.3	2.6	0.6								
016 Copper	28	73	18								130*
016 Nickel	36	32	6								70*
016 Zinc	81	77	12								300*

*Denotes analysis outside the scope of our UKAS accreditation.

All results expressed in mg/kg dry weight basis except for pH.

-	=	No Analysis Undertaken	ND	=	Not detected above Analytical Detection Limit
#	=	ICRCL Industrial Threshold			(<0.01% for Asbestos & <2 c/s for Radiation)
*	=	ICRCL "open space" Threshold	+	=	ICRCL Industrial Action Guideline
1	=	Guideline for Complex Cyanide	2	=	Widely Accepted Guideline
3	=	Dutch B Guideline	4	=	Dutch I Guideline

A.C. Lloyd

TABLE XXX SOIL ANALYTICAL RESULTS - GENERAL SUITE

Our Report No: 1102

Your Order No: Instns. of 04.01.2001

CLIENT: ENVIRON UK Ltd

35 no. soil & 4 no. water samples submitted for analysis on 04.01.2001

DATE OF ISSUE: 22nd January 2001

Project Name: Carlton

Project Code: 61-C4594

Lab Ref No.	E534	E535	E536	E537	E538	E539	E540	E541	E542	E543	Guide Value
Sample Depth (m)	2.1	0.9	0.4	1.0	1.0	1.0	0.2	2.9	0.2	2.6	
Sample No.	TP1	TP2	TP3	TP4	TP5	TP6	TP7	TP8	TP9	TP10	
Sample Description	S	S	S	S	S	S	S	S	S	S	
009 pH	5.6	4.7	7.1	5.4	6.3	7.3	7.3	6.5	6.6	6.2	>9(2)
*025a Total (acid soluble) Sulphate as SO_4	220	1500	640	400	220	<200	220	<200	1600	300	2000#/50000+
014 Monohydric Phenol	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	5#/1000+
005 Total Cyanide	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	250(1)/5000+
012 TEM											5000(2)
032 PAH Screen by HPLC											1000*
030 Hydrocarbon Oils by IR											
*TPH Screen by Flash GC	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	
*PAH Screen by Flash GC											
*001a Asbestos Screen											
*043 Radiation Screen											
016 Arsenic	3	26	36	22	2	8	8	8	11	8	40**
016 Cadmium	<0.5	1.7	1.4	0.7	<0.5	<0.5	<0.5	0.7	<0.5	<0.5	15**
016 Chromium	<2	10	61	22	14	17	25	24	12	18	1000**
016 Lead	14	42	71	40	11	18	19	52	14	19	2000**
016 Mercury	<0.3	0.5	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	20**
016 Selenium	1.0	1.7	9.3	3.5	0.8	1.1	0.7	<0.5	1.0	0.5	
016 Copper	75	25	170	43	42	22	20	30	21	26	130**
016 Nickel	21	32	110	16	18	23	22	49	16	24	70**
016 Zinc	9	19	130	32	39	73	73	130	28	39	300**

*Denotes analysis outside the scope of our UKAS accreditation.

All results expressed in mg/kg dry weight basis except for pH

-	=	No Analysis Undertaken	ND	=	Not detected above Analytical Detection Limit (<0.01% for Asbestos & <2 c/s for Radiation)
#	=	ICRCL Industrial Threshold			
**	=	ICRCL "open space" Threshold	+	=	ICRCL Industrial Action Guideline
1	=	Guideline for Complex Cyanide	2	=	Widely Accepted Guideline
3	=	Dutch B Guideline	4	=	Dutch I Guideline

TABLE XXX SOIL ANALYTICAL RESULTS - GENERAL SUITE

Our Report No: 1102

Your Order No: Instns. of 04.01.2001

CLIENT: ENVIRON UK Ltd

35 no. soil & 4 no. water samples submitted for analysis on 04.01.2001

DATE OF ISSUE: 22nd January 2001

Project Name: Carlton

Project Code: 61-C4594

Lab Ref No.	E544	E545	E546	E547	E548	E549	E550	E551	E552	E553	Guide Value
Sample Depth (m)	2.1	0.5	1.4	3.0	1.3	1.9	0.4	1.6	2.6	0.5	
Sample No.	TP11	TP12	TP13	TP14	TP15	TP16	TP17	TP18	TP19	TP20	
Sample Description	S	S	S	S	S	S	S	S	S	S	
009 pH	6.6	7.5	7.6	7.6	7.9	6.0	7.9	7.9	7.9	7.6	>9(2)
*025a Total (acid soluble) Sulphate as SO_4	<200	940	380	900	2300	2000	920	19000	1700	1000	2000#/50000+
014 Monohydric Phenol	<3	<3	<3	<3	<3	<3	<3	3.9	9.6	<3	5#/1000+
005 Total Cyanide	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	250(1)/5000+
012 TEM											5000(2)
032 PAH Screen by HPLC											1000*
030 Hydrocarbon Oils by IR											
*TPH Screen by Flash GC	110	<20	<20	92	150	11900	41	<20	<20	<20	
*PAH Screen by Flash GC	<20			<20	<20	<1000					
*001a Asbestos Screen											
*043 Radiation Screen											
016 Arsenic	6	32	12	17	33	20	36	32	35	58	40**
016 Cadmium	<0.5	1.3	<0.5	0.6	7.5	0.6	2.2	0.8	1.0	2.6	15**
016 Chromium	11	13	7	15	14	5	15	15	17	19	1000**
016 Lead	16	370	82	180	220	39	45	10	19	67	2000**
016 Mercury	<0.3	<0.3	0.6	0.5	0.3	<0.3	<0.3	<0.3	<0.3	<0.3	20**
016 Selenium	0.8	1.8	1.0	1.0	1.2	1.6	1.3	0.7	0.5	0.6	
016 Copper	15	100	38	150	89	43	99	110	59	150	130**
016 Nickel	21	34	24	36	34	17	33	30	38	53	70**
016 Zinc	38	230	80	170	370	27	170	89	34	240	300**

*Denotes analysis outside the scope of our UKAS accreditation.

All results expressed in mg/kg dry weight basis except for pH

-	=	No Analysis Undertaken	ND	=	Not detected above Analytical Detection Limit
#	=	ICRCL Industrial Threshold			(<0.01% for Asbestos & <2 c/s for Radiation)
**	=	ICRCL "open space" Threshold	+	=	ICRCL Industrial Action Guideline
1	=	Guideline for Complex Cyanide	2	=	Widely Accepted Guideline
3	=	Dutch B Guideline	4	=	Dutch I Guideline

TABLE XXX SOIL ANALYTICAL RESULTS - GENERAL SUITE

Our Report No: 1102

Your Order No: Instns. of 04.01.2001

CLIENT: ENVIRON UK Ltd

35 no. soil & 4 no. water samples submitted for analysis on 04.01.2001

DATE OF ISSUE: 22nd January 2001

Project Name: Carlton

Project Code: 61-C4594

Lab Ref No.	E554	E555	E557	E558	E559	E560	E561	E562	E563	E564	Guide Value
Sample Depth (m)	1.0	1.0	2.6	0.5	1.3	2.8	3.2	0.5	0.4	1.2	
Sample No.	TP21	TP22	TP23	TP24	TP25	TP26	TP27	TP28	TP29	TP30	
Sample Description	S	S	S	S	S	S	S	S	S	S	
009 pH	7.6	7.9	6.7	6.6	4.0	7.0	7.3	8.0	4.7	3.7	>9(2)
*025a Total (acid soluble) Sulphate as SO_4	4800	2700	1900	4400	6900	2500	580	1100	7600	17000	2000#/50000+
014 Monohydric Phenol	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	5#/1000+
005 Total Cyanide	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	250(1)/5000+
012 TEM											5000(2)
032 PAH Screen by HPLC											1000*
030 Hydrocarbon Oils by IR											
*TPH Screen by Flash GC	<20	<20	<20	<20	<20	<20	<20	110	170	<20	
*PAH Screen by Flash GC								<20	<20		
*001a Asbestos Screen											
*043 Radiation Screen											
016 Arsenic	55	33	260	38	33	13	15	30	42	36	40**
016 Cadmium	1.9	0.9	7.2	1.2	1.0	0.7	0.7	1.6	1.2	1.0	15**
016 Chromium	13	11	5	13	11	24	24	22	14	7	1000**
016 Lead	63	38	74	96	35	66	84	67	150	29	2000**
016 Mercury	<0.3	<0.3	0.4	0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	20**
016 Selenium	1.8	1.4	3.3	1.8	1.3	1.6	<0.5	0.9	2.7	1.7	
016 Copper	68	51	56	100	63	60	35	100	330	37	130**
016 Nickel	29	22	35	40	30	52	52	43	140	12	70**
016 Zinc	160	57	55	120	100	200	190	140	93	27	300**

*Denotes analysis outside the scope of our UKAS accreditation.

All results expressed in mg/kg dry weight basis except for pH

-	=	No Analysis Undertaken	ND	=	Not detected above Analytical Detection Limit
#	=	ICRCL Industrial Threshold			(<0.01% for Asbestos & <2 c/s for Radiation)
**	=	ICRCL "open space" Threshold	+	=	ICRCL Industrial Action Guideline
1	=	Guideline for Complex Cyanide	2	=	Widely Accepted Guideline
3	=	Dutch B Guideline	4	=	Dutch I Guideline

TABLE XXX SOIL ANALYTICAL RESULTS - GENERAL SUITE

Our Report No: 1102

Your Order No: Instns. of 04.01.2001

CLIENT: ENVIRON UK Ltd

35 no. soil & 4 no. water samples submitted for analysis on 04.01.2001

DATE OF ISSUE: 22nd January 2001

Project Name: Carlton

Project Code: 61-C4594

Lab Ref No.	E565	E566	E567	E568							Guide Value
Sample Depth (m)	0.5	1.0	3.5	0.4							
Sample No.	TP31	TP32	TP33	TP34							
Sample Description	S	S	S	S							
009 pH	5.5	4.8	8.4	3.5							>9(2)
*025a Total (acid soluble) Sulphate as SO_4	4400	12000	1100	7500							2000#/50000+
014 Monohydric Phenol	<3	<3	<3	<3							5#/1000+
005 Total Cyanide	<5	<5	<5	<5							250(1)/5000+
012 TEM											5000(2)
032 PAH Screen by HPLC											1000*
030 Hydrocarbon Oils by IR											
*TPH Screen by Flash GC	<20	55	34	<20							
*PAH Screen by Flash GC		<20									
*001a Asbestos Screen											
*043 Radiation Screen											
016 Arsenic	51	27	30	40							40**
016 Cadmium	1.6	0.8	1.0	1.1							15**
016 Chromium	12	10	8	10							1000**
016 Lead	79	45	140	36							2000**
016 Mercury	<0.3	<0.3	<0.3	<0.3							20**
016 Selenium	1.8	1.5	3.5	1.8							
016 Copper	93	63	55	57							130**
016 Nickel	38	27	28	28							70**
016 Zinc	110	85	79	84							300**

*Denotes analysis outside the scope of our UKAS accreditation.

All results expressed in mg/kg dry weight basis except for pH

-	=	No Analysis Undertaken	ND	=	Not detected above Analytical Detection Limit
#	=	ICRCL Industrial Threshold			(<0.01% for Asbestos & <2 c/s for Radiation)
**	=	ICRCL "open space" Threshold	+	=	ICRCL Industrial Action Guideline
1	=	Guideline for Complex Cyanide	2	=	Widely Accepted Guideline
3	=	Dutch B Guideline	4	=	Dutch I Guideline

TABLE XXX SOIL ANALYTICAL RESULTS - 040 VOC BY HEAD SPACE GC-MS Results in µg/kg dry weight basis

Our Report No: 1102

Your Order No: Instns. of 04.01.2001

CLIENT: ENVIRON UK Ltd

35 no. soil & 4 no. water samples submitted for analysis on 04.01.2001

DATE OF ISSUE: 22nd January 2001

Project Name: Carlton

Project Code: 61-C4594

Lab Ref No.	E535	E542	E544	E547	E549	E553	E555	E557	E561	
Sample Depth (m)	0.9	0.2	2.1	3.0	1.9	0.5	1.0	2.6	3.2	
Sample No.	TP2	TP9	TP11	TP14	TP16	TP20	TP22	TP23	TP27	
Sample Description	S	S	S	S	S	S	S	S	S	
Vinyl chloride	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Chloroethane	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Trichlorofluoromethane	<10	<10	<10	<10	<10	<10	<10	<10	<10	
1,1-Dichloroethene	<2	<2	<2	<2	<2	<2	<2	<2	<2	
1,1,2-trichloro-1,2,2-trifluoroethane	<25	<25	<25	<25	<25	<25	<25	<25	<25	
Dichloromethane	<25	<25	<25	<25	<25	<25	<25	<25	<25	
trans-1,2 Dichloroethene	<10	<10	<10	<10	<10	<10	<10	<10	<10	
MTBE	<10	<10	<10	<10	<10	<10	<10	<10	<10	
1,1 -Dichloroethane	<10	<10	<10	<10	<10	<10	<10	<10	<10	
cis-1,2 dichloroethene	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Chloroform	<10	<10	<10	<10	<10	<10	<10	<10	<10	
1,1,1-Trichloroethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	
1,2-Dichloroethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	
Benzene	<2	<2	<2	<2	<2	<2	<2	<2	<2	
Carbon tetrachloride	<2	<2	<2	<2	<2	<2	<2	<2	<2	
Trichloroethene	<2	<2	<2	<2	<2	<2	<2	<2	<2	
Bromodichloromethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	
cis-1,3 Dichloropropene	<2	<2	<2	<2	<2	<2	<2	<2	<2	
Toluene	2	<2	<2	<2	2	2	<2	6	<2	
trans-1,3 dichloropropene	<2	<2	<2	<2	<2	<2	<2	<2	<2	
1,1,2-Trichloroethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	
Dibromochloromethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	
Tetrachloroethene	<2	<2	<2	<2	<2	<2	<2	<2	<2	
Chlorobenzene	<2	<2	<2	<2	<2	<2	<2	<2	<2	
Ethyl benzene	9	<2	<2	4	7	7	<2	5	2	
m,p-Xylenes	13	<2	<2	8	10	15	4	12	5	
Bromoform	<10	<10	<10	<10	<10	<10	<10	<10	<10	
o-Xylene	6	<2	<2	5	6	5	<2	5	3	
1,1,2,2 Tetrachloroethane	<10	<10	<10	<10	<10	<10	<10	<10	<10	
1,3,5 Trimethylbenzene	<2	<2	<2	<2	<2	<2	<2	2	<2	
1,2,4 Trimethylbenzene	<2	<2	<2	<2	<2	<2	<2	3	<2	
1,3 Dichlorobenzene	<2	<2	<2	<2	<2	<2	<2	<2	<2	
1,4 Dichlorobenzene	<2	<2	<2	<2	<2	<2	<2	<2	<2	
1,2 Dichlorobenzene	<2	<2	<2	<2	<2	<2	<2	<2	<2	

TEST REPORT

*SOIL ANALYTICAL RESULTS - *SVOC BY GC-MS Results in µg/kg dry weight basis*

Our Report No: 1102 — Page 7 of 12 pages

Your Order No: Instns. of 04.01.2001 — CLIENT: ENVIRON UK Ltd

35 no. soil & 4 no. water samples submitted for analysis on 04.01.2001 — DATE OF ISSUE: 22nd January 2001

Project Name: Carlton — Project Code: 61-C4594

Lab Ref No.		E547	E549	E561		
Sample Depth (m)		3.0	1.9	3.2		
Sample No.		TP14	TP16	TP27		
Sample Description		S	S	S		
PAH	naphthalene	1600	1400	130		
	2-chloronaphthalene	<10	<10	<10		
	acenaphthylene	19	<10	<10		
	acenaphthene	83	110	<10		
	fluorene	140	350	26		
	phenanthrene	1500	2200	110		
	anthracene	130	570	100		
	fluoranthene	850	1400	<10		
	pyrene	710	1200	<10		
	benz(a)anthracene	280	560	<10		
	chrysene	510	1300	37		
	benzo(b)fluoranthene	160	<10	<10		
	benzo(k)fluoranthene	97	<10	<10		
	benzo(a)pyrene	140	<10	<10		
	indeno(123-cd)pyrene	98	<10	<10		
	dibenzo(ah)anthracene	<10	<10	<10		
	benzo(ghi)perylene	160	<10	<10		
PHENOLS	phenol	30	280	<10		
	2-chlorophenol	<10	<10	<10		
	2-methylphenol	38	460	<10		
	4-methylphenol	67	960	<10		
	2-nitrophenol	<10	<10	<10		
	2,4-dimethylphenol	75	390	<10		
	2,4-dichlorophenol	<10	<10	<10		
	2,6-dichlorophenol	<10	<10	<10		
	4-chloro-3-methyl phenol	<10	<10	<10		
	2,4,6-trichlorophenol	<10	<10	<10		
	2,4,5-trichlorophenol	<10	<10	<10		
	4-nitrophenol	<10	<10	<10		
	2,3,4,6-tetrachlorophenol	<10	<10	<10		
	pentachlorophenol	<10	<10	<10		
PHTHALATES	dimethylphthalate	<10	<10	<10		
	diethyl phthalate	<10	<10	<10		
	di-n-butyl phthalate	<10	<10	<10		
	butyl benzyl phthalate	<10	<10	<10		
	di-n-octyl phthalate	<10	<10	<10		
ETHERS	bis(2-chloroethyl)ether	<10	<10	<10		
	bis(2-chloroisopropyl)ether	<10	<10	<10		
	4-chlorophenyl phenyl ether	<10	<10	<10		
	bromo phenyl phenyl ether	<10	<10	<10		
BENZENES	1,3-dichlorobenzene	<10	<10	<10		
	1,2-dichlorobenzene	<10	<10	<10		
	1,4-dichlorobenzene	<10	<10	<10		
	nitrobenzene	<10	<10	<10		
	1,2,4-trichlorobenzene	<10	<10	<10		
	2,6-dinitrotoluene	<10	<10	<10		
	2,4-dinitrotoluene	<10	<10	<10		
	azobenzene	<10	<10	<10		
	hexachlorobenzene	<10	<10	<10		
OTHERS	hexachloroethane	<10	<10	<10		
	n-nitroso-di-n-propyl-1-propanamine	<10	<10	<10		
	isophorone	<10	<10	<10		
	bis(2-chloroethoxy)methane	<10	<10	<10		
	hexachlorobutadiene	<10	<10	<10		
	hexachlorocyclopentadiene	<10	<10	<10		

*Denotes analysis outside the scope of our UKAS accreditation.

*TABLE XXX SOIL ANALYTICAL RESULTS - *039 POLYCHLORINATED BIPHENYLS*

Our Report No: 1102

Your Order No: Instns. of 04.01.2001

CLIENT: ENVIRON UK Ltd

35 no. soil & 4 no. water samples submitted for analysis on 04.01.2001

DATE OF ISSUE: 22nd January 2001

Project Name: Carlton

Project Code: 61-C4594

Lab Ref No.	E550	E558								
Sample Depth (m)	0.4	0.5								
Sample No.	TP17	TP24								
Sample Description	S	S								
Polychlorinated Biphenyls (PCB's)										
PCB Congener 28	<0.005	<0.005								
PCB Congener 52	<0.005	<0.005								
PCB Congener 101	<0.005	<0.005								
PCB Congener 118	<0.005	<0.005								
PCB Congener 138	<0.005	<0.005								
PCB Congener 153	<0.005	<0.005								
PCB Congener 180	<0.005	<0.005								
Total PCBs	ND	ND								

*Denotes analysis outside the scope of our UKAS accreditation.

All results expressed in mg/kg dry weight basis

ND denotes Not Detected

Total PCB = Sum of 7 identified components

TechniChem Laboratories Ltd.

TEST REPORT

*SOIL ANALYTICAL RESULTS - Bulk Identification - Method 001 based upon MDHS 77 (Asbestos Screening Method *001a)*

Our Report No: 1102

Your Order No: Instns. of 04.01.2001

CLIENT: ENVIRON UK Ltd

35 no. soil & 4 no. water samples submitted for analysis on 04.01.2001

DATE OF ISSUE: 22nd January 2001

Project Name: Carlton

Project Code: 61-C4594

Lab Ref No.	Sample Depth (m)	Sample No.	Sample Description	Description	Result of Asbestos Type(s)
E536	0.4	TP3	S		No Asbestos Detected
E540	0.2	TP7	S		No Asbestos Detected
E542	0.2	TP9	S		No Asbestos Detected
E545	0.5	TP12	S		No Asbestos Detected
E548	1.3	TP15	S		No Asbestos Detected
E550	0.4	TP17	S		No Asbestos Detected
E553	0.5	TP20	S		No Asbestos Detected
E556	0.5	TP23	S		No Asbestos Detected
E563	0.4	TP29	S		No Asbestos Detected
E565	0.5	TP31	S		No Asbestos Detected
E568	0.4	TP34	S		No Asbestos Detected

Notes:- Estimates of asbestos content are defined as Trace (<2%), Significant (2 - 50%), and Substantial (>50%)

Any estimate of asbestos content within bulk materials is outside the scope of accreditation

* denotes analysis outside the scope of our UKAS accreditation

TechniChem Laboratories Ltd.

TABLE XXX GROUNDWATER ANALYTICAL RESULTS - GENERAL SUITE

Our Report No: 1102

Your Order No: Instns. of 04.01.2001

CLIENT: ENVIRON UK Ltd

35 no. soil & 4 no. water samples submitted for analysis on 04.01.2001

DATE OF ISSUE: 22nd January 2001

Project Name: Carlton

Project Code: 61-C4594

Lab Ref No.	E569	E570	E571	E572						
Sample Depth (m)										
Sample No.	SW1	SW2	TP8	TP19						
Sample Description	W	W	W	W						
009 pH	6.7	6.2	6.3	7.3						
*Electrical Conductivity µS/cm										
*Dissolved Oxygen										
*Ammonia as N										
*025a Sulphate as SO_4 mg/l	220	530	160	790						
014 Monohydric Phenol	<20	<20	<20	<20						
005 Total Cyanide	<30	<30	<30	<30						
030 Hydrocarbon Oil by IR	<100	<100	<100	<100						
022 Total PAH by GC										
016 Arsenic	11	12	8	15						
016 Cadmium	<1	<1	<1	<1						
016 Chromium	19	35	20	40						
016 Lead	<10	<10	<10	<10						
028 Mercury	<0.05	<0.05	<0.05	<0.05						
016 Copper	<5	<5	<5	<5						
016 Nickel	9	53	10	<5						
016 Zinc	14	100	7	<5						
016 Iron										

*Denotes analysis outside the scope of our UKAS accreditation.

