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EXECUTIVE SUMMARY

This executive summary contains an overview of the key findings and conclusions. No reliance should be placed on any part of the executive summary until the whole of the report has been read. Other sections of the report may contain information that puts into context the findings that are summarised in the executive summary.

BRIEF

This report describes the findings of a ground investigation carried out by Geotechnical and Environmental Associates Limited (GEA) on behalf of Beck Developments Limited, with respect to the potential residential redevelopment of the site. GEA previously undertook a desk study of the site and the findings were presented in report ref J07352, dated April 2008. The purpose of this investigation has been to assess the ground conditions, investigate the presence of contamination and to provide information for the design of suitable foundations.

SITE HISTORY

The desk study revealed that this site does not appear to have been previously developed and the majority of it has been used as a yard and storage area for the adjacent Primrose Mill since the mid 1800's. The northwestern end of the site was formerly occupied by rail sidings which were replaced by small industrial and storage units which are understood to have been used for vehicle repair and by the Environment Agency.

GROUND CONDITIONS

The investigation has revealed that below a relatively thin cover of made ground which principally comprises a layer of crushed limestone gravel overlying sandy gravelly clay, the site is underlain by Glacial Till. This till initially comprises firm slightly sandy clay with scattered gravel but increases in strength with depth to become stiff slightly sandy slightly gravelly clay with scattered cobles by depths in the order of 1.5m to 2.2m. These cobles proved impenetrable in several of the boreholes which were terminated upon them with SPT 'N' values in excess of 50 being recorded. The chemical analyses of the recovered samples indicates the presence of isolated elevated total sulphate concentrations and the presence of elevated PAH and especially benzo(a)pyrene concentrations within the fill material. Speciation of this PAH indicates it to be likely to represent tarmac fragments or degraded oil within the matrix to the crushed limestone.

During drilling groundwater was only encountered at the base of Borehole No 1, however the initial monitoring of the three standpipes some three weeks after installation has revealed groundwater standing at depths of 0.94m, 0.70m and 3.1m in Borehole Nos 1, 2 and 3 respectively. The initial soil gas monitoring has revealed an absence of any methane or soil gas flow from the bore hole and ambient oxygen and typical carbon dioxide concentrations suggestive of aerobic soil conditions, with no evidence for any methanogenesis.

RECOMMENDATIONS

Shallow spread foundations bearing upon the natural firm clay at a minimum depth of 1.0m may be designed to apply a net allowable bearing pressure of 125 kN/m^2. If deepened to bear upon the stiff clay at a depth of roughly 1.5 m to 2.2m, this bearing pressure could be increased to 175 kN/m^2. Following the removal of the made ground and a proof rolling exercise together with the removal of any soft spots, lightly loaded ground bearing floor slabs constructed upon the natural Glacial Till could be adopted. Much of the made ground comprises crushed limestone gravel which following a screening exercise could be re-used below floor slabs and paved areas as a granular fill material.

It is recommended that the made ground be removed during the site strip and that all made ground be removed from the proposed garden areas to address the potential risk posed by the PAH contamination. However, following a screening of the made ground the gravel sized crushed limestone could be re-used as a granular fill material below floor slabs or hardstandings.

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GROUND CONDITIONS

Below a relatively thin cover of made ground, which principally comprises a layer of crushed limestone gravel overlying sandy gravelly clay, Glacial Till was encountered to the full depth of the investigation. This till initially comprises firm slightly sandy clay with scattered gravel but increases in strength with depth to become stiff slightly sandy slightly gravelly clay with scattered cobbles by depths in the order of 1.5m to 2.2m. These cobbles proved impenetrable in several of the boreholes which were terminated with SPT 'N' values in excess of 50 being recorded. The chemical analyses of the recovered samples indicates the presence of isolated elevated total sulphate concentrations and the presence of elevated polyaromatic hydrocarbons (PAH) and especially benzo(a)pyrene concentrations within the fill material. Speciation of this PAH indicates it to probably represent tarmac fragments or degraded oil within the matrix to the crushed limestone.

During drilling, groundwater was only encountered at the base of Borehole No 1 at a depth of 4.30 m; however the initial monitoring of three standpipes installed in the boreholes some three weeks after installation has revealed groundwater at depths of 0.94m, 0.70m and 3.1m in Borehole Nos 1, 2 and 3 respectively. The initial soil gas monitoring has revealed an absence of any methane or soil gas flow from the bore hole and ambient oxygen and typical carbon dioxide concentrations suggestive of aerobic soil conditions, with no evidence for any methanogenesis.

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Following the removal of the made ground and a proof rolling exercise and subsequent removal of any soft spots, lightly loaded ground bearing floor slabs constructed upon the natural Glacial Till could be adopted. Much of the made ground comprises crushed limestone gravel which following a screening exercise could potentially be re-used below floor slabs and paved areas as a granular fill material subject to confirmatory testing.

It is recommended that the made ground be removed during the site strip and screened and that all made ground be removed from the proposed garden areas to address the potential risk posed by the PAH contamination. However, following a screening of the made ground the gravel sized crushed limestone could be re-used as a granular fill material below floor slabs or hardstandings.

CONTENTS

Part 1: INVESTIGATION REPORT

This section of the report details the objectives of the investigation, the work that has been carried out to meet these objectives and the results of the investigation. Interpretation of the findings is presented in Part 2.

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1.0 INTRODUCTION

Geotechnical and Environmental Associates (GEA) has been commissioned by Beck Developments Limited to carry out a site investigation of a site behind Primrose Mill, off Woone Lane in Clitheroe, Lancashire. GEA previously undertook a desk study investigation of the site and the findings were presented in report ref J07352 Issue 2, dated April 2008.

1.1 Proposed Development

Consideration is being given to the residential redevelopment of the site and Phase 1 comprises the construction of some 50 houses with gardens and hardstanding for car parking, as well as a new entrance from George Street. This report is specific to the proposed development and the advice herein should be reviewed if the development proposals are amended.

1.2 Purpose of Work

The principal technical objectives of the work carried out were as follows:

- to determine the ground conditions and their engineering properties;
- to provide information to assist in the selection and design of shallow foundations;
- to provide information for use in the design of pavements;
- to determine the feasibility of soakaway drainage; and
- to investigate the presence of contamination.

1.3 Scope of Work

In order to meet the above objectives, a ground investigation was carried out and comprised, in summary, the following activities:

- a series of nine small diameter open-drive boreholes advanced to a maximum depth of approximately 4.5 m;
- testing of selected soil samples for geotechnical and contamination purposes; and
- provision of a report presenting and interpreting the above data, together with our advice and recommendations with respect to the proposed development.

1.4 Limitations

The conclusions and recommendations made in this report are limited to those that can be made on the basis of the investigation. The results of the work should be viewed in the context of the range of data sources consulted, the number of locations where the ground was sampled and the number

of soil, gas or groundwater samples tested; no liability can be accepted for information in other data sources or conditions not revealed by the sampling or testing. Any comments made on the basis of information obtained from the client or other third parties are given in good faith on the assumption that the information is accurate; no independent validation of such information has been made by GEA.

2.0 THE SITE

2.1 Site Description

The centre of the site is located some 1.2 km southwest of Clitheroe town centre and is roughly rectangular in shape, measuring approximately 170 m northwest to southeast and 50 m northeast to southwest. It is bounded to the northeast by a narrow lane, beyond which lies a recent residential development on George Street. To the northwest the site is bounded by a railway line whilst Primrose Mill occupies the land to the southeast and to the southwest the site is bounded by the remaining half of the Primrose Mill land with open farmland beyond. The centre of the site may additionally be located by National Grid Reference 373647, 440887.

The site comprises the concrete yard area adjacent to Primrose Mill and an area of open ground to the northwest which drops down slope by some 4.0 m to a railway line. The site is largely open although some single storey structures are present within the court yard of the mill and adjacent to the railway in the southeast. The site is largely covered by gravel through which rough grass and scattered small trees have grown.

2.2 Site History

The site history was researched in the previous desk study report which should be read in conjunction with this report but is summarised below.

Primrose Mill is thought to have been constructed in the mid to late 1800's as a cotton mill. The railway, at the northwestern part of the site, predates the mill and Primrose Siding were constructed at the northwestern end of the site possibly to serve the mill. By the mid 1960's Primrose Mill was in use as a storage depot and from the 1990's it is understood to have been used as Government Buildings occupied by the Department of Health and Social Security (DHSS). During this time no evidence of any development is apparent on the majority of the site area to the northwest of the mill with the exception of the single storey structures in the Mill yard and adjacent to the railway which appears to have been constructed in the mid 1900's. It is thought that some of these structures may have at one time been used by a vehicle repair business.

2.3 Preliminary Risk Assessment

The desk study concluded that the site posed a moderate potential for soil contamination as a result of its previous usage as rail sidings and locally where some of the structures had been used for vehicle repairs.

3.0 EXPLORATORY WORK

In order to meet the objectives described in Section 1.2, a series of nine boreholes was advanced using a tracked open-drive sampling rig to a maximum depth of approximately 4.5 m under the supervision of a geotechnical engineer from GEA. During boring a continuous soil core was recovered and examined by the engineer and Standard Penetration Tests (SPTs) were carried out at regular intervals.

Three gas and groundwater monitoring standpipes were installed to a depth of 3 m, within Borehole Nos 1, 2 and 3. These boreholes have been monitored on a single occasion and further monitoring will be reported as an addendum to this report. A selection of the samples recovered from the boreholes was submitted to a soil mechanics laboratory for a programme of geotechnical testing and an analytical laboratory for a programme of contamination testing.

The boring records and the results of the laboratory analyses are appended, together with a site plan indicating the borehole locations.

3.1 Sampling Strategy

The boreholes were located to provide a general coverage of the site and to investigate both the sites likely contaminative potential and to assess the variability of the ground conditions across the site.

Samples of the made ground and the underlying natural soil were recovered at selected depths and have been subjected to chemical analyses to determine concentrations of a range of typical soil contamination indicative parameters and the results are discussed in Section 4.6. These soils were selected to provide a general view of the chemical conditions of the soils that are likely to be involved in a human exposure, groundwater or surface water pathway and to provide advice in respect of waste disposal.

The contamination analyses were carried out at an MCERTs accredited laboratory with the majority of the testing suite accredited to MCERTS standards. Details of the MCERTs accreditation and test methods are included in the Appendix together with the analytical results.

4.0 GROUND CONDITIONS

The investigation has revealed the expected ground conditions in that, below a generally thin to moderate cover of made ground, Glacial Till was encountered and proved to the maximum depth investigated.

4.1 Made Ground

The made ground was found to generally comprise an upper layer of humic slightly clayey sand, often within a matrix of crushed limestone gravel, which extended to depths of between 0.10 m and 0.25 m. This material was generally found to be underlain by greyish brown slightly sandy gravelly clay with scattered or abundant gravel of crushed limestone or brick rubble which was found to extend to depths of up to 0.60 m.

No evidence of gross contamination was observed within this material although scattered clinker fragments may be indicative of a potential for some metallic and PAH contamination.

4.2 Glacial Till

The made ground was found to be underlain by firm pale grey and pale brown mottled slightly sandy clay with scattered gravel and occasional cobbles. This material increased in strength with depth becoming stiff greyish brown slightly sandy gravelly clay with occasional cobbles below a depth of approximately 1.5 m to 2.2 m. The presence of cobbles and possible boulders within this material hindered sampling and prevented progress in several of the boreholes which were terminated on such obstructions after an SPT 'N' value in excess of 50 blows was measured. No evidence of desiccation of these soils has been observed within any of the boreholes.

Laboratory index property determinations carried out on samples of the Glacial Till indicate it to be of a highly variable plasticity with a plasticity index range of between 8 and 46 being measured with no obvious pattern to explain the distribution of this plasticity either laterally or with depth. No evidence of soil contamination was observed within these natural glacial deposits.

4.3 Groundwater

Groundwater was only encountered within Borehole No 1, where it was encountered at 4.4 m and observed to rise to a depth of 4.2 m in 10 minutes. All other boreholes were found to be dry.

Monitoring of the standpipes about three weeks after installation indicated groundwater at depths of 0.94 m, 0.70 m and 3.10 m in Borehole Nos 1, 2 and 3 respectively.

4.4 Soil Contamination

Part IIA of the Environmental Protection Act 1990, which was inserted into that Act by Section 57 of the Environment Act 1995, provides the main regulatory regime for the identification and remediation of contaminated land. The determination of contaminated sites is based on a "suitable for use" approach which involves managing the risks posed by contaminated land by making risk-based decisions. This risk assessment is carried out on the basis of a source-pathway-receptor approach.

The use of a risk-based approach, which is presented in Part 2 of this report, means that it is not appropriate to determine the significance of contamination test results by simply comparing individual contaminant concentrations to a single "trigger" or "target" concentration. The significance of the results is therefore considered in more detail in Part 2, whilst the table below sets out the values measured within the nine samples tested that represent the general site conditions.

Contaminant of Concern	Maximum concentration recorded (mg/kg)	Minimum concentration recorded (mg/kg)	Number Below Detection Limit	Normalised upper bound US_{95}
Arsenic	22	10	None	19
Cadmium	1.4	0.24	None	1.1
Chromium	30	10	None	22
Copper	250	10	None	104
Lead	340	9.9	None	217
Mercury	0.51	<0.1	Three	0.2
Nickel	44	12	None	37

Contaminant of Concern	Maximum concentration recorded (mg/kg)	Minimum concentration recorded (mg/kg)	Number Below Detection Limit	Normalised upper bound US_{95}
Selenium	0.58	<0.2	Three	0.37
Zinc	380	17	None	233
Total Sulphate	3700	600	None	2225
Sulphide	4.4	1.2	None	3.3
Chloride g/l	0.025	<0.01	Three	0.02
TPH (C10-C12)	2.1	<0.1	Six	0.87
TPH (C12-C16)	36	<0.1	Two	13.1
TPH (C16-C21)	250	<0.1	Two	85
TPH (C16-C21)	560	<0.1	Two	260
naphthalene	4.2	0.13	None	1.64
acenaphthylene	0.36	<0.1	Five	0.19
acenaphthene	3.3	<0.1	Two	1.27
fluorene	2.5	<0.1	Six	0.97
phenanthrene	35	0.28	One	13.1
anthracene	5.5	<0.1	Five	2.0
fluoranthene	43	0.57	One	16.4
pyrene	34	0.18	None	13.4
benzo(a)anthracene	17	0.46	One	6.6
chrysene	20	0.39	One	7.9
benzo(b)fluoranthene	17	<0.1	Two	7.1
benzo(k)fluoranthene	12	<0.1	Two	4.7
benzo(a)pyrene	20	<0.1	Two	8.2
Indeno(1,2,3-cd)pyrene	12	<0.1	Two	4.9
dibenzo(a,h)anthracene	2.6	<0.1	Three	1.1
benzo(ghi)perylene	11	<0.1	Two	4.5
Cyanide	<0.5	<0.5	All	<0.5
phenol	<0.3	<0.3	All	<0.3
pH	8.2	7.4	None	-
TOC	5.3	0.39	None	3.8

Elevated concentrations of total sulphate and PAH have been measured within samples recovered from the made ground. A total of five samples from the made ground also indicate elevated concentrations of benzo(a)pyrene.

An analysis of the ratios of the various PAH from the two samples from Borehole Nos 2 and 5, with PAH concentrations some five to ten times greater than those measured in the remaining samples, indicates this PAH to be likely to be of pyrogenic origin and to principally comprise

fluoranthene, phenanthrene and pyrene but with a relatively low proportion of acenaphthene and only moderate proportions of benzo(b)fluoranthene and benzo(a)pyrene. This distribution of the PAH species suggests this PAH to probably derive from tarmac fragments within the soil.

The remaining three samples in which elevated benzo(a)pyrene concentrations were measured are all samples of the matrix between the crushed limestone surfacing and the ratios of the PAH species within these samples are indicative of this PAH being a degraded lubricating oil in Borehole Nos 4, 8 and 9 and tarmac fragments in Borehole No 1.

The implications of the contaminants of concern are assessed in detail in the conceptual site model in Section 7.7.

4.5 Soil Gas

A single round of soil gas monitoring has been carried out to date and has indicated ambient soil gas temperatures and oxygen concentrations and the absence of any detectable flow or methane concentrations. Carbon dioxide concentrations of between 0.1% and 1.1% have been measured which are considered to be within the typical range for normal aerobic soil activity and are thus not considered to be indicative of potential methanogenesis.

Part 2: DESIGN BASIS REPORT

This section of the report provides an interpretation of the findings detailed in Part 1, in the form of a ground model, and then provides advice and recommendations for foundations and other aspects of the development.

5.0 INTRODUCTION

Consideration is being given to the residential redevelopment of this site through the construction of 50 two-storey houses and apartments, along with a new entrance from George Street and areas of car parking and soft landscaping. Loadings have not been provided but are anticipated to be relatively light.

6.0 GROUND MODEL

On the basis of the investigation, the ground conditions at this site can be characterised as follows.

- made ground is present to depths of between 0.2 m and 0.6 m and comprises generally a cover of crushed limestone gravel overlying slightly sandy gravelly clay with extraneous material;
- the made ground was found to be underlain by Glacial Till, comprising firm slightly sandy clay with scattered gravel and occasional cobbles, which increased in strength with depth becoming stiff below a depth of approximately 1.5 m to 2.2 m;
- groundwater was encountered in only one borehole during drilling but was measured in all of the three installed standpipes, at depths of between 0.7 m and 3.1 m, about three weeks after installation;
- elevated concentrations of total sulphate and PAH have been measured within the made ground, which are thought to result from inclusions of tarmac and from a degraded waste oil in the matrix of the crushed limestone surfacing; and
- ambient soil gas concentrations have been monitored in the installed standpipes on the first round of soil gas monitoring which are typical of normal aerobic soil conditions.

6.1 Contaminants of Concern

The use of a risk-based approach has been adopted to provide an initial screening of the test results to assess the need for subsequent site-specific risk assessments. To this end the table below indicates those contaminants of concern that have US95 values in excess of a generic human health risk based guideline value which is either that of the CLEA[1] Soil Guideline Value where available, or is a Generic Guideline Value calculated using the CLEA UK Version 1.06 software assuming, a residential end use with the potential for plant uptake. Where contaminant concentrations are measured in excess of these values it is considered that there is a potential for there to be some risk to human health and hence site specific risk assessment, soil remediation or risk management may be required. Values measured at concentrations below these values are not deemed to require further consideration with regard to human health.

1 *Updated Technical Background to the CLEA Model (Science Report SC050021/SR3) Jan 2009* and Soil Guideline Value reports for specific contaminants; all DEFRA and Environment Agency.

The tables of generic screening values derived by GEA and an explanation of how each value has been derived are included in the Appendix.