All results expressed in µg/l except for pH and sulphate (mg/l)

-	=	No Analysis Undertaken
DWQ	=	Drinking Water Quality Standards
*	=	Dutch C Guideline
NG	=	No Guideline
"shaded"	=	In excess of Dutch I (DWQ for sulphate)

TABLE XXX GROUNDWATER ANALYTICAL RESULTS - GENERAL SUITE

Our Report No: 1102

Your Order No: Instns. of 04.01.2001

CLIENT: ENVIRON UK Ltd

35 no. soil & 4 no. water samples submitted for analysis on 04.01.2001

DATE OF ISSUE: 22nd January 2001

Project Name: Carlton

Project Code: 61-C4594

Lab Ref No.	E569	E570	E571	E572						
Sample Depth (m)										
Sample No.	SW1	SW2	TP8	TP19						
Sample Description	W	W	W	W						
009 pH	6.7	6.2	6.3	7.3						
*033 Electrical Conductivity µS/cm										
*Total Dissolved Solids										
*025a Sulphate as SO_4	220000	530000	160000	790000						
011 Chloride	27000	28000	35000	<10000						
011 Nitrate as N	380	1100	1100	1300						
*Nitrite as N										
*Ammonia as N	730	740	77	68						
*Phosphate as P										
*Fluoride as F										
*Hardness as $CaCO_3$ mg/l										
*Alkalinity as $CaCO_3$ mg/l	150	50	100	380						
016 Sodium	29000	37000	21000	54000						
016 Potassium	9100	9200	4200	28000						
016 Calcium	91000	140000	57000	300000						
016 Magnesium	30000	58000	34000	100000						
016 Copper										
016 Zinc										
016 Iron										

*Denotes analysis outside the scope of our UKAS accreditation.

All results expressed in µg/l except for pH unless stated.

-	=	No Analysis Undertaken
DWQ	=	Drinking Water Quality Standards
*	=	*Dutch C Guideline*
NG	=	No Guideline
"shaded"	=	In excess of Dutch I (DWQ for sulphate)

TABLE XXX GROUNDWATER ANALYTICAL RESULTS - 040 VOC BY HEAD SPACE GC-MS Results in µg/l

Our Report No: 1102

Your Order No: Instns. of 04.01.2001

CLIENT: ENVIRON UK Ltd

35 no. soil & 4 no. water samples submitted for analysis on 04.01.2001

DATE OF ISSUE: 22nd January 2001

Project Name: Carlton

Project Code: 61-C4594

Lab Ref No.	E569	E570	E571	E572						
Sample Depth (m)										
Sample No.	SW1	SW2	TP8	TP19						
Sample Description	W	W	W	W						
Vinyl chloride	<10	<10	<10	<10						
Chloroethane	<1	<1	<1	<1						
Trichlorofluoromethane	<1	<1	<1	<1						
1,1-Dichloroethene	<1	<1	<1	<1						
1,1,2-trichloro-1,2,2-trifluoroethane	<25	<25	<25	<25						
Dichloromethane	<25	<25	<25	<25						
trans-1,2 Dichloroethene	<1	<1	<1	<1						
MTBE	<1	<1	<1	<1						
1,1 -Dichloroethane	<1	<1	<1	<1						
Cis-1,2 dichloroethene	<1	<1	<1	<1						
Chloroform	<1	<1	<1	<1						
1,1,1-Trichloroethane	<1	<1	<1	<1						
1,2-Dichloroethane	<1	<1	<1	<1						
Benzene	<1	<1	<1	<1						
Carbon tetrachloride	<1	<1	<1	<1						
Trichloroethene	<1	<1	<1	<1						
Bromodichloromethane	<1	<1	<1	<1						
cis-1,3 Dichloropropene	<1	<1	<1	<1						
Toluene	<1	<1	<1	<1						
trans-1,3 dichloropropene	<1	<1	<1	<1						
1,1,2-Trichloroethane	<1	<1	<1	<1						
Dibromochloromethane	<1	<1	<1	<1						
Tetrachloroethene	<1	<1	<1	<1						
Chlorobenzene	<1	<1	<1	<1						
Ethyl benzene	<1	<1	<1	<1						
m,p-Xylenes	<1	<1	<1	<1						
Bromoform	<1	<1	<1	<1						
o-Xylene	<1	<1	<1	<1						
1,1,2,2 Tetrachloroethane	<1	<1	<1	<1						
1,3,5 Trimethylbenzene	<1	<1	<1	<1						
1,2,4 Trimethylbenzene	<1	<1	<1	<1						
1,3 Dichlorobenzene	<1	<1	<1	<1						
1,4 Dichlorobenzene	<1	<1	<1	<1						
1,2 Dichlorobenzene	<1	<1	<1	<1						

MWP
PLANNING

Minerals and Waste Planning
Environmental Permitting
Quarry Consultant

10 Dobroyd, Shepley, Huddersfield HD8 8AU
Tel: 01484 604026 Mobile: 07794 597515
cjb@mwplanning.co.uk www.mwplanning.co.uk

TITLE	TOPOGRAPHICAL SURVEY (CORRECTED LEVELS)
CLIENT	PORTWARD HOMES LTD SOUTHGATE, SOUTHMOOR ROAD BRIERLEY, BARNSLEY S72 9EU
SITE	FORMER CARLTON COLLIERY SHAW LANE, CARLTON, BARNSLEY

DATE	DRAWN BY	CHECKED BY
21/05/2014	CJB	CJB
DRAWING NO	SCALE	
10103/04B	1:1250 @ A1	

REV	AMENDMENT	DATE
B	Add Section Lines	11/ 06/14

LEGEND

Permit Boundary

Section Line

MWP
PLANNING

Minerals and Waste Planning
Environmental Permitting
Quarry Consultant

10 Dobroyd, Shepley, Huddersfield HD8 8AU
Tel: 01484 604026 Mobile: 07794 597515
cjb@mwplanning.co.uk www.mwplanning.co.uk

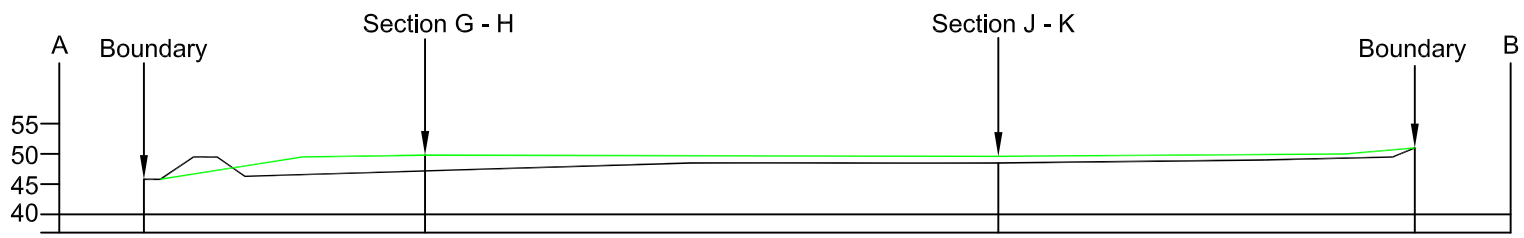
TITLE	FINISHED LEVELS (CORRECTED LEVELS)
CLIENT	PORTWARD HOMES LTD SOUTHGATE, SOUTHMOOR ROAD BRIERLEY, BARNSLEY S72 9EU
SITE	FORMER CARLTON COLLIERY SHAW LANE, CARLTON, BARNSLEY
DATE	21/05/2014
DRAWN BY	CJB
CHECKED BY	CJB
DRAWING NO	10103/08B
SCALE	1:1250 @ A1

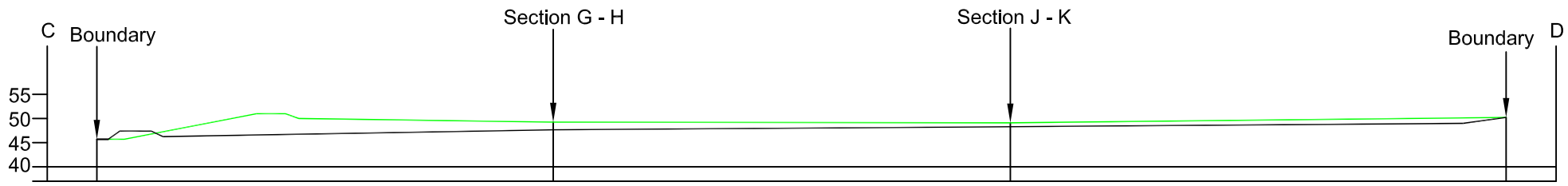
REV	AMENDMENT	DATE
B	Add Section Lines	11/ 06/14

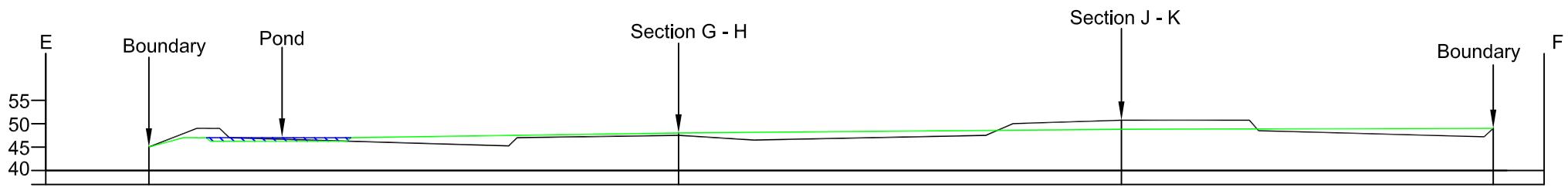
LEGEND

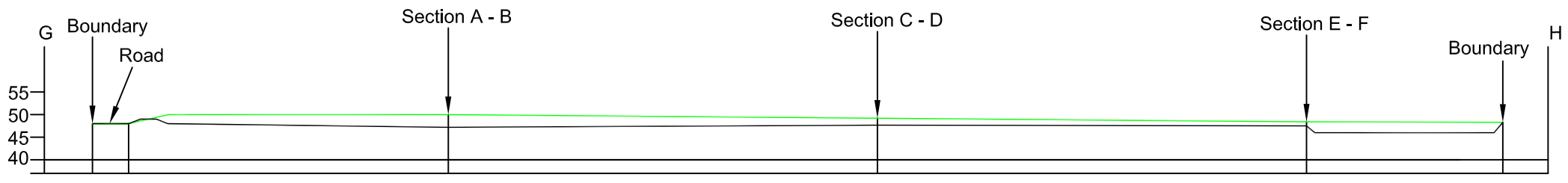
Permit Boundary

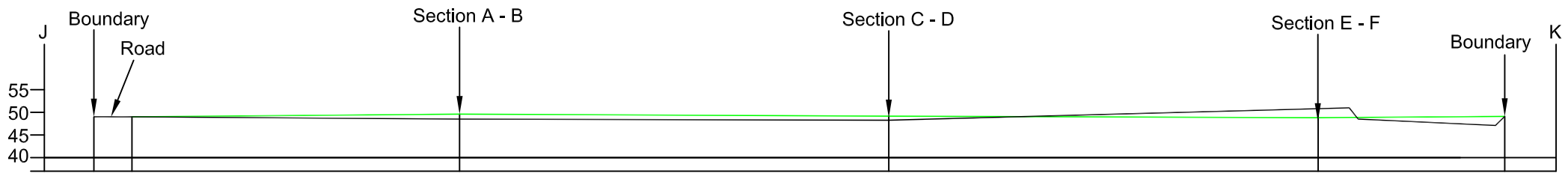
Section Line











MWP
PLANNING

Minerals and Waste Planning
Environmental Permitting
Quarry Consultant

10 Dobroyd, Shepley, Huddersfield HD8 8AU
Tel: 01484 604026 Mobile: 07794 597515
cjb@mwplanning.co.uk www.mwplanning.co.uk

TITLE
CROSS SECTIONS

CLIENT
PORTWARD HOMES LTD
SOUTHGATE, SOUTHMOOR ROAD
BRIERLEY, BARNSLEY S72 9EU

SITE
FORMER CARLTON COLLIERY
SHAW LANE, CARLTON, BARNSLEY

DATE	DRAWN BY	CHECKED BY
11/08/2014	CJB	CJB

DRAWING NO	SCALE
10103/09	1:1250 @ A1

REV	AMENDMENT	DATE

LEGEND

Post Ash Extraction Ground Levels

Completion Ground Levels

NOTES

Levels in metres AOD

For Section Lines locations see Drawings 10103/04B and 10103/08B

APPENDIX B
AAE 2019 Factual Report

Portward Homes Limited

Carlton Colliery

Factual Report:
Ground Investigation

Job No: 173367

Report Ref: 173367/FR/001

Environmental Consultants

AA Environmental Limited
4-8 Cholswell Court
Shippon
Abingdon
OX136HX
T01235 536042
F01235 523849
info@aae-llp.com
www.aae-llp.com

Document Control

Report for

Mr Robert Lunn
Portward Homes Ltd
Southgate, Southmoore Road
Brierley. Barnsley
S72 9EU

Carlton Colliery
Shaw Lane
Barnsley

Prepared by

……..
J McCusker BA (Hons)

Reviewed by

……..
J N Taylor BSc (Hons) PIEMA

Authorised by

……..
M Lawman BSc MSc (Hons)

Issue Date	**Issue**
18th April 2019	Final

Document Reference

193072/SR/001

AA Environmental Limited
4-8 Cholswell Court
Shippon
Abingdon
OX13 6HX

T 01235 536042
F 01235 523849
E info@aae-llp.com
W www.aae-llp.com

Registered Office (England and Wales) as above
Company No. 8474322

Table of Revisions

Final	For issue

Contents

1.0 INTRODUCTION

1.1 AA Environmental Limited (AAe) has been commissioned by Portward Homes Limited (PHL) to undertake additional ground investigation in support of the enabling regeneration works at the former Carlton Colliery. The site location is shown in Drawing 173367/D/001.

1.2 PHL commissioned AAe to complete 8 trial pits to characterise ground conditions. The extent of the investigation was limited to the Made Ground at the site.

1.3 All testing has been completed in line with quality control procedures. All information provided in this report is based on the ground encountered during the investigation. It should be recognised that during any investigation the conditions identified may not be fully representative of the wider stratum quality.

2.0 SITE LOCATION & DESCRIPTION

2.1 The site is located at the former Carlton Colliery. All former colliery structures have been demolished to ground level all though there is clear evidence that sub-surface structures remain. The site is extensively covered with stockpiles of demolition material, excavated clinker and what is believed to be imported materials.

2.2 The site has been the subject of a number of site investigation and in 2008 FGB issued a remedial plan that was approved under planning permission 2007/1365.

2.3 With reference to the previous investigation at and around the site, the geological conditions underlying site are anticipated to be:

- Made Ground consisting of burnt shale, clinker, ashes, brick, soils and between typically 0.0 to 2.5 m;
- over re-worked colliery spoil (typically mudstone).

2.4 In addition, there are stockpiles up to 7 m high of the following types of materials:

- imported and site derived mixed construction and demolition wastes;
- segregated burnt shale and clinker;
- soils; and
- ashes.

3.0 GROUND INVESTIGATION

Fieldwork

3.1 The fieldwork undertaken between 9h and 10th April 2019 and comprised 8 machine excavated trial pits TP101-TP108. AAe were responsible for soil sampling and scheduling the environmental testing at a UKAS Accredited laboratory.

3.2 The investigation locations were surveyed by the site engineer. The locations are attached in Drawing 193072/D/002. In addition a topographical survey was completed site wide. Topographical levels are presented in the site investigation drawing.

Logging and Sampling

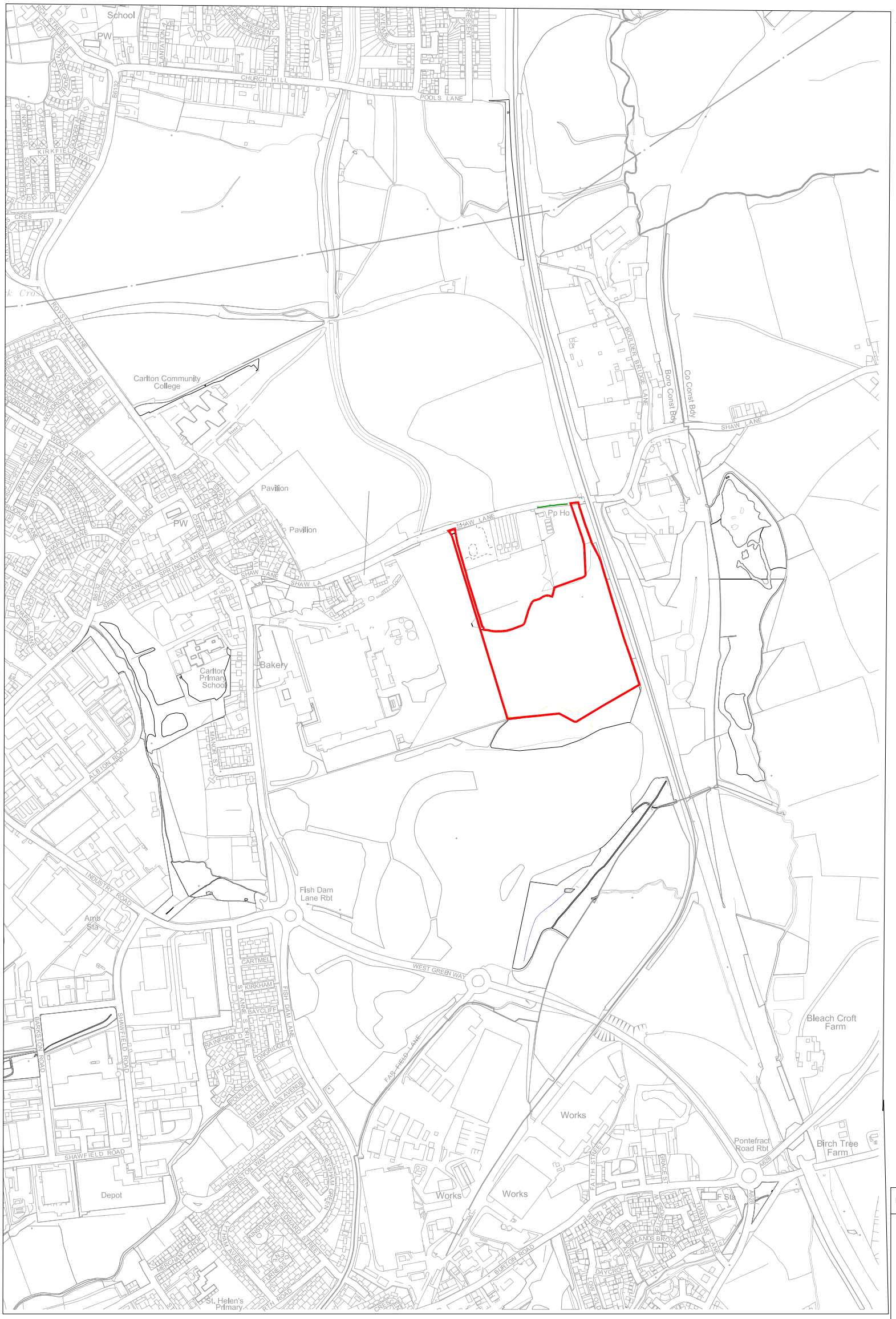
3.3 AAe logged the strata recorded in the trial pits for geo-environmental purposes in accordance with BS5930 and collected representative samples for laboratory testing analysis in accordance with quality control requirements.

Environmental Testing

3.4 Soil samples were sent to Chemtest, a UKAS accredited laboratory for chemical testing. Table 3.1 presents a summary of the scheduled environmental testing. The laboratory certificates of analysis B.

Table 3.1 Summary of Environmental testing		
Type of Test	**Number**	**Laboratory Reports**
AAE Soil Contamination Suite + Calorific Value	11	19-12605-1
AA Soil Suite: Total Petroleum Hydrocarbons and Polyaromatic Hydrocarbons	1	
AAE Metals Suite + Calorific Value	2	
AAE Leachate Suite: Metals	8	

DRAWINGS



Key:

Planning Application Boundary

Rev.	Details	Drawn / Chkd.	Date

Project

173367
Carlton Colliery Restoration
Barnsley

Title

Site Location Plan

AA Environmental Ltd
Units 4 to 8
Cholswell Court
Shippon
Abingdon
Oxon. OX13 6HX

T: (01235) 536042
F: (01235) 523849
info@aae-llp.com
www.aae-llp.com

Environmental Consultants

Scale	Date	Drg. No.	Rev.
1:10,000@A3	Aug '19	173367/D/001	
	Drawn: JM / Chkd.: ML		

Key:

- Planning Application Boundary
- AAe April 2019 Trial Pit Location
- AAe April 2019 Stockpile Sample Location
- Environ Trial Pit Location
- Environ Window Sample Location
- Environ Surface Sample Location

Notes:
1. The historic underlay shown is from an 1893 drawing.

Rev.	Details	Drawn / Chkd.	Date

Project
173367
Carlton Colliery Restoration
Barnsley

Title
Site Investigaion Plan

AA Environmental Ltd
Units 4-8
Cholswell Court
Shippon Abingdon
Oxon OX13 6HX

T:(01235) 536042
F:(01235) 523849
info@aae-llp.com
www.aae-llp.com

Scale	Date	Drawn	Chkd.	Drg. No.	Rev.
1:2000@A3	Aug '19	JM	ML	173367/D/002	

APPENDIX A
Site Investigation Photo Plates

Comment

Strata
0-0.05 m begl: Made Ground - Minor vegetation over ashy soil.
0.05 to 0.3 m begl: Made Ground - Black ash with minor brick contamination.
0.3 – 1.5 m begl: Made Ground - Black ash, clinker and red brick.

Trial pit terminated at 1.5 m.

Sampling
ES 0.5-1.25 m

Project
173367 - Carlton Colliery

Reference
TP101

Date
9th April 2019

Originator
MJML

AA Environmental Limited
Units 4-8 Cholswell Court
Shippon, Abingdon
OX13 6HX
T: (01235) 536042
F: (01235) 523849
info@aae-llp.com
www.aae-llp.com

Comment *Strata* 0-0.3 m begl: Made Ground – black ash, clinker, brick, stone, ceramics 0.3–1.5 m begl: Made Ground consisting predominantly of ash, red burnt shale, clinker and brick. *Sampling* ES 0.5-1.0 m ES 1.5-1.5 m	**Project** 173367 - Carlton Colliery **Reference** TP102 **Date** 9th April 2019 **Originator** MJML

AA Environmental Limited
Units 4-8 Cholswell Court
Shippon, Abingdon
OX13 6HX
T: (01235) 536042
F: (01235) 523849
info@aae-llp.com
www.aae-llp.com

Comment

Strata
0-0.5 m begl: Made Ground – ash, soil, clinker, brick, stone, red burnt shale, clinker and brick. Potential ACM fragment noted in material.
> 0.5 m begl: Made Ground - reworked mudstone (colliery spoil)

Sampling
ES 0.0-0.5 m

Project
173367 - Carlton Colliery

Reference
TP103

Date
9th April 2019

Originator
MJML

AA Environmental Limited
Units 4-8 Cholswell Court
Shippon, Abingdon
OX13 6HX
T: (01235) 536042
F: (01235) 523849
info@aae-llp.com
www.aae-llp.com

Comment

Strata
0.0-0.5 m begl: Made ground consisting of black ash and clinker.
0.5-1.0 m begl: Made ground consisting of blank clinker and ash, burnt shale and brick.
1.0-1.8 m begl: red burnt shale and clinker: Material was significantly smouldering.

Sampling
ES 0.5-1.0
ES 1.0-1.8

Project
173367 - Carlton Colliery

Reference
TP104

Date
9th April 2019

Originator
MJML

AA Environmental Limited
Units 4-8 Cholswell Court
Shippon, Abingdon
OX13 6HX
T: (01235) 536042
F: (01235) 523849
info@aae-llp.com
www.aae-llp.com

Comment

Strata
0.0-0.3 m begl: Made ground consisting of black ash and clinker.
0.3-1.8 m begl: Made ground consisting of clinker, burnt shale and brick. Material was warm and minor evidence of smouldering.
>1.8 m begl: Made ground - reworked mudstone (colliery spoil)

Sampling
ES 0.0-1.0
ES 1.0-1.8

Project
173367 - Carlton Colliery

Reference
TP105

Date
9th April 2019

Originator
MJML

AA Environmental Limited
Units 4-8 Cholswell Court
Shippon, Abingdon
OX13 6HX
T: (01235) 536042
F: (01235) 523849
info@aae-llp.com
www.aae-llp.com

Comment

Strata
0-0.05 m begl: Made Ground - vegetation on thin layer of soil and brick;
0.05-2.0 m begl: Made Ground reworked mudstone with minor fragments of brick and stone
0-2.0 m begl: Made ground - reworked mudstone (colliery spoil)

Sampling
ES 0.0-2.0 m

Project
173367 - Carlton Colliery

Reference
TP106

Date
9th April 2019

Originator
MJML

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Environmental Consultants

Comment

Strata
0-0.75 m begl: Made Ground –ash, clinker, brick, soil, stone and ceramic. Suspected ACM fragment observed.
0.75–2.0 m begl: Made Ground consisting predominantly of ash, red burnt shale, clinker and brick.

Broken metal pipe filled with tar within soil matrix (0.5 m).

Sampling
ES 0-0.5 m (tar)
ES 0.25-0.75 m
ES 1.2-2.0 m

Project
173367 - Carlton Colliery

Reference
TP107

Date
9th April 2019

Originator
MJML

AA Environmental Limited
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Shippon, Abingdon
OX13 6HX
T: (01235) 536042
F: (01235) 523849
info@aae-llp.com
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Environmental Consultants

Comment *Strata* 0-0.5 m begl: Made Ground - vegetation over ash and soil. 0.5-3 m begl: Made Ground - Black coal ash and clinker. *Sampling* ES 0-1.3 m	**Project** 173367 - Carlton Colliery **Reference** TP108 **Date** 9th April 2019 **Originator** MJML

AA Environmental Limited
Units 4-8 Cholswell Court
Shippon, Abingdon
OX13 6HX
T: (01235) 536042
F: (01235) 523849
info@aae-llp.com
www.aae-llp.com

Comment *Stockpile SP1* Mixed ash and brick and pipe Potential ACM noted within matrix	**Project** 173367 - Carlton Colliery
	Reference SP1
	Date 9th April 2019
	Originator MJML
	Environmental Consultants **AA Environmental Limited** Units 4-8 Cholswell Court Shippon, Abingdon OX13 6HX T: (01235) 536042 F: (01235) 523849 info@aae-llp.com www.aae-llp.com

Comment Mixed clinker and burnt shale	**Project** 173367 - Carlton Colliery
	Reference SP2
	Date 9th April 2019
	Originator MJML
	Environmental Consultants **AA Environmental Limited** Units 4-8 Cholswell Court Shippon, Abingdon OX13 6HX T: (01235) 536042 F: (01235) 523849 info@aae-llp.com www.aae-llp.com

Comment Demolition arisings Identified potential ACM	**Project** 173367 - Carlton Colliery
	Reference SP3
	Date 9th April 2019
	Originator MJML
	Environmental Consultants **AA Environmental Limited** Units 4-8 Cholswell Court Shippon, Abingdon OX13 6HX T: (01235) 536042 F: (01235) 523849 info@aae-llp.com www.aae-llp.com

Comment Material appears to be top and sub-soil with some Made Ground	**Project** 173367 - Carlton Colliery
	Reference SP4
	Date 9th April 2019
	Originator MJML
	Environmental Consultants **AA Environmental Limited** Units 4-8 Cholswell Court Shippon, Abingdon OX13 6HX T: (01235) 536042 F: (01235) 523849 info@aae-llp.com www.aae-llp.com

APPENDIX B
Certificates of Analysis

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.: 19-12605-1

Initial Date of Issue: 17-Apr-2019

Client AA Environmental Ltd

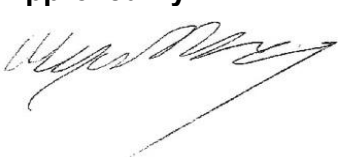
Client Address: Units 4 to 8
Cholswell Court
Shippon
Abingdon
Oxfordshire
OX136HX

Contact(s): Ed Brown
Henry Austin
Ioannis Markidis
Jack Taylor
John McCusker
Mark Anderson
Matthew Lawman
Richard Heath
Sam Muir
Tomos Eaves

Project 173367 - Carlton Colliery, Shaw Lane

Quotation No.:		**Date Received:**	11-Apr-2019
Order No.:		**Date Instructed:**	11-Apr-2019
No. of Samples:	14		
Turnaround (Wkdays):	4	**Results Due:**	16-Apr-2019
Date Approved:	17-Apr-2019		

Approved By:



Details: Glynn Harvey, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 173367 - Carlton Colliery, Shaw Lane

Client: AA Environmental Ltd			**Chemtest Job No.:**		19-12605	19-12605	19-12605	19-12605	19-12605	19-12605	19-12605	19-12605
Quotation No.:			**Chemtest Sample ID.:**		809362	809364	809366	809367	809368	809369	809370	809375
			Client Sample ID.:		TP101	TP102	TP104	TP104	TP105	TP105	TP106	TP108
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	1.00	0.50	1.00	0.00	1.00	0.00	0.00
			Bottom Depth (m):		1.25	1.50	1.00	1.80	1.00	1.80	2.00	1.30
			Date Sampled:		09-Apr-2019	09-Apr-2019	09-Apr-2019	09-Apr-2019	09-Apr-2019	09-Apr-2019	09-Apr-2019	09-Apr-2019
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Sulphate	U	1220	mg/l	1.0	26	43	33	74	170	830	24	310
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	< 1.0	1.5	3.3	1.4	< 1.0	< 1.0	< 1.0	< 1.0
Boron (Dissolved)	U	1450	µg/l	20	< 20	40	23	< 20	< 20	< 20	< 20	< 20
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080	< 0.080	< 0.080	< 0.080	0.096	< 0.080	< 0.080	< 0.080
Copper (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	9.5	< 1.0	< 1.0	4.1
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	38	12	< 1.0	5.3
Chromium (Trivalent)	N	1490	µg/l	20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Chromium (Hexavalent)	U	1490	µg/l	20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 173367 - Carlton Colliery, Shaw Lane

Client: AA Environmental Ltd			**Chemtest Job No.:**		19-12605	19-12605	19-12605	19-12605	19-12605	19-12605	19-12605	19-12605	19-12605
Quotation No.:			**Chemtest Sample ID.:**		809362	809363	809364	809365	809366	809367	809368	809369	809370
			Client Sample ID.:		TP101	TP102	TP102	TP103	TP104	TP104	TP105	TP105	TP106
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	0.50	1.00	0.00	0.50	1.00	0.00	1.00	0.00
			Bottom Depth (m):		1.25	1.00	1.50	0.50	1.00	1.80	1.00	1.80	2.00
			Date Sampled:		09-Apr-2019	09-Apr-2019	09-Apr-2019	09-Apr-2019	09-Apr-2019	09-Apr-2019	09-Apr-2019	09-Apr-2019	09-Apr-2019
			Asbestos Lab:		DURHAM	DURHAM		DURHAM	DURHAM		DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192		N/A	-	-		-	Fibres/Clumps		-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected		No Asbestos Detected	Amosite		No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-		-	Stereo Microscopy		-	-	-
Asbestos by Gravimetry	U	2192	%	0.001					<0.001				
Total Asbestos	N	2192	%	0.001					<0.001				
Moisture	N	2030	%	0.020	14	8.7	28	12	13	8.9	9.2	14	21
Soil Colour	N	2040		N/A	Black,	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,
Other Material	N	2040		N/A	Stones,	Stones,	Stones,	Stones,	Stones,	Stones,	Stones,	Stones,	Stones,
Soil Texture	N	2040		N/A	Sand,	Sand,	Sand,	Sand,	Sand,	Sand,	Sand,	Sand,	Sand,
pH	M	2010		N/A	7.9	11.6		9.5	8.2		6.0	7.6	8.7
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	1.3	1.2	1.5	1.6	1.0	< 0.40	1.1	0.68	0.94
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.21	0.71	0.34	0.73	0.12	0.18	0.34	1.2	0.18
Calorific Value	N	2140	MJ/kg	0.10	21	0.48	5.2		4.3	< 0.10	8.6	0.74	0.23
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	1.5	19		2.9	10		5.6	3.9	15
Arsenic	M	2450	mg/kg	1.0	61	13	40	23	39	9.7	25	22	13
Cadmium	M	2450	mg/kg	0.10	0.15	0.24	0.23	0.78	0.53	< 0.10	0.14	< 0.10	0.14
Chromium	M	2450	mg/kg	1.0	8.9	33		45	24		24	14	460
Copper	M	2450	mg/kg	0.50	46	37	58	32	96	27	67	41	34
Mercury	M	2450	mg/kg	0.10	0.20	0.10	< 0.10	0.13	0.12	< 0.10	< 0.10	< 0.10	0.27
Nickel	M	2450	mg/kg	0.50	21	23	28	24	48	20	45	25	34
Lead	M	2450	mg/kg	0.50	59	98	110	65	61	8.7	56	13	31
Selenium	M	2450	mg/kg	0.20	1.6	< 0.20	0.84	< 0.20	0.62	< 0.20	0.57	0.41	0.54
Vanadium	U	2450	mg/kg	5.0	20	30	33	29	40	22	43	29	90
Zinc	M	2450	mg/kg	0.50	48	100	67	86	160	22	59	60	83
Chromium (Trivalent)	N	2490	mg/kg	1.0			17			8.8			
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Organic Carbon	M	2625	%	0.20	48	5.1		3.2	18		20	3.2	2.0
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	[C] < 1.0		< 1.0	< 1.0		< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	[C] < 1.0		< 1.0	< 1.0		< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	4.3	[C] < 1.0		< 1.0	< 1.0		8.6	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	1.7	[C] < 1.0		< 1.0	< 1.0		3.8	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	1.4	[C] < 1.0		< 1.0	< 1.0		8.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	1.5	[C] < 1.0		< 1.0	< 1.0		16	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	[C] 59		< 1.0	< 1.0		170	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	[C] < 1.0		< 1.0	< 1.0		< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 173367 - Carlton Colliery, Shaw Lane

Client: AA Environmental Ltd			**Chemtest Job No.:**		19-12605	19-12605	19-12605	19-12605	19-12605	19-12605	19-12605	19-12605	19-12605
Quotation No.:			**Chemtest Sample ID.:**		809362	809363	809364	809365	809366	809367	809368	809369	809370
			Client Sample ID.:		TP101	TP102	TP102	TP103	TP104	TP104	TP105	TP105	TP106
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	0.50	1.00	0.00	0.50	1.00	0.00	1.00	0.00
			Bottom Depth (m):		1.25	1.00	1.50	0.50	1.00	1.80	1.00	1.80	2.00
			Date Sampled:		09-Apr-2019	09-Apr-2019	09-Apr-2019	09-Apr-2019	09-Apr-2019	09-Apr-2019	09-Apr-2019	09-Apr-2019	09-Apr-2019
			Asbestos Lab:		DURHAM	DURHAM		DURHAM	DURHAM		DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	8.8	[C] 59		< 5.0	< 5.0		200	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	[C] < 1.0		< 1.0	< 1.0		< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	[C] < 1.0		< 1.0	< 1.0		< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	3.9	[C] < 1.0		< 1.0	< 1.0		8.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	1.5	[C] < 1.0		< 1.0	< 1.0		1.6	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	2.0	[C] 4.3		< 1.0	< 1.0		6.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	[C] 110		< 1.0	< 1.0		4.3	< 1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	[C] 390		< 1.0	< 1.0		89	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	[C] 22		< 1.0	< 1.0		< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	7.4	[C] 530		< 5.0	< 5.0		110	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	16	[C] 590		< 10	< 10		310	< 10	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	1.9		< 0.10	8.2		< 0.10	< 0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	0.59		< 0.10	1.3		< 0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	0.67		< 0.10	0.36		< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	1.0		< 0.10	1.9		< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	< 0.10	20		< 0.10	3.0		< 0.10	0.54	< 0.10
Anthracene	M	2700	mg/kg	0.10	< 0.10	3.7		< 0.10	0.32		< 0.10	0.10	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	< 0.10	25		< 0.10	1.3		< 0.10	0.37	0.56
Pyrene	M	2700	mg/kg	0.10	< 0.10	23		< 0.10	1.6		< 0.10	0.47	0.64
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	9.0		< 0.10	< 0.10		< 0.10	< 0.10	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10	9.4		< 0.10	< 0.10		< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	10		< 0.10	< 0.10		< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	4.0		< 0.10	< 0.10		< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	7.4		< 0.10	< 0.10		< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	4.7		< 0.10	< 0.10		< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	1.3		< 0.10	< 0.10		< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	4.8		< 0.10	< 0.10		< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0	130		< 2.0	18		< 2.0	< 2.0	< 2.0
Benzene	M	2760	µg/kg	1.0	< 1.0	[C] < 1.0			< 1.0		37	< 1.0	
Toluene	M	2760	µg/kg	1.0	< 1.0	[C] < 1.0			< 1.0		110	< 1.0	
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	[C] < 1.0			< 1.0		9.7	< 1.0	
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	[C] < 1.0			< 1.0		62	< 1.0	
o-Xylene	M	2760	µg/kg	1.0	< 1.0	[C] < 1.0			< 1.0		26	< 1.0	
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30		< 0.30	< 0.30		< 0.30	< 0.30	< 0.30

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 173367 - Carlton Colliery, Shaw Lane

Client: AA Environmental Ltd			**Chemtest Job No.:**		19-12605	19-12605	19-12605	19-12605	19-12605
Quotation No.:			**Chemtest Sample ID.:**		809371	809372	809373	809374	809375
			Client Sample ID.:		TP106	TP107(Tar)	TP107	TP107	TP108
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		2.00	0.00	0.25	1.20	0.00
			Bottom Depth (m):		2.20	0.50	0.75	2.00	1.30
			Date Sampled:		09-Apr-2019	09-Apr-2019	09-Apr-2019	09-Apr-2019	09-Apr-2019
			Asbestos Lab:		DURHAM		DURHAM	DURHAM	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
ACM Type	U	2192		N/A	-		-	-	
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected		No Asbestos Detected	No Asbestos Detected	
ACM Detection Stage	U	2192		N/A	-		-	-	
Asbestos by Gravimetry	U	2192	%	0.001					
Total Asbestos	N	2192	%	0.001					
Moisture	N	2030	%	0.020	8.4	< 0.020	11	12	11
Soil Colour	N	2040		N/A	Brown,	Brown	Brown,	Brown,	Black,
Other Material	N	2040		N/A	Stones,	Stones	Stones,	Stones,	Stones,
Soil Texture	N	2040		N/A	Sand,	Sand	Sand,	Sand,	Sand,
pH	M	2010		N/A	6.1		9.0	8.4	
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	0.61		0.75	0.82	0.63
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.13		0.085	0.060	0.43
Calorific Value	N	2140	MJ/kg	0.10	2.5		1.8	0.88	5.5
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50		0.80	< 0.50	< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	2.5		6.4	4.4	
Arsenic	M	2450	mg/kg	1.0	12		27	22	16
Cadmium	M	2450	mg/kg	0.10	< 0.10		1.1	0.35	0.24
Chromium	M	2450	mg/kg	1.0	28		34	20	
Copper	M	2450	mg/kg	0.50	41		79	49	52
Mercury	M	2450	mg/kg	0.10	< 0.10		0.23	0.12	< 0.10
Nickel	M	2450	mg/kg	0.50	31		40	31	45
Lead	M	2450	mg/kg	0.50	18		140	52	32
Selenium	M	2450	mg/kg	0.20	0.31		0.25	0.49	0.45
Vanadium	U	2450	mg/kg	5.0	18		24	21	17
Zinc	M	2450	mg/kg	0.50	73		230	110	110
Chromium (Trivalent)	N	2490	mg/kg	1.0					18
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50
Total Organic Carbon	M	2625	%	0.20	4.9		8.0	8.6	
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	10	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	10	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	27	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	3300	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	23000	36	< 1.0	4.4
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	1700	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 173367 - Carlton Colliery, Shaw Lane

Client: AA Environmental Ltd			**Chemtest Job No.:**		19-12605	19-12605	19-12605	19-12605	19-12605
Quotation No.:			**Chemtest Sample ID.:**		809371	809372	809373	809374	809375
			Client Sample ID.:		TP106	TP107(Tar)	TP107	TP107	TP108
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		2.00	0.00	0.25	1.20	0.00
			Bottom Depth (m):		2.20	0.50	0.75	2.00	1.30
			Date Sampled:		09-Apr-2019	09-Apr-2019	09-Apr-2019	09-Apr-2019	09-Apr-2019
			Asbestos Lab:		DURHAM		DURHAM	DURHAM	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	28000	36	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	20	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	35	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	700	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	2700	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	83000	68	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	11000	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	98000	68	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	130000	100	< 10	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.53	< 0.10
Pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.99	< 0.10
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Benzene	M	2760	µg/kg	1.0	< 1.0				
Toluene	M	2760	µg/kg	1.0	< 1.0				
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0				
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0				
o-Xylene	M	2760	µg/kg	1.0	< 1.0				
Total Phenols	M	2920	mg/kg	0.30	< 0.30		< 0.30	< 0.30	

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
809363		TP102		09-Apr-2019	C	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2140	Calorific Value	Calorific Value	Bomb Calorimeter
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

APPENDIX C
Consolidated contamination results

Consolidated Soil Results - Residential with Homegrown Produce

Site: Carlton Colliery
Project Reference: 173367
Client: Unconfirmed
Strata: ALL Strata
Notes:

KEY
Exceedance of SGV
Below Limit of Detection

Determinant	Units	LOD	SGV	Max	Number	No. Exceedances	Sample Location	WS1	WS2	WS3	WS4	WS5	WS6	WS7	WS8	WS9	WS10	WS11	TP35	TP36	TP37	TP38	TP39	TP40	TP41	TP42	TP43	TP44	SU1	SU2	TP1	TP2	TP3	TP4	TP5	TP7
							Sample Ref	E855	E856	E857	E858	E859	E860	E861	E862	E863	E864	E865	E866	E867	E868	E869	E870	E871	E872	E873	E874	E875	E876	E877	E534	E535	E536	E537	E538	E540
							Depth (top)	0.2	1.6	2.2	0.2	1	0.5	1.9	0.1	1.2	0.5	0.5	0.5	1.2	0.5	1.6	0.7	0.3	1.4	0.8	0.5	2.1	GL	GL	2.1	0.9	0.4	1	1	0.2
							Depth (bottom)	0.4	1.8	2.4	0.4	1.2	0.7	2.1	0.3	1.9	0.7	0.7																	
							Lab Report	1152	1152	1152	1152	1152	1152	1152	1152	1152	1152	1152	1152	1152	1152	1152	1152	1152	1152	1152	1152	1152	1152	1152	1102	1102	1102	1102	1102	1102
							Sample Date																													
							Originator																													
							Strata	TS	NAT-CL	NAT	NAT	MG	MG	MG	MG	MG	NAT-CL	MG		NAT-CL	MG	MG	MG	TS	NAT-CL	NAT-CL		NAT			NAT	NAT-CL	NAT-CL	NAT-CL	NAT-CL	TS
pH	pH unit	0.1	6 to 9																																	
Boron (Hot Water Soluble)	mg/kg	0.4	290	1.6	13																															
Cyanide (Total)	mg/kg	0.5	34	5	69		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	**5**	**5**	5	5
Sulphide (Easily Liberatable)	mg/kg	0.5		19	10																															
Arsenic	mg/kg	1	37	260	69	16	33	**64**	8	27	**68**	8	9	19	32	6	28	6	9	**45**	23	**39**	22	9	**56**	8	7	**84**	**120**	3	26	36	22	2	8
Cadmium	mg/kg	0.1	11	7.5	69		0.9	4.8	4	0.7	0.9	0.5	0.5	0.5	0.5	0.5	0.6	0.5	0.5	1.4	0.5	0.6	0.5	0.5	1	0.5	0.5	1.1	1.5	0.5	1.7	1.4	0.7	0.5	0.5
Chromium	mg/kg	1	910	460	66		17	49	26	22	7	9	8	8	7	7	2	10	9	10	14	10	9	7	17	13	20	7	21	2	10	61	22	14	25
Copper	mg/kg	0.5	2400	820	69		66	180	74	52	61	100	45	84	52	14	71	14	15	820	46	53	61	15	68	12	28	73	18	75	25	170	43	42	20
Mercury	mg/kg	0.1	1.2	0.6	69		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.3	0.3	0.3	0.3
Nickel	mg/kg	0.5	180	180	69		18	180	72	18	25	42	30	36	19	11	20	17	9	26	27	15	25	8	31	10	36	32	6	21	32	110	16	18	22
Lead	mg/kg	0.5	200	1670	69	3	90	160	53	64	35	44	28	18	36	21	66	17	25	**1670**	140	41	120	30	89	24	20	54	33	14	42	71	40	11	19
Selenium	mg/kg	0.2	250	22	69		4	22	10	1.9	1.5	2.9	1.6	2.6	2.1	2.2	3.6	1.5	1.4	2	1.9	2.3	1.9	1.4	1.9	1.7	1.3	2.6	0.6	1	1.7	9.3	3.5	0.8	0.7
Vanadium	mg/kg	5	410	90	13																															
Zinc	mg/kg	0.5	3700	850	69		180	190	160	71	35	20	91	70	68	68	93	46	57	850	83	69	51	66	140	43	81	77	12	9	19	130	32	39	73
Chromium (Hexavalent)	mg/kg	0.5	6	0.5	13																															
Total Organic Carbon	%	0.2	3	48	10	9																														
Aliphatic TPH >C5-C6	mg/kg	0.1	42	1	11																															
Aliphatic TPH >C6-C8	mg/kg	0.1	100	1	11																															
Aliphatic TPH >C8-C10	mg/kg	0.1	27	10	11																															
Aliphatic TPH >C10-C12	mg/kg	1	130	10	11																															
Aliphatic TPH >C12-C16	mg/kg	1	1100	27	11																															
Aliphatic TPH >C16-C21	mg/kg	1	65000	3300	11																															
Aliphatic TPH >C21-C35	mg/kg	1	65000	23000	11																															
Aliphatic TPH >C35-C44	mg/kg	1	65000	1700	11																															
Total Aliphatic Hydrocarbons	mg/kg	5		28000	11																															
Aromatic TPH >C5-C7	mg/kg	0.1	70	1	11																															
Aromatic TPH >C7-C8	mg/kg	0.1	130	1	11																															
Aromatic TPH >C8-C10	mg/kg	0.1	34	20	11																															
Aromatic TPH >C10-C12	mg/kg	1	74	35	11																															
Aromatic TPH >C12-C16	mg/kg	1	140	700	11	1																														
Aromatic TPH >C16-C21	mg/kg	1	260	2700	11	1																														
Aromatic TPH >C21-C35	mg/kg	1	1100	83000	11	1																														
Aromatic TPH >C35-C44	mg/kg	1	1100	11000	11	1																														
Total Aromatic Hydrocarbons	mg/kg	5		98000	11																															
TPH C6-C10	mg/kg	1																																		
TPH C10-C21	mg/kg	1																																		
TPH C21-C40	mg/kg	1																																		
Total Petroleum Hydrocarbons	mg/kg	10		130000	67		20	20	20	20	20	20	20	59	20	20	56	20	20	58	73	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Naphthalene	mg/kg	0.1	2.3	8.2	15	1																														
Acenaphthylene	mg/kg	0.1	170	1.3	15																															
Acenaphthene	mg/kg	0.1	210	0.67	15																															
Fluorene	mg/kg	0.1	170	1.9	15																															
Phenanthrene	mg/kg	0.1	95	20	15																															
Anthracene	mg/kg	0.1	2400	3.7	15																															
Fluoranthene	mg/kg	0.1	280	25	15																															
Pyrene	mg/kg	0.1	620	23	15																															
Benzo[a]anthracene	mg/kg	0.1	7.2	9	15	1																														
Chrysene	mg/kg	0.1	15	9.4	15																															
Benzo[b]fluoranthene	mg/kg	0.1	2.6	10	15	1																														
Benzo[k]fluoranthene	mg/kg	0.1	77	4	15																															
Benzo[a]pyrene	mg/kg	0.1	2.2	7.4	15	1																														
Indeno(1,2,3-c,d)Pyrene	mg/kg	0.1	27	4.7	15																															
Dibenz(a,h)Anthracene	mg/kg	0.1	0.24	1.3	15	1																														
Benzo[g,h,i]perylene	mg/kg	0.1	320	4.8	15																															
Total Of 16 PAH's	mg/kg	2		130	24										20			20			20	20														
Total Phenols	mg/kg	0.3	280	280	66		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Asbestos	Type	If present	Detected			1	NAD								NAD		NAD	NAD	NAD		NAD		NAD										NAD	0		NAD
Asbestos % (if present)	%	0.001		0.001	1																															
Benzene	mg/kg	0.1	0.087	37	13	13																											**2**				
Toluene	mg/kg	0.1	130	110	13																												2				
Ethylbenzene	mg/kg	0.1	47	9.7	13																												9				
M-Xylene	mg/kg	0.1	59	62	13	1																											13				
P-Xylene	mg/kg	0.1	56	62	13	1																											13				
O-Xylene	mg/kg	0.1	60	26	13																												6				

Consolidated Soil Results - Residential with Homegrown Produce

Site: Carlton Colliery
Project Reference: 173367
Client: Unconfirmed
Strata: ALL Strata
Notes:

KEY
Exceedance of SGV
Below Limit of Detection

Determinant	Units	LOD	SGV	Max	Number	No. Exceedances	Sample Location	TP8	TP9	TP10	TP11	TP12	TP13	TP14	TP15	TP16	TP17	TP18	TP19	TP20	TP21	TP22	TP23	TP24	TP25	TP26	TP27	TP28	TP29	TP30	TP31	TP32	TP33	TP34	TP101	TP102
							Sample Ref	E541	E542	E543	E544	E545	E546	E547	E548	E549	E550	E551	E552	E553	E554	E555	E557	E558	E559	E560	E561	E562	E563	E564	E565	E566	E567	E568	809362	809363
							Depth (top)	2.9	0.2	2.6	2.1	0.5	1.4	3	1.3	1.9	0.4	1.6	2.6	0.5	1	1	2.6	0.5	1.3	2.8	3.2	0.5	0.4	1.2	0.5	1	3.5	0.4	0.50	0.50
							Depth (bottom)																												1.25	1.00
							Lab Report	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	19-12605	19-12605
							Sample Date																												9/4/19	9/4/19
							Originator																													
							Strata	NAT-CL	MG	NAT	NAT	MG	MG	MG	MG	MG	TS	MG	NAT-GR	TS	MG	MG	MG	TS	MG	NAT-CL	NAT-GR	MG	MG	MG	MG	MG	MG	MG	MG	MG
pH	pH unit	0.1	6 to 9																																	
Boron (Hot Water Soluble)	mg/kg	0.4	290	1.6	13																														1.3	1.2
Cyanide (Total)	mg/kg	0.5	34	5	69		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	*0.5*	*0.5*
Sulphide (Easily Liberatable)	mg/kg	0.5		19	10																														1.5	19
Arsenic	mg/kg	1	37	260	69	16	8	11	8	6	32	12	17	33	20	36	32	35	**58**	36	22	**260**	**38**	33	13	15	30	**42**	36	**51**	27	30	**40**	**61**	13
Cadmium	mg/kg	0.1	11	7.5	69		0.7	0.5	0.5	0.5	1.3	0.5	0.6	7.5	0.6	2.2	0.8	1	2.6	1.4	0.7	7.2	1.2	1	0.7	0.7	1.6	1.2	1	1.6	0.8	1	1.1	0.15	0.24
Chromium	mg/kg	1	910	460	66		24	12	18	11	13	7	15	14	5	15	15	17	19	61	22	5	13	11	24	24	22	14	7	12	10	8	10	8.9	33
Copper	mg/kg	0.5	2400	820	69		30	21	26	15	100	38	150	89	43	99	110	59	150	170	43	56	100	63	60	35	100	330	37	93	63	55	57	46	37
Mercury	mg/kg	0.1	1.2	0.6	69		0.3	0.3	0.3	0.3	0.3	0.6	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	*0.1*
Nickel	mg/kg	0.5	180	180	69		49	16	24	21	34	24	36	34	17	33	30	38	53	110	16	35	40	30	52	52	43	140	12	38	27	28	28	21	23
Lead	mg/kg	0.5	200	1670	69	3	52	14	19	16	**370**	82	180	**220**	39	45	10	19	67	71	40	74	96	35	66	84	67	150	29	79	45	140	36	59	98
Selenium	mg/kg	0.2	250	22	69		0.5	1	0.5	0.8	1.8	1	1	1.2	1.6	1.3	0.7	0.5	0.6	9.3	3.5	3.3	1.8	1.3	1.6	0.5	0.9	2.7	1.7	1.8	1.5	3.5	1.8	1.6	*0.2*
Vanadium	mg/kg	5	410	90	13																														20	30
Zinc	mg/kg	0.5	3700	850	69		130	28	39	38	230	80	170	370	27	170	89	34	240	130	32	55	120	100	200	190	140	93	27	110	85	79	84	48	100
Chromium (Hexavalent)	mg/kg	0.5	6	0.5	13																														*0.5*	*0.5*
Total Organic Carbon	%	0.2	3	48	10	9																													**48**	**5.1**
Aliphatic TPH >C5-C6	mg/kg	0.1	42	1	11																														1	**[C] 1.0**
Aliphatic TPH >C6-C8	mg/kg	0.1	100	1	11																														1	**[C] 1.0**
Aliphatic TPH >C8-C10	mg/kg	0.1	27	10	11																														4.3	**[C] 1.0**
Aliphatic TPH >C10-C12	mg/kg	1	130	10	11																														1.7	**[C] 1.0**
Aliphatic TPH >C12-C16	mg/kg	1	1100	27	11																														1.4	**[C] 1.0**
Aliphatic TPH >C16-C21	mg/kg	1	65000	3300	11																														1.5	**[C] 1.0**
Aliphatic TPH >C21-C35	mg/kg	1	65000	23000	11																														*1*	**[C] 59**
Aliphatic TPH >C35-C44	mg/kg	1	65000	1700	11																														*1*	**[C] 1.0**
Total Aliphatic Hydrocarbons	mg/kg	5		28000	11																														8.8	[C] 59
Aromatic TPH >C5-C7	mg/kg	0.1	70	1	11																														1	**[C] 1.0**
Aromatic TPH >C7-C8	mg/kg	0.1	130	1	11																														1	[C] 1.0
Aromatic TPH >C8-C10	mg/kg	0.1	34	20	11																														3.9	[C] 1.0
Aromatic TPH >C10-C12	mg/kg	1	74	35	11																														1.5	[C] 1.0
Aromatic TPH >C12-C16	mg/kg	1	140	700	11	1																													2	[C] 4.3
Aromatic TPH >C16-C21	mg/kg	1	260	2700	11	1																													*1*	[C] 110
Aromatic TPH >C21-C35	mg/kg	1	1100	83000	11	1																													*1*	[C] 390
Aromatic TPH >C35-C44	mg/kg	1	1100	11000	11	1																													*1*	[C] 22
Total Aromatic Hydrocarbons	mg/kg	5		98000	11																														7.4	[C] 530
TPH C6-C10	mg/kg	1																																		
TPH C10-C21	mg/kg	1																																		
TPH C21-C40	mg/kg	1																																		
Total Petroleum Hydrocarbons	mg/kg	10		130000	67		20	20	20	110	20	20	92	150	11900	41	20	20	20	20	20	20	20	20	20	20	110	170	20	20	55	34	20	16	[C] 590
Naphthalene	mg/kg	0.1	2.3	8.2	15	1							1.6		1.4											0.13								*0.1*	1.9
Acenaphthylene	mg/kg	0.1	170	1.3	15								*0.019*		*0.01*											*0.01*								*0.1*	0.59
Acenaphthene	mg/kg	0.1	210	0.67	15								*0.083*		0.11											*0.01*								*0.1*	0.67
Fluorene	mg/kg	0.1	170	1.9	15								0.14		0.35											*0.026*								*0.1*	1
Phenanthrene	mg/kg	0.1	95	20	15								1.5		2.2											0.11								*0.1*	20
Anthracene	mg/kg	0.1	2400	3.7	15								0.13		0.57											*0.1*								*0.1*	3.7
Fluoranthene	mg/kg	0.1	280	25	15								0.85		1.4											*0.01*								*0.1*	25
Pyrene	mg/kg	0.1	620	23	15								0.71		1.2											*0.01*								*0.1*	23
Benzo[a]anthracene	mg/kg	0.1	7.2	9	15	1							0.28		0.56											*0.01*								*0.1*	9
Chrysene	mg/kg	0.1	15	9.4	15								0.51		1.3											*0.037*								*0.1*	9.4
Benzo[b]fluoranthene	mg/kg	0.1	2.6	10	15	1							0.16		*0.01*											*0.01*								*0.1*	10
Benzo[k]fluoranthene	mg/kg	0.1	77	4	15								*0.097*		*0.01*											*0.01*								*0.1*	4
Benzo[a]pyrene	mg/kg	0.1	2.2	7.4	15	1							0.14		*0.01*											*0.01*								*0.1*	7.4
Indeno(1,2,3-c,d)Pyrene	mg/kg	0.1	27	4.7	15								*0.098*		*0.01*											*0.01*								*0.1*	4.7
Dibenz(a,h)Anthracene	mg/kg	0.1	0.24	1.3	15	1							*0.01*		*0.01*											*0.01*								*0.1*	1.3
Benzo[g,h,i]perylene	mg/kg	0.1	320	4.8	15								0.16		*0.01*											*0.01*								*0.1*	4.8
Total Of 16 PAH's	mg/kg	2		130	24					20			6.487	20	9.16											*0.503*	20	20			20			*2*	130
Total Phenols	mg/kg	0.3	280	280	66		3	3	3	3	3	3	30	3	280	3	3.9	9.6	3	3	3	3	3	3	3	10	3	3	3	3	3	3	3	*0.3*	*0.3*
Asbestos	Type	If present	Detected			1		NAD			NAD			NAD			NAD			NAD	NAD		NAD					NAD		NAD			NAD	NAD	NAD
Asbestos % (if present)	%	0.001		0.001	1																															
Benzene	mg/kg	0.1	0.087	37	13	13		2		2			2		2				2			2				2								1	**[C] 1.0**
Toluene	mg/kg	0.1	130	110	13			2		2			2		2				2			6				2								1	**[C] 1.0**
Ethylbenzene	mg/kg	0.1	47	9.7	13			2		2			4		7				7			5				2								1	**[C] 1.0**
M-Xylene	mg/kg	0.1	59	62	13	1		2		2			8		10				15			12				5								1	**[C] 1.0**
P-Xylene	mg/kg	0.1	56	62	13	1		2		2			8		10				15			12				5								1	**[C] 1.0**
O-Xylene	mg/kg	0.1	60	26	13			2		2			5		6				5			5				3								1	**[C] 1.0**

Consolidated Soil Results - Residential with Homegrown Produce

Site: Carlton Colliery
Project Reference: 173367
Client: Unconfirmed
Strata: ALL Strata
Notes:

KEY
Exceedance of SGV
Below Limit of Detection

Determinant	Units	LOD	SGV	Max	Number	No. Exceedances	Sample Location	TP102	TP103	TP104	TP104	TP105	TP105	TP106	TP106	TP107(Tar)	TP107	TP107	TP108
							Sample Ref	809364	809365	809366	809367	809368	809369	809370	809371	809372	809373	809374	809375
							Depth (top)	1.00	0.00	0.50	1.00	0.00	1.00	0.00	2.00	0.00	0.25	1.20	0.00
							Depth (bottom)	1.50	0.50	1.00	1.80	1.00	1.80	2.00	2.20	0.50	0.75	2.00	1.30
							Lab Report	19-12605	19-12605	19-12605	19-12605	19-12605	19-12605	19-12605	19-12605	19-12605	19-12605	19-12605	19-12605
							Sample Date	9/4/19	9/4/19	9/4/19	9/4/19	9/4/19	9/4/19	9/4/19	9/4/19	9/4/19	9/4/19	9/4/19	9/4/19
							Originator												
							Strata	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG
pH	pH unit	0.1	6 to 9																
Boron (Hot Water Soluble)	mg/kg	0.4	290	1.6	13			1.5	1.6	1	*0.4*	1.1	0.68	0.94	0.61		0.75	0.82	0.63
Cyanide (Total)	mg/kg	0.5	34	5	69			*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*		0.8	*0.5*	*0.5*
Sulphide (Easily Liberatable)	mg/kg	0.5		19	10				2.9	10		5.6	3.9	15	2.5		6.4	4.4	
Arsenic	mg/kg	1	37	260	69	16		**40**	23	**39**	9.7	25	22	13	12		27	22	16
Cadmium	mg/kg	0.1	11	7.5	69			0.23	0.78	0.53	*0.1*	0.14	*0.1*	0.14	*0.1*		1.1	0.35	0.24
Chromium	mg/kg	1	910	460	66				45	24		24	14	460	28		34	20	
Copper	mg/kg	0.5	2400	820	69			58	32	96	27	67	41	34	41		79	49	52
Mercury	mg/kg	0.1	1.2	0.6	69			*0.1*	0.13	0.12	*0.1*	*0.1*	*0.1*	0.27	*0.1*		0.23	0.12	*0.1*
Nickel	mg/kg	0.5	180	180	69			28	24	48	20	45	25	34	31		40	31	45
Lead	mg/kg	0.5	200	1670	69	3		110	65	61	8.7	56	13	31	18		140	52	32
Selenium	mg/kg	0.2	250	22	69			0.84	*0.2*	0.62	*0.2*	0.57	0.41	0.54	0.31		0.25	0.49	0.45
Vanadium	mg/kg	5	410	90	13			33	29	40	22	43	29	90	18		24	21	17
Zinc	mg/kg	0.5	3700	850	69			67	86	160	22	59	60	83	73		230	110	110
Chromium (Hexavalent)	mg/kg	0.5	6	0.5	13			*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*		*0.5*	*0.5*	*0.5*
Total Organic Carbon	%	0.2	3	48	10	9			**3.2**	**18**		**20**	**3.2**	2	**4.9**		**8**	**8.6**	
Aliphatic TPH >C5-C6	mg/kg	0.1	42	1	11				1	1		1	1	1	1	1	1	1	1
Aliphatic TPH >C6-C8	mg/kg	0.1	100	1	11				1	1		1	1	1	1	1	1	1	1
Aliphatic TPH >C8-C10	mg/kg	0.1	27	10	11				1	1		8.6	1	1	1	10	1	1	1
Aliphatic TPH >C10-C12	mg/kg	1	130	10	11				*1*	*1*		3.8	*1*	*1*	*1*	10	*1*	*1*	*1*
Aliphatic TPH >C12-C16	mg/kg	1	1100	27	11				*1*	*1*		8	*1*	*1*	*1*	27	*1*	*1*	*1*
Aliphatic TPH >C16-C21	mg/kg	1	65000	3300	11				*1*	*1*		16	*1*	*1*	*1*	3300	*1*	*1*	*1*
Aliphatic TPH >C21-C35	mg/kg	1	65000	23000	11				*1*	*1*		170	*1*	*1*	*1*	23000	36	*1*	4.4
Aliphatic TPH >C35-C44	mg/kg	1	65000	1700	11				*1*	*1*		*1*	*1*	*1*	*1*	1700	*1*	*1*	*1*
Total Aliphatic Hydrocarbons	mg/kg	5		28000	11				*5*	*5*		200	*5*	*5*	*5*	28000	36	*5*	*5*
Aromatic TPH >C5-C7	mg/kg	0.1	70	1	11				1	1		1	1	1	1	1	1	1	1
Aromatic TPH >C7-C8	mg/kg	0.1	130	1	11				1	1		1	1	1	1	1	1	1	1
Aromatic TPH >C8-C10	mg/kg	0.1	34	20	11				1	1		8	1	1	1	20	1	1	1
Aromatic TPH >C10-C12	mg/kg	1	74	35	11				*1*	*1*		1.6	*1*	*1*	*1*	35	*1*	*1*	*1*
Aromatic TPH >C12-C16	mg/kg	1	140	700	11	1			*1*	*1*		6	*1*	*1*	*1*	700	*1*	*1*	*1*
Aromatic TPH >C16-C21	mg/kg	1	260	2700	11	1			*1*	*1*		4.3	*1*	*1*	*1*	2700	*1*	*1*	*1*
Aromatic TPH >C21-C35	mg/kg	1	1100	83000	11	1			*1*	*1*		89	*1*	*1*	*1*	83000	68	*1*	*1*
Aromatic TPH >C35-C44	mg/kg	1	1100	11000	11	1			*1*	*1*		*1*	*1*	*1*	*1*	11000	*1*	*1*	*1*
Total Aromatic Hydrocarbons	mg/kg	5		98000	11				*5*	*5*		110	*5*	*5*	*5*	98000	68	*5*	*5*
TPH C6-C10	mg/kg	1																	
TPH C10-C21	mg/kg	1																	
TPH C21-C40	mg/kg	1																	
Total Petroleum Hydrocarbons	mg/kg	10		130000	67				*10*	*10*		310	*10*	*10*	*10*	130000	100	*10*	*10*
Naphthalene	mg/kg	0.1	2.3	8.2	15	1			*0.1*	8.2		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*
Acenaphthylene	mg/kg	0.1	170	1.3	15				*0.1*	1.3		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*
Acenaphthene	mg/kg	0.1	210	0.67	15				*0.1*	0.36		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*
Fluorene	mg/kg	0.1	170	1.9	15				*0.1*	1.9		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*
Phenanthrene	mg/kg	0.1	95	20	15				*0.1*	3		*0.1*	0.54	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*
Anthracene	mg/kg	0.1	2400	3.7	15				*0.1*	0.32		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*
Fluoranthene	mg/kg	0.1	280	25	15				*0.1*	1.3		*0.1*	0.37	0.56	*0.1*	*0.1*	*0.1*	0.53	*0.1*
Pyrene	mg/kg	0.1	620	23	15				*0.1*	1.6		*0.1*	0.47	0.64	*0.1*	*0.1*	*0.1*	0.99	*0.1*
Benzo[a]anthracene	mg/kg	0.1	7.2	9	15	1			*0.1*	*0.1*		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*
Chrysene	mg/kg	0.1	15	9.4	15				*0.1*	*0.1*		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*
Benzo[b]fluoranthene	mg/kg	0.1	2.6	10	15	1			*0.1*	*0.1*		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*
Benzo[k]fluoranthene	mg/kg	0.1	77	4	15				*0.1*	*0.1*		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*
Benzo[a]pyrene	mg/kg	0.1	2.2	7.4	15	1			*0.1*	*0.1*		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*
Indeno(1,2,3-c,d)Pyrene	mg/kg	0.1	27	4.7	15				*0.1*	*0.1*		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*
Dibenz(a,h)Anthracene	mg/kg	0.1	0.24	1.3	15	1			*0.1*	*0.1*		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*
Benzo[g,h,i]perylene	mg/kg	0.1	320	4.8	15				*0.1*	*0.1*		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*
Total Of 16 PAH's	mg/kg	2		130	24				*2*	18		*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*
Total Phenols	mg/kg	0.3	280	280	66				*0.3*	*0.3*		*0.3*	*0.3*	*0.3*	*0.3*		*0.3*	*0.3*	
Asbestos	Type	If present	Detected			1	N/T	NAD	**Detected**	N/T	NAD	NAD	NAD	NAD	N/T	NAD	NAD	N/T	
Asbestos % (if present)	%	0.001		0.001	1				0.001										
Benzene	mg/kg	0.1	0.087	37	13	13			1		37	1		1					
Toluene	mg/kg	0.1	130	110	13				1		110	1		1					
Ethylbenzene	mg/kg	0.1	47	9.7	13				1		9.7	1		1					
M-Xylene	mg/kg	0.1	59	62	13	1			1		62	1		1					
P-Xylene	mg/kg	0.1	56	62	13	1			1		62	1		1					
O-Xylene	mg/kg	0.1	60	26	13				1		26	1		1					