Contaminant of Concern	Maximum concentration recorded (mg/kg)	Minimum concentration recorded (mg/kg)	Normalised upper bound US_{95}	Generic Risk-Based Screening Value
Total Sulphate	3700	600	2225	2400
naphthalene	4.2	0.13	1.64	3.7
benzo(a)anthracene	17	<0.1	6.60	4.7
chrysene	20	<0.1	7.91	8.0
benzo(b)fluoranthene	17	<0.1	7.09	6.5
benzo(k)fluoranthene	12	<0.1	4.74	9.6
benzo(a)pyrene	20	<0.1	8.23	0.94
indeno(1,2,3-cd)pyrene	12	<0.1	4.92	3.9
dibenzo(a,h)anthracene	2.6	<0.1	1.10	0.86

** Threshold values marked thus are for compounds with a limited human toxicity hence the threshold values adopted are not derived on a risk based methodology. Justification for all of the values quoted is provided in the appended table of Generic Risk Based Threshold Soil Guideline Values*

The elevated total sulphate concentrations were measured within the near surface fill materials in Borehole Nos 1 and 3 and are thus considered to be unlikely to present a risk to buried concrete as these deposits will be stripped from the construction area prior to the placement of new concrete. Soluble sulphate analyses on samples recovered at depths of between 0.5 m and 1.5 m indicate the presence of low soluble sulphate concentrations, suggesting that the elevated total sulphates are likely to be isolated and present in an insoluble form.

The elevated benzo(a)pyrene concentrations were measured within the matrix of the near surface crushed limestone within Borehole Nos 1, 4 and 8 with a near GGV concentration in Borehole No 9. The ratios of the PAH speciation in the latter three of these boreholes is indicative of this material representing a degraded oil, which could have resulted from spillages from vehicles using this area as a hardstanding. Alternatively if this stone is a re-used railway ballast it could result from historical spillages from engines and rolling stock. The PAH present largely comprises three, four and five ring structures and thus this PAH will be of very low solubility and of negligible volatility and will be essentially immobile. Whilst this material would be unsuitable for use within garden areas it would pose minimal risk if placed below structures and hard surfacing and this crushed stone could therefore be re-used on site, subject to it being screened to remove the fines and humic material which has built up between the stones over time.

The elevated PAH concentrations measured within Borehole Nos 2 and 5 are thought to represent tarmac fragments due to the proportions of the PAH species present. Such material would also be essentially immobile and being tar bound is likely to be present as larger particles within the soil. The principal risk pathways for these carcinogenic PAHs is via dermal contact and the ingestion of soil and dust. Tarmac fragments are unlikely to generate dust or be involved in the accidental ingestion route due to their particle size and having a relatively low surface area to volume ratio pose a reduced risk via dermal contact. It is thus unlikely that the PAH identified would pose a significant risk to human health, although it would obviously be preferable to remove the material from garden areas for aesthetic and horticultural reasons.

The results of the initial soil gas monitoring indicate ambient soil gas concentrations and the absence of any measurable flow or methane concentrations. The desk study has provided no evidence of a potential source of biogas on or in the vicinity of the site and the investigation has identified the present of low permeability cohesive soils from near surface-levels; there is thus minimal potential for soil gas migration on to this site.

In determining the significance of soil gas concentrations both the gas concentrations and borehole flow rates are used to define a characteristic situation for a site based on the limiting borehole gas volume flow, referred to as the Gas Screening Value (GSV) for methane and carbon dioxide, in accordance with guidance provided by CIRIA[2].

In this case no concentrations of methane have been measured and a maximum concentration of 1.1 % vol. has been measured for carbon dioxide. No positive borehole flow rates have been measured and as such the corresponding GSV is zero. On the basis of the above the site is therefore defined as Characteristic Situation 1 and as having a very low risk. On the basis of the NHBC "traffic light" system3 the site may be considered to be Green. Further monitoring is however underway and will be reported as an addendum to this report.

The implications of the contaminants of concern are assessed in detail in Section 7.6.

7.0 ADVICE AND RECOMMENDATIONS

On the basis of the findings of this investigation it is considered that conventional spread foundations bearing in the natural soils will provide a suitable foundation scheme for the anticipated relatively light loads.

7.1 Spread Foundations

Shallow spread foundations bearing upon the natural firm slightly sandy clay may be designed to apply a net allowable bearing pressure of 125 kN/m^2. If deepened to bear upon the stiff slightly sandy slightly gravelly clay at a depth of roughly 1.5 m to 2.2 m, this bearing pressure could be increased to 175 kN/m^2.

Foundations should be placed at a minimum depth of 1.0 m, assuming that restrictions are applied on planting of shrubs in the vicinity of foundations, or at a depth of 1.25 m if there is unrestricted planting of shrubs in the new development, subject also to the further restrictions on new tree planting as detailed in the NHBC guidelines. It would be prudent to assume a high shrinkability class for the clays due to the variability revealed by the laboratory testing unless specific testing is to be carried out in specific areas. Where trees are to be removed the required founding depth should be determined on the basis of the existing tree height if it is less than 50% of the mature height and on the basis of full mature height if the current height is more than 50% of the mature height. Where a tree is to be retained the final mature height should be adopted. Notwithstanding NHBC guidelines, all foundations should extend beyond any zone of desiccation. In this respect it would be prudent to have all foundation excavations inspected by a suitably experienced engineer. Due allowance should be made for future growth of the trees.

The requirement for compressible material alongside foundations should be determined by reference to the NHBC guidelines.

2 Wilson, S, Oliver, S, Mallett, H, Hutchings, H and Card, G (2006) *Assessing risks posed by hazardous ground gases to buildings* CIRIA Report C659

3 Boyle, R and Witherington, P (2006) *Guidance on evaluation on development proposals on sites where methane and carbon dioxide are present, incorporating 'traffic lights'.* Report Ref 10627-R01-(02) for National House-Building Council

7.2 Excavations

On the basis of the borehole findings it is considered likely that shallow excavations in the made ground and cohesive Glacial Till should stay open in the short to medium term, and that significant groundwater inflows are unlikely to be encountered in excavations of less than 1.2 m depth. Groundwater may however, build up within even shallow excavations if left open for prolonged periods. Such groundwater should however, be controllable by conventional sump pumping techniques.

Where personnel are required to enter excavations, a risk assessment should be carried out and temporary lateral support or battering of the excavation sides considered in order to comply with normal safety requirements.

7.3 Ground Floor Slabs

Following the removal of the made ground and a proof rolling exercise, followed the removal of any soft spots with suitable compacted fill, lightly loaded ground bearing floor slabs may be designed to bear upon the natural Glacial Till. In the area close to the trees / hedgerow bounding the lane to the northeast, desiccated soils could be present during dryer periods and it is thus recommended that the formation level of any ground bearing floor slabs in this area be inspected by a suitably experienced engineer. If desiccated soils are encountered, either a fully suspended floor slab should be adopted over a void in accordance with NHBC guidelines, or the desiccated soil should be removed and replaced with granular material.

Much of the site is surfaced with crushed limestone gravel in a matrix of humic sandy clay. If this material was to be excavated and screened it is possible that the 'clean' gravel fraction could be reused as a sub-base and if required gas venting layer below ground bearing floor slabs, subject to testing to determine that it has a suitable grading and that it will not be susceptible to frost heave.

The gas monitoring to date does not indicate a need for soil gas exclusion measures to be installed below or within floor slabs, but further monitoring is planned and the requirement for protection measures will be determined in the light of this further monitoring. The desk study indicated that the site is located in an area where less than 1% of homes are affected by radon emissions and no radon protective measures will be necessary.

7.4 Pavement Design

Following the removal of the made ground and a proof rolling exercise, the natural cohesive Glacial Till should be capable of achieving a CBR of 3 %, whilst pavements formed within the made ground should be designed on the basis of a CBR of 'less than 2 %'. However, if the made ground is stripped, screened and tested the resultant crushed limestone gravel could potentially be re-used and compacted as a sub-base material below paved areas.

It is recommended that saturated moisture content testing be carried out on samples of the screened gravel to confirm that it is unlikely to be frost susceptible. The laboratory tests indicate that the near surface cohesive Glacial Till is generally unlikely to be frost susceptible, however, if zones of sandy or silty material are encountered at formation level, they should be removed to minimise the potential for ice lens formation unless a sufficient pavement make up is adopted to protect the formation.

7.5 Disposal of Surface Water

In view of the cohesive nature of the natural deposits it is considered that soakaways would be ineffective in these soils and that all surface water will need to be diverted in to the main storm water drainage network.

7.6 Effect of Sulphates

Chemical analyses of selected soil samples have revealed generally low total and low soluble sulphate concentrations. However, two elevated total sulphate concentrations were measured within the near surface made ground. Assuming that the made ground is to be stripped prior to development it is recommended that buried concrete be designed assuming Class DS-1 of Table C2 of BRE Special Digest 1: SD1 Third Edition (2005) soil conditions. Mildly acidic to more generally mildly alkaline pH conditions have been measured on the basis of mobile groundwater conditions being assumed for buried concrete an ACEC classification of AC-1 may generally be adopted.

The guidelines contained in the above digest should be followed in the design of foundation concrete.

7.7 Contamination Risk Assessment

The results of the contamination tests have confirmed the presence of elevated concentrations of PAH within the samples of the made ground. This PAH appears attributable to tarmac inclusions within the samples from Borehole Nos 1, 2 and 5 where the greatest PAH concentrations were measured and to degraded oil in the matrix to the crushed limestone in Borehole Nos 4, 8 & 9 where elevated benzo(a)pyrene concentrations were measured. These PAHs are considered to be of very low mobility and to pose limited risk to human health as their grain size, low volatility and immobility will not lend them to being involved in the direct contact, accidental ingestion or ingestion of dust pathways which account for some 90% of the total exposure pathway for these PAHs for a residential with plant uptake usage. In addition as the measured PAH is principally in the form of 3, 4 and 5 ring compounds it will be of a very low solubility and hence will pose minimal risk of leaching and thus of ground or surface water contamination. However, the PAH could pose some albeit limited risk to human health via plant uptake and thus it is recommended that the made ground be removed from all garden areas. This may in any case be required due to the brick and stone content of the fill which would not lend itself to plant growth.

The following table summarises the Conceptual Model for the site if it were to be developed without removing the made ground from garden areas.

SOURCE	RECEPTOR	PATHWAY	COMMENTS
PAH contamination derived from tarmac within near surface made ground as encountered in Borehole Nos 1, 2 and 5	Groundwater	Percolation and leaching	With the exception of the naphthalene measured within Borehole No 5 all of the PAH compounds present at elevated concentrations have maximum solubility values of less than 10ug/l and have a very low affinity for water. The PAHs present will thus tend to resist leaching and will remain bound to the tar or to organic matter within the soil and will pose negligible risk to groundwater.
	End users	Direct contact, ingestion and inhalation of dust	The PAHs present are generally non-volatile and are bound within the tar into relatively large particles that will not be subject to dusting or accidental ingestion and will have a relatively small surface area to volume ratio, so will pose minimal risk via direct contact.

SOURCE	RECEPTOR	PATHWAY	COMMENTS
		Plant uptake and consumption of home grown fruit and vegetables	The PAHs present are generally of low mobility and being tar bound are unlikely to be taken up by plants to any significant degree.
	Site workers during construction	Ingestion of contaminated soil or dust, skin contact, inhalation	Whilst these pathways would present a low risk it would be prudent for appropriate protective equipment and working practices to be employed during groundworks,
PAH contamination derived from degraded oil within the matrix to the stone fill as encountered in Borehole Nos 4, 8 and 9	Groundwater	Percolation and leaching	Only benzo(a)pyrene (B(a)P) has been measured at concentrations in excess of the adopted GGVs. B(a)P has a maximum solubility value of 1.6ug/l and has a very low affinity for water. The PAHs present will thus tend to resist leaching and will remain bound to the hydrocarbons present or to organic matter within the soil and pose negligible risk to groundwater.
	End users	Direct contact, ingestion and inhalation of dust	B(a)P is non-volatile and being present within a degraded oil is unlikely to be subject to dusting. This material could however be subject to accidental ingestion and dermal contact during working with the fill material, it is thus recommended that it be removed from garden areas.
		Plant uptake and consumption of home grown fruit and vegetables	B(a)P is of low mobility and is relatively unlikely to be actively taken up by plants, it is however recommended that the crushed stone fill in which this material is present be removed from garden areas.
	Site workers during construction	Ingestion of contaminated soil or dust, skin contact, inhalation	These pathways could present a low risk to site workers handling this fill material, it would thus be prudent for appropriate protective equipment and working practices to be employed during groundworks,

The removal of the made ground during the site strip will effectively remove the source of the PAH contamination and following a screening of the fill, the re-use of the gravel sized crushed limestone below buildings and hardstandings should not pose an unacceptable risk. It is however recommended that the made ground be removed from the garden areas.

In areas of soft landscaping, all soil brought onto the site should be certified as clean with appropriate documentation.

7.8 Protection of Site Workers during Construction

Site workers should be made aware of the contamination and a programme of working should be identified to protect workers handling any soil. The method of site working should be in accordance with guidelines set out by HSE[4] and CIRIA[5] and the requirements of the Local Authority Environmental Health Officer.

As with any site that has previously been developed, if suspect soils are identified during groundworks it is recommended that work is suspended pending further investigation and advice from a geo-environmental engineer.

4 HSE (1992) HS(G)66 *Protection of workers and the general public during the development of contaminated land* HMSO

5 CIRIA (1996) *A guide for safe working on contaminated sites* Report 132 Construction Industry Research and Information Association

7.9 Waste Disposal

Any spoil arising from excavations or landscaping works will need to be disposed of to a licensed tip. Under the European Waste Directive landfills are classified as accepting inert, non-hazardous or hazardous wastes in accordance with the EU waste Directive. The soils discarded during the development of this site as Hazardous waste which are to be disposed of to landfill will need to be tested and the results compared with the Waste Acceptance Criteria (WAC) based upon the results of CEN method bulk leaching tests or percolation tests to confirm their acceptability for disposal to landfill. Such tests should be carried out upon representative samples from the waste stream once the extent of the materials to be discarded has been established.

If the made ground is to be screened and the gravel sized crushed limestone re-used as a granular fill material it is likely that much of the material arising from the site strip could be re-used as a construction material. This would constitute a waste recovery operation under the Waste Management Licensing section of the Environmental Permitting Regulations which could be carried out under a 'Paragraph 19 exemption - Waste for construction', whereby soil and stones other than those containing dangerous substances can be used for construction purposes as long as it is suitable for use. These exemptions are currently under review and may be changed after April 2010.

Based upon on the analysis of the samples of the made ground carried out as part of this investigation and the technical guidance provided by the Environment Agency[6] it is considered likely that the screened fines and any other areas of made ground which are to be disposed of are likely to be classified as a non-hazardous. However, this classification should be confirmed by the receiving landfill once the soils to be discarded have been identified. Further testing of the material to be removed may be required by the receiving tip.

The natural Glacial Till could be regarded as being an inert waste and being from an 'uncontaminated site' may not require WAC leaching tests, however further analysis including WAC tests could be required by the receiving land fill and thus it is recommended that they be consulted in this respect.

Under the requirements of the European Waste Directive all waste needs to be pre-treated prior to disposal. The pre-treatment process must be physical, thermal, chemical or biological, including sorting. It must change the characteristics of the waste in order to reduce its volume, hazardous nature, facilitate handling or enhance recovery. The waste producer can carry out the treatment but they will need to provide documentation to prove that this has been carried out. Alternatively, the treatment can be carried out by an approved contractor. The Environment Agency has issued a position paper[7] which states that in certain circumstances, segregation at source may be considered as pre-treatment and thus excavated material may not have to be treated prior to landfilling if the soils can be segregated onsite prior to excavation by sufficiently characterising the soils insitu prior to excavation.

The above opinion with regard to the classification of the excavated soils is provided for guidance only and should be confirmed by the receiving landfill once the soils to be discarded have been identified.

The local waste regulation department of the Environment Agency (EA) should be contacted to obtain details of tips that are licensed to accept the soil represented by the test results. The tips will be able to provide costs for disposing of this material but may require further testing.

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6 Environment Agency May 2008. Hazardous Waste: Interpretation of the definition and classification of hazardous waste Technical Guidance WM2 Second Edition Version 2 2

7 *Regulatory Position Statement 'Treating non-hazardous waste for landfill - Enforcing the new requirement' Environment Agency 23 Oct 2007*

8.0 FURTHER WORK

Further gas monitoring is on going and will be reported as an addendum to this report. This monitoring will include further groundwater monitoring and it is also recommended that the groundwater level within the standpipes be checked immediately prior to the commencement of construction to confirm the depth at which groundwater may be encountered within excavations.

It is recommended that saturated moisture content testing be carried out on samples of the screened gravel to confirm its suitability for re-use below roads and floor slabs.

It may be prudent to test further soil samples from the areas where it is known spoil will be generated to confirm its acceptability to the receiving landfill prior to excavation.

APPENDIX

Borehole Records

Standard Penetration Test Results

Laboratory Test Results
:Summary of Geotechnical Testing
:Chemical Test Results

Generic Guideline Values

Site Plan

Document Control

Project title	Primrose Mill, Primrose Road Clitheroe, Lancashire	**Project ref**	J07352
Report prepared by	Martin Cooper BEng CEng MICE		
Report approved for issue by	Steve Branch BSc MSc CGeol FGS FRGS MIEnvSc		

Issue No	Status	Date	Approved for Issue
1	Final	30 November 2007	
2	Final (revised)	28 April 2008	
3	Final (revised)	04 June 2008	

This report has been issued by the GEA office indicated below. Any enquiries regarding the report should be directed to the office indicated or to Steve Branch in our Herts office.

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CONTENTS

EXECUTIVE SUMMARY

This executive summary contains an overview of the key findings and conclusions. No reliance should be placed on any part of the executive summary until the whole of the report has been read. Other sections of the report may contain information that puts into context the findings that are summarised in the executive summary.

BRIEF

This report describes the findings of a desk study carried out by Geotechnical and Environmental Associates Limited (GEA), on behalf of Beck Developments limited, to determine the history of the site, potential for contamination and to provide preliminary information on foundation options with regard to the proposed residential redevelopment and improvement to the former mill lodge area.

DESK STUDY FINDINGS

The earliest map studied, dated 1847, shows Primrose Lodge, which is a reservoir holding water to service Primrose Print Works and Paper Mills, to be very much as at the time of this investigation. The print works and paper mill are shown to lie downstream of a dam and two cotton mills are shown upstream of the lodge. Primrose Mill is not shown to have been built but a large, unidentified feature lies across the part of the site that is currently occupied by the mill. Subsequent maps dated 1886 and 1890 show that Primrose Mill had been constructed along with Commercial Mill to the north of the site; both denoted as cotton mills. Alongside the railway, at the northwestern part of the site, Primrose Siding is shown and the general surroundings saw the building of a number of rows of terraced houses. Little change is shown on the next map dated 1911 but the 1914 map shows that the building that is currently occupied by a sheet metal business had been erected. This map also shows a laundry and brewery upstream of the lodge. The map dated 1932 shows that Primrose Works, the former print works, was in use for bleaching and finishing. A further building is shown behind the mill on the 1933 map but little change is otherwise shown to 1955. On the next map, dated 1964, the Primrose Mill building is shown to have been in use as a storage depot and the adjacent former Commercial Mill is shown to have been an engineering works but otherwise there is little change. The 1978 map shows the mill to have been a depot and the maps dated 1993, 2001 and 2007 indicate the mill to have been Government Buildings. A conversation with a local resident confirmed that during this period, the buildings were occupied by the former DHSS.