Consolidated Soil Results - Public Open Space (POS) Residential

Site: Carlton Colliery
Project Reference: 173367
Client: Unconfirmed
Strata: ALL Strata
Notes:

KEY
Exceedance of SGV
Below Limit of Detection

Determinant	Units	LOD	SGV	Max	Number	No. Exceedances	WS1	WS2	WS3	WS4	WS5	WS6	WS7	WS8	WS9	WS10	WS11	TP35
Sample Location							WS1	WS2	WS3	WS4	WS5	WS6	WS7	WS8	WS9	WS10	WS11	TP35
Sample Ref							E855	E856	E857	E858	E859	E860	E861	E862	E863	E864	E865	E866
Depth (top)							0.2	1.6	2.2	0.2	1	0.5	1.9	0.1	1.2	0.5	0.5	0.5
Depth (bottom)							0.4	1.8	2.4	0.4	1.2	0.7	2.1	0.3	1.9	0.7	0.7	
Lab Report							1152	1152	1152	1152	1152	1152	1152	1152	1152	1152	1152	1152
Sample Date																		
Originator																		
Strata							TS	NAT-CL	NAT	NAT	MG	MG	MG	MG	MG	NAT-CL	MG	
pH	pH unit	0.1	6 to 9															
Boron (Hot Water Soluble)	mg/kg	0.4	21000	1.6	13													
Cyanide (Total)	mg/kg	0.5	34	5	69		5	5	5	5	5	5	5	5	5	5	5	5
Sulphide (Easily Liberatable)	mg/kg	0.5		19	10													
Arsenic	mg/kg	1	79	260	69	3	33	64	8	27	68	8	9	19	32	6	28	6
Cadmium	mg/kg	0.1	120	7.5	69		0.9	4.8	4	0.7	0.9	0.5	0.5	0.5	0.5	0.5	0.6	0.5
Chromium	mg/kg	1	1500	460	66		17	49	26	22	7	9	8	8	7	7	2	10
Copper	mg/kg	0.5	12000	820	69		66	180	74	52	61	100	45	84	52	14	71	14
Mercury	mg/kg	0.1	16	0.6	69		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Nickel	mg/kg	0.5	230	180	69		18	180	72	18	25	42	30	36	19	11	20	17
Lead	mg/kg	0.5	630	1670	69	1	90	160	53	64	35	44	28	18	36	21	66	17
Selenium	mg/kg	0.2	1100	22	69		4	22	10	1.9	1.5	2.9	1.6	2.6	2.1	2.2	3.6	1.5
Vanadium	mg/kg	5	2000	90	13													
Zinc	mg/kg	0.5	81000	850	69		180	190	160	71	35	20	91	70	68	68	93	46
Chromium (Hexavalent)	mg/kg	0.5	7.7	0.5	13													
Total Organic Carbon	%	0.2	3	48	10	9												
Aliphatic TPH >C5-C6	mg/kg	0.1	570000	1	12													
Aliphatic TPH >C6-C8	mg/kg	0.1	600000	1	12													
Aliphatic TPH >C8-C10	mg/kg	0.1	13000	10	12													
Aliphatic TPH >C10-C12	mg/kg	1	13000	10	12													
Aliphatic TPH >C12-C16	mg/kg	1	13000	27	12													
Aliphatic TPH >C16-C21	mg/kg	1	250000	3300	12													
Aliphatic TPH >C21-C35	mg/kg	1	250000	23000	12													
Aliphatic TPH >C35-C44	mg/kg	1	250000	1700	12													
Total Aliphatic Hydrocarbons	mg/kg	5		28000	12													
Aromatic TPH >C5-C7	mg/kg	0.1	72	1	12													
Aromatic TPH >C7-C8	mg/kg	0.1	56000	1	12													
Aromatic TPH >C8-C10	mg/kg	0.1	5000	20	12													
Aromatic TPH >C10-C12	mg/kg	1	5000	35	12													
Aromatic TPH >C12-C16	mg/kg	1	5100	700	12													
Aromatic TPH >C16-C21	mg/kg	1	3800	2700	12													
Aromatic TPH >C21-C35	mg/kg	1	3800	83000	12	1												
Aromatic TPH >C35-C44	mg/kg	1	3800	11000	12	1												
Total Aromatic Hydrocarbons	mg/kg	5		98000	12													
TPH C6-C10	mg/kg	1																
TPH C10-C21	mg/kg	1																
TPH C21-C40	mg/kg	1																

Consolidated Soil Results - Public Open Space (POS) Residential

Site: Carlton Colliery
Project Reference: 173367
Client: Unconfirmed
Strata: ALL Strata
Notes:

KEY
Exceedance of SGV
Below Limit of Detection

Determinant	Units	LOD	SGV	Max	Number	No. Exceedances	WS1	WS2	WS3	WS4	WS5	WS6	WS7	WS8	WS9	WS10	WS11	TP35
Sample Location							WS1	WS2	WS3	WS4	WS5	WS6	WS7	WS8	WS9	WS10	WS11	TP35
Sample Ref							E855	E856	E857	E858	E859	E860	E861	E862	E863	E864	E865	E866
Depth (top)							0.2	1.6	2.2	0.2	1	0.5	1.9	0.1	1.2	0.5	0.5	0.5
Depth (bottom)							0.4	1.8	2.4	0.4	1.2	0.7	2.1	0.3	1.9	0.7	0.7	
Lab Report							1152	1152	1152	1152	1152	1152	1152	1152	1152	1152	1152	1152
Sample Date																		
Originator																		
Strata							TS	NAT-CL	NAT	NAT	MG	MG	MG	MG	MG	NAT-CL	MG	
Total Petroleum Hydrocarbons	mg/kg	10		130000	68		20	20	20	20	20	20	20	59	20	20	56	20
Naphthalene	mg/kg	0.1	4900	8.2	15													
Acenaphthylene	mg/kg	0.1	15000	1.3	15													
Acenaphthene	mg/kg	0.1	15000	0.67	15													
Fluorene	mg/kg	0.1	9900	1.9	15													
Phenanthrene	mg/kg	0.1	3100	20	15													
Anthracene	mg/kg	0.1	74000	3.7	15													
Fluoranthene	mg/kg	0.1	3100	25	15													
Pyrene	mg/kg	0.1	7400	23	15													
Benzo[a]anthracene	mg/kg	0.1	29	9	15													
Chrysene	mg/kg	0.1	57	9.4	15													
Benzo[b]fluoranthene	mg/kg	0.1	7.1	10	15	1												
Benzo[k]fluoranthene	mg/kg	0.1	190	4	15													
Benzo[a]pyrene	mg/kg	0.1	5.7	7.4	15	1												
Indeno(1,2,3-c,d)Pyrene	mg/kg	0.1	82	4.7	15													
Dibenz(a,h)Anthracene	mg/kg	0.1	0.57	1.3	15	1												
Benzo[g,h,i]perylene	mg/kg	0.1	640	4.8	15													
Total Of 16 PAH's	mg/kg	2		130	24									20			20	
Total Phenols	mg/kg	0.3	760	280	66		3	3	3	3	3	3	3	3	3	3	3	3
Asbestos	Type	If present	Detected			1	NAD							NAD		NAD	NAD	NAD
Asbestos % (if present)	%	0.001		0.001	1													
Benzene	mg/kg	0.1	72	37	14													
Toluene	mg/kg	0.1	56000	110	13													
Ethylbenzene	mg/kg	0.1	24000	9.7	13													
M-Xylene	mg/kg	0.1	41000	62	13													
P-Xylene	mg/kg	0.1	41000	62	13													
O-Xylene	mg/kg	0.1	41000	26	13													

Consolidated Soil Results - Public Open Space (POS) Residential

Site: Carlton Colliery
Project Reference: 173367
Client: Unconfirmed
Strata: ALL Strata
Notes:

KEY
Exceedance of SGV
Below Limit of Detection

Determinant	Units	LOD	SGV	Max	Number	No. Exceedances	TP36	TP37	TP38	TP39	TP40	TP41	TP42	TP43	TP44	SU1	SU2	TP1
Sample Location							TP36	TP37	TP38	TP39	TP40	TP41	TP42	TP43	TP44	SU1	SU2	TP1
Sample Ref							E867	E868	E869	E870	E871	E872	E873	E874	E875	E876	E877	E534
Depth (top)							1.2	0.5	1.6	0.7	0.3	1.4	0.8	0.5	2.1	GL	GL	2.1
Depth (bottom)																		
Lab Report							1152	1152	1152	1152	1152	1152	1152	1152	1152	1152	1152	1102
Sample Date																		
Originator																		
Strata							NAT-CL	MG	MG	MG	TS	NAT-CL	NAT-CL		NAT			NAT
pH	pH unit	0.1	6 to 9															
Boron (Hot Water Soluble)	mg/kg	0.4	21000	1.6	13													
Cyanide (Total)	mg/kg	0.5	34	5	69		5	5	5	5	5	5	5	5	5	5	5	5
Sulphide (Easily Liberatable)	mg/kg	0.5		19	10													
Arsenic	mg/kg	1	79	260	69	3	9	45	23	39	22	9	56	8	7	**84**	**120**	3
Cadmium	mg/kg	0.1	120	7.5	69		0.5	1.4	0.5	0.6	0.5	0.5	1	0.5	0.5	1.1	1.5	0.5
Chromium	mg/kg	1	1500	460	66		9	10	14	10	9	7	17	13	20	7	21	2
Copper	mg/kg	0.5	12000	820	69		15	820	46	53	61	15	68	12	28	73	18	75
Mercury	mg/kg	0.1	16	0.6	69		0.3	0.3	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Nickel	mg/kg	0.5	230	180	69		9	26	27	15	25	8	31	10	36	32	6	21
Lead	mg/kg	0.5	630	1670	69	1	25	**1670**	140	41	120	30	89	24	20	54	33	14
Selenium	mg/kg	0.2	1100	22	69		1.4	2	1.9	2.3	1.9	1.4	1.9	1.7	1.3	2.6	0.6	1
Vanadium	mg/kg	5	2000	90	13													
Zinc	mg/kg	0.5	81000	850	69		57	850	83	69	51	66	140	43	81	77	12	9
Chromium (Hexavalent)	mg/kg	0.5	7.7	0.5	13													
Total Organic Carbon	%	0.2	3	48	10	9												
Aliphatic TPH >C5-C6	mg/kg	0.1	570000	1	12													
Aliphatic TPH >C6-C8	mg/kg	0.1	600000	1	12													
Aliphatic TPH >C8-C10	mg/kg	0.1	13000	10	12													
Aliphatic TPH >C10-C12	mg/kg	1	13000	10	12													
Aliphatic TPH >C12-C16	mg/kg	1	13000	27	12													
Aliphatic TPH >C16-C21	mg/kg	1	250000	3300	12													
Aliphatic TPH >C21-C35	mg/kg	1	250000	23000	12													
Aliphatic TPH >C35-C44	mg/kg	1	250000	1700	12													
Total Aliphatic Hydrocarbons	mg/kg	5		28000	12													
Aromatic TPH >C5-C7	mg/kg	0.1	72	1	12													
Aromatic TPH >C7-C8	mg/kg	0.1	56000	1	12													
Aromatic TPH >C8-C10	mg/kg	0.1	5000	20	12													
Aromatic TPH >C10-C12	mg/kg	1	5000	35	12													
Aromatic TPH >C12-C16	mg/kg	1	5100	700	12													
Aromatic TPH >C16-C21	mg/kg	1	3800	2700	12													
Aromatic TPH >C21-C35	mg/kg	1	3800	83000	12	1												
Aromatic TPH >C35-C44	mg/kg	1	3800	11000	12	1												
Total Aromatic Hydrocarbons	mg/kg	5		98000	12													
TPH C6-C10	mg/kg	1																
TPH C10-C21	mg/kg	1																
TPH C21-C40	mg/kg	1																

Consolidated Soil Results - Public Open Space (POS) Residential

Site: Carlton Colliery
Project Reference: 173367
Client: Unconfirmed
Strata: ALL Strata
Notes:

KEY
Exceedance of SGV
Below Limit of Detection

Determinant	Units	LOD	SGV	Max	Number	No. Exceedances	TP36	TP37	TP38	TP39	TP40	TP41	TP42	TP43	TP44	SU1	SU2	TP1
Sample Location							TP36	TP37	TP38	TP39	TP40	TP41	TP42	TP43	TP44	SU1	SU2	TP1
Sample Ref							E867	E868	E869	E870	E871	E872	E873	E874	E875	E876	E877	E534
Depth (top)							1.2	0.5	1.6	0.7	0.3	1.4	0.8	0.5	2.1	GL	GL	2.1
Depth (bottom)																		
Lab Report							1152	1152	1152	1152	1152	1152	1152	1152	1152	1152	1152	1102
Sample Date																		
Originator																		
Strata							NAT-CL	MG	MG	MG	TS	NAT-CL	NAT-CL		NAT			NAT
Total Petroleum Hydrocarbons	mg/kg	10		130000	68		20	58	73	20	20	20	20	20	20	20	20	20
Naphthalene	mg/kg	0.1	4900	8.2	15													
Acenaphthylene	mg/kg	0.1	15000	1.3	15													
Acenaphthene	mg/kg	0.1	15000	0.67	15													
Fluorene	mg/kg	0.1	9900	1.9	15													
Phenanthrene	mg/kg	0.1	3100	20	15													
Anthracene	mg/kg	0.1	74000	3.7	15													
Fluoranthene	mg/kg	0.1	3100	25	15													
Pyrene	mg/kg	0.1	7400	23	15													
Benzo[a]anthracene	mg/kg	0.1	29	9	15													
Chrysene	mg/kg	0.1	57	9.4	15													
Benzo[b]fluoranthene	mg/kg	0.1	7.1	10	15	1												
Benzo[k]fluoranthene	mg/kg	0.1	190	4	15													
Benzo[a]pyrene	mg/kg	0.1	5.7	7.4	15	1												
Indeno(1,2,3-c,d)Pyrene	mg/kg	0.1	82	4.7	15													
Dibenz(a,h)Anthracene	mg/kg	0.1	0.57	1.3	15	1												
Benzo[g,h,i]perylene	mg/kg	0.1	640	4.8	15													
Total Of 16 PAH's	mg/kg	2		130	24			20	20									
Total Phenols	mg/kg	0.3	760	280	66		3	3	3	3	3	3	3	3	3	3	3	3
Asbestos	Type	If present	Detected			1		NAD		NAD								
Asbestos % (if present)	%	0.001		0.001	1													
Benzene	mg/kg	0.1	72	37	14													
Toluene	mg/kg	0.1	56000	110	13													
Ethylbenzene	mg/kg	0.1	24000	9.7	13													
M-Xylene	mg/kg	0.1	41000	62	13													
P-Xylene	mg/kg	0.1	41000	62	13													
O-Xylene	mg/kg	0.1	41000	26	13													

Consolidated Soil Results - Public Open Space (POS) Residential

Site: Carlton Colliery
Project Reference: 173367
Client: Unconfirmed
Strata: ALL Strata
Notes:

KEY
Exceedance of SGV
Below Limit of Detection

Determinant	Units	LOD	SGV	Max	Number	No. Exceedances	TP2	TP3	TP4	TP5	TP7	TP8	TP9	TP10	TP11	TP12	TP13	TP14
Sample Ref							E535	E536	E537	E538	E540	E541	E542	E543	E544	E545	E546	E547
Depth (top)							0.9	0.4	1	1	0.2	2.9	0.2	2.6	2.1	0.5	1.4	3
Depth (bottom)																		
Lab Report							1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102
Sample Date																		
Originator																		
Strata							NAT-CL	NAT-CL	NAT-CL	NAT-CL	TS	NAT-CL	MG	NAT	NAT	MG	MG	MG
pH	pH unit	0.1	6 to 9															
Boron (Hot Water Soluble)	mg/kg	0.4	21000	1.6	13													
Cyanide (Total)	mg/kg	0.5	34	5	69		5	5	5	5	5	5	5	5	5	5	5	5
Sulphide (Easily Liberatable)	mg/kg	0.5		19	10													
Arsenic	mg/kg	1	79	260	69	3	26	36	22	2	8	8	11	8	6	32	12	17
Cadmium	mg/kg	0.1	120	7.5	69		1.7	1.4	*0.7*	0.5	0.5	0.7	0.5	0.5	0.5	1.3	0.5	0.6
Chromium	mg/kg	1	1500	460	66		10	61	22	14	25	24	12	18	11	13	7	15
Copper	mg/kg	0.5	12000	820	69		25	170	43	42	20	30	21	26	15	100	38	150
Mercury	mg/kg	0.1	16	0.6	69		0.5	0.3	*0.3*	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.6	0.5
Nickel	mg/kg	0.5	230	180	69		32	110	16	18	22	49	16	24	21	34	24	36
Lead	mg/kg	0.5	630	1670	69	1	42	71	40	11	19	52	14	19	16	370	82	180
Selenium	mg/kg	0.2	1100	22	69		1.7	9.3	3.5	0.8	0.7	0.5	1	0.5	0.8	1.8	1	1
Vanadium	mg/kg	5	2000	90	13													
Zinc	mg/kg	0.5	81000	850	69		19	130	32	39	73	130	28	39	38	230	80	170
Chromium (Hexavalent)	mg/kg	0.5	7.7	0.5	13													
Total Organic Carbon	%	0.2	3	48	10	9												
Aliphatic TPH >C5-C6	mg/kg	0.1	570000	1	12													
Aliphatic TPH >C6-C8	mg/kg	0.1	600000	1	12													
Aliphatic TPH >C8-C10	mg/kg	0.1	13000	10	12													
Aliphatic TPH >C10-C12	mg/kg	1	13000	10	12													
Aliphatic TPH >C12-C16	mg/kg	1	13000	27	12													
Aliphatic TPH >C16-C21	mg/kg	1	250000	3300	12													
Aliphatic TPH >C21-C35	mg/kg	1	250000	23000	12													
Aliphatic TPH >C35-C44	mg/kg	1	250000	1700	12													
Total Aliphatic Hydrocarbons	mg/kg	5		28000	12													
Aromatic TPH >C5-C7	mg/kg	0.1	72	1	12													
Aromatic TPH >C7-C8	mg/kg	0.1	56000	1	12													
Aromatic TPH >C8-C10	mg/kg	0.1	5000	20	12													
Aromatic TPH >C10-C12	mg/kg	1	5000	35	12													
Aromatic TPH >C12-C16	mg/kg	1	5100	700	12													
Aromatic TPH >C16-C21	mg/kg	1	3800	2700	12													
Aromatic TPH >C21-C35	mg/kg	1	3800	83000	12	1												
Aromatic TPH >C35-C44	mg/kg	1	3800	11000	12	1												
Total Aromatic Hydrocarbons	mg/kg	5		98000	12													
TPH C6-C10	mg/kg	1																
TPH C10-C21	mg/kg	1																
TPH C21-C40	mg/kg	1																