CONTAMINATION RISK ASSESSMENT

The desk study research has indicated that this site has been in industrial usage for much of its recorded history. A qualitative rating of the risk arising from the site concludes that the site is regarded as having a MODERATE risk of ground contamination.

FOUNDATIONS

No new loads are understood to be proposed as a result of the conversion of the Primrose Mill building but on the basis of two or perhaps three storey dwellings being proposed, foundation loads are likely to be light to moderate and spread foundations bearing on the Boulder Clay or the limestone if present should provide a suitable foundation solution.

An intrusive investigation is advised; in particular, such an investigation should target the areas of former industrial operations, the former railway sidings, the area that may be affected by dye waste and fill as well as establishing whether or not a soil gas problem is present. In addition sampling of the silt and water in the lodge should be undertaken although careful thought will have to be given to the way in which samples are recovered.

1.0 INTRODUCTION

Geotechnical and Environmental Associates (GEA) has been commissioned by Beck Developments Limited to carry out a desk study of Primrose Mill, the former Rectella depot and a small reservoir named Primrose Lodge, all located close to Primrose Road in Clitheroe, Lancashire.

1.1 Proposed Development

Consideration is being given to the residential redevelopment of this site through the conversion of the existing mill into apartments and the construction of new houses. In addition the renovation of the woodland surrounding the former mill reservoir forms part of the scheme.

This report is specific to the proposed development and the advice herein should be reviewed if the development proposals are amended

1.2 Purpose of Work

The principal technical objectives of the work carried out were as follows.

- to determine the history of the site and surrounding area, particularly with respect to any previous or current potentially contaminative uses;
- to research the geology and hydrogeology of the site;
- to check records of data on ground water, surface water and other publicly available environmental data;
- to use the information obtained in the above searches to carry out a qualitative risk assessment with respect to subsurface contamination; and
- to provide preliminary comments on foundation options.

1.3 Scope of Work

In order to meet the above objectives, a desk study was carried out, comprising, in summary, the following activities:

- a walkover survey of the site;
- a review of readily available geological maps;
- a review of publicly available environmental data sourced from the Envirocheck database;
- a review of historic Ordnance Survey (OS) maps supplied by Landmark Information Group; and
- provision of a report presenting and interpreting the above data, together with our advice and recommendations with respect to the proposed development.

1.4 Limitations

The conclusions and recommendations made in this report are limited to those that can be made on the basis of the investigation. The results of the work should be viewed in the context of the range of data sources consulted, the number of locations where the ground was sampled and the number of soil, gas or groundwater samples tested; no liability can be accepted for information in other data sources or conditions not revealed by the sampling or testing. Any comments made on the basis of information obtained from the client or other third parties are given in good faith on the assumption that the information is accurate; no independent validation of such information has been made by GEA.

2.0 THE SITE

2.1 Site Description

The centre of the site is located some 1.2 km southwest of Clitheroe town centre. The site comprises three areas; firstly Primrose Mill along with its immediate surroundings, secondly the 'Rectella land' and thirdly Primrose Lodge reservoir. The centre of the site may additionally be located by National Grid Reference 373870 440980.

The Primrose Mill area is roughly rectangular in shape, measuring approximately 250 m northwest to southeast and 150 m northeast to southwest. It is bounded to the northeast and southeast by narrow lanes beyond which lie a vehicle repair garage and mechanical engineering works respectively. To the northwest the site is bounded by a railway line and to the southwest by open farmland. The ground surface of this area is essentially level over the southeastern half and then slopes gently down in a northwesterly direction to the railway. The southeastern part of this area is occupied by a number of buildings. The main building is Primrose Mill, a four storey masonry building with a connected two storey section and a tarmaced car park surrounded by mature trees immediately behind. Both of these buildings front onto the southwestern boundary and appeared to contain metal racking across most of the visible internal floor area. Two asbestos-clad buildings are present close to the mill buildings. Access was not possible into the smaller building which is adjacent to the southwestern boundary but the larger building, of two storey steel portal frame construction, was identified to have been used for the sale, service and repair of commercial vehicles. Within this building, charred remnants of such operations as well as a large number of cotton bobbins and other debris were strewn across the floor; the charred concrete surface indicating that fires had burned inside the buildings.

Outside the buildings, the remainder of the site is generally covered by gravel, through which rough grass and the occasional small tree have grown. A small part of the area behind the buildings, of approximate dimensions 50 m by 15 m, was fenced off and conversation with the owner indicated it to house the operations and storage area of Telsa Sheet Metal Site Services Limited. Off the site but immediately opposite the entrance, an electrical substation was observed, housed within a single storey stone building.

The area of the site referred to as the Rectella land is a roughly square piece of land adjacent to the northeastern elevation of Primrose Mill. It is bounded to the northwest by Pendleton Brook, a day centre for adults with learning disabilities, to the northeast by the properties on George Street and to the southeast by Woone Lane. It is of approximate maximum dimensions of 75 m northeast to southwest and 75 m northwest to southeast and is occupied

by a depot most recently used by Rectella International Limited who supply instant barbeques and charcoal.

The third area of the site comprises the former reservoir known as Primrose Lodge, that served Primrose Mill, together with the wooded banks surrounding the reservoir. This part of the site represents an area approximately 600 m northeast to southwest and 100 m northwest to southeast. It is bounded by Woone Lane to the northwest, by a dam to the southwest crossed by Primrose Road and by the properties of Beverly Drive, Parker Drive and Whalley Road to the southwest. The lodge itself appears to be a largely silted up reservoir with Mearley Brook entering at the northeast and shown as a stream that flows through the middle and discharges over a weir at the dam in the southwestern corner. In addition a small stream, noted on the current and historic maps as a drain, flows along the southwestern bank of the lodge and discharges at or close to the weir; the precise outfall location was not clear. From the weir, water discharges into Pendleton Brook before ultimately joining the River Ribble. Much of the banking to the lodge is covered with trees and the northern part of the lodge appears as a shallow stream with low banks. Immediately north of the lodge, Mearley Brook flows into the lodge between roughly 3 m high stone walls that were observed to still contain remnants of sluice gates.

The walkover survey of the site was carried out on 25 October 2007.

2.2 Site History

The site history has been researched by reference to historical Ordnance Survey (OS) maps.

The earliest map studied, dated 1847, shows Primrose Lodge, which is a reservoir holding water to service Primrose Print Works and Paper Mills, to be very much as at the time of this investigation. The print works and paper mill are shown to lie downstream of a dam and two cotton mills are shown upstream of the lodge. Primrose Mill is not shown to have been built but a large, unidentified feature lies across the part of the site that is currently occupied by the mill. Subsequent maps dated 1886 and 1890 show that Primrose Mill had been constructed along with Commercial Mill, the current Rectella land, to the north of the site; both denoted as cotton mills. Alongside the railway, at the northwestern part of the site, Primrose Siding is shown and the general surroundings saw the building of a number of rows of terraced houses. Little change is shown on the next map dated 1911 but the 1914 map shows that the building that is currently occupied by a sheet metal business had been erected. This map also shows a laundry and brewery upstream of the lodge. The map dated 1932 shows that Primrose Works, the former print works, was in use for bleaching and finishing. A further building is shown behind the mill on the 1933 map but little change is otherwise shown to 1955. On the next map, dated 1964, the Primrose Mill building is shown to have been in use as a storage depot and the adjacent former Commercial Mill is shown to have been an engineering works but otherwise there is little change. The 1978 map shows the mill to have been a depot and the maps dated 1993, 2001 and 2007 indicate the mill to have been Government Buildings. A conversation with a local resident confirmed that during this period, the buildings were occupied by the former DHSS.

The maps also indicate that a number of short-lived small works were variously located near to Mearley Brook close to its entry into the lodge between 1884 and1995. A tank is shown to the northwest of the brook on the 1932 map, appearing to be against the rear boundary wall of a property on Woone Lane.

2.3 Other Information

A search of public registers and databases has been made via the Envirocheck database and a summary of the results of this search is included in the Appendix. More detailed information relating to the search can be provided on request.

A single recorded pollution incident to controlled waters was located on the site in 1993 relating to pollution by suspended solids and was recorded as a Category 3, Significant Incident. A further 13 pollution incidents are recorded within 250 m of the site, relating to Mearley Brook and Pendleton Brook. These are Category 3 Minor Incidents and Category 2 Significant incidents and the pollutants are shown to have been variously oils, gas oil, sub-soil, chicken entrails and crude sewage and occurred between 1992 and 1999.Given the surface water feature in the lodge and the fact that much of the lodge is silted up, it is considered that these contamination from these incidents may have remained within the lodge.

The Stalwart Dying Company Limited, which occupies Primrose Works, operates eight licences for the abstraction of surface water from Primrose Lodge or from Mearley Brook for industrial usage but no groundwater abstraction licences appear to be held within 1000 m of the site.

There are two listed historic landfill sites within 1 km of the site; the first lies immediately beyond the northern boundary of the Primrose Mill area close to the former Commercial Mill. The operator is listed the Stalwart Dying Company Limited and the waste listed as 'deposited waste including unknown material'. Sita (Lancashire) Limited operate a landfill site some 700 to 800 m southwest of the site for commercial, household and industrial landfills including sludge. In addition a waste management facility licensed to the same operator is located some 270 m west of the site

The site is listed as being within a nitrate vulnerable zone.

The site is located in an area where less than 1% of homes are affected by radon emissions; therefore no radon protective measures will be necessary.

3.0 GROUND CONDITIONS

3.1 Soil Conditions

The Geological Survey map of the area (BGS sheet 68) indicates that the site is underlain by Boulder Clay overlying limestone of the Worston Shale Group.

3.2 Ground Water Conditions

The former National Rivers Authority (NRA) Ground Water Vulnerability map suggests that the limestone that lies beneath the site is a minor aquifer of low leaching potential. Ground water is likely to be flowing in a generally southwesterly direction, towards the River Ribble which flows in a westerly direction.

4.0 RISK ASSESSMENT

Consideration is being given to the residential redevelopment of this site through the conversion of the existing mill into apartments and the construction of new houses. In addition the renovation of the woodland surrounding the former mill reservoir forms part of the scheme. The desk study research has indicated that this site has been partly occupied by industrial buildings since around 1890. The site is currently disused but has recently been used for the storage, garaging and maintenance of motor vehicles.

4.1 Environmental Risks

The historic use of areas of the site and its surroundings together with the pollution incidents and the surface water in the lodge indicates there is a risk of a range of potential contaminants.

For the Primrose Mill and Rectella parts of the site the historical uses include cotton mills, vehicle repair areas, metalworking, railway sidings and the placement of landfill from a dye works. Reference to the relevant DoE Industry Profiles[1] indicates the main following potential contaminants, although not all are expected across the whole site:

- engine and lubricating oils;
- lighter oils from machining operations;
- lead from fuels;
- copper from engine bearings and other metals from engine parts:
- ethylene glycol and methanol from anti-freeze;
- glycols and ethers from brake fluids;
- asbestos from brake linings;
- a range of solvents used in degreasers, thinners, fillers, adhesives, strippers and paints;
- PAHs from the former railway usage;
- metals and metalloids, inorganic compounds from dye waste; and
- organic solvents, chlorinated solvents and dyes from dye waste.

For the mill lodge part of the site, the former small works and the number of recorded pollution incidents likely to reach the lodge together with its long term silting up, indicate that the silt may contain the following potential contaminants:

- oils and fuels; and
- heavy metals and metalloids from industrial operations;

[1] Department of the Environment Industry Profiles (1996) *Road vehicle fuelling, services and repair: garages and filling stations; Railway land; Textile and Dye Works.* HMSO

The above need to be considered as potential contaminants, however as a reservoir the lodge has obviously been full at various times and it is possible that much of the soluble material will have been washed away into Pendleton Brook.

Part IIA of the Environmental Protection Act 1990, which was inserted into that Act by Section 57 of the Environment Act 1995, provides a regulatory regime for the identification and remediation of contaminated land. As part of the new regime local authorities are required to carry out inspections of their area to identify sites that may be contaminated. The determination of contaminated sites is based on a "suitable for use" approach which involves investigating the risks posed by contaminated land by making risk-based decisions. This risk assessment is carried out on the basis of establishing one or more "pollution linkages"; a pollution linkage requires a source of contamination, a sensitive target or receptor that is at risk from the contamination and a pathway by which the contamination can travel from the source to the target.
Current guidance to Local Planning Authorities (LPAs)[2] also indicates the need for a risk assessment and requires that where development is proposed on land that may be affected by contamination, a risk assessment should be carried out for consideration by the LPA before the planning application is determined. Where unacceptable risks are identified proposals need to be made to address these risks as part of the development process. The guidance recognises the benefits of a phased approach and the desk study is the first phase in the process of investigating and identifying contamination to assist in the determination of a planning application.

In accordance with the guidelines provided by CIRIA[3], the following table summarises possible pollution linkages for the site, on the basis of a residential end use.

SOURCE	RECEPTOR	PATHWAY	PROBABILITY	CONSEQUENCE
Hydrocarbon, metallic and other contamination within near surface soils resulting from past activities on site	End users	Ingestion of contaminated soil or dust, through skin contact or inhalation	Likely	Medium
		Vapours	Likely	Medium
	Ground water	Percolation and leaching of surface run-off	Likely	Medium
	Adjacent sites	Shallow perched water or drain runs	Low likelihood	Medium
Dye waste from adjacent landfill	End users	Ingestion of contaminated soil or dust, through skin contact or inhalation	Low likelihood	Medium
		Landfill gas migration	Likely	Mild
Hydrocarbon, metallic and other contamination within the silt of the lodge resulting from past activities close to the site	End users	Ingestion of contaminated soil or dust, through skin contact or inhalation	Likely	Medium
	Controlled Waters	Migration from the silt when the lodge is filled	Low likelihood	Medium

[2] Planning Policy Statement 23 (2004) *Planning and Pollution Control* HMSO
[3] *Rudland, DJ, Lancefield, RM and Mayell, PN (2001) Contaminated land risk assessment. A guide to good practice. CIRIA Pub C552*

This method of risk evaluation involves classification of the magnitude of the potential **consequence** (severity) and **probability** (likelihood) of the risk. The method by which these factors are classified is detailed in the Appendix.

On the basis of the consequence and probability the site can be attributed a level of risk, ranging from very low to very high and the procedure for making this assessment is shown in the Appendix, together with a description of each level of assessed risk and the actions that may be required to mitigate the risk.

Using this qualitative rating system, the site has generally been regarded as having a MODERATE RISK.

As the risk is assessed as a moderate risk, further investigations should be carried out prior to any future development and contamination testing will be required to allow the risk assessment to be prepared for potentially contaminated soils encountered on site.

Any soil brought onto the site should be certified as clean with appropriate documentation.

4.2 Development Issues

No new loads are understood to be proposed as a result of the conversion of the Primrose Mill but on the basis of two or perhaps three storey dwellings being proposed, then foundation loads are likely to be light to moderate and spread foundations bearing on the boulder clay or the limestone if present should provide a suitable foundation solution.

5.0 CONCLUSIONS

On the basis of the findings of the research carried out there is considered to be a MODERATE risk from contamination at this site.

It would therefore be prudent to carry out further investigations prior to the redevelopment of the site, to allow the risks to be determined of any potentially contaminated soils that may be present due to past activities on the site. Measures to deal with any contamination can then be proposed.

In particular the intrusive investigation should target the former vehicle repair building, the former railway sidings, the depot on the Rectella Land, the area that may be affected by dye waste and fill as well as establishing whether or not a gas problem is present.

In addition sampling of the silt and water in the lodge should be undertaken although careful thought will have to be given to the way in which samples are recovered.

APPENDIX

Envirocheck Summary Report

Historical Maps

Site Photographs

320120565P

GEA Geotechnical & Environmental Associates

Envirocheck® Report: Datasheet

Order Details:

Order Number:
25517735_1_1

Customer Reference:
J07352

National Grid Reference:
373860, 441000

Slice:
A

Site Area (Ha):
7 94

Search Buffer (m):
1000

Site Details:

Site at 373870, 440980

Client Details:

Mr M Plimmer
GEA Ltd
Unit 1
Church Farm
Gotham Road
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Geotechnical & Environmental Associates

Contents

Introduction

The Environment Act 1995 has made site sensitivity a key issue, as the legislation pays as much attention to the pathways by which contamination could spread, and to the vulnerable targets of contamination, as it does the potential sources of contamination.
For this reason, Landmark's Site Sensitivity maps and Datasheet(s) place great emphasis on statutory data provided by the Environment Agency and the Scottish Environment Protection Agency; it also incorporates data from Natural England (and the Scottish and Welsh equivalents) and Local Authorities; and highlights hydrogeological features required by environmental and geotechnical consultants. It does not include any information concerning past uses of land. The datasheet is produced by querying the Landmark database to a distance defined by the client from a site boundary provided by the client.

In the attached datasheet the National Grid References (NGRs) are rounded to the nearest 10m in accordance with Landmark's agreements with a number of Data Suppliers.

Report Version v36.0

320120565 P

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Agency & Hydrological					
Contaminated Land Register Entries and Notices					
Discharge Consents	pg 1		2	4	7
Enforcement and Prohibition Notices					
Integrated Pollution Controls					
Integrated Pollution Prevention And Control					
Local Authority Integrated Pollution Prevention And Control					
Local Authority Pollution Prevention and Controls	pg 4		4	4	4
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature	pg 5	Yes			
Pollution Incidents to Controlled Waters	pg 5	1	13	4	27
Prosecutions Relating to Authorised Processes					
Prosecutions Relating to Controlled Waters					
Registered Radioactive Substances					
River Quality	pg 13	1			2
River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points					
Substantiated Pollution Incident Register	pg 13				1
Water Abstractions	pg 14	4	5		2 (*1)
Water Industry Act Referrals					
Groundwater Vulnerability	pg 16	Yes	n/a	n/a	n/a
Source Protection Zones					
Extreme Flooding from Rivers or Sea without Defences	pg 17	Yes	Yes	n/a	n/a
Flooding from Rivers or Sea without Defences	pg 17	Yes	Yes	n/a	n/a
Areas Benefiting from Flood Defences	pg 17		Yes	n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences	pg 17	Yes	Yes	n/a	n/a
Waste					
BGS Recorded Landfill Sites					
Historical Landfill Sites	pg 19	1			1
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)	pg 19				1
Licensed Waste Management Facilities (Locations)	pg 19			2	
Local Authority Recorded Landfill Sites					
Registered Landfill Sites					
Registered Waste Transfer Sites					
Registered Waste Treatment or Disposal Sites					

Geotechnical & Environmental Associates

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Hazardous Substances					
Control of Major Accident Hazards Sites (COMAH)					
Explosive Sites					
Notification of Installations Handling Hazardous Substances (NIHHS)					
Planning Hazardous Substance Consents					
Planning Hazardous Substance Enforcements					
Geological					
BGS Recorded Mineral Sites					
BGS 1:625,000 Solid Geology	pg 21	Yes	n/a	n/a	n/a
Brine Compensation Area			n/a	n/a	n/a
Coal Mining Affected Areas			n/a	n/a	n/a
Mining Instability			n/a	n/a	n/a
Natural and Mining Cavities					
Potential for Collapsible Ground Stability Hazards				n/a	n/a
Potential for Compressible Ground Stability Hazards	pg 21	Yes		n/a	n/a
Potential for Ground Dissolution Stability Hazards		Yes		n/a	n/a
Potential for Landslide Ground Stability Hazards		Yes	Yes	n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 21	Yes		n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 22	Yes		n/a	n/a
Radon Potential - Radon Affected Areas	pg 22	Yes	n/a	n/a	n/a
Radon Potential - Radon Protection Measures			n/a	n/a	n/a
Shallow Mining Hazards				n/a	n/a
Industrial Land Use					
Contemporary Trade Directory Entries	pg 23		20	12	43
Fuel Station Entries	pg 29		1	1	2

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Sensitive Land Use					
Areas of Adopted Green Belt					
Areas of Unadopted Green Belt					
Areas of Outstanding Natural Beauty					
Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves					
Marine Nature Reserves					
National Nature Reserves					
National Parks					
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones	pg 30	1			1
Ramsar Sites					
Sites of Special Scientific Interest					
Special Areas of Conservation					
Special Protection Areas					

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Agency & Hydrological

Map ID	Details	Quadrant Reference (Compass	Estimated Distance From Site	Contact	NGR
1	**Discharge Consents** Operator: Executors Of T. Balmforth Deceased Property Type: Domestic Property (Single) Location: Primrose Lodge, Primrose Works, Clitheroe, Lancashire Authority: Environment Agency, North West Region Catchment Area: Upper Ribble Reference: 017190403 Permit Version: 1 Effective Date: 20th December 1991 Issued Date: Not Supplied Revocation Date: 1st October 1996 Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Trib Pendleton Brook Status: Lapsed (under Environment Act 1995, Schedule 23) Positional Accuracy: Located by supplier to within 100m	A6NE (SW)	57	1	373700 440700
2	**Discharge Consents** Operator: R.C.W. Bennett Property Type: Domestic Property (Single) Location: Millersdene, Whalley Rd, Clitheroe, Lancashire, Bb7 1pw Authority: Environment Agency, North West Region Catchment Area: Ribble Reference: 011658 Permit Version: 1 Effective Date: 1st April 1969 Issued Date: 1st April 1969 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Pendleton Brook Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989 Positional Accuracy: Located by supplier to within 100m	A7NW (SE)	209	1	374040 440680
3	**Discharge Consents** Operator: Mr. B. Dent Property Type: Domestic Property (Single) Location: Littlemoor Mill, Whalley Road, Clitheroe, Lancashire, Bb7 1pw Authority: Environment Agency, North West Region Catchment Area: Ribble Reference: 011574 Permit Version: 1 Effective Date: 9th January 1968 Issued Date: 9th October 1967 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Pendleton Brook Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989 Positional Accuracy: Located by supplier to within 10m	A7NW (SE)	324	1	374160 440670
4	**Discharge Consents** Operator: United Utilities Water Plc Property Type: Sewage Disposal Works - Water Company Location: Near Clitheroe Stw, Clitheroe, Lancashire Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 017160177 Permit Version: 1 Effective Date: 28th June 1985 Issued Date: Not Supplied Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Pendleton Brook Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989 Positional Accuracy: Located by supplier to within 100m	A6SW (SW)	388	1	373300 440560

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Map ID	Details	Quadrant Reference (Compass	Estimated Distance From Site	Contact	NGR
5	**Discharge Consents** Operator: United Utilities Water Plc Property Type: Sewerage Network - Sewers - Water Company Location: Adj Police Stn King St, Clitheroe, Lancashire Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 01RIB0002 Permit Version: 1 Effective Date: 1st January 1995 Issued Date: Not Supplied Revocation Date: Not Supplied Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Into And/Or Watercourse Receiving Water: S.W. Sys(Dual Mh) Status: Post National Rivers Authority Legislation where Issue date > 31/08/1989 Positional Accuracy: Located by supplier to within 100m	A9SE (W)	485	1	373130 441105
5	**Discharge Consents** Operator: North West Water Limited Property Type: Not Given Location: Adj Police Stn , King Street, RIBBLE VALLEY Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: RIB0002 Permit Version: Not Supplied Effective Date: Not Supplied Issued Date: Not Supplied Revocation Date: Not Supplied Discharge Type: Sewage Effluent Discharge-Storm Effluent Discharge Environment: Unknown Receiving Water: Not Supplied Status: Not Supplied Positional Accuracy: Located by supplier to within 100m	A9SE (W)	488	1	373130 441110
6	**Discharge Consents** Operator: Mr S P Woods Property Type: Sewage Disposal Works - Other Location: Barreclough House Whalley Rd, Pendleton, Clitheroe Lancashire, Bb7 1pp Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 017190625 Permit Version: 1 Effective Date: 16th March 1999 Issued Date: 16th March 1999 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Barrow Clough Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995) Positional Accuracy: Located by supplier to within 10m	A3SW (S)	784	1	373920 439950
7	**Discharge Consents** Operator: United Utilities Water Plc Property Type: Sewerage Network - Sewers - Water Company Location: North West Henthorn Rd Eo North West Henthorn Road, Bridge Henth, Ribble Valley, Lancashire Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 017160099 Permit Version: 1 Effective Date: 7th September 1983 Issued Date: Not Supplied Revocation Date: Not Supplied Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Pendleton Brook Status: Pre National Rivers Authority Legislation where Issue date < 01/09/1989 Positional Accuracy: Located by supplier to within 100m	A5SW (W)	886	1	372700 440600

Map ID	Details	Quadrant Reference (Compass	Estimated Distance From Site	Contact	NGR
8	**Discharge Consents** Operator: United Utilities Water Plc Property Type: Sewage Disposal Works - Water Company Location: Clitheroe Stw, Henthorn Road, Clitheroe, Lancashire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 017160033 Permit Version: 4 Effective Date: 24th March 2005 Issued Date: 24th March 2005 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Barrow Clough **Status: Consent Currently Under Appeal** Positional Accuracy: Located by supplier to within 10m	A1NE (SW)	932	1	372920 440170
8	**Discharge Consents** Operator: United Utilities Water Plc Property Type: Sewage Disposal Works - Water Company Location: Clitheroe Stw, Henthorn Road, Clitheroe, Lancashire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 017160033 Permit Version: 3 Effective Date: 20th December 2000 Issued Date: 20th December 2000 Revocation Date: 23rd March 2005 Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Barrow Clough **Status: Consent revoked or revised: New Consent Issued (Section 37(1))** Positional Accuracy: Located by supplier to within 10m	A1NE (SW)	932	1	372920 440170
8	**Discharge Consents** Operator: United Utilities Water Plc Property Type: Sewage Disposal Works - Water Company Location: Clitheroe Stw, Henthorn Road, Clitheroe, Lancashire Authority: Environment Agency, North West Region Catchment Area: Ribble (Ex Calder) Reference: 017160033 Permit Version: 2 Effective Date: 31st January 1985 Issued Date: Not Supplied Revocation Date: 19th December 2000 Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Barrow Clough **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 100m	A1NE (SW)	932	1	372920 440170
8	**Discharge Consents** Operator: United Utilities Water Plc Property Type: Sewage Disposal Works - Water Company Location: Clitheroe Stw, Henthorn Road, Clitheroe, Lancashire Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 017160033 Permit Version: 1 Effective Date: 19th October 1979 Issued Date: Not Supplied Revocation Date: 30th January 1985 Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Barrow Clough **Status: Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 10m	A1NE (SW)	932	1	372920 440170

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Map ID	Details	Quadrant Reference (Compass	Estimated Distance From Site	Contact	NGR
9	**Discharge Consents** Operator: Mr. S.W. Thornber Property Type: Domestic Property (Single) Location: Templewood, Pendle Rd, Clitheroe, Lancashire, Bb7 1jh Authority: Environment Agency, North West Region Catchment Area: Ribble Reference: 011649 Permit Version: 1 Effective Date: 28th July 1969 Issued Date: 28th April 1969 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Shaw Brook Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989 Positional Accuracy: Located by supplier to within 100m	A12SE (E)	988	1	375120 441270
10	**Local Authority Pollution Prevention and Controls** Name: Primrose Garage Location: Whalley Road, Clitheroe, BB7 Authority: Ribble Valley Borough Council, Environmental Health Department Permit Reference: RVBC/PPC/49/06 Dated: 19th January 2006 Process Type: Local Authority Pollution Prevention and Control Description: PG1/1Waste oil burners, less than 0.4MW net rated thermal input Status: Permitted Positional Accuracy: Manually positioned to the road within the address or location	A11SW (E)	74	2	374125 441059
11	**Local Authority Pollution Prevention and Controls** Name: Massey Tankers Location: Croft Street, CLITHEROE, Lancashire, BB7 2RA Authority: Ribble Valley Borough Council, Environmental Health Department Permit Reference: Rvbc/Epa/27/00 Dated: 31st August 2000 Process Type: Local Authority Air Pollution Control Description: PG6/34 Respraying of road vehicles Status: Authorisation revokedRevoked Positional Accuracy: Manually positioned to the road within the address or location	A11SW (E)	91	2	374171 441086
12	**Local Authority Pollution Prevention and Controls** Name: Primrose Garage Ltd Location: Whalley Road, CLITHEROE, Lancashire, BB7 1HU Authority: Ribble Valley Borough Council, Environmental Health Department Permit Reference: Rvbc/Epa/22/00 Dated: 31st July 2000 Process Type: Local Authority Air Pollution Control Description: PG1/14 Petrol filling station Status: Authorised Positional Accuracy: Manually positioned to the address or location	A7NW (E)	170	2	374113 440904
13	**Local Authority Pollution Prevention and Controls** Name: Somerfield Location: Ribble Valley Enterprise Park, Whalley Road, Clitheroe, BB7 9HW Authority: Ribble Valley Borough Council, Environmental Health Department Permit Reference: RVBC/PPC/50/06 Dated: Not Supplied Process Type: Local Authority Pollution Prevention and Control Description: PG1/14 Petrol filling station Status: Application Not Yet Authorised Positional Accuracy: Manually positioned to the road within the address or location	A7SW (S)	236	2	373947 440525
14	**Local Authority Pollution Prevention and Controls** Name: Bowker Bros (Clitheroe) Ltd Location: Highfield Works, Sun Street, CLITHEROE, Lancashire, BB7 1AL Authority: Ribble Valley Borough Council, Environmental Health Department Permit Reference: Rvbc/Epa/12/93 Dated: 1st February 1993 Process Type: Local Authority Air Pollution Control Description: PG6/2 Manufacture of timber and wood-based products Status: Authorisation revokedRevoked Positional Accuracy: Manually positioned within the geographical locality	A11NE (NE)	268	2	374287 441474
14	**Local Authority Pollution Prevention and Controls** Name: Bowker Bros (Clitheroe) Ltd Location: Highfield Works, Sun Street, CLITHEROE, Lancashire, BB7 1AL Authority: Ribble Valley Borough Council, Environmental Health Department Permit Reference: Rvbc/Epa/02/92 Dated: 1st February 1994 Process Type: Local Authority Air Pollution Control Description: PG6/10 Coating manufacturing Status: Authorisation revokedRevoked Positional Accuracy: Manually positioned within the geographical locality	A11NE (NE)	272	2	374289 441477

Map ID	Details	Quadrant Reference (Compass	Estimated Distance From Site	Contact	NGR
15	**Local Authority Pollution Prevention and Controls** Name: Flexible Reinforcements Ltd Location: Queensway House, Queensway, CLITHEROE, Lancashire, BB7 1AU Authority: Ribble Valley Borough Council, Environmental Health Department Permit Reference: Rvbc/Epa/11/92 Dated: 1st May 1994 Process Type: Local Authority Air Pollution Control Description: PG6/10 Coating manufacturing **Status:** Authorisation revokedRevoked Positional Accuracy: Automatically positioned to the address	A11NE (NE)	322	2	374372 441466
16	**Local Authority Pollution Prevention and Controls** Name: David Ellis & Ken Ward Location: The Workshop, Thorn Street Garage, CLITHEROE, Lancashire, BB7 1DN Authority: Ribble Valley Borough Council, Environmental Health Department Permit Reference: Epa/18/96 Dated: 13th March 1996 Process Type: Local Authority Air Pollution Control Description: PG1/1Waste oil burners, less than 0.4MW net rated thermal input **Status:** Authorisation revokedRevoked Positional Accuracy: Manually positioned to the address or location	A10NE (N)	389	2	373832 441554
17	**Local Authority Pollution Prevention and Controls** Name: Johnson Cleaners Uk Ltd Location: 38-40 Castle Street, Clitheroe, BB7 2BX Authority: Ribble Valley Borough Council, Environmental Health Department Permit Reference: RVBC/PPC/51/06 Dated: Not Supplied Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status:** Application Not Yet Authorised Positional Accuracy: Manually positioned to the address or location	A15SE (NE)	649	2	374370 441865
18	**Local Authority Pollution Prevention and Controls** Name: Clitheroe Dry Cleaners Location: 23 Wellgate, Clitheroe, Bb7 2dp Authority: Ribble Valley Borough Council, Environmental Health Department Permit Reference: RVBC/PPC/54/06 Dated: 5th December 2006 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status:** Permitted Positional Accuracy: Manually positioned to the address or location	A15SE (NE)	727	2	374465 441905
19	**Local Authority Pollution Prevention and Controls** Name: Ian Boocock Location: Unit 4 & 5 Albion Court, Waterloo Road, CLITHEROE, Lancashire, BB7 Authority: Ribble Valley Borough Council, Environmental Health Department Permit Reference: Rvbc/Ppc/41/04 Dated: 6th January 2003 Process Type: Local Authority Air Pollution Control Description: PG1/1Waste oil burners, less than 0.4MW net rated thermal input **Status:** Authorised Positional Accuracy: Manually positioned to the address or location	A16NW (NE)	892	2	374605 442013
20	**Local Authority Pollution Prevention and Controls** Name: 3m Neotechnic Location: Taylor Street, CLITHEROE, Lancashire, BB7 1NL Authority: Ribble Valley Borough Council, Environmental Health Department Permit Reference: RVBC/PPC/46/04 Dated: 19th January 2006 Process Type: Local Authority Pollution Prevention and Control Description: PG4/1 Processes for the surface treatment of metals Status: Permitted Positional Accuracy: Manually positioned to the address or location	A16SW (NE)	975	2	374803 441959
	Nearest Surface Water Feature	A6NE (SW)	0	-	373762 440777
21	**Pollution Incidents to Controlled Waters** Property Type: Spillage; Accident in Transit Location: Location Description Not Available Authority: Environment Agency North West Region Pollutant: Miscellaneous - Inert Suspended Solids Note: Pendleton Brook Incident Date: 7th July 1993 Incident Reference: 93340059 Catchment Area: Ribble - Non-Tidal Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A6NE (S)	0	1	373800 440795

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Map ID	Details	Quadrant Reference (Compass	Estimated Distance From Site	Contact	NGR
22	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Oils - Unknown Note: Mearley Brook Incident Date: 28th December 1994 Incident Reference: 94340157 Catchment Area: Ribble - Non-Tidal Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A11SW (E)	25	1	374000 441000
23	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Oils - Gas Oil Note: Pendleton Brook Incident Date: 8th November 1994 Incident Reference: 94340150 Catchment Area: Ribble - Non-Tidal Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A7NW (S)	40	1	373900 440800
24	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Rubble/Litter Or Solids Note: Mearley Brook; Chicken Entrails Incident Date: 22nd October 1992 Incident Reference: 92340106 Catchment Area: Ribble - Non-Tidal Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A11SE (NE)	75	1	374200 441200
25	**Pollution Incidents to Controlled Waters** Property Type: Construction Location: Woone Lane Works Authority: Environment Agency North West Region Pollutant: Inert ; Subsoil Note: Not Supplied Incident Date: 15th January 1999 Incident Reference: 1610 Catchment Area: Mearley Brook Receiving Water: River Stretch (Freshwater) Cause of Incident: Not Given Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A11SE (NE)	81	1	374200 441295
25	**Pollution Incidents to Controlled Waters** Property Type: Construction: Other Location: Kennedy, Mearly Brook, Woone Lane Works, Lancashire Authority: Environment Agency, North West Region Pollutant: Inert : Subsoil Note: Not Supplied Incident Date: 15th January 1999 Incident Reference: 30457 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Human Actions : Management Failure Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A11SE (NE)	85	1	374205 441295
26	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Lancashire Authority: Environment Agency North West Region Pollutant: Not Given Note: Mearley Brook; None Pollution Found Incident Date: 15th July 1993 Incident Reference: 93340063 Catchment Area: Ribble - Non-Tidal Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A11NE (NE)	153	1	374200 441395

Map ID	Details	Quadrant Reference (Compass	Estimated Distance From Site	Contact	NGR
26	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Oils - Unknown Note: Mearley Brook Incident Date: 19th January 1993 Incident Reference: 93340004 Catchment Area: Ribble - Non-Tidal Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A11NE (NE)	157	1	374200 441400
27	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Oils - Diesel (Including Agricultural) Note: Pendleton Brook Incident Date: 11th October 1994 Incident Reference: 94340145 Catchment Area: Ribble - Non-Tidal Receiving Water: Not Given Cause of Incident: Accidental Spillage/Leakage Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A7NW (SE)	167	1	374000 440695
27	**Pollution Incidents to Controlled Waters** Property Type: Road Location: Stonday Bk, Whalley Road Bridge , CLITHEROE Authority: Environment Agency, North West Region Pollutant: Miscellaneous - Inert Suspended Solids Note: Stonday Bk; Silt Incident Date: 2nd February 1997 Incident Reference: 97340010 Catchment Area: Ribble - Non-Tidal Receiving Water: Freshwater Stream/River Cause of Incident: Land Runoff Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A7NW (SE)	169	1	374005 440700
27	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Oils - Gas Oil Note: Pendleton Brook Incident Date: 23rd December 1994 Incident Reference: 94340156 Catchment Area: Ribble - Non-Tidal Receiving Water: Not Given Cause of Incident: Leaking Underground Pipe Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A7NW (SE)	171	1	374005 440695
28	**Pollution Incidents to Controlled Waters** Property Type: Private Sewage (Non-PLC): Surface Water Outfall Location: Opposite Sparth House, CLAYTON-LE-MOORS Authority: Environment Agency, North West Region Pollutant: Crude Sewage Note: Tributary Of Hyndburn Bk; Crude Sewage Incident Date: 16th June 1997 Incident Reference: 97330160 Catchment Area: Calder - Lancs Receiving Water: Freshwater Stream/River Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A10SW (W)	201	1	373400 441000
29	**Pollution Incidents to Controlled Waters** Property Type: Miscellaneous Premises: Other Location: CLITHEROE Authority: Environment Agency, North West Region Pollutant: Oils - Diesel (Including Agricultural) Note: Diesel Incident Date: 30th July 1998 Incident Reference: CE980673 Catchment Area: Ribble - Non-Tidal Receiving Water: Freshwater Stream/River Cause of Incident: Accidental Spillage/Leakage Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A10SE (NW)	237	1	373700 441200