Consolidated Soil Results - Public Open Space (POS) Residential

Site: Carlton Colliery
Project Reference: 173367
Client: Unconfirmed
Strata: ALL Strata
Notes:

KEY
Exceedance of SGV
Below Limit of Detection

Determinant	Units	LOD	SGV	Max	Number	No. Exceedances	TP2	TP3	TP4	TP5	TP7	TP8	TP9	TP10	TP11	TP12	TP13	TP14
Sample Location							TP2	TP3	TP4	TP5	TP7	TP8	TP9	TP10	TP11	TP12	TP13	TP14
Sample Ref							E535	E536	E537	E538	E540	E541	E542	E543	E544	E545	E546	E547
Depth (top)							0.9	0.4	1	1	0.2	2.9	0.2	2.6	2.1	0.5	1.4	3
Depth (bottom)																		
Lab Report							1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102
Sample Date																		
Originator																		
Strata							NAT-CL	NAT-CL	NAT-CL	NAT-CL	TS	NAT-CL	MG	NAT	NAT	MG	MG	MG
Total Petroleum Hydrocarbons	mg/kg	10		130000	68		20	20	20	20	20	20	20	20	110	20	20	92
Naphthalene	mg/kg	0.1	4900	8.2	15													1.6
Acenaphthylene	mg/kg	0.1	15000	1.3	15													*0.019*
Acenaphthene	mg/kg	0.1	15000	0.67	15													*0.083*
Fluorene	mg/kg	0.1	9900	1.9	15													0.14
Phenanthrene	mg/kg	0.1	3100	20	15													1.5
Anthracene	mg/kg	0.1	74000	3.7	15													0.13
Fluoranthene	mg/kg	0.1	3100	25	15													0.85
Pyrene	mg/kg	0.1	7400	23	15													0.71
Benzo[a]anthracene	mg/kg	0.1	29	9	15													0.28
Chrysene	mg/kg	0.1	57	9.4	15													0.51
Benzo[b]fluoranthene	mg/kg	0.1	7.1	10	15	1												0.16
Benzo[k]fluoranthene	mg/kg	0.1	190	4	15													*0.097*
Benzo[a]pyrene	mg/kg	0.1	5.7	7.4	15	1												0.14
Indeno(1,2,3-c,d)Pyrene	mg/kg	0.1	82	4.7	15													*0.098*
Dibenz(a,h)Anthracene	mg/kg	0.1	0.57	1.3	15	1												*0.01*
Benzo[g,h,i]perylene	mg/kg	0.1	640	4.8	15													0.16
Total Of 16 PAH's	mg/kg	2		130	24										20			6.487
Total Phenols	mg/kg	0.3	760	280	66		3	3	3	3	3	3	3	3	3	3	3	30
Asbestos	Type	If present	Detected			1		NAD			NAD		NAD			NAD		
Asbestos % (if present)	%	0.001		0.001	1													
Benzene	mg/kg	0.1	72	37	14		2						2		2			2
Toluene	mg/kg	0.1	56000	110	13		2						2		2			2
Ethylbenzene	mg/kg	0.1	24000	9.7	13		9						2		2			4
M-Xylene	mg/kg	0.1	41000	62	13		13						2		2			8
P-Xylene	mg/kg	0.1	41000	62	13		13						2		2			8
O-Xylene	mg/kg	0.1	41000	26	13		6						2		2			5

Consolidated Soil Results - Public Open Space (POS) Residential

Site: Carlton Colliery
Project Reference: 173367
Client: Unconfirmed
Strata: ALL Strata
Notes:

KEY
Exceedance of SGV
Below Limit of Detection

Determinant	Units	LOD	SGV	Max	Number	No. Exceedances	TP15	TP16	TP17	TP18	TP19	TP20	TP21	TP22	TP23	TP24	TP25	TP26
Sample Location							**TP15**	**TP16**	**TP17**	**TP18**	**TP19**	**TP20**	**TP21**	**TP22**	**TP23**	**TP24**	**TP25**	**TP26**
Sample Ref							E548	E549	E550	E551	E552	E553	E554	E555	E557	E558	E559	E560
Depth (top)							1.3	1.9	0.4	1.6	2.6	0.5	1	1	2.6	0.5	1.3	2.8
Depth (bottom)																		
Lab Report							1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102
Sample Date																		
Originator																		
Strata							MG	MG	TS	MG	NAT-GR	TS	MG	MG	MG	TS	MG	NAT-CL
pH	pH unit	0.1	6 to 9															
Boron (Hot Water Soluble)	mg/kg	0.4	21000	1.6	13													
Cyanide (Total)	mg/kg	0.5	34	5	69		5	5	5	5	5	5	5	5	5	5	5	5
Sulphide (Easily Liberatable)	mg/kg	0.5		19	10													
Arsenic	mg/kg	1	79	260	69	3	33	20	36	32	35	58	36	22	**260**	38	33	13
Cadmium	mg/kg	0.1	120	7.5	69		7.5	0.6	2.2	0.8	1	2.6	1.4	0.7	7.2	1.2	1	0.7
Chromium	mg/kg	1	1500	460	66		14	5	15	15	17	19	61	22	5	13	11	24
Copper	mg/kg	0.5	12000	820	69		89	43	99	110	59	150	170	43	56	100	63	60
Mercury	mg/kg	0.1	16	0.6	69		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3
Nickel	mg/kg	0.5	230	180	69		34	17	33	30	38	53	110	16	35	40	30	52
Lead	mg/kg	0.5	630	1670	69	1	220	39	45	10	19	67	71	40	74	96	35	66
Selenium	mg/kg	0.2	1100	22	69		1.2	1.6	1.3	0.7	0.5	0.6	9.3	3.5	3.3	1.8	1.3	1.6
Vanadium	mg/kg	5	2000	90	13													
Zinc	mg/kg	0.5	81000	850	69		370	27	170	89	34	240	130	32	55	120	100	200
Chromium (Hexavalent)	mg/kg	0.5	7.7	0.5	13													
Total Organic Carbon	%	0.2	3	48	10	9												
Aliphatic TPH >C5-C6	mg/kg	0.1	570000	1	12													
Aliphatic TPH >C6-C8	mg/kg	0.1	600000	1	12													
Aliphatic TPH >C8-C10	mg/kg	0.1	13000	10	12													
Aliphatic TPH >C10-C12	mg/kg	1	13000	10	12													
Aliphatic TPH >C12-C16	mg/kg	1	13000	27	12													
Aliphatic TPH >C16-C21	mg/kg	1	250000	3300	12													
Aliphatic TPH >C21-C35	mg/kg	1	250000	23000	12													
Aliphatic TPH >C35-C44	mg/kg	1	250000	1700	12													
Total Aliphatic Hydrocarbons	mg/kg	5		28000	12													
Aromatic TPH >C5-C7	mg/kg	0.1	72	1	12													
Aromatic TPH >C7-C8	mg/kg	0.1	56000	1	12													
Aromatic TPH >C8-C10	mg/kg	0.1	5000	20	12													
Aromatic TPH >C10-C12	mg/kg	1	5000	35	12													
Aromatic TPH >C12-C16	mg/kg	1	5100	700	12													
Aromatic TPH >C16-C21	mg/kg	1	3800	2700	12													
Aromatic TPH >C21-C35	mg/kg	1	3800	83000	12	1												
Aromatic TPH >C35-C44	mg/kg	1	3800	11000	12	1												
Total Aromatic Hydrocarbons	mg/kg	5		98000	12													
TPH C6-C10	mg/kg	1																
TPH C10-C21	mg/kg	1																
TPH C21-C40	mg/kg	1																

Consolidated Soil Results - Public Open Space (POS) Residential

Site: Carlton Colliery
Project Reference: 173367
Client: Unconfirmed
Strata: ALL Strata
Notes:

KEY
Exceedance of SGV
Below Limit of Detection

Determinant	Units	LOD	SGV	Max	Number	No. Exceedances	Sample Location	TP15	TP16	TP17	TP18	TP19	TP20	TP21	TP22	TP23	TP24	TP25	TP26
							Sample Ref	E548	E549	E550	E551	E552	E553	E554	E555	E557	E558	E559	E560
							Depth (top)	1.3	1.9	0.4	1.6	2.6	0.5	1	1	2.6	0.5	1.3	2.8
							Depth (bottom)												
							Lab Report	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102
							Sample Date												
							Originator												
							Strata	MG	MG	TS	MG	NAT-GR	TS	MG	MG	MG	TS	MG	NAT-CL
Total Petroleum Hydrocarbons	mg/kg	10		130000	68			150	11900	41	20	20	20	20	20	20	20	20	20
Naphthalene	mg/kg	0.1	4900	8.2	15				1.4										
Acenaphthylene	mg/kg	0.1	15000	1.3	15				*0.01*										
Acenaphthene	mg/kg	0.1	15000	0.67	15				0.11										
Fluorene	mg/kg	0.1	9900	1.9	15				0.35										
Phenanthrene	mg/kg	0.1	3100	20	15				2.2										
Anthracene	mg/kg	0.1	74000	3.7	15				0.57										
Fluoranthene	mg/kg	0.1	3100	25	15				1.4										
Pyrene	mg/kg	0.1	7400	23	15				1.2										
Benzo[a]anthracene	mg/kg	0.1	29	9	15				0.56										
Chrysene	mg/kg	0.1	57	9.4	15				1.3										
Benzo[b]fluoranthene	mg/kg	0.1	7.1	10	15	1			*0.01*										
Benzo[k]fluoranthene	mg/kg	0.1	190	4	15				*0.01*										
Benzo[a]pyrene	mg/kg	0.1	5.7	7.4	15	1			*0.01*										
Indeno(1,2,3-c,d)Pyrene	mg/kg	0.1	82	4.7	15				*0.01*										
Dibenz(a,h)Anthracene	mg/kg	0.1	0.57	1.3	15	1			*0.01*										
Benzo[g,h,i]perylene	mg/kg	0.1	640	4.8	15				*0.01*										
Total Of 16 PAH's	mg/kg	2		130	24		20	9.16											
Total Phenols	mg/kg	0.3	760	280	66		3	280	3	3.9	9.6	3	3	3	3	3	3	3	3
Asbestos	Type	If present	Detected			1	NAD		NAD			NAD	NAD		NAD				
Asbestos % (if present)	%	0.001		0.001	1														
Benzene	mg/kg	0.1	72	37	14			2				2			2				
Toluene	mg/kg	0.1	56000	110	13			2				2			6				
Ethylbenzene	mg/kg	0.1	24000	9.7	13			7				7			5				
M-Xylene	mg/kg	0.1	41000	62	13			10				15			12				
P-Xylene	mg/kg	0.1	41000	62	13			10				15			12				
O-Xylene	mg/kg	0.1	41000	26	13			6				5			5				

Consolidated Soil Results - Public Open Space (POS) Residential

Site: Carlton Colliery
Project Reference: 173367
Client: Unconfirmed
Strata: ALL Strata
Notes:

KEY
Exceedance of SGV
Below Limit of Detection

Determinant	Units	LOD	SGV	Max	Number	No. Exceedances	TP27	TP28	TP29	TP30	TP31	TP32	TP33	TP34	TP101	TP102	TP102	TP103
Sample Ref							E561	E562	E563	E564	E565	E566	E567	E568	809362	809363	809364	809365
Depth (top)							3.2	0.5	0.4	1.2	0.5	1	3.5	0.4	0.50	0.50	1.00	0.00
Depth (bottom)															1.25	1.00	1.50	0.50
Lab Report							1102	1102	1102	1102	1102	1102	1102	1102	19-12605	19-12605	19-12605	19-12605
Sample Date															9/4/19	9/4/19	9/4/19	9/4/19
Originator																		
Strata							NAT-GR	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG
pH	pH unit	0.1	6 to 9															
Boron (Hot Water Soluble)	mg/kg	0.4	21000	1.6	13										1.3	1.2	1.5	1.6
Cyanide (Total)	mg/kg	0.5	34	5	69		5	5	5	5	5	5	5	5	*0.5*	*0.5*	*0.5*	*0.5*
Sulphide (Easily Liberatable)	mg/kg	0.5		19	10										1.5	19		2.9
Arsenic	mg/kg	1	79	260	69	3	15	30	42	36	51	27	30	40	61	13	40	23
Cadmium	mg/kg	0.1	120	7.5	69		0.7	1.6	1.2	1	1.6	0.8	1	1.1	0.15	0.24	0.23	0.78
Chromium	mg/kg	1	1500	460	66		24	22	14	7	12	10	8	10	8.9	33		45
Copper	mg/kg	0.5	12000	820	69		35	100	330	37	93	63	55	57	46	37	58	32
Mercury	mg/kg	0.1	16	0.6	69		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	*0.1*	*0.1*	0.13
Nickel	mg/kg	0.5	230	180	69		52	43	140	12	38	27	28	28	21	23	28	24
Lead	mg/kg	0.5	630	1670	69	1	84	67	150	29	79	45	140	36	59	98	110	65
Selenium	mg/kg	0.2	1100	22	69		0.5	0.9	2.7	1.7	1.8	1.5	3.5	1.8	1.6	*0.2*	0.84	*0.2*
Vanadium	mg/kg	5	2000	90	13										20	30	33	29
Zinc	mg/kg	0.5	81000	850	69		190	140	93	27	110	85	79	84	48	100	67	86
Chromium (Hexavalent)	mg/kg	0.5	7.7	0.5	13										*0.5*	*0.5*	*0.5*	*0.5*
Total Organic Carbon	%	0.2	3	48	10	9									**48**	**5.1**		**3.2**
Aliphatic TPH >C5-C6	mg/kg	0.1	570000	1	12										1	1		1
Aliphatic TPH >C6-C8	mg/kg	0.1	600000	1	12										1	1		1
Aliphatic TPH >C8-C10	mg/kg	0.1	13000	10	12										4.3	1		1
Aliphatic TPH >C10-C12	mg/kg	1	13000	10	12										1.7	*1*		*1*
Aliphatic TPH >C12-C16	mg/kg	1	13000	27	12										1.4	*1*		*1*
Aliphatic TPH >C16-C21	mg/kg	1	250000	3300	12										1.5	*1*		*1*
Aliphatic TPH >C21-C35	mg/kg	1	250000	23000	12										*1*	59		*1*
Aliphatic TPH >C35-C44	mg/kg	1	250000	1700	12										*1*	*1*		*1*
Total Aliphatic Hydrocarbons	mg/kg	5		28000	12										8.8	59		*5*
Aromatic TPH >C5-C7	mg/kg	0.1	72	1	12										1	1		1
Aromatic TPH >C7-C8	mg/kg	0.1	56000	1	12										1	1		1
Aromatic TPH >C8-C10	mg/kg	0.1	5000	20	12										3.9	1		1
Aromatic TPH >C10-C12	mg/kg	1	5000	35	12										1.5	*1*		*1*
Aromatic TPH >C12-C16	mg/kg	1	5100	700	12										2	4.3		*1*
Aromatic TPH >C16-C21	mg/kg	1	3800	2700	12										*1*	110		*1*
Aromatic TPH >C21-C35	mg/kg	1	3800	83000	12	1									*1*	390		*1*
Aromatic TPH >C35-C44	mg/kg	1	3800	11000	12	1									*1*	22		*1*
Total Aromatic Hydrocarbons	mg/kg	5		98000	12										7.4	530		*5*
TPH C6-C10	mg/kg	1																
TPH C10-C21	mg/kg	1																
TPH C21-C40	mg/kg	1																

Consolidated Soil Results - Public Open Space (POS) Residential

Site: Carlton Colliery
Project Reference: 173367
Client: Unconfirmed
Strata: ALL Strata
Notes:

KEY
Exceedance of SGV
Below Limit of Detection

Determinant	Units	LOD	SGV	Max	Number	No. Exceedances	Sample Location	TP27	TP28	TP29	TP30	TP31	TP32	TP33	TP34	TP101	TP102	TP102	TP103
							Sample Ref	E561	E562	E563	E564	E565	E566	E567	E568	809362	809363	809364	809365
							Depth (top)	3.2	0.5	0.4	1.2	0.5	1	3.5	0.4	0.50	0.50	1.00	0.00
							Depth (bottom)									1.25	1.00	1.50	0.50
							Lab Report	1102	1102	1102	1102	1102	1102	1102	1102	19-12605	19-12605	19-12605	19-12605
							Sample Date									9/4/19	9/4/19	9/4/19	9/4/19
							Originator												
							Strata	NAT-GR	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG
Total Petroleum Hydrocarbons	mg/kg	10		130000	68			20	110	170	20	20	55	34	20	16	590		*10*
Naphthalene	mg/kg	0.1	4900	8.2	15			0.13								*0.1*	1.9		*0.1*
Acenaphthylene	mg/kg	0.1	15000	1.3	15			*0.01*								*0.1*	0.59		*0.1*
Acenaphthene	mg/kg	0.1	15000	0.67	15			*0.01*								*0.1*	0.67		*0.1*
Fluorene	mg/kg	0.1	9900	1.9	15			*0.026*								*0.1*	1		*0.1*
Phenanthrene	mg/kg	0.1	3100	20	15			0.11								*0.1*	20		*0.1*
Anthracene	mg/kg	0.1	74000	3.7	15			*0.1*								*0.1*	3.7		*0.1*
Fluoranthene	mg/kg	0.1	3100	25	15			*0.01*								*0.1*	25		*0.1*
Pyrene	mg/kg	0.1	7400	23	15			*0.01*								*0.1*	23		*0.1*
Benzo[a]anthracene	mg/kg	0.1	29	9	15			*0.01*								*0.1*	9		*0.1*
Chrysene	mg/kg	0.1	57	9.4	15			*0.037*								*0.1*	9.4		*0.1*
Benzo[b]fluoranthene	mg/kg	0.1	7.1	10	15	1		*0.01*								*0.1*	10		*0.1*
Benzo[k]fluoranthene	mg/kg	0.1	190	4	15			*0.01*								*0.1*	4		*0.1*
Benzo[a]pyrene	mg/kg	0.1	5.7	7.4	15	1		*0.01*								*0.1*	7.4		*0.1*
Indeno(1,2,3-c,d)Pyrene	mg/kg	0.1	82	4.7	15			*0.01*								*0.1*	4.7		*0.1*
Dibenz(a,h)Anthracene	mg/kg	0.1	0.57	1.3	15	1		*0.01*								*0.1*	1.3		*0.1*
Benzo[g,h,i]perylene	mg/kg	0.1	640	4.8	15			*0.01*								*0.1*	4.8		*0.1*
Total Of 16 PAH's	mg/kg	2		130	24			*0.503*	20	20			20			*2*	130		*2*
Total Phenols	mg/kg	0.3	760	280	66			10	3	3	3	3	3	3	3	*0.3*	*0.3*		*0.3*
Asbestos	Type	If present	Detected			1				NAD		NAD			NAD	NAD	NAD	N/T	NAD
Asbestos % (if present)	%	0.001		0.001	1														
Benzene	mg/kg	0.1	72	37	14			2								1	1		
Toluene	mg/kg	0.1	56000	110	13			2								1	[C] 1.0		
Ethylbenzene	mg/kg	0.1	24000	9.7	13			2								1	[C] 1.0		
M-Xylene	mg/kg	0.1	41000	62	13			5								1	[C] 1.0		
P-Xylene	mg/kg	0.1	41000	62	13			5								1	[C] 1.0		
O-Xylene	mg/kg	0.1	41000	26	13			3								1	[C] 1.0		

Consolidated Soil Results - Public Open Space (POS) Residential

Site: Carlton Colliery
Project Reference: 173367
Client: Unconfirmed
Strata: ALL Strata
Notes:

KEY
Exceedance of SGV
Below Limit of Detection

Determinant	Units	LOD	SGV	Max	Number	No. Exceedances	Sample Location	TP104	TP104	TP105	TP105	TP106	TP106	TP107(Tar)	TP107	TP107	TP108		
							Sample Ref	809366	809367	809368	809369	809370	809371	809372	809373	809374	809375		
							Depth (top)	0.50	1.00	0.00	1.00	0.00	2.00	0.00	0.25	1.20	0.00		
							Depth (bottom)	1.00	1.80	1.00	1.80	2.00	2.20	0.50	0.75	2.00	1.30		
							Lab Report	19-12605	19-12605	19-12605	19-12605	19-12605	19-12605	19-12605	19-12605	19-12605	19-12605		
							Sample Date	9/4/19	9/4/19	9/4/19	9/4/19	9/4/19	9/4/19	9/4/19	9/4/19	9/4/19	9/4/19		
							Originator												
							Strata	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG		
pH	pH unit	0.1	6 to 9																
Boron (Hot Water Soluble)	mg/kg	0.4	21000	1.6	13		1	*0.4*	1.1	0.68	0.94	0.61		0.75	0.82	0.63			
Cyanide (Total)	mg/kg	0.5	34	5	69		*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*		0.8	*0.5*	*0.5*			
Sulphide (Easily Liberatable)	mg/kg	0.5		19	10		10		5.6	3.9	15	2.5		6.4	4.4				
Arsenic	mg/kg	1	79	260	69	3	39	9.7	25	22	13	12		27	22	16			
Cadmium	mg/kg	0.1	120	7.5	69		0.53	*0.1*	0.14	*0.1*	0.14	*0.1*		1.1	0.35	0.24			
Chromium	mg/kg	1	1500	460	66		24		24	14	460	28		34	20				
Copper	mg/kg	0.5	12000	820	69		96	27	67	41	34	41		79	49	52			
Mercury	mg/kg	0.1	16	0.6	69		0.12	*0.1*	*0.1*	*0.1*	0.27	*0.1*		0.23	0.12	*0.1*			
Nickel	mg/kg	0.5	230	180	69		48	20	45	25	34	31		40	31	45			
Lead	mg/kg	0.5	630	1670	69	1	61	8.7	56	13	31	18		140	52	32			
Selenium	mg/kg	0.2	1100	22	69		0.62	*0.2*	0.57	0.41	0.54	0.31		0.25	0.49	0.45			
Vanadium	mg/kg	5	2000	90	13		40	22	43	29	90	18		24	21	17			
Zinc	mg/kg	0.5	81000	850	69		160	22	59	60	83	73		230	110	110			
Chromium (Hexavalent)	mg/kg	0.5	7.7	0.5	13		*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*		*0.5*	*0.5*	*0.5*			
Total Organic Carbon	%	0.2	3	48	10	9	**18**		**20**	**3.2**	2	**4.9**		**8**	**8.6**				
Aliphatic TPH >C5-C6	mg/kg	0.1	570000	1	12		1		1	1	1	1	1	1	1	1			
Aliphatic TPH >C6-C8	mg/kg	0.1	600000	1	12		1		1	1	1	1	1	1	1	1			
Aliphatic TPH >C8-C10	mg/kg	0.1	13000	10	12		1		8.6	1	1	1	10	1	1	1			
Aliphatic TPH >C10-C12	mg/kg	1	13000	10	12		*1*		3.8	*1*	*1*	*1*	10	*1*	*1*	*1*			
Aliphatic TPH >C12-C16	mg/kg	1	13000	27	12		*1*		8	*1*	*1*	*1*	27	*1*	*1*	*1*			
Aliphatic TPH >C16-C21	mg/kg	1	250000	3300	12		*1*		16	*1*	*1*	*1*	3300	*1*	*1*	*1*			
Aliphatic TPH >C21-C35	mg/kg	1	250000	23000	12		*1*		170	*1*	*1*	*1*	23000	36	*1*	4.4			
Aliphatic TPH >C35-C44	mg/kg	1	250000	1700	12		*1*		*1*	*1*	*1*	*1*	1700	*1*	*1*	*1*			
Total Aliphatic Hydrocarbons	mg/kg	5		28000	12		*5*		200	*5*	*5*	*5*	28000	36	*5*	*5*			
Aromatic TPH >C5-C7	mg/kg	0.1	72	1	12		1		1	1	1	1	1	1	1	1			
Aromatic TPH >C7-C8	mg/kg	0.1	56000	1	12		1		1	1	1	1	1	1	1	1			
Aromatic TPH >C8-C10	mg/kg	0.1	5000	20	12		1		8	1	1	1	20	1	1	1			
Aromatic TPH >C10-C12	mg/kg	1	5000	35	12		*1*		1.6	*1*	*1*	*1*	35	*1*	*1*	*1*			
Aromatic TPH >C12-C16	mg/kg	1	5100	700	12		*1*		6	*1*	*1*	*1*	700	*1*	*1*	*1*			
Aromatic TPH >C16-C21	mg/kg	1	3800	2700	12		*1*		4.3	*1*	*1*	*1*	2700	*1*	*1*	*1*			
Aromatic TPH >C21-C35	mg/kg	1	3800	83000	12	1	*1*		89	*1*	*1*	*1*	83000	68	*1*	*1*			
Aromatic TPH >C35-C44	mg/kg	1	3800	11000	12	1	*1*		*1*	*1*	*1*	*1*	11000	*1*	*1*	*1*			
Total Aromatic Hydrocarbons	mg/kg	5		98000	12		*5*		110	*5*	*5*	*5*	98000	68	*5*	*5*			
TPH C6-C10	mg/kg	1																	
TPH C10-C21	mg/kg	1																	
TPH C21-C40	mg/kg	1																	

Consolidated Soil Results - Public Open Space (POS) Residential

Site: Carlton Colliery
Project Reference: 173367
Client: Unconfirmed
Strata: ALL Strata
Notes:

KEY
Exceedance of SGV
Below Limit of Detection

Determinant	Units	LOD	SGV	Max	Number	No. Exceedances	Sample Location	TP104	TP104	TP105	TP105	TP106	TP106	TP107(Tar)	TP107	TP107	TP108		
							Sample Ref	809366	809367	809368	809369	809370	809371	809372	809373	809374	809375		
							Depth (top)	0.50	1.00	0.00	1.00	0.00	2.00	0.00	0.25	1.20	0.00		
							Depth (bottom)	1.00	1.80	1.00	1.80	2.00	2.20	0.50	0.75	2.00	1.30		
							Lab Report	19-12605	19-12605	19-12605	19-12605	19-12605	19-12605	19-12605	19-12605	19-12605	19-12605		
							Sample Date	9/4/19	9/4/19	9/4/19	9/4/19	9/4/19	9/4/19	9/4/19	9/4/19	9/4/19	9/4/19		
							Originator												
							Strata	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG		
Total Petroleum Hydrocarbons	mg/kg	10		130000	68			*10*		310	*10*	*10*	*10*	130000	100	*10*	*10*		
Naphthalene	mg/kg	0.1	4900	8.2	15			8.2		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*		
Acenaphthylene	mg/kg	0.1	15000	1.3	15			1.3		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*		
Acenaphthene	mg/kg	0.1	15000	0.67	15			0.36		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*		
Fluorene	mg/kg	0.1	9900	1.9	15			1.9		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*		
Phenanthrene	mg/kg	0.1	3100	20	15			3		*0.1*	0.54	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*		
Anthracene	mg/kg	0.1	74000	3.7	15			0.32		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*		
Fluoranthene	mg/kg	0.1	3100	25	15			1.3		*0.1*	0.37	0.56	*0.1*	*0.1*	*0.1*	0.53	*0.1*		
Pyrene	mg/kg	0.1	7400	23	15			1.6		*0.1*	0.47	0.64	*0.1*	*0.1*	*0.1*	0.99	*0.1*		
Benzo[a]anthracene	mg/kg	0.1	29	9	15			*0.1*		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*		
Chrysene	mg/kg	0.1	57	9.4	15			*0.1*		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*		
Benzo[b]fluoranthene	mg/kg	0.1	7.1	10	15	1		*0.1*		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*		
Benzo[k]fluoranthene	mg/kg	0.1	190	4	15			*0.1*		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*		
Benzo[a]pyrene	mg/kg	0.1	5.7	7.4	15	1		*0.1*		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*		
Indeno(1,2,3-c,d)Pyrene	mg/kg	0.1	82	4.7	15			*0.1*		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*		
Dibenz(a,h)Anthracene	mg/kg	0.1	0.57	1.3	15	1		*0.1*		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*		
Benzo[g,h,i]perylene	mg/kg	0.1	640	4.8	15			*0.1*		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*		
Total Of 16 PAH's	mg/kg	2		130	24			18		*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*		
Total Phenols	mg/kg	0.3	760	280	66			*0.3*		*0.3*	*0.3*	*0.3*	*0.3*		*0.3*	*0.3*			
Asbestos	Type	If present	Detected			1		**Detected**	N/T	NAD	NAD	NAD	NAD	N/T	NAD	NAD	N/T		
Asbestos % (if present)	%	0.001		0.001	1			0.001											
Benzene	mg/kg	0.1	72	37	14			1		37	1		1						
Toluene	mg/kg	0.1	56000	110	13			1		110	1		1						
Ethylbenzene	mg/kg	0.1	24000	9.7	13			1		9.7	1		1						
M-Xylene	mg/kg	0.1	41000	62	13			1		62	1		1						
P-Xylene	mg/kg	0.1	41000	62	13			1		62	1		1						
O-Xylene	mg/kg	0.1	41000	26	13			1		26	1		1						

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 173367 - Carlton Colliery, Shaw Lane

Client: AA Environmental Ltd		**Chemtest Job No.:**			**Surface Water EQS (µg/l)**	19-12605	19-12605	19-12605	19-12605	19-12605	19-12605
Quotation No.:		**Chemtest Sample ID.:**				809362	809364	809366	809367	809368	809369
		Client Sample ID.:				TP101	TP102	TP104	TP104	TP105	TP105
		Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):				0.50	1.00	0.50	1.00	0.00	1.00
		Bottom Depth (m):				1.25	1.50	1.00	1.80	1.00	1.80
		Date Sampled:				09-Apr-2019	09-Apr-2019	09-Apr-2019	09-Apr-2019	09-Apr-2019	09-Apr-2019
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
Sulphate	U	1220	mg/l	1.0	400 (mg/l)	26	43	33	74	170	830
Cyanide (Total)	U	1300	mg/l	0.050	0.001 (mg/l)	0.05	0.05	0.05	0.05	0.05	0.05
Arsenic (Dissolved)	U	1450	µg/l	1.0	50	1	1.5	3.3	1.4	1	1
Boron (Dissolved)	U	1450	µg/l	20	2000	20	40	23	20	20	20
Cadmium (Dissolved)	U	1450	µg/l	0.080	0.08-0.25*	0.08	0.08	0.08	0.08	0.096	0.08
Copper (Dissolved)	U	1450	µg/l	1.0	1	1	1	1	1	1	1
Mercury (Dissolved)	U	1450	µg/l	0.50	1	0.5	0.5	0.5	0.5	0.5	0.5
Nickel (Dissolved)	U	1450	µg/l	1.0	4	1	1	1	1	9.5	1
Lead (Dissolved)	U	1450	µg/l	1.0	1.2	1	1	1	1	1	1
Selenium (Dissolved)	U	1450	µg/l	1.0		1	1	1	1	1	1
Vanadium (Dissolved)	U	1450	µg/l	1.0	20	1	1	1	1	1	1
Zinc (Dissolved)	U	1450	µg/l	1.0	10.9	1	1	1	1	38	12
Chromium (Trivalent)	N	1490	µg/l	20	4.7	20	20	20	20	20	20
Chromium (Hexavalent)	U	1490	µg/l	20		20	20	20	20	20	20

Chemtest
The right chemistry to deliver results

Results - Leachate

Project: 173367 - Carlton Colliery, Shaw Lane

Client: AA Environmental Ltd			**Chemtest Job No.:**		19-12605	19-12605
Quotation No.:			**Chemtest Sample ID.:**		809370	809375
			Client Sample ID.:		TP106	TP108
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.00	0.00
			Bottom Depth (m):		2.00	1.30
			Date Sampled:		09-Apr-2019	09-Apr-2019
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Sulphate	U	1220	mg/l	1.0	24	310
Cyanide (Total)	U	1300	mg/l	0.050	0.05	0.05
Arsenic (Dissolved)	U	1450	µg/l	1.0	1	1
Boron (Dissolved)	U	1450	µg/l	20	20	20
Cadmium (Dissolved)	U	1450	µg/l	0.080	0.08	0.08
Copper (Dissolved)	U	1450	µg/l	1.0	1	1
Mercury (Dissolved)	U	1450	µg/l	0.50	0.5	0.5
Nickel (Dissolved)	U	1450	µg/l	1.0	1	4.1
Lead (Dissolved)	U	1450	µg/l	1.0	1	1
Selenium (Dissolved)	U	1450	µg/l	1.0	1	1
Vanadium (Dissolved)	U	1450	µg/l	1.0	1	1
Zinc (Dissolved)	U	1450	µg/l	1.0	1	5.3
Chromium (Trivalent)	N	1490	µg/l	20	20	20
Chromium (Hexavalent)	U	1490	µg/l	20	20	20

APPENDIX D
Public Open Space (Residential) guidance values

AA Environmental Limited – Tier 1 Soil Guidance Values

The following table presents the AA Environmental Tier 1 Soil Guidance Values (SGVs) Revision 003 based on LQM/CIEH Suitable 2 Use Levels (S4UL) for Human Health Assessment (unless stated otherwise).

	Land-Use Scenario					
Determinant	**Residential with Homegrown Produce**	**Residential without Homegrown Produce**	**Public Open Space (POS) Residential**	**Public Open Space (POS) Park**	**Allotment**	**Commercial and Industrial**
Metals and Metalloids						
Arsenic	37	40	79	170	43	640
Boron	290	11000	21000	46000	45	240000
Cadmium	11	85	120	532	1.9	190
Chromium (Hexavalent)	6	6	7.7	220	1.8	33
Chromium	910	910	1500	33000	18000	8600
Copper	2400	7100	12000	44000	520	68000
Lead (C4SL Criteria)	200	310	630	1300	80	2330
Elemental Mercury	1.2	1.2	16	30	21	58
Inorganic Mercury	40	56	120	240	19	1100
Nickel	180	180	230	3400	230	980
Selenium	250	430	1100	1800	88	12000
Vanadium	410	1200	2000	5000	91	9000
Zinc	3700	40000	81000	170000	620	730000
Other Inorganics						
pH	6-9 Units					
Asbestos	If Detected					
Cyanide (AtRisk)	34	34	34	34	34	34
Phenol (based on 1% SOM)						
Phenol (Total)	280	750	760	760	66	760
Total Petroleum Hydrocarbons (TPH) (based on 1% SOM)						
Aliphatic (5-6)	42	42	570000	95000	730	3200
Aliphatic (6-8)	100	100	600000	150000	2300	7800
Aliphatic (8-10)	27	27	13000	14000	320	2000
Aliphatic (10-12)	130	130	13000	21000	2200	9700
Aliphatic (12-16)	1100	1100	13000	25000	11000	59000
Aliphatic (16-35)	65000	65000	250000	450000	260000	1600000
Aliphatic (35-44)	65000	65000	250000	450000	260000	1600000
Aromatic (5-7 benzene)*	0.087(70)	0.38(370)	72(56000)	90(76000)	0.017(13)	27(26000)
Aromatic (7-8 toluene)	130	860	56000	87000	22	56000
Aromatic (8-10)	34	47	5000	7200	8.6	3500
Aromatic (10-12)	74	250	5000	9200	13	16000
Aromatic (12-16)	140	1800	5100	10000	23	36000
Aromatic (16-21)	260	1900	3800	7600	46	28000
Aromatic (21-35)	1100	1900	3800	7800	370	28000
Aromatic (35-44)	1100	1900	3800	7800	370	28000
BTEX (based on 1% SOM)						
Benzene	0.087	0.38	72	90	0.017	27
Toluene	130	880	56000	87000	22	56000
Ethylbenzene	47	83	24000	17000	16	5700
m-Xylene	59	82	41000	17000	31	6200
p-Xylene	56	79	41000	17000	29	5900
o-Xylene	60	88	41000	17000	28	6600

All values in mg/kg unless stated otherwise
* Benzene values to be used as a conservative screen for TPH Aromatic C5-C7 range hydrocarbons if Speciated BTEX results are not available. If Speciated BTEX are available then TPH Aromatic C5-C7 screening value in () can be adopted.

AA Environmental Limited – Tier 1 Soil Guidance Values (Cont.)

Determinant	Land-Use Scenario: Residential with Homegrown Produce	Residential without Homegrown Produce	Public Open Space (POS) Residential	Public Open Space (POS) Park	Allotment	Commercial and Industrial
Polycyclic Aromatic Hydrocarbons (PAH) (based on 1% SOM)						
Naphthalene	2.3	2.3	4900	1200	4.1	190
Acenaphthene	210	3000	15000	29000	34	84000
Acenapthylene	170	2900	15000	29000	28	83000
Fluorene	170	2800	9900	20000	27	63000
Anthracene	2400	31000	74000	150000	380	520000
Fluoranthene	280	1500	3100	6300	52	23000
Phenanthrene	95	1300	3100	6200	15	22000
Pyrene	620	3700	7400	15000	110	54000
Benzo(a)anthracene	7.2	11	29	49	2.9	170
Chrysene	15	30	57	93	4.1	350
Benzo(b)fluoranthene	2.6	3.9	7.1	13	0.99	44
Benzo(k)fluoranthene	77	110	190	370	37	1200
Benzo(ghi)perylene	320	360	640	1400	290	3900
Benzo(a)pyrene	2.2	3.2	5.7	11	0.97	35
Dibenzo(ah)anthracene	0.24	0.31	0.57	1.1	0.14	3.5
Indeno(123-cd)pyrene	27	45	82	150	9.5	500

All values in mg/kg unless stated otherwise

References

LQM/CIEH Suitable 2 Use Levels (S4UL) for Human Health Assessment – Land Quality Management Limited (LQM) and Chartered Institute of Environmental Health (CIEH) Land Quality Press (2015)

SP1010: Development of Category 4 Screening Levels (C4SL) for Assessment of Land Affected by Contamination - Department for Environment, Food and Rural Affairs (2014)

Descriptions of Public Open Space (POS): Section 1.4.2 of The LQM S4UL for Human Health Assessment

POS Residential: Includes the predominantly grassed areas adjacent to high density housing, the central green area on many 1930s-1970s housing estates, and smaller areas commonly incorporated in newer developments as informal grassed areas or more formal landscaped areas with a mixture of open space and covered soil with planting. It is assumed that the close proximity to the place of residence will allow tracking back of soil to occur.

POS Park: An area of open space, usually owned and maintained by the Local Authority, provided for recreational uses including family visits and picnics, children's play area, informal sporting activities such as football (but not a dedicated sports pitch), and dog walking. It is assumed that tracking back of soils into the place of residence will be negligible.

SOM – Soil Organic Matter

Soil Guidance Values for Organics are presented as the most-conservative values based on 1.0% SOM. In the event of exceedance, the actual SOM content of the sample(s) should be reviewed to determine if a higher value based on 2.5% or 6.0% can be adopted.

AA Environmental Limited – Tier 1 Water Guidance Values

Determinant	Groundwater - Drinking Water Standard (DWS)	Surface Water – Environmental Quality Standard (EQS)
Selected metals and metalloids		
-Arsenic	10	50
-Boron	1000	2000
-Cadmium	5	0.08-0.25
-Chromium (III)	50	4.7
-Copper	2000	1
-Iron	200	1000
-Lead (inorganic – dissolved)	25-10	1.2
-Mercury	1	1[3]
-Nickel	20	4
-Selenium (total)	10	
-Vanadium		20
-Zinc	5000	10.9
-Potassium	12000	
-Magnesium	50000	
-Sodium	200000	
TPHs		
-TPH by GC >C8-C10	1[1]	10[1]
-TPH by GC >C10 - C20	10	
-TPH by GC >C20-C40	10	
TPH aliphatic > C10-C12	10 (300[2])	
TPH aliphatic > C12-C16	10(300[2])	
TPH aliphatic > C16-C21	10 (300[2])	
TPH aliphatic > C21-C35	10 (300[2])	
TPH aromatic > C5-C7	1[2]	
TPH aromatic > C7-C8	1[2]	
TPH aromatic > C8-C10	3[2]	
TPH aromatic > C10-C12	10 (100[2])	
TPH aromatic > C12-C16	10 (100[2])	
TPH aromatic > C16-C21	10 (100[2])	
TPH aromatic >C21-C35	10 (100[2])	
PAHs		
Anthracene		
Benzo(a)pyrene	0.01	
Fluoranthene		0.0063
-Napthalene		2
-Benzo(a)Pyrene	0.01	0.00017
-PAH (total) If PAH not speciated	0.1	0.00017
Selected VOCs		
-benzene	1	10
-toluene	700	74
-ethylbenzene	300[2]	
-xylene (total)	500[2]	30
-trichloromethane (chloroform)	200[2]	2.5
-vinyl chloride (chloroethene)	0.5	
Selected other		
-Chloride	250000	250000
-Ammoniacal Nitrogen	500	
-Nitrite	100	
-Nitrate	50000	
-Cyanide	50	1
-Sulphide	0.25	
-Phenols	0.5	7.7
-Sulphate	250000	400000

Notes

All values are measured in µg/l unless stated otherwise.
Groundwater guidance values are assumed from UK Drinking Water Standards unless specified.
Surface water guidance values are assumed from EQS freshwater standards – Water Framework Directive 2015.
[1] Based upon conservative value for benzene
[2] Based upon World Health Organisation *Guidelines for Drinking Water Quality*
[3] Conservative screen for whether further assessment required. No EQS.
Where a range of values is given the acceptable concentration depends on water hardness
Where two values are given they relate to an acceptable annual average concentration followed in brackets by a maximum admissible peak concentration.

APPENDIX E
Material Management Plans and Data

173367 - CARLTON COLLIERY: MATERIAL MANAGEMENT CALCULATIONS

Notes:

1. Volumes calculated from the isopleth drawings attached in Appendix F and also Site Investigation data.

2. There is significant variation in levels site wide and there will be inherent uncertainty regarding the exact volumes. To allow variations all assessed volumes have been assessed to nearest 250 cu m.