Map ID	Details	Quadrant Reference (Compass	Estimated Distance From Site	Contact	NGR
30	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Lancashire Authority: Environment Agency, North West Region Pollutant: Oils - Unknown Note: Mearley Bk; Oil Incident Date: 15th April 1996 Incident Reference: 96340021 Catchment Area: Ribble - Non-Tidal Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A7NE (E)	246	1	374200 440900
31	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Oils - Unknown Note: Not Supplied Incident Date: 25th August 1993 Incident Reference: 93340076 Catchment Area: Ribble - Non-Tidal Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A10SW (NW)	255	1	373500 441200
32	**Pollution Incidents to Controlled Waters** Property Type: Pollution Found Source Not Determined Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Chemicals - Paints / Dyes Note: Mearley Brook; Fluorescein Incident Date: 8th July 1994 Incident Reference: 94340107 Catchment Area: Ribble - Non-Tidal Receiving Water: Not Given Cause of Incident: Deliberate Disposal To Drain Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A11NE (NE)	307	1	374400 441400
33	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: St James's School, CLITHEROE Authority: Environment Agency, North West Region Pollutant: Oils - Unknown Note: Not Supplied Incident Date: 9th July 1998 Incident Reference: CE980832 Catchment Area: Ribble - Non-Tidal Receiving Water: Freshwater Stream/River Cause of Incident: Unknown Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A11NW (N)	333	1	374100 441600
34	**Pollution Incidents to Controlled Waters** Property Type: Private Sewage (Non-PLC): Sewerage Systems Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Sewage Debris/Litter Note: Mearley Brook Incident Date: 20th July 1994 Incident Reference: 94340110 Catchment Area: Ribble - Non-Tidal Receiving Water: Not Given Cause of Incident: Deliberate Disposal To Drain Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A6SW (SW)	436	1	373300 440500
35	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Rubble/Litter Or Solids Note: Mearley Brook Incident Date: 15th January 1993 Incident Reference: 93340003 Catchment Area: Ribble - Non-Tidal Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A11NE (NE)	507	1	374500 441600

Map ID	Details	Quadrant Reference (Compass	Estimated Distance From Site	Contact	NGR
36	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Oils - Diesel (Including Agricultural) Note: Pimlico Brook Incident Date: 6th May 1995 Incident Reference: 95340049 Catchment Area: Ribble - Non-Tidal Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A15SE (NE)	579	1	374500 441700
37	**Pollution Incidents to Controlled Waters** Property Type: Private Sewage: Sewage Works And Septic Tanks Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Sewage - Septic Tank Effluent Note: Shaw Brook Incident Date: 29th January 1993 Incident Reference: 93340006 Catchment Area: Ribble - Non-Tidal Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12NW (NE)	584	1	374600 441600
38	**Pollution Incidents to Controlled Waters** Property Type: Spillage; Accident - Static Site Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Oils - Other Oil Note: Mearley Brook; Paraffin Wax Incident Date: 30th July 1991 Incident Reference: 91340067 Catchment Area: Ribble - Non-Tidal Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A16SW (NE)	649	1	374600 441700
39	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Lancashire Authority: Environment Agency, North West Region Pollutant: Unknown Note: Mearley Bk Incident Date: 20th October 1995 Incident Reference: 95340125 Catchment Area: Ribble - Non-Tidal Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A15SE (NE)	653	1	374500 441795
39	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Mearly Bk , CLITHEROE Authority: Environment Agency, North West Region Pollutant: Oils - Unknown Note: Ribble; Oil Incident Date: 21st August 1997 Incident Reference: 97340113 Catchment Area: Ribble - Non-Tidal Receiving Water: Freshwater Stream/River Cause of Incident: Overfilling During Delivery Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A15SE (NE)	656	1	374505 441795
39	**Pollution Incidents to Controlled Waters** Property Type: Connection To Surface Drains Location: Location Description Not Available Authority: Environment Agency North West Region Pollutant: Other Sewage Note: Mearley Brook; Sulage Incident Date: 15th October 1995 Incident Reference: 95340122 Catchment Area: Ribble - Non-Tidal Receiving Water: Not Given Cause of Incident: Wrong Connection Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A15SE (NE)	657	1	374500 441800

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Map ID	Details	Quadrant Reference (Compass	Estimated Distance From Site	Contact	NGR
40	**Pollution Incidents to Controlled Waters** Property Type: Private Sewage (Non-PLC); Sewerage Systems Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Crude Sewage Note: Mearley Brook Incident Date: 5th May 1994 Incident Reference: 94340060 Catchment Area: Ribble - Non-Tidal Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A15SE (NE)	659	1	374300 441900
41	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Miscellaneous - Inert Suspended Solids Note: Pendleton Brook Incident Date: 24th May 1992 Incident Reference: 92340066 Catchment Area: Ribble - Non-Tidal Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A7SE (SE)	702	1	374500 440500
42	**Pollution Incidents to Controlled Waters** Property Type: Connection To Surface Drains Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Chemicals - Detergents/Surfactant Note: Mearley Brook Incident Date: 11th August 1995 Incident Reference: 95340100 Catchment Area: Ribble - Non-Tidal Receiving Water: Not Given Cause of Incident: Wrong Connection Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A16SW (NE)	716	1	374600 441795
42	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Lancashire Authority: Environment Agency North West Region Pollutant: Unknown Note: Mearley Bk; None Pollution Found Incident Date: 4th April 1995 Incident Reference: 95340032 Catchment Area: Ribble - Non-Tidal Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A16SW (NE)	720	1	374605 441795
42	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Oils - Unknown Note: Mearley/Pimlico Brook Incident Date: 5th October 1993 Incident Reference: 93340091 Catchment Area: Ribble - Non Tidal Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A16SW (NE)	720	1	374600 441800
42	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Whittle Close , CLITHEROE Authority: Environment Agency, North West Region Pollutant: Miscellaneous - Unknown Note: Meaney Brook; Unknown Incident Date: 30th January 1997 Incident Reference: 97340018 Catchment Area: Ribble - Non-Tidal Receiving Water: Freshwater Stream/River Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A16SW (NE)	723	1	374605 441800

Map ID	Details	Quadrant Reference (Compass	Estimated Distance From Site	Contact	NGR
42	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Adjacent To Showbridge, Lancashire Authority: Environment Agency, North West Region Pollutant: Crude Sewage Note: Not Supplied Incident Date: 26th August 1999 Incident Reference: 31794 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Drainage Failures : Foul Sewer Failure Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A16SW (NE)	727	1	374605 441805
43	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Oils - Diesel (Including Agricultural) Note: Pimlico/Mearley Bk Incident Date: 12th August 1994 Incident Reference: 94340122 Catchment Area: Ribble - Non-Tidal Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A16SW (NE)	793	1	374600 441895
44	**Pollution Incidents to Controlled Waters** Property Type: Private Sewage: Sewage Works And Septic Tanks Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Sewage - Septic Tank Effluent Note: Mearley Brook Tributary Incident Date: 3rd July 1993 Incident Reference: 93340057 Catchment Area: Ribble - Non-Tidal Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A12NE (NE)	844	1	374600 441600
45	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Oils - Unknown Note: Cemetery Beck Incident Date: 28th September 1993 Incident Reference: 93340088 Catchment Area: Ribble - Non-Tidal Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A15NW (N)	855	1	373900 442095
45	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Oils - Unknown Note: Cemetery Beck Incident Date: 8th September 1993 Incident Reference: 93340078 Catchment Area: Ribble - Non-Tidal Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A15NW (N)	860	1	373900 442100
46	**Pollution Incidents to Controlled Waters** Property Type: Private Sewage (Non-PLC): Other Location: Pimlico Bk , Opposite Tesco Authority: Environment Agency, North West Region Pollutant: Cattle Land Runoff Note: Pimlico; Silt Incident Date: 9th September 1997 Incident Reference: 97340083 Catchment Area: Ribble - Non-Tidal Receiving Water: Freshwater Stream/River Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A16SW (NE)	878	1	374600 442000

Map ID	Details	Quadrant Reference (Compass	Estimated Distance From Site	Contact	NGR
47	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Oils - Diesel (including Agricultural) Note: Mearley Brook Incident Date: 18th July 1994 Incident Reference: 94340109 Catchment Area: Ribble - Non-Tidal Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A16SW (NE)	933	1	374700 441995
47	**Pollution Incidents to Controlled Waters** Property Type: Other Location: Mearley Brook Authority: Environment Agency, North West Region Pollutant: Oils - Unknown Note: Mearley Bk; Oil/Silt Incident Date: 30th July 1997 Incident Reference: 97340080 Catchment Area: Ribble - Non-Tidal Receiving Water: Freshwater Stream/River Cause of Incident: In River Works Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A16SW (NE)	936	1	374705 441995
47	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Oils - Fats And Grease Note: Mearley Brook Incident Date: 10th February 1993 Incident Reference: 93340011 Catchment Area: Ribble - Non-Tidal Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A16SW (NE)	937	1	374700 442000
47	**Pollution Incidents to Controlled Waters** Property Type: Other Location: Oil Mearley Bk Authority: Environment Agency, North West Region Pollutant: Oils - Unknown Note: Mearley Bk; Oil Incident Date: 31st July 1997 Incident Reference: 97340081 Catchment Area: Ribble - Non-Tidal Receiving Water: Freshwater Stream/River Cause of Incident: In River Works Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A16SW (NE)	940	1	374705 442000
48	**Pollution Incidents to Controlled Waters** Property Type: Farm Drainage Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Agricultural: Other Note: Tributary Mearley Brk; Midden Drainage Incident Date: 3rd February 1992 Incident Reference: 92340012 Catchment Area: Ribble - Non-Tidal Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A12NE (NE)	937	1	375001 441601
49	**Pollution Incidents to Controlled Waters** Property Type: Connection To Surface Drains Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Miscellaneous - Other Note: Tributary Ribble; Bluish Dye/Detergent Incident Date: 11th February 1993 Incident Reference: 93340012 Catchment Area: Ribble - Non-Tidal Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A9SW (W)	954	1	372700 441295

Map ID	Details	Quadrant Reference (Compass	Estimated Distance From Site	Contact	NGR
49	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Oils - Unknown Note: Tributary River Ribble Incident Date: 10th March 1992 Incident Reference: 92340025 Catchment Area: Ribble - Non-Tidal Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A9SW (W)	956	1	372700 441300
50	**Pollution Incidents to Controlled Waters** Property Type: Private Sewage: Sewage Works And Septic Tanks Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Sewage - Septic Tank Effluent Note: Shaw Brook Incident Date: 18th June 1992 Incident Reference: 92340073 Catchment Area: Ribble - Non-Tidal Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12NE (E)	1000	1	375100 441500
	River Quality Name: Mearley Bk GQA Grade: River Quality B Reach: Qsl At Tower Hill To Ribble Estimated Distance (km): 3 9 Flow Rate: Flow less than 1 25 cumecs Flow Type: River Year: 2000	A7NW (SE)	0	1	373888 440971
	River Quality Name: Pimlico Bk GQA Grade: River Quality A Reach: Qsl At Chatburn I.E To Mearley Bk Estimated Distance (km): 2.7 Flow Rate: Flow less than 0 31 cumecs Flow Type: River Year: 2000	A16SW (NE)	761	1	374594 441885
	River Quality Name: Ribble GQA Grade: River Quality B Reach: Stock Beck To Clitheroe Stw Estimated Distance (km): 19 1 Flow Rate: Flow less than 20 cumecs Flow Type: River Year: 2000	A5NW (W)	919	1	372626 440968
51	**Substantiated Pollution Incident Register** Authority: Environment Agency - North West Region, Central Area Incident Date: 24th July 2006 Incident Reference: 420315 Water Impact: Category 2 - Significant Incident Air Impact: Category 4 - No Impact Land Impact: Category 4 - No Impact Positional Accuracy: Located by supplier to within 10m Pollutant: Crude Sewage	A5NE (W)	513	1	373045 440961

Map ID	Details	Quadrant Reference (Compass	Estimated Distance From Site	Contact	NGR
52	Water Abstractions Operator: Stalwart Dyeing Co Ltd Licence Number: 2671309033 Permit Version: 100 Location: Mearley Brk Feeding Primrose Lodge At Clitheroe Authority: Environment Agency, North West Region Abstraction: General Agriculture: Transfer Between Sources Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): 0 Yearly Rate (m3): 0 Details: Primrose Wrks, Clitheroe Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 16th December 1966 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A6NE (S)	0	1	373800 440800
52	Water Abstractions Operator: Stalwart Dyeing Co Ltd Licence Number: 2671309033 Permit Version: 100 Location: Mearley Brk Feeding Primrose Lodge At Clitheroe Authority: Environment Agency, North West Region Abstraction: Other Industrial/Commercial/Public Services: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Primrose Wrks, Clitheroe Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 16th December 1966 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A6NE (S)	0	1	373800 440800
53	Water Abstractions Operator: Stalwart Dyeing Co Ltd Licence Number: 2671309033 Permit Version: 100 Location: Mearley Brk Feeding Primrose Lodge At Clitheroe Authority: Environment Agency, North West Region Abstraction: General Agriculture: Transfer Between Sources Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): 1000 Yearly Rate (m3): 181840 Details: Primrose Wrks, Clitheroe Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 16th December 1966 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A11SW (NE)	0	1	374100 441200
53	Water Abstractions Operator: Stalwart Dyeing Co Ltd Licence Number: 2671309033 Permit Version: 100 Location: Mearley Brk Feeding Primrose Lodge At Clitheroe Authority: Environment Agency, North West Region Abstraction: Other Industrial/Commercial/Public Services: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Primrose Wrks, Clitheroe Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 16th December 1966 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A11SW (NE)	0	1	374100 441200

Map ID	Details	Quadrant Reference (Compass	Estimated Distance From Site	Contact	NGR
54	Water Abstractions Operator: James Thomber Ltd Licence Number: 2671309025 Permit Version: 100 Location: Mearley Brk At Clitheroe Authority: Environment Agency, North West Region Abstraction: Other Industrial/Commercial/Public Services: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): 982 Yearly Rate (m3): 227300 Details: Land At Holmes Mill Clitheroe Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 11th November 1966 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A11SE (NE)	84	1	374200 441300
55	Water Abstractions Operator: Stalwart Dyeing Co Ltd Licence Number: 2671309032 Permit Version: 100 Location: Pendleton Brk@Clitheroe Feeding Mill Pond,Primrose Wks Authority: Environment Agency, North West Region Abstraction: General Agriculture: Transfer Between Sources Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): 0 Yearly Rate (m3): 0 Details: Land At Primrose Works Clitheroe Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st December 1993 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A7SW (S)	147	1	373900 440600
55	Water Abstractions Operator: Stalwart Dyeing Co Ltd Licence Number: 2671309032 Permit Version: 100 Location: Pendleton Brk@Clitheroe Feeding Mill Pond,Primrose Wks Authority: Environment Agency, North West Region Abstraction: Other Industrial/Commercial/Public Services: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Land At Primrose Works Clitheroe Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st December 1993 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A7SW (S)	147	1	373900 440600
56	Water Abstractions Operator: Stalwart Dyeing Co Ltd Licence Number: 2671309032 Permit Version: 100 Location: Pendleton Brk@Clitheroe Feeding The Mill Pond, Primrose Wks Authority: Environment Agency, North West Region Abstraction: General Agriculture: Transfer Between Sources Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): 1000 Yearly Rate (m3): 181840 Details: Land At Primrose Works Clitheroe Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st December 1993 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A7NW (SE)	165	1	374000 440700

Map ID	Details	Quadrant Reference (Compass	Estimated Distance From Site	Contact	NGR
56	**Water Abstractions** Operator: Stalwart Dyeing Co Ltd Licence Number: 2671309032 Permit Version: 100 Location: Pendleton Brk@Clitheroe Feeding The Mill Pond, Primrose Wks Authority: Environment Agency, North West Region Abstraction: Other Industrial/Commercial/Public Services: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Land At Primrose Works Clitheroe. Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st December 1993 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A7NW (SE)	165	1	374000 440700
57	**Water Abstractions** Operator: Castle Castings Ltd Licence Number: 2671309002 Permit Version: Not Supplied Location: Mearley Brook, South Bank Of Brook At Works Site, CLITHEROE Authority: Environment Agency, North West Region Abstraction: Industrial Cooling (Miscellaneous) Abstraction Type: Not Supplied Source: Surface Daily Rate (m3): 9 Yearly Rate (m3): 2228 Details: Additional Purpose: Cooling; Licence Status: Revoked Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A16SW (NE)	938	1	374695 442005
57	**Water Abstractions** Operator: Castle Castings Ltd Licence Number: 2671309001 Permit Version: Not Supplied Location: Mearley Brook, On Works Site, CLITHEROE Authority: Environment Agency, North West Region Abstraction: Industrial Cooling (Miscellaneous) Abstraction Type: Not Supplied Source: Surface Daily Rate (m3): 36 Yearly Rate (m3): 8910 Details: Additional Purpose: Cooling; Licence Status: Revoked Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A16SW (NE)	941	1	374700 442005
	Water Abstractions Operator: Trustees Of Standen Settled Estate Licence Number: 2671309021 Permit Version: 100 Location: Pendleton Brook North Of Pendleton Village Authority: Environment Agency, North West Region Abstraction: General Agriculture; General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): 164 Yearly Rate (m3): 59098 Details: Three Farms In Pendleton Area. Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 20th May 1966 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(SE)	1587	1	375300 440100
	Groundwater Vulnerability Geological Classification: Minor Aquifer (Variably permeable) - These can be fractured or potentially fractured rocks, which do not have a high primary permeability, or other formations of variable permeability including unconsolidated deposits. Although not producing large quantities of water for abstraction, they are important for local supplies and in supplying base flow to rivers Soil Classification: Soils of Low Leaching Potential - Soils in which pollutants are unlikely to penetrate the soil layer because water movement is largely horizontal or they have large ability to attenuate diffuse pollutants. Lateral flow from these soils contribute to groundwater recharge elsewhere in the catchment Map Sheet: Sheet 10 Central Lancashire Scale: 1:100,000	A5SE (SW)	0	1	372996 440438

Map ID	Details	Quadrant Reference (Compass	Estimated Distance From Site	Contact	NGR
	Drift Deposits Drift Deposit: Low permeability drift deposits occuring at the surface and overlying Major and Minor Aquifers are head, clay-with-flints, brickearth, peat, river terrace deposits and marine and estuarine alluvium Map Sheet: Sheet 10 Central Lancashire Scale: 1:100,000	A10SE (NW)	0	1	373772 441033
	Drift Deposits Drift Deposit: Low permeability drift deposits occuring at the surface and overlying Major and Minor Aquifers are head, clay-with-flints, brickearth, peat, river terrace deposits and marine and estuarine alluvium Map Sheet: Sheet 10 Central Lancashire Scale: 1:100,000	A7NW (SE)	0	1	373867 440988
	Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Boundary Accuracy: As Supplied	A11SW (NE)	0	1	374015 441127
	Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Boundary Accuracy: As Supplied	A7SW (S)	92	1	373868 440645
	Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Boundary Accuracy: As Supplied	A7NW (SE)	95	1	374009 440694
	Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Boundary Accuracy: As Supplied	A7NW (SE)	182	1	374028 440722
	Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Boundary Accuracy: As Supplied	A11SW (NE)	0	1	374018 441128
	Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Boundary Accuracy: As Supplied	A11NW (NE)	73	1	374137 441342
	Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Boundary Accuracy: As Supplied	A7SW (S)	92	1	373867 440643
	Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Boundary Accuracy: As Supplied	A7NW (SE)	96	1	374008 440691
	Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Boundary Accuracy: As Supplied	A7NW (SE)	186	1	374025 440700
	Areas Benefiting from Flood Defences Type: Area Benefiting from Flood Defences Boundary Accuracy: As Supplied	A11NW (NE)	126	1	374169 441382
	Areas Benefiting from Flood Defences Type: Area Benefiting from Flood Defences Boundary Accuracy: As Supplied	A11NE (NE)	176	1	374276 441353
	Flood Water Storage Areas None				
	Flood Defences Type: Flood Defences Reference: 01210PEBR0101L16	A11SW (NE)	0	1	374127 441252
	Flood Defences Type: Flood Defences Reference: 01210PEBR0101R16	A11SW (NE)	10	1	374105 441272
	Flood Defences Type: Flood Defences Reference: 01210PEBR0101R17	A11SW (NE)	73	1	374147 441334
	Flood Defences Type: Flood Defences Reference: 01210PEBR0101L17	A11SW (NE)	79	1	374174 441321
	Flood Defences Type: Flood Defences Reference: 01210PEBR0101L18	A11NE (NE)	174	1	374229 441399

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Map ID	Details	Quadrant Reference (Compass	Estimated Distance From Site	Contact	NGR
	Flood Defences Type: Flood Defences Reference: 01210PESR0101L19	A11NE (NE)	204	1	374252 441419
	Flood Defences Type: Flood Defences Reference: 01210PESR0101R19	A11NE (NE)	237	1	374274 441444

Map ID	Details	Quadrant Reference (Compass	Estimated Distance From Site	Contact	NGR
58	**Historical Landfill Sites** Licence Holder: Not Supplied Location: Off Kemple View, Near Clitheroe, Lancashire Name: Stewart Dying Company Limited Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD07099 First Input Date: Not Supplied Last Input Date: Not Supplied Specified Waste Type: Deposited Waste Included Unknown Material EA Waste Ref: Not Supplied Regis Ref: Not Supplied WRC Ref: 2300/0186 BGS Ref: Not Supplied Other Ref: K1/03/034	A6NE (W)	0	1	373711 440985
59	**Historical Landfill Sites** Licence Holder: Not Supplied Location: Hawthorn, Clitheroe, Lancashire Name: Henthorn Tip Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD31943 First Input Date: 31st December 1920 Last Input Date: Not Supplied Specified Waste Type: Deposited Waste Included Commercial Waste and Liquid Sludge EA Waste Ref: Not Supplied Regis Ref: Not Supplied WRC Ref: Not Supplied BGS Ref: 1916 Other Ref: Not Supplied	A1NE (SW)	810	1	372948 440312
60	**Licensed Waste Management Facilities (Landfill Boundaries)** Name: Henthorn Road L F S Licence Number: 54102 Location: Henthorn Road, Clitheroe, Blackburn, Lancashire, BB7 2QF Licence Holder: Sita (Lancashire) Ltd Authority: Environment Agency - North West Region, Central Area Site Category: Household, Commercial And Industrial Waste Landfills Max Input Rate: Not Supplied Licence Status: Active Issued 14th May 1993 Positional Accuracy: Positioned by the supplier Boundary Accuracy: As Supplied	A2NW (SW)	711	1	373279 440161
61	**Licensed Waste Management Facilities (Locations)** Licence Number: 54102 Location: Henthorn Road, Clitheroe, Blackburn, Lancashire, BB7 2QF Operator Name: Sita (Lancashire) Ltd Operator Location: Tustin Court, Portway, Preston, Lancashire, PR2 2YQ Authority: Environment Agency - North West Region, Central Area Site Category: Household, Commercial And Industrial Waste Landfills Licence Status: Issued Issued: 14th May 1993 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A10SW (W)	269	1	373345 441041
61	**Licensed Waste Management Facilities (Locations)** Licence Number: 54114 Location: Henthorn Road, Clitheroe, Lancashire, BB7 2QF Operator Name: Sita (Lancashire) Ltd Operator Location: Tustin Court, Portway, Preston, Lancashire, PR2 2YQ Authority: Environment Agency - North West Region, Central Area Site Category: Special Waste Transfer Stations Licence Status: Modified Issued: 14th May 1993 Last Modified: 25th November 2002 Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A10SW (W)	269	1	373345 441041
	Local Authority Landfill Coverage Name: Ribble Valley Borough Council - Had landfill data but passed it to the relevant environment agency		0	2	378169 436389

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Waste

Map ID	Details	Quadrant Reference (Compass	Estimated Distance From Site	Contact	NGR
	Local Authority Landfill Coverage Name: Lancashire County Council - Had landfill data but passed it to the relevant environment agency		0	6	369315 431789

Map ID	Details	Quadrant Reference (Compass	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: Tournaisian and Visean (Carboniferous Limestone Series)	A14SW (NW)	0	3	373216 441859
	Coal Mining Affected Areas In an area which may not be affected by coal mining				
	Potential for Collapsible Ground Stability Hazards No Hazard				
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A7NW (E)	0	3	373875 440998
	Potential for Compressible Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A7NW (E)	0	3	373875 440998
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A7NW (SE)	0	3	373900 440950
	Potential for Ground Dissolution Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A7NW (E)	0	3	373975 440975
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A7NW (E)	15	3	373975 440975
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A11SW (NE)	0	3	373950 441075
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A11SW (E)	0	3	373875 441000
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A6NE (S)	0	3	373800 440850
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A11SW (E)	0	3	373875 441000
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A11SW (NE)	0	3	373975 441100
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A6NE (SW)	30	3	373700 440725
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A6SE (S)	78	3	373825 440650
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A11NW (NE)	123	3	374175 441375
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A11NE (NE)	157	3	374200 441400
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A11NE (NE)	192	3	374225 441425
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A11NE (NE)	227	3	374250 441450
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A6SW (SW)	229	3	373500 440600
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A7NW (SE)	0	3	373900 440950

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Geological

Map ID	Details	Quadrant Reference (Compass	Estimated Distance From Site	Contact	NGR
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A7NW (E)	0	3	373875 440996
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A7NW (E)	0	3	373875 440996
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A11NE (NE)	0	3	374200 441550
	Radon Potential - Radon Affected Areas Affected Area: The property is in a radon affected area, as between 1 and 3% of homes are above the action level Source: British Geological Survey, National Geoscience Information Service	A6NE (SW)	0	3	373750 440925
	Radon Potential - Radon Affected Areas Affected Area: The property is not in a radon affected area, as less than 1% of homes are above the action level Source: British Geological Survey, National Geoscience Information Service	A6NE (SW)	0	3	373750 440925
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A6NE (SW)	0	3	373750 440925
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A6NE (SW)	0	3	373750 440925
	Shallow Mining Hazards No Hazard				

Map ID	Details	Quadrant Reference (Compass	Estimated Distance From Site	Contact	NGR
62	**Contemporary Trade Directory Entries** Name: Castle Stained Glass Location: 1, Victoria Street, Clitheroe, Lancashire, BB7 1BL Classification: Stained Glass Designers & Producers Status: Inactive Positional Accuracy: Automatically positioned to the address	A11SW (NE)	15	-	373921 441118
63	**Contemporary Trade Directory Entries** Name: Lodemalic Group Ltd Location: 1/3, Works, Primrose Road, Clitheroe, Lancashire, BB7 1BS Classification: Mechanical Handling Engineers Status: Active Positional Accuracy: Automatically positioned to the address	A6NE (SW)	18	-	373715 440750
64	**Contemporary Trade Directory Entries** Name: Stalwart Dyeing Co Ltd Location: Primrose Works, Primrose Road, Clitheroe, Lancashire, BB7 1BT Classification: Carpets & Rugs - Manufacturers Status: Inactive Positional Accuracy: Automatically positioned to the address	A6NE (S)	53	-	373768 440707
64	**Contemporary Trade Directory Entries** Name: Stalwart Commission Carpets Location: Primrose Works, Primrose Road, Clitheroe, Lancashire, BB7 1BT Classification: Carpets & Rugs - Manufacturers Status: Active Positional Accuracy: Automatically positioned to the address	A6NE (S)	53	-	373768 440707
65	**Contemporary Trade Directory Entries** Name: Easy Wash Location: 68-70, Whalley Road, Clitheroe, Lancashire, BB7 1EE Classification: Ironing & Home Laundry Services Status: Active Positional Accuracy: Automatically positioned to the address	A11SE (NE)	88	-	374200 441258
65	**Contemporary Trade Directory Entries** Name: Capri Electrical Developments Ltd Location: 45-47, Whalley Road, Clitheroe, Lancashire, BB7 1EE Classification: Electrical Heating Equipment & Systems Status: Inactive Positional Accuracy: Automatically positioned to the address	A11SE (NE)	112	-	374239 441284
66	**Contemporary Trade Directory Entries** Name: Borderblind Ltd Location: 103, Whalley Road, Clitheroe, Lancashire BB7 1EE Classification: Blinds, Awnings & Canopies Status: Active Positional Accuracy: Automatically positioned to the address	A11SW (E)	75	-	374159 441100
67	**Contemporary Trade Directory Entries** Name: James Thombeer Ltd Location: Holmes Mill, Greenacre Street, Clitheroe, Lancashire, BB7 1EB Classification: Textile Manufacturing Status: Active Positional Accuracy: Automatically positioned to the address	A11NW (NE)	92	-	374128 441359
68	**Contemporary Trade Directory Entries** Name: C Whitehead Location: 17, Kemple View, Clitheroe, Lancashire, BB7 2QB Classification: Chemicals & Allied Products Status: Inactive Positional Accuracy: Automatically positioned to the address	A10SE (W)	101	-	373844 441076
69	**Contemporary Trade Directory Entries** Name: Greenacre Garage Location: Greenacre Street, Clitheroe, Lancashire, BB7 1ED Classification: Garage Services Status: Active Positional Accuracy: Automatically positioned to the address	A11NE (NE)	113	-	374197 441347
70	**Contemporary Trade Directory Entries** Name: John Schofield Location: 5, Wilson Street, Clitheroe, Lancashire, BB7 1BH Classification: French Polishing Status: Active Positional Accuracy: Automatically positioned to the address	A11NW (NE)	116	-	374029 441348
71	**Contemporary Trade Directory Entries** Name: Domestpest Location: 27, West View, Clitheroe Lancashire, BB7 1DG Classification: Pest & Vermin Control Status: Active Positional Accuracy: Automatically positioned to the address	A11NW (N)	139	-	373967 441344

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Industrial Land Use

Map ID	Details	Quadrant Reference (Compass	Estimated Distance From Site	Contact	NGR
72	**Contemporary Trade Directory Entries** Name: Jeh'S Stores Location: 26, Whalley Road, Clitheroe, Lancashire, BB7 1AW Classification: Hardware Status: Inactive Positional Accuracy: Automatically positioned to the address	A11NE (NE)	159	-	374232 441376
72	**Contemporary Trade Directory Entries** Name: Past & Present Location: 22, Whalley Road, Clitheroe, Lancashire, BB7 1AW Classification: Fireplaces & Mantelpieces Status: Active Positional Accuracy: Automatically positioned to the address	A11NE (NE)	166	-	374234 441384
73	**Contemporary Trade Directory Entries** Name: Motor Point Auto Centre Location: Victoria Street Garage, Victoria Street, Clitheroe, Lancashire, BB7 1BL Classification: Garage Services Status: Active Positional Accuracy: Automatically positioned to the address	A10SE (NW)	178	-	373761 441162
74	**Contemporary Trade Directory Entries** Name: Primrose Garage (Clitheroe) Ltd Location: Whalley Road, Clitheroe, Lancashire, BB7 1HT Classification: Garage Services Status: Active Positional Accuracy: Automatically positioned to the address	A7NW (SE)	182	-	374093 440847
75	**Contemporary Trade Directory Entries** Name: Diesel Doctor Location: Unit 3,Mitchell St, Clitheroe, Lancashire, BB7 1DF Classification: Diesel Engine Equipment & Services Status: Active Positional Accuracy: Manually positioned to the road within the address or location	A11NW (N)	202	-	373895 441366
76	**Contemporary Trade Directory Entries** Name: Snow White Location: 46, Eshton Terrace, Clitheroe, Lancashire, BB7 1BQ Classification: Laundries & Launderettes Status: Active Positional Accuracy: Automatically positioned to the address	A11NW (N)	218	-	373999 441451
76	**Contemporary Trade Directory Entries** Name: Lancashire Bulk Location: 46, Eshton Terrace, Clitheroe, Lancashire, BB7 1BQ Classification: Road Haulage Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A11NW (N)	218	-	373999 441451
77	**Contemporary Trade Directory Entries** Name: Gary Wilson Location: Woone Lane, Clitheroe, Lancashire, BB7 1BG Classification: Cabinet Makers Status: Inactive Positional Accuracy: Automatically positioned to the address	A11NE (NE)	241	-	374230 441479
78	**Contemporary Trade Directory Entries** Name: Pendle Print Ltd Location: 2, Franklin Street, Clitheroe, Lancashire, BB7 1DQ Classification: Printers Status: Active Positional Accuracy: Automatically positioned to the address	A11NW (N)	293	-	373904 441488
78	**Contemporary Trade Directory Entries** Name: D J P Domestics Location: 2, Franklin Street, Clitheroe, Lancashire, BB7 1DQ Classification: Cleaning Services - Domestic Status: Inactive Positional Accuracy: Automatically positioned to the address	A11NW (N)	293	-	373904 441488
79	**Contemporary Trade Directory Entries** Name: Sita (Lancashire) Ltd Location: Henthorn Cottage,Henthorn Rd, Clitheroe, Lancashire, BB7 2QF Classification: Waste Disposal Services Status: Active Positional Accuracy: Manually positioned to the address or location	A6NW (W)	345	-	373212 440936
79	**Contemporary Trade Directory Entries** Name: M & W Spedding Location: Henthorn Road, Clitheroe, Lancashire, BB7 2QF Classification: Dairies Status: Inactive Positional Accuracy: Automatically positioned to the address	A6NW (W)	372	-	373184 440938

Map ID	Details	Quadrant Reference (Compass	Estimated Distance From Site	Contact	NGR
80	**Contemporary Trade Directory Entries** Name: David Ellis Location: Thorn St, Clitheroe, Lancashire, BB7 2LJ Classification: Garage Services Status: Inactive Positional Accuracy: Manualy positioned to the road within the address or locaiton	A10NE (N)	372	-	373835 441536
81	**Contemporary Trade Directory Entries** Name: Best Wishes Location: 37-39, Moor Lane, Clitheroe, Lancashire, BB7 1BE Classification: Greeting Card Publishers & Wholesalers Status: Active Positional Accuracy: Automatically positioned to the address	A11NE (NE)	412	-	374326 441622
81	**Contemporary Trade Directory Entries** Name: Lightworks Location: 122, Lowergate, CLITHEROE, Lancashire BB7 1AG Classification: Leaded Lights & Windows Status: Active Positional Accuracy: Manually positioned to the address or location	A11NE (NE)	421	-	374327 441632
81	**Contemporary Trade Directory Entries** Name: Folkswaggons Location: 2 Lowergate Works,Lowergate, Clitheroe, Lancashire BB7 1AD Classification: Car Breakers & Dismantlers Status: Inactive Positional Accuracy: Manually positioned to the road within the address or location	A11NE (NE)	423	-	374338 441627
82	**Contemporary Trade Directory Entries** Name: Smallbone Cars Location: Unit 1, Highfield Road, Clitheroe, Lancashire, BB7 1AQ Classification: Car Dealers - Used Status: Inactive Positional Accuracy: Automatically positioned to the address	A11NE (NE)	426	-	374442 441543
83	**Contemporary Trade Directory Entries** Name: Rufus Carr Ltd Location: Bawdlands Garage, Bawdlands, Clitheroe, Lancashire, BB7 2LA Classification: Car Dealers Status: Active Positional Accuracy: Automatically positioned to the address	A10NE (N)	452	-	373829 441626
84	**Contemporary Trade Directory Entries** Name: R F Parker Location: Lowergate Works,Lowergate, Clitheroe, Lancashire, BB7 1AD Classification: Car Body Repairs Status: Inactive Positional Accuracy: Manually positioned to the road within the address or location	A11NE (NE)	473	-	374360 441672
85	**Contemporary Trade Directory Entries** Name: Lappet Manufacturing Co Location: Mount Vale,Lowergate, Clitheroe, Lancashire BB7 1AG Classification: Clothing & Fabrics - Manufacturers Status: Active Positional Accuracy: Manually positioned to the road within the address or location	A15SE (NE)	500	-	374369 441698
86	**Contemporary Trade Directory Entries** Name: Powerclean Location: Unit 24, Deanfield Court, Link 59 Business Park, CLITHEROE, Lancashire, BB7 1QS Classification: Blast Cleaning Status: Active Positional Accuracy: Manually positioned within the geographical locality	A11NE (NE)	537	-	374480 441662
87	**Contemporary Trade Directory Entries** Name: The Tyremen Location: 28 Parson La, Clitheroe Lancashire, BB7 2JP Classification: Mot Testing Centres Status: Active Positional Accuracy: Manually positioned to the address or location	A15SE (NE)	543	-	374202 441804
88	**Contemporary Trade Directory Entries** Name: B & H Transport Ltd Location: 4, Bleasdale Avenue, Clitheroe, Lancashire, BB7 2PF Classification: Road Haulage Services Status: Active Positional Accuracy: Automatically positioned to the address	A10NW (NW)	621	-	373180 441412
89	**Contemporary Trade Directory Entries** Name: Jag Communications Location: 33, Castle Street, Clitheroe, Lancashire, BB7 2BT Classification: Mobile Phone Accessories and Car Kits Status: Active Positional Accuracy: Automatically positioned to the address	A15SE (NE)	623	-	374333 441852