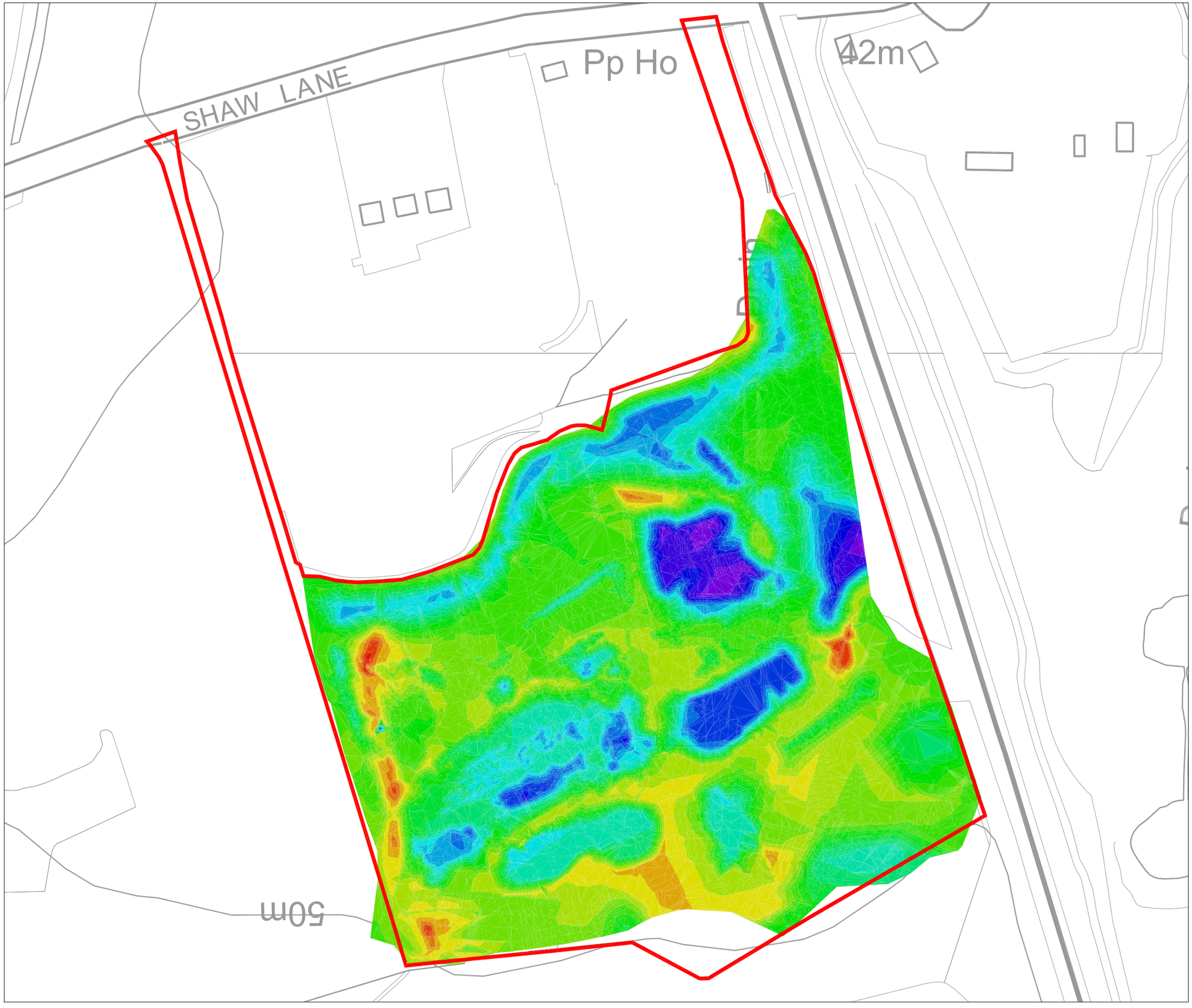
1. STOCKPILED MATERIAL	**CU M**	**Est. prop.**	**Notes**
			1. The volume of stockpiles has been derived using AutoCAD Map 3 D Modelling software. Calculation of stockpile volumes have been derived from surrounding ground level. 2. Stockpile contents derived from investigation and visual assessment. If in doubt, characterised as Made Ground and potentially unsuitable. Refer to Drawing in Appendix F.
Total stockpile volume	85,000		
Proportion clinker with high calorific value	14,500		Assessed volumes from AAE topographical survey data. To be transferred from site.
Residual stockpile	70,500		Total volume - clinker / red shale
Proportion of concrete/brick and other construction & demo inerts	42,300	60%	Retained for use as 6F2 aggregate or capping in follow-on works by future contractors
Proportion other (requiring characterisation, treatment, disposal)	28,200	40%	Potential for on site treatment / re-use / off site transfer

2. TOTAL EARTHWORKS MATERIAL BALANCE

Overview			
Total Cut to formation including stockpiles	71,500		AutoCad analysis
Total cut excluding stockpiles	- 13,500		Stockpiles will need assessment and treatment to enable re-use. There is likely to be some unacceptable materials that will require off site transfer. Recycled inert demolition and construction arisings will be (capping, sub-base and 6F2) will be retained on site for the follow on development. As there is no uncertainty of use on residual materials at this stage they have not been incorporated into the material assessment. Accordingly stockpiled material has been taken out of the material management calcs. Ultimately treated materials will be used as fill in the permit.
Calculated additional fill required	48,000		Modelled volume from isopleth.
Total fill balance	61,500		Fill balance taking into account exclusion of stockpiles from calculations.
Remedial Earthworks			
Total development area (sq m)	86,500		Total development area
Unremediated area (sq m)	60,000		Residual area requiring treatment.
Total residual remediation dig.	75,000		Site wide removal of all Made Ground and processing. Assumes an average cut of 1.25 m.
off site transfer of materials with elevated calorific value	45,000		Estimated area of materials with a calorific value of > 4 MJ/Kg is 30,000 sq m. Average depth in this area is 1.5 m.
post removal of materials with elevated calorific value: these material are potentially unacceptable and will need assessment and potential / treatment & use.	30,000		Calculation uses residual dig volumes minus the calorific value data.
estimate untreatable material	6,000	20%	off site transfer
segregated inerts for recovery and on site use	4,500	15%	on site treatment and re-use
treatment & reinstatement (if suitable)	19,500		
additional imported/recovered fill required post of site removal	55,500		
Total fill or recovered material required	117,000	cu m	

3. SUMMARY DATA

Import/manufacture of human health layer	87,000	A 1 m thick Human Health (HH) cap will need to be manufactured on site from site works or imported. Must meet remedial specification.
Import/manufacture of feneral fill	30,000	Estimated volume of bulk fill required below HH
Total anticipated export	65,500	Unacceptable material and excavated material with a calorific value of > 4 MJ/Kg.
Inerts for treatment and use by follow-on Contractors.	46,800	To be assessed, segregated and crushed/screened into recovered aggregate.
Remedial excavations/stockpile for further treatment and re-use.	58,200	Estimated volume from remedial earthworks and stockpiles



Key:

Planning Application Boundary

Colour, Band, Area

-7.00	-6.40
-6.40	-5.80
-5.80	-5.20
-5.20	-4.60
-4.60	-4.00
-4.00	-3.40
-3.40	-2.80
-2.80	-2.20
-2.20	-1.60
-1.60	-1.00
-1.00	-0.40
-0.40	0.20
0.20	0.80
0.80	1.40
1.40	2.00
2.00	2.60
2.60	3.20
3.20	3.80
3.80	4.40
4.40	5.00

Notes:

1. The proposed planning area is circa 87,434 m^2.
2. The proposed landform design area is circa 86,601 m^2.
3. The total cut volume is 71,430 m^3.
4. The total fill volume is 47,957 m^3.
5. The balance of cut and fill volume is -23,473 m^3.
6. Topographical levels were interpreted from a survey carried out by an AA Environmental operative in April 2019 as well as pervious topographical modeling.

Rev.	Details	Drawn / Chkd.	Date

Project

173367
Carlton Colliery Restoration
Barnsley

Title

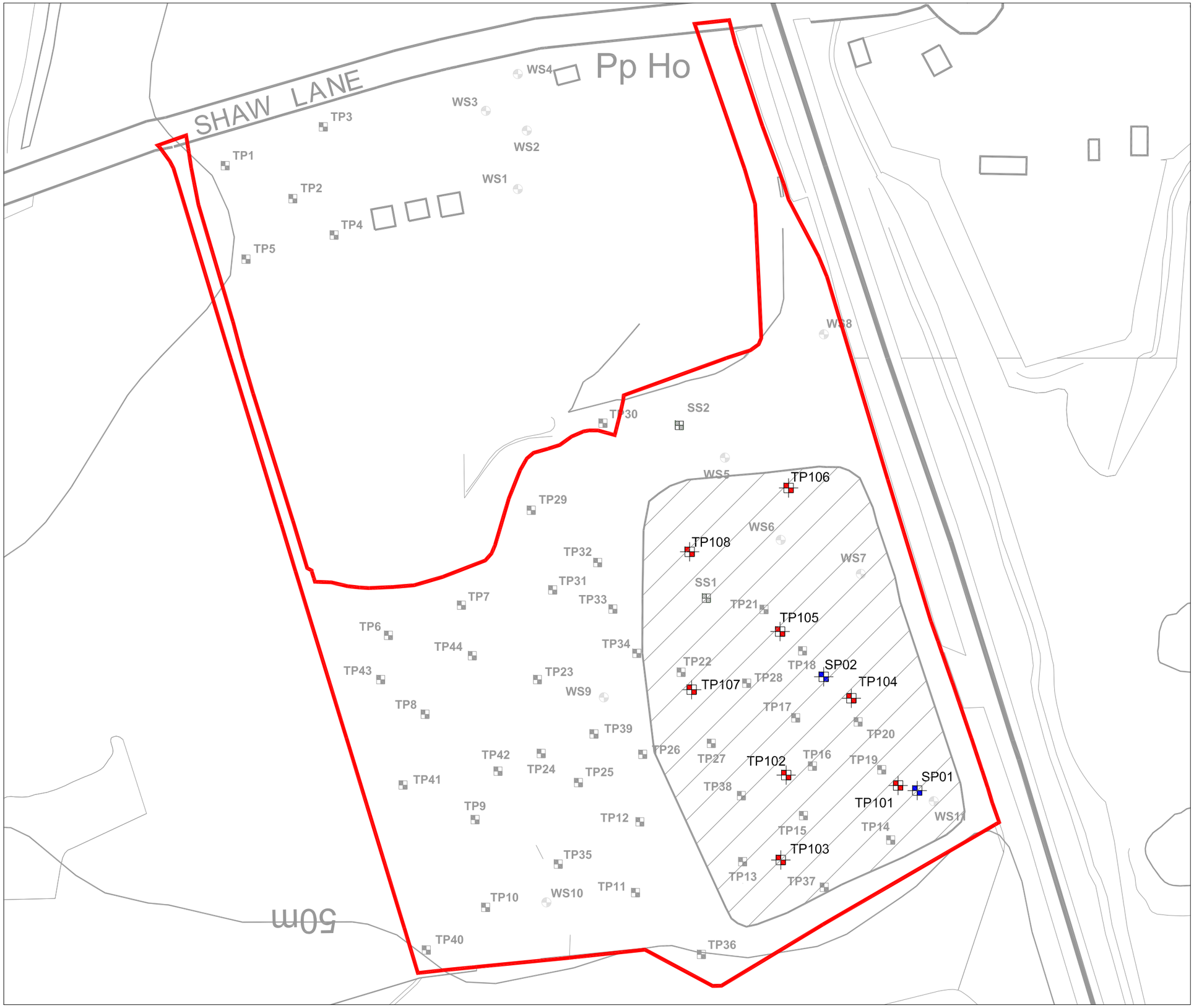
Existing to Proposed Landform Cut and Fill Volumes

AA Environmental Ltd
Units 4-8
Cholswell Court
Shippon Abingdon
Oxon OX13 6HX

T:(01235) 536042
F:(01235) 523849
info@aae-llp.com
www.aae-llp.com

AAe Environmental Consultants

Scale	Date	Drawn	Chkd.	Drg. No.	Rev.
1:2000@A3	Sept '19	JM	ML	173367/AppF/D/001	



Key:

- Planning Application Boundary
- Indicative Clinker Location
- AAe April 2019 Trial Pit Location
- AAe April 2019 Stockpile Sample Location
- Environ Trial Pit Location
- Environ Window Sample Location
- Environ Surface Sample Location

Notes:

1. The indicative clinker location is circa 29,992 m^2.
2. During the Site Investigation in April 2019, AAe identified clinker to an average depth of 1.5 m bgl in trial pits TP101-105, TP107-108 and SP2.
3. The volume of the stockpile of black coal ash and clinker (TP108) is circa 12,342 m^3.
4. The stockpile of mixed clinker and burnt shale (SP2) is circa 1,396 m^3.
5. The total estimated volume of clinker to be exported for off-site recovery is circa 58,725 m^3.

Rev.	Details	Drawn / Chkd.	Date

Project

173367
Carlton Colliery Restoration
Barnsley

Title

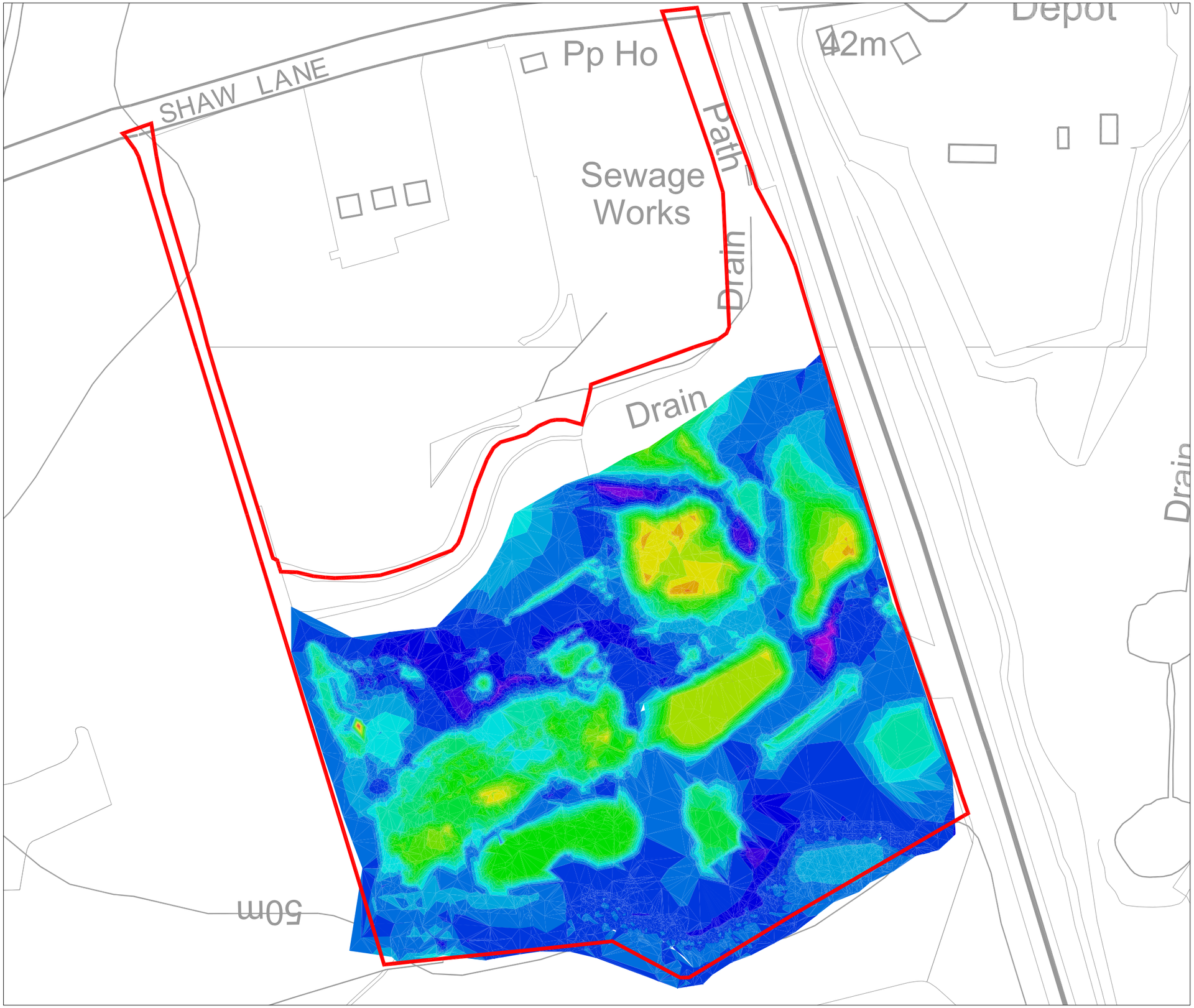
Indicative Extent of Clinker
Fill Volumes

AAe Environmental Consultants

AA Environmental Ltd
Units 4-8
Cholswell Court
Shippon Abingdon
Oxon OX13 6HX

T:(01235) 536042
F:(01235) 523849
info@aae-llp.com
www.aae-llp.com

Scale	Date	Drg. No.	Rev.
1:2000@A3	Sept '19	173367/AppF/D/002	
	Drawn: JM / Chkd.: ML		



Key:

Planning Application Boundary

Colour, Band, Area

	-3.00	-2.40
	-2.40	-1.80
	-1.80	-1.20
	-1.20	-0.60
	-0.60	0.00
	0.00	0.60
	0.60	1.20
	1.20	1.80
	1.80	2.40
	2.40	3.00
	3.00	3.60
	3.60	4.20
	4.20	4.80
	4.80	5.40
	5.40	6.00
	6.00	6.60
	6.60	7.20
	7.20	7.80
	7.80	8.40
	8.40	9.00

Notes:

1. The proposed planning area is circa 87,435 m^2.
2. The total volume of in-situ stockpiles on site is 84,797 m^3.
3. Topographical levels were interpreted from a survey carried out by an AA Environmental operative in April 2019 as well as previous topographical data including third party data.

Rev.	Details	Drawn / Chkd.	Date

Project

173367
Carlton Colliery Restoration
Barnsley

Title

Existing Stockpile Elevations and Assessed Volume

AA Environmental Ltd
Units 4-8
Cholswell Court
Shippon Abingdon
Oxon OX13 6HX

T:(01235) 536042
F:(01235) 523849
info@aae-llp.com
www.aae-llp.com

Environmental Consultants

Scale	Date	Drg. No.	Rev.
1:2000@A3	Sept '19	173367/AppF/D/003	
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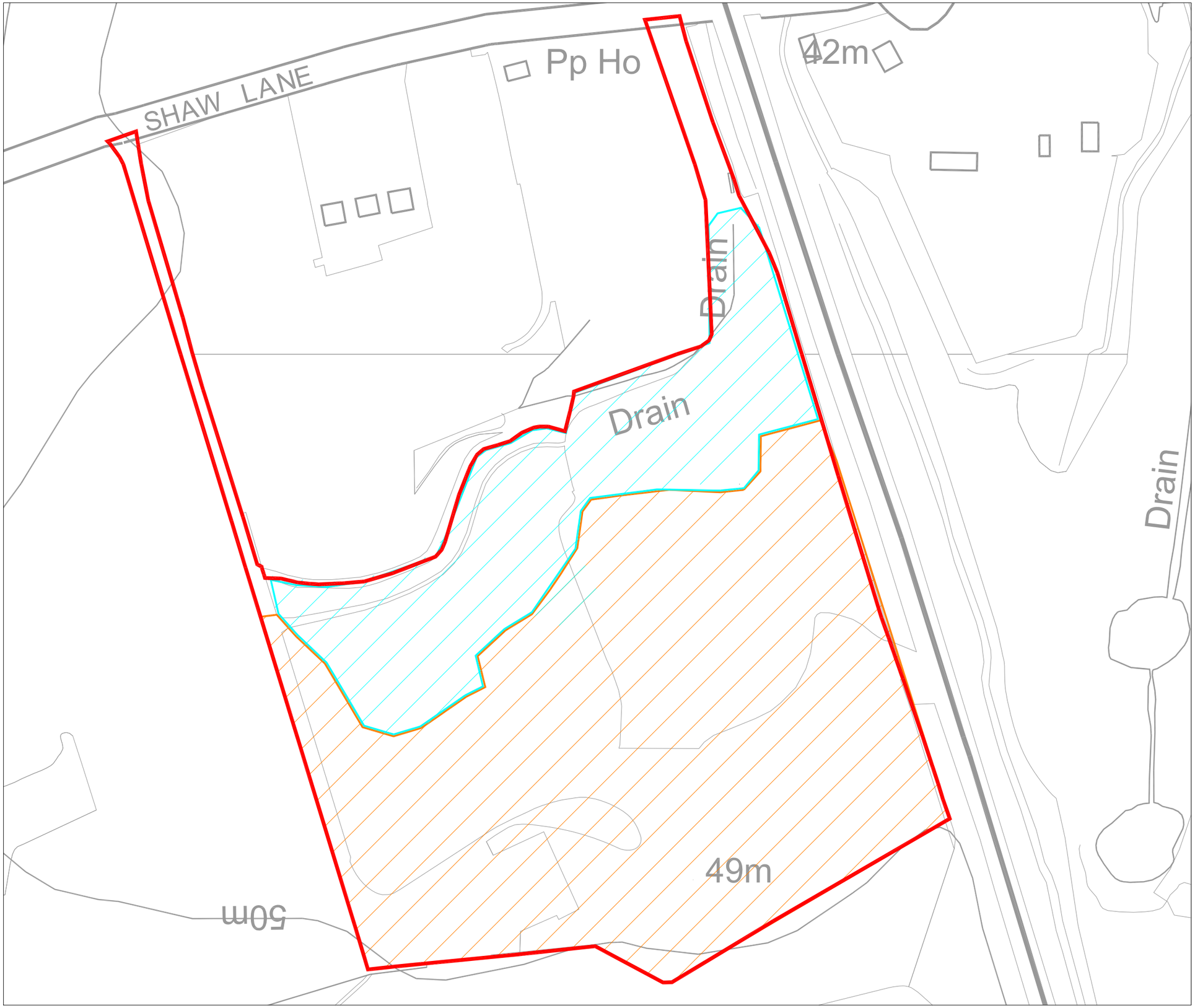

Key:

- Planning application boundary
- Indicative extent of remediation prior to 2019
- Indicative area to be remediated

Notes:

1. The planning area is circa 87,434 m^2.
2. The proposed landform design area is circa 86,601 m^2.
3. The remediation area is circa 61,133 m^2.
4. The indicative extent of remediation prior to is circa 25,468 m^2.

Rev.	Details	Drawn / Chkd.	Date

Project

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Title

Extent of Remediation Prior to 2019

AA Environmental Ltd
Units 4-8
Cholswell Court
Shippon Abingdon
Oxon OX13 6HX

T:(01235) 536042
F:(01235) 523849
info@aae-llp.com
www.aae-llp.com

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	Drawn: JM / Chkd.: ML		

Key:

Planning application boundary

1. Stockpile of brick and concrete.
2. Stockpile of Made Ground including brick, concrete and soil.
3. Stockpile of brick and concrete.
4. Black coal and clinker stockpile.
5. Stockpile of Made Ground from the remediation of the northern portion of the site prior to 2019.
6. Stockpile Made Ground from the remediation of the northern portion of the site prior to 2019.
7. Stockpile of Made Ground including brick, concrete and soil.
8. Stockpile of concrete and brick.
9. Stockpile of Made Ground including brick, concrete and soil.
10. Demolition Arisings.
11. Stockpile of Made Ground.
12. Demolition Arisings.
13. Demolition Arisings.
14. Demolition Arisings.
15. Stockpile of mixed clinker and burnt shale.
16. Stockpile of concrete and brick.

Rev.	Details	Drawn / Chkd.	Date

Project

173367
Carlton Colliery Restoration
Barnsley

Title

Stockpile Plan

AA Environmental Ltd
Units 4-8
Cholswell Court
Shippon Abingdon
Oxon OX13 6HX

T:(01235) 536042
F:(01235) 523849
Info@aae-llp.com
www.aae-llp.com

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