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Industrial Land Use

Map ID	Details	Quadrant Reference (Compass	Estimated Distance From Site	Contact	NGR
89	**Contemporary Trade Directory Entries** Name: Johnson Cleaners (Uk) Ltd Location: 40, Castle Street, Clitheroe, Lancashire, BB7 2BX Classification: Dry Cleaners Status: Active Positional Accuracy: Automatically positioned to the address	A15SE (NE)	650	-	374373 441865
90	**Contemporary Trade Directory Entries** Name: Arbex (Gb) Ltd Location: Shawbridge Mill,Unit 2 Shaw Bridge St, Clitheroe, Lancashire, BB7 1LY Classification: Carpets & Rugs - Manufacturers Status: Active Positional Accuracy: Manually positioned to the address or location	A16SW (NE)	643	-	374611 441680
90	**Contemporary Trade Directory Entries** Name: The Fire Works Location: Shawbridge Sawmill, Shaw Bridge Street, Clitheroe, Lancashire, BB7 1LY Classification: Fireplaces & Mantelpieces Status: Inactive Positional Accuracy: Automatically positioned to the address	A16SW (NE)	644	-	374612 441680
90	**Contemporary Trade Directory Entries** Name: Planet Contracts Location: 2 Peel St, Clitheroe, Lancashire, BB7 1NH Classification: Carpets & Rugs - Manufacturers Status: Active Positional Accuracy: Manually positioned to the address or location	A16SW (NE)	653	-	374621 441683
91	**Contemporary Trade Directory Entries** Name: Engineering 2000 Location: 3, Longfield Cottages, Shaw Bridge Street, Clitheroe, Lancashire, BB7 1LZ Classification: Precision Engineers Status: Active Positional Accuracy: Automatically positioned to the address	A12NW (NE)	646	-	374656 441628
92	**Contemporary Trade Directory Entries** Name: Hull Location: Henthorn Rd, Clitheroe, Lancashire, BB7 3BY Classification: Plastics - Coating Services Status: Active Positional Accuracy: Manually positioned to the road within the address or location	A5NE (W)	654	-	372923 440866
93	**Contemporary Trade Directory Entries** Name: Djp Domestic Appliances Ltd Location: 1-3, The Arcade, King Lane, Clitheroe, Lancashire, BB7 1AA Classification: Washing Machines - Servicing & Repairs Status: Active Positional Accuracy: Automatically positioned to the address	A15SE (NE)	667	-	374430 441856
93	**Contemporary Trade Directory Entries** Name: King Lane Garage Location: Unit 1, Wellgate Court, Wellgate, Clitheroe, Lancashire, BB7 2DS Classification: Garage Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A15SE (NE)	683	-	374440 441869
94	**Contemporary Trade Directory Entries** Name: Vantage Clitheroe Location: Edisford Road, Clitheroe, Lancashire, BB7 2LT Classification: Garage Services Status: Active Positional Accuracy: Automatically positioned to the address	A10NW (NW)	682	-	373292 441573
94	**Contemporary Trade Directory Entries** Name: Vantage Clitheroe Location: Edisford Road, Clitheroe, Lancashire, BB7 2LT Classification: Car Dealers Status: Inactive Positional Accuracy: Automatically positioned to the address	A10NW (NW)	682	-	373292 441573
94	**Contemporary Trade Directory Entries** Name: Vantage Garages (Burnley) Ltd Location: Edisford Road, Clitheroe, Lancashire, BB7 2LT Classification: Car Dealers Status: Active Positional Accuracy: Automatically positioned to the address	A10NW (NW)	682	-	373292 441573
95	**Contemporary Trade Directory Entries** Name: Hargreaves & Coates Ltd Location: Low Moor Top Farm, Edisford Road, Clitheroe, Lancashire, BB7 2LT Classification: Road Haulage Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A10NW (NW)	685	-	373346 441604

Map ID	Details	Quadrant Reference (Compass	Estimated Distance From Site	Contact	NGR
96	**Contemporary Trade Directory Entries** Name: Iron Xpress Location: 15, Fairfield Drive, Clitheroe, Lancashire, BB7 2PE Classification: Ironing & Home Laundry Services Status: Active Positional Accuracy: Automatically positioned to the address	A9NE (NW)	686	-	373101 441422
96	**Contemporary Trade Directory Entries** Name: P R Knowles Location: 22, Fairfield Drive, Clitheroe, Lancashire, BB7 2PE Classification: Stained Glass Designers & Producers Status: Inactive Positional Accuracy: Automatically positioned to the address	A9NE (NW)	722	-	373076 441448
97	**Contemporary Trade Directory Entries** Name: MJ Car Sales Location: Wellgate Garage, Wellgate Yard, Wellgate, Clitheroe, Lancashire, BB7 2DP Classification: Garage Services Status: Active Positional Accuracy: Automatically positioned to the address	A15SE (NE)	689	-	374482 441851
97	**Contemporary Trade Directory Entries** Name: Magpie Location: 13, Lowergate, Clitheroe, Lancashire, BB7 1AD Classification: Furniture - Repairing & Restoring Status: Active Positional Accuracy: Automatically positioned to the address	A16SW (NE)	692	-	374518 441831
98	**Contemporary Trade Directory Entries** Name: Locoste Trading Location: Abbey Works,Back King St, Clitheroe, Lancashire, BB7 2ET Classification: T-Shirts Status: Inactive Positional Accuracy: Manually positioned to the road within the address or location	A15SE (NE)	711	-	374286 441858
99	**Contemporary Trade Directory Entries** Name: County Sales Location: Flat 1, Shawbridge Court, Shaw Bridge Street, Clitheroe, Lancashire, BB7 1LY Classification: Packaging Materials Manufacturers & Suppliers Status: Inactive Positional Accuracy: Automatically positioned to the address	A16SW (NE)	722	-	374628 441777
100	**Contemporary Trade Directory Entries** Name: Clitheroe Dry Cleaners Ltd Location: 23, Wellgate, Clitheroe, Lancashire, BB7 2DP Classification: Dry Cleaners Status: Active Positional Accuracy: Automatically positioned to the address	A15SE (NE)	727	-	374465 441905
101	**Contemporary Trade Directory Entries** Name: Central Garage Location: Back York Street, Clitheroe, Lancashire, BB7 2DW Classification: Garage Services Status: Active Positional Accuracy: Automatically positioned to the address	A15SE (NE)	779	-	374514 441936
101	**Contemporary Trade Directory Entries** Name: The Jenny Press Location: Back York Street, Clitheroe, Lancashire, BB7 2DW Classification: Printers Status: Inactive Positional Accuracy: Automatically positioned to the address	A15SE (NE)	779	-	374514 441936
101	**Contemporary Trade Directory Entries** Name: Suppression Devices Location: 8, York Street, Clitheroe, Lancashire, BB7 2DL Classification: Electronic Component Manufacturers & Distributors Status: Active Positional Accuracy: Manually positioned to the address or location	A15SE (NE)	800	-	374491 441974
102	**Contemporary Trade Directory Entries** Name: T & J Haulage Location: Swan Meadow, Clitheroe, Lancashire, BB7 2BS Classification: Road Haulage Services Status: Active Positional Accuracy: Manually positioned to the road within the address or location	A15NW (N)	760	-	373933 442025
103	**Contemporary Trade Directory Entries** Name: Clean & Sparkle Location: 10, Walker Street, Clitheroe, Lancashire, BB7 1NN Classification: Cleaning Services - Domestic Status: Active Positional Accuracy: Automatically positioned to the address	A16SW (NE)	783	-	374656 441835

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Industrial Land Use

Map ID	Details	Quadrant Reference (Compass	Estimated Distance From Site	Contact	NGR
104	**Contemporary Trade Directory Entries** Name: Tesco Petrol Filling Station Location: Duck Street, Clitheroe. Lancashire, BB7 1LP Classification: Petrol Filling Stations Status: Active Positional Accuracy: Automatically positioned to the address	A16SW (NE)	788	-	374563 441917
105	**Contemporary Trade Directory Entries** Name: B M Shearer Ltd Location: Railway View Avenue, Clitheroe. Lancashire, BB7 2HA Classification: Garage Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A15NE (NE)	816	-	374319 442058
106	**Contemporary Trade Directory Entries** Name: County Sales (Great Harwood) Co Ltd Location: Pendle Mill, Pendle Road, Clitheroe, Lancashire. BB7 1JQ Classification: Cleaning Materials & Equipment Status: Inactive Positional Accuracy: Automatically positioned to the address	A12NE (NE)	832	-	374909 441549
106	**Contemporary Trade Directory Entries** Name: County Sales Location: Pendle Mill, Pendle Road, Clitheroe, Lancashire. BB7 1JQ Classification: Manufacturers Status: Active Positional Accuracy: Automatically positioned to the address	A12NE (NE)	832	-	374909 441549
107	**Contemporary Trade Directory Entries** Name: Club Bus Location: River Lea Gdns, Clitheroe, Lancashire, BB7 1QQ Classification: Bus & Coach Operators & Stations Status: Inactive Positional Accuracy: Manually positioned to the road within the address or location	A16SW (NE)	863	-	374683 441918
107	**Contemporary Trade Directory Entries** Name: Careclean Location: Waterloo Mill, Waterloo Road, Clitheroe, Lancashire, BB7 1LR Classification: Cleaning Materials & Equipment Status: Active Positional Accuracy: Automatically positioned to the address	A16SW (NE)	864	-	374651 441945
107	**Contemporary Trade Directory Entries** Name: Alan Richards Location: Waterloo Road, Clitheroe, Lancashire, BB7 1LR Classification: Cleaning Materials & Equipment Status: Active Positional Accuracy: Automatically positioned to the address	A16SW (NE)	864	-	374651 441945
108	**Contemporary Trade Directory Entries** Name: Clitheroe Centre Location: Unit 1, Albion Court, Waterloo Road, Clitheroe. Lancashire, BB7 1NS Classification: Exhaust & Shock Absorber Centres Status: Active Positional Accuracy: Automatically positioned to the address	A16SW (NE)	871	-	374600 441991
108	**Contemporary Trade Directory Entries** Name: Zaust.Com Location: Unit 3,Albion Ct,Waterloo Rd, Clitheroe, Lancashire BB7 1NS Classification: Exhaust System Manufacturers & Wholesalers Status: Inactive Positional Accuracy: Manually positioned to the address or location	A16SW (NE)	881	-	374608 441998
108	**Contemporary Trade Directory Entries** Name: County Motor Group Ltd Location: Unit 5, Albion Court, Waterloo Road, Clitheroe. Lancashire, BB7 1NS Classification: Garage Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A16NW (NE)	895	-	374607 442016
109	**Contemporary Trade Directory Entries** Name: Primrose Dairy Location: Railway View Road, Clitheroe, Lancashire BB7 2HE Classification: Dairies Status: Active Positional Accuracy: Automatically positioned in the proximity of the address	A15NE (N)	898	-	374298 442147
110	**Contemporary Trade Directory Entries** Name: Perrys Location: Waterloo Road, Clitheroe. Lancashire, BB7 1NS Classification: Car Dealers Status: Active Positional Accuracy: Automatically positioned to the address	A16NW (NE)	934	-	374621 442053

Map ID	Details	Quadrant Reference (Compass	Estimated Distance From Site	Contact	NGR
110	**Contemporary Trade Directory Entries** Name: W Southworth & Son Location: 40-42, York Street, Clitheroe, Lancashire, BB7 2DL Classification: Cabinet Makers Status: Inactive Positional Accuracy: Automatically positioned to the address	A16NW (NE)	942	-	374614 442067
110	**Contemporary Trade Directory Entries** Name: Affordable Mobility Location: 40-42, York Street, Clitheroe, Lancashire, BB7 2DL Classification: Disability Equipment - Manufacturers & Suppliers Status: Active Positional Accuracy: Automatically positioned to the address	A16NW (NE)	945	-	374609 442074
110	**Contemporary Trade Directory Entries** Name: Latest Flames Location: 42, York Street, Clitheroe, Lancashire, BB7 2DL Classification: Fireplaces & Mantelpieces Status: Active Positional Accuracy: Automatically positioned to the address	A16NW (NE)	945	-	374609 442074
111	**Fuel Station Entries** Name: Primrose Garage Location: Whalley Road, CLITHEROE, Lancashire, BB7 1HU Brand: Total Premises Type: Petrol Station Status: Open Positional Accuracy: Automatically positioned to the address	A7NW (SE)	181	-	374092 440846
112	**Fuel Station Entries** Name: Greenacre Street Garage Location: Greenacre Street, CLITHEROE, Lancashire, BB7 1ED Brand: OBSOLETE Premises Type: Not Applicable Status: Obsolete Positional Accuracy: Approximate location provided by supplier	A11NE (NE)	284	-	374315 441470
113	**Fuel Station Entries** Name: Low Moor Garage Location: Edisford Road, CLITHEROE, Lancashire, BB7 2LT Brand: Obsolete Premises Type: Not Applicable Status: Obsolete Positional Accuracy: Approximate location provided by supplier	A14SE (N)	688	-	373638 441784
114	**Fuel Station Entries** Name: Vantage - Network Q Location: Edisford Road, CLITHEROE, Lancashire, BB7 2LT Brand: OBSOLETE Premises Type: Not Applicable Status: Obsolete Positional Accuracy: Approximate location provided by supplier	A14SW (NW)	773	-	373307 441682

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Sensitive Land Use

Map ID	Details	Quadrant Reference (Compass	Estimated Distance From Site	Contact	NGR
115	Nitrate Vulnerable Zones Name: Not Supplied Description: Surface Water Source: Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	A8NE (E)	0	5	375000 440996
116	Nitrate Vulnerable Zones Name: Not Supplied Description: Surface Water Source: Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	A8NE (E)	868	5	375000 440996

Data Currency

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices		
Pendle Borough Council - Environmental Health Department	January 2008	Annual Rolling Update
Hyndburn Borough Council - Environmental Health Department	November 2007	Annual Rolling Update
Ribble Valley Borough Council - Environmental Health Department	September 2007	Annual Rolling Update
Discharge Consents		
Environment Agency - North West Region	April 2008	Quarterly
Enforcement and Prohibition Notices		
Environment Agency - North West Region	May 2008	As notified
Integrated Pollution Controls		
Environment Agency - North West Region	April 2008	Quarterly
Integrated Pollution Prevention And Control		
Environment Agency - North West Region	April 2008	Quarterly
Local Authority Integrated Pollution Prevention And Control		
Hyndburn Borough Council - Environmental Health Department	January 2008	Annual Rolling Update
Pendle Borough Council - Environmental Health Department	July 2007	Annual Rolling Update
Ribble Valley Borough Council - Environmental Health Department	October 2007	Annual Rolling Update
Local Authority Pollution Prevention and Controls		
Hyndburn Borough Council - Environmental Health Department	January 2008	Annual Rolling Update
Pendle Borough Council - Environmental Health Department	July 2007	Annual Rolling Update
Ribble Valley Borough Council - Environmental Health Department	October 2007	Annual Rolling Update
Local Authority Pollution Prevention and Control Enforcements		
Hyndburn Borough Council - Environmental Health Department	January 2008	Annual Rolling Update
Pendle Borough Council - Environmental Health Department	July 2007	Annual Rolling Update
Ribble Valley Borough Council - Environmental Health Department	October 2007	Annual Rolling Update
Nearest Surface Water Feature		
Ordnance Survey	January 2008	Quarterly
Pollution Incidents to Controlled Waters		
Environment Agency - North West Region	January 2000	Not Applicable
Prosecutions Relating to Authorised Processes		
Environment Agency - North West Region	May 2008	As notified
Prosecutions Relating to Controlled Waters		
Environment Agency - North West Region	May 2008	As notified
Registered Radioactive Substances		
Environment Agency - North West Region	April 2008	Quarterly
River Quality		
Environment Agency - Head Office	November 2001	Not Applicable
River Quality Biology Sampling Points		
Environment Agency - Head Office	September 2007	Annually
River Quality Chemistry Sampling Points		
Environment Agency - Head Office	August 2007	Annually
Substantiated Pollution Incident Register		
Environment Agency - North West Region - Central Area	April 2008	Quarterly
Water Abstractions		
Environment Agency - North West Region	April 2008	Quarterly
Water Industry Act Referrals		
Environment Agency - North West Region	April 2008	Quarterly
Groundwater Vulnerability		
Environment Agency - Head Office	January 1999	Not Applicable
Drift Deposits		
Environment Agency - Head Office	January 1999	Not Applicable

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Data Currency

Agency & Hydrological	Version	Update Cycle
Source Protection Zones Environment Agency - Head Office	April 2008	Variable
Extreme Flooding from Rivers or Sea without Defences Environment Agency - Head Office	April 2008	Quarterly
Flooding from Rivers or Sea without Defences Environment Agency - Head Office	April 2008	Quarterly
Areas Benefiting from Flood Defences Environment Agency - Head Office	April 2008	Quarterly
Flood Water Storage Areas Environment Agency - Head Office	April 2008	Quarterly
Flood Defences Environment Agency - Head Office	April 2008	Quarterly
Waste	**Version**	**Update Cycle**
BGS Recorded Landfill Sites British Geological Survey - National Geoscience Information Service	June 1996	Not Applicable
Historical Landfill Sites Environment Agency - North West Region - Central Area	February 2008	As notified
Integrated Pollution Control Registered Waste Sites Environment Agency - North West Region	April 2008	Quarterly
Licensed Waste Management Facilities (Landfill Boundaries) Environment Agency - North West Region - Central Area	May 2008	Quarterly
Licensed Waste Management Facilities (Locations) Environment Agency - North West Region - Central Area	February 2008	Quarterly
Local Authority Landfill Coverage Hyndburn Borough Council - Environmental Health Department Lancashire County Council - Waste Management Group Pendle Borough Council - Environmental Health Department Ribble Valley Borough Council - Environmental Health Department	 May 2000 May 2000 May 2000 May 2000	 Not Applicable Not Applicable Not Applicable Not Applicable
Local Authority Recorded Landfill Sites Pendle Borough Council - Environmental Health Department Hyndburn Borough Council - Environmental Health Department Lancashire County Council - Waste Management Group Ribble Valley Borough Council - Environmental Health Department	 April 2003 May 2000 May 2000 May 2000	 Not Applicable Not Applicable Not Applicable Not Applicable
Registered Landfill Sites Environment Agency - North West Region - Central Area	March 2003	Not Applicable
Registered Waste Transfer Sites Environment Agency - North West Region - Central Area	March 2003	Not Applicable
Registered Waste Treatment or Disposal Sites Environment Agency - North West Region - Central Area	March 2003	Not Applicable

Data Currency

Hazardous Substances	Version	Update Cycle
Control of Major Accident Hazards Sites (COMAH) Health and Safety Executive	April 2008	Bi-Annually
Explosive Sites Health and Safety Executive	February 2008	Bi-Annually
Notification of Installations Handling Hazardous Substances (NIHHS) Health and Safety Executive	November 2000	Not Applicable
Planning Hazardous Substance Enforcements Lancashire County Council Hyndburn Borough Council - Planning Ribble Valley Borough Council Pendle Borough Council - Planning	 April 2007 January 2008 June 2007 March 2008	 Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update
Planning Hazardous Substance Consents Lancashire County Council Hyndburn Borough Council - Planning Ribble Valley Borough Council Pendle Borough Council - Planning	 April 2007 January 2008 June 2007 March 2008	 Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update
Geological	**Version**	**Update Cycle**
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	April 2008	Bi-Annually
BGS 1:625,000 Solid Geology British Geological Survey - National Geoscience Information Service	August 1996	Not Applicable
Brine Compensation Area Cheshire Brine Subsidence Compensation Board	November 2002	As notified
Coal Mining Affected Areas The Coal Authority - Mining Report Service	January 2006	As notified
Mining Instability Ove Arup & Partners	October 2000	Not Applicable
Natural and Mining Cavities Peter Brett Associates	December 2005	Variable
Potential for Collapsible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2008	Annually
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2008	Annually
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	January 2008	Annually
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2008	Annually
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2008	Annually
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2008	Annually
Radon Potential - Radon Affected Areas British Geological Survey - National Geoscience Information Service	May 2007	Annually
Radon Potential - Radon Protection Measures British Geological Survey - National Geoscience Information Service	May 2007	Annually
Shallow Mining Hazards British Geological Survey - National Geoscience Information Service	August 2002	Not Applicable

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Data Currency

Industrial Land Use	Version	Update Cycle
Contemporary Trade Directory Entries Thomson Directories	February 2008	Quarterly
Fuel Station Entries Catalist Ltd - (Fuel Station Data)	March 2008	Quarterly
Sensitive Land Use	**Version**	**Update Cycle**
Areas of Adopted Green Belt Pendle Borough Council Ribble Valley Borough Council Hyndburn Borough Council	 January 1999 June 1998 November 1996	 As notified As notified As notified
Areas of Unadopted Green Belt Pendle Borough Council Ribble Valley Borough Council Hyndburn Borough Council	 April 2005 March 2004 November 1996	 As notified As notified As notified
Areas of Outstanding Natural Beauty Natural England	January 2008	Annually
Environmentally Sensitive Areas Natural England	January 2008	Annually
Forest Parks Forestry Commission	April 1997	Not Applicable
Local Nature Reserves Natural England	January 2008	Bi-Annually
Marine Nature Reserves Natural England	October 2007	Bi-Annually
National Nature Reserves Natural England	October 2007	Bi-Annually
National Parks Natural England	January 2008	Annually
Nitrate Sensitive Areas Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	December 2003	Not Applicable
Nitrate Vulnerable Zones Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	May 2007	Annually
Ramsar Sites Natural England	October 2007	Bi-Annually
Sites of Special Scientific Interest Natural England	October 2007	Bi-Annually
Special Areas of Conservation Natural England	October 2007	Bi-Annually
Special Protection Areas Natural England	October 2007	Bi-Annually

Geotechnical & Environmental Associates

Data Suppliers

A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	
Environment Agency	
Scottish Environment Protection Agency	
The Coal Authority	
British Geological Survey	
Centre for Ecology and Hydrology	
Countryside Council for Wales	
Scottish Natural Heritage	
Natural England	
Health Protection Agency	
Ove Arup	
Peter Brett Associates	

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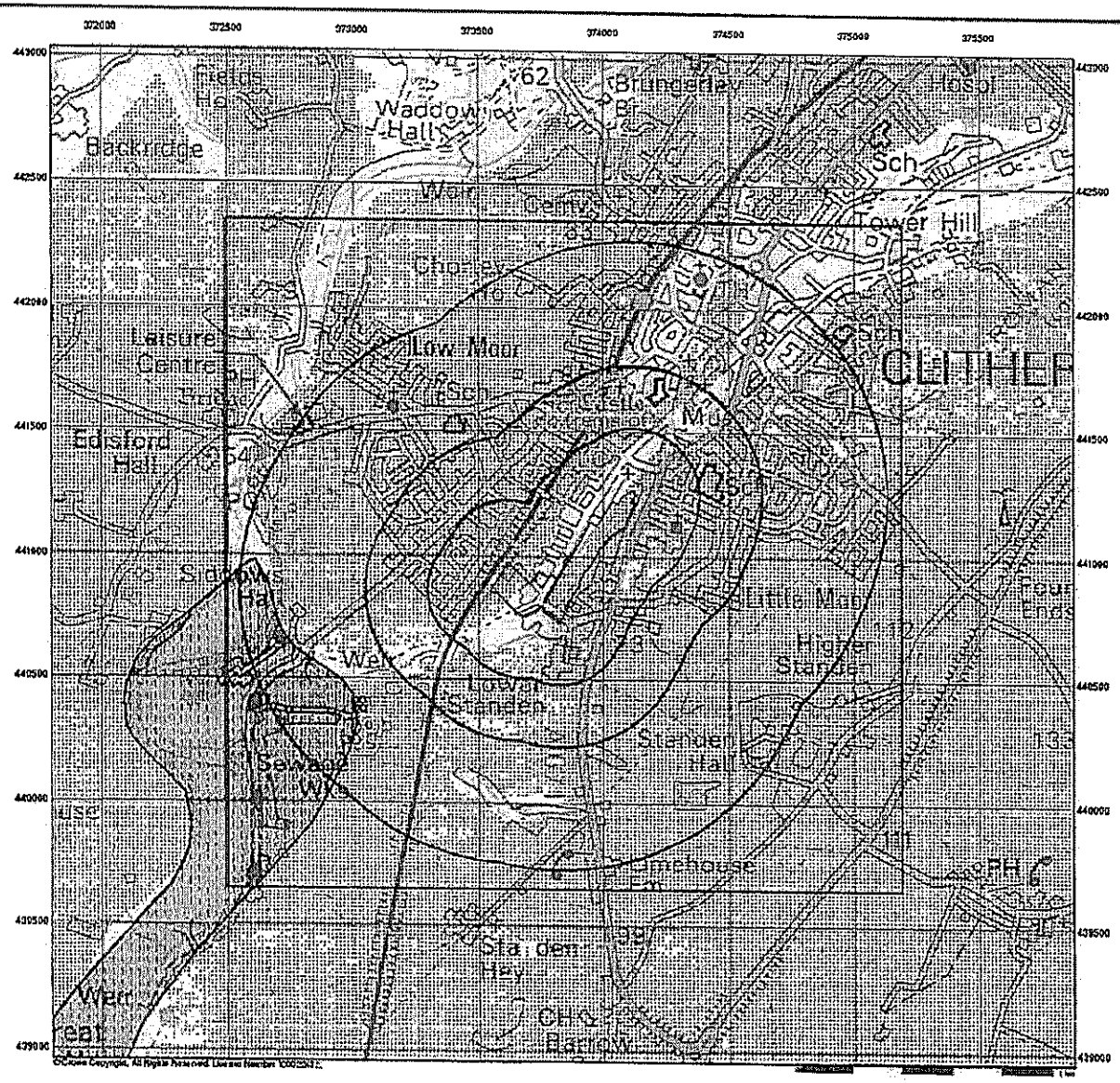
Geotechnical & Environmental Associates

Useful Contacts

Contact	Name and Address	Contact Details
1	**Environment Agency - National Customer Contact Centre (NCCC)** PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 08708 506 506 Email: enquiries@environment-agency.gov.uk
2	**Ribble Valley Borough Council - Environmental Health Department** Council Offices, Church Walk, Clitheroe, Lancashire, BB7 2RA	Telephone: 01200 425111 Fax: 01200 26339 Website: www.ribblevalley.gov.uk
3	**British Geological Survey - Enquiry Service** British Geological Survey, Kingsley Dunham Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
4	**Natural England** Northminster House, Northminster Road, Peterborough, Cambridgeshire, PE1 1UA	Telephone: 0845 600 3078 Fax: 01733 455103 Email: enquiries@naturalengland.org.uk Website: www.naturalengland.org.uk
5	**Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)** Government Buildings, Otley Road, Lawnswood, Leeds, West Yorkshire, LS16 5QT	Telephone: 0113 2613333 Fax: 0113 230 0879
6	**Lancashire County Council - Waste Management Group** Environment Directorate, Guild House, Cross Street, Preston, Lancashire, PR1 8RD	Website: www.lancashire.gov.uk
-	**Health Protection Agency - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards** Chilton, Didcot, Oxfordshire, OX11 0RQ	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@hpa.org.uk Website: www.hpa.org.uk
-	**Landmark Information Group Limited** The Smith Centre, Henley On Thames, Oxfordshire, RG9 6AB	Telephone: 0870 850 6670 Fax: 0870 850 6671 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk

Please note that the Environment Agency / SEPA have a charging policy in place for enquiries.



GEA Geotechnical & Environmental Associates

Groundwater Vulnerability

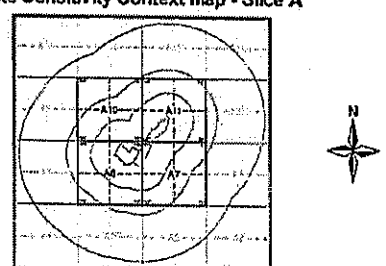
General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

Geological Classes	Soil Classes
Major Aquifer (Highly Permeable)	High (H) 1, 2, 3, U
	Intermediate (I) 1, 2
	Low
Minor Aquifer (Variably Permeable)	High (H) 1, 2, 3, U
	Intermediate (I) 1, 2
	Low
Non Aquifer (Negligibly Permeable)	
Water or Sea	
Drift Deposit	

Site Sensitivity Context Map - Slice A



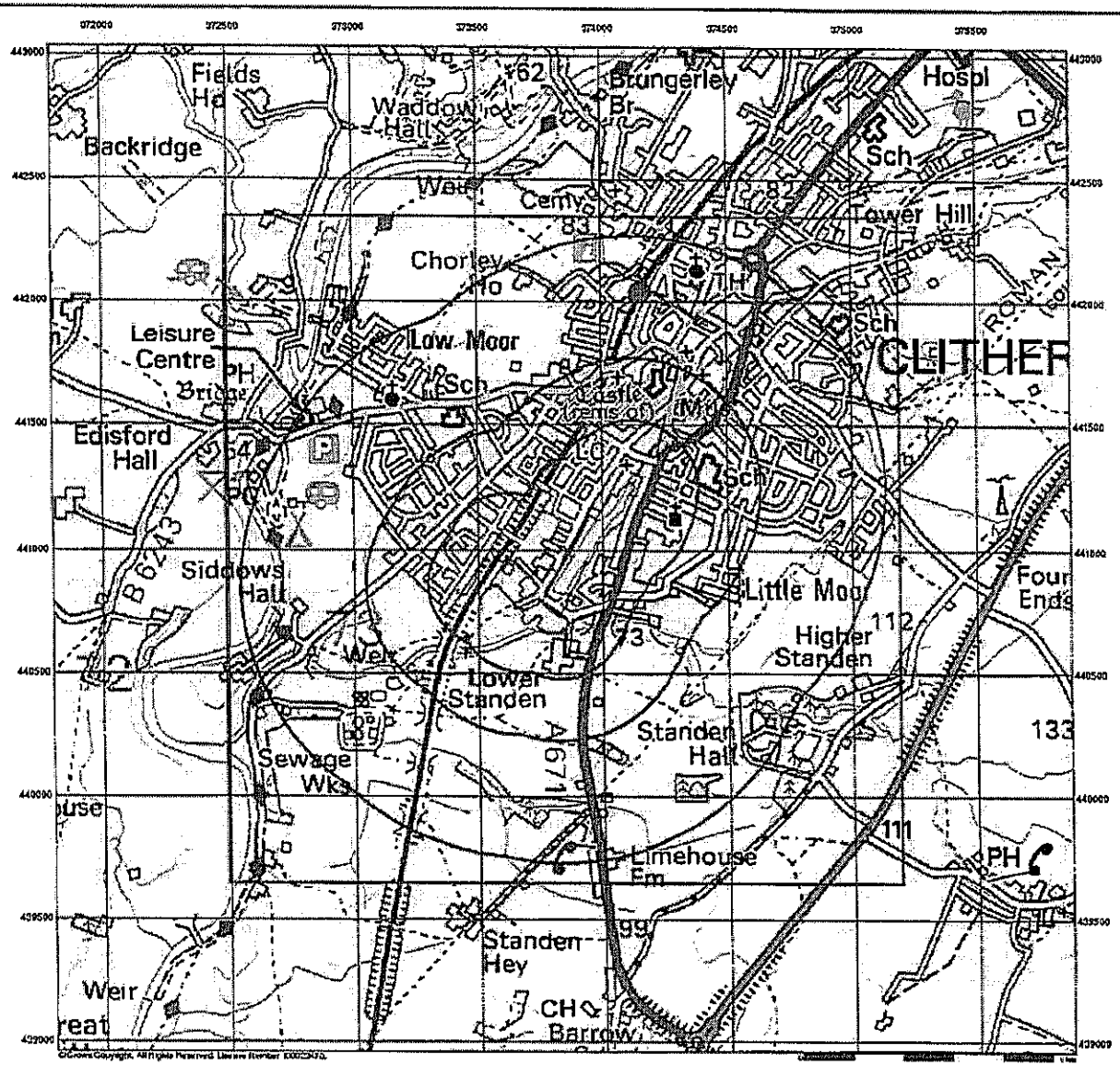
Order Details

Order Number:	25517735_1_1
Customer Ref:	J07352
National Grid Reference:	373860, 441000
Slice:	A
Site Area (Ha):	7.94
Search Buffer (m):	1000

Site Details

Site at 373870, 440980

LANDMARK Information Group
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



GEA Geotechnical & Environmental Associates

Source Protection Zones

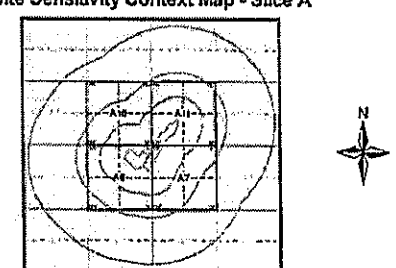
General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

- Source Protection Zone I
- Source Protection Zone II
- Source Protection Zone III
- Zone of Special Interest
- Source Protection Zone Borehole

Site Sensitivity Context Map - Slice A

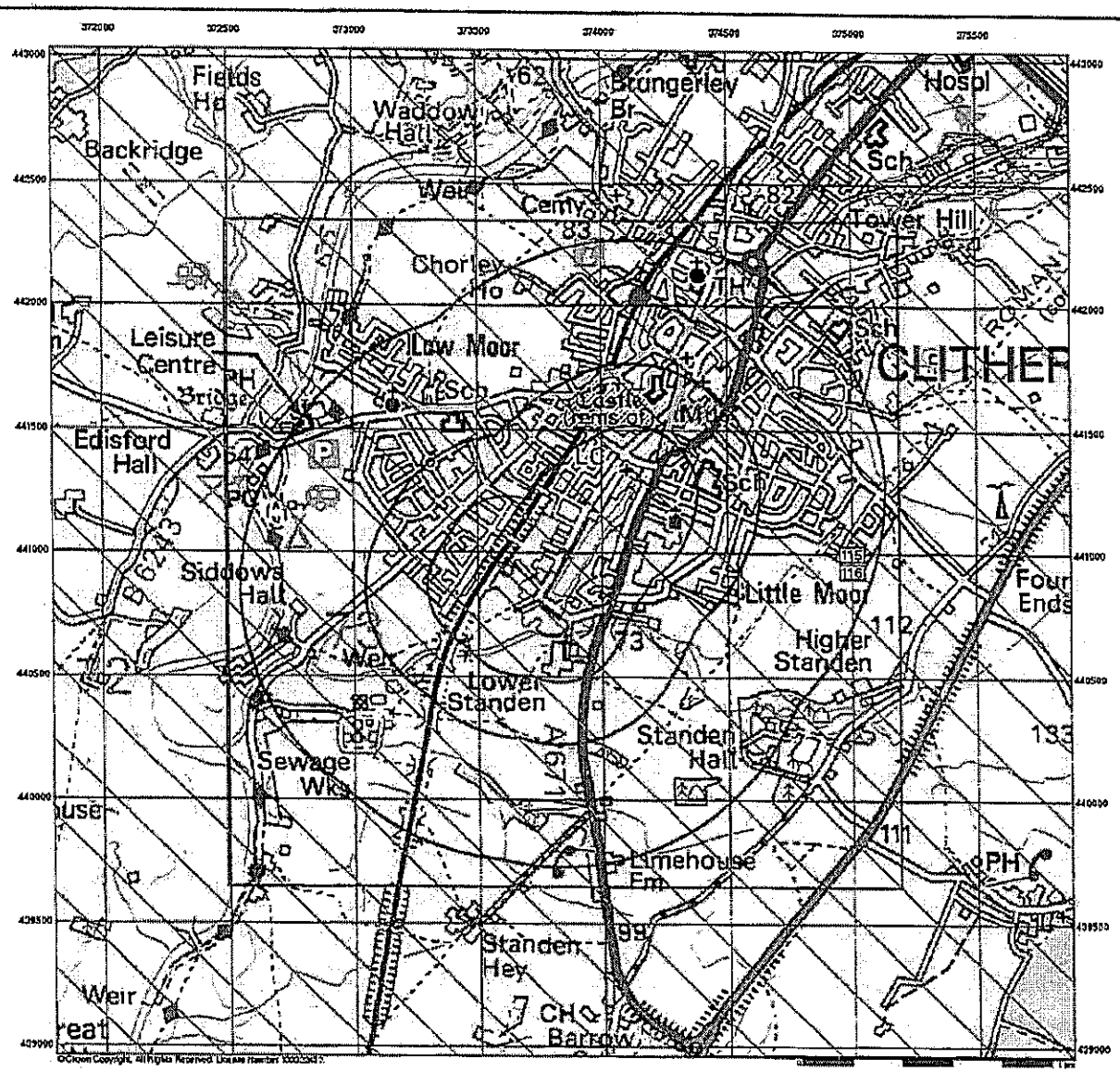


Order Details

Order Number:	25517735_1_1
Customer Ref:	J07352
National Grid Reference:	373860, 441000
Slice:	A
Site Area (Ha):	7.94
Search Buffer (m):	1000

Site Details

Site at 373870, 440980



GEA Geotechnical & Environmental Associates

Sensitive Land Uses

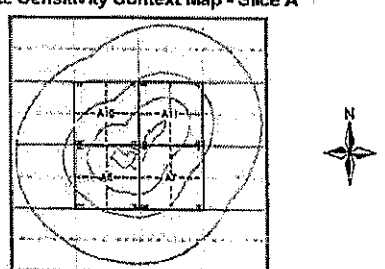
General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Dists | Map ID

Sensitive Land Uses

- Area of Adopted Green Belt
- Area of Unadopted Green Belt
- Area of Outstanding Natural Beauty
- Environmentally Sensitive Area
- Forest Park
- Local Nature Reserve
- Marine Nature Reserve
- National Nature Reserve
- National Park
- Nitrate Sensitive Area
- Nitrate Vulnerable Zone
- Ramsar Site
- Site of Special Scientific Interest
- Special Area of Conservation
- Special Protection Area

Site Sensitivity Context Map - Slice A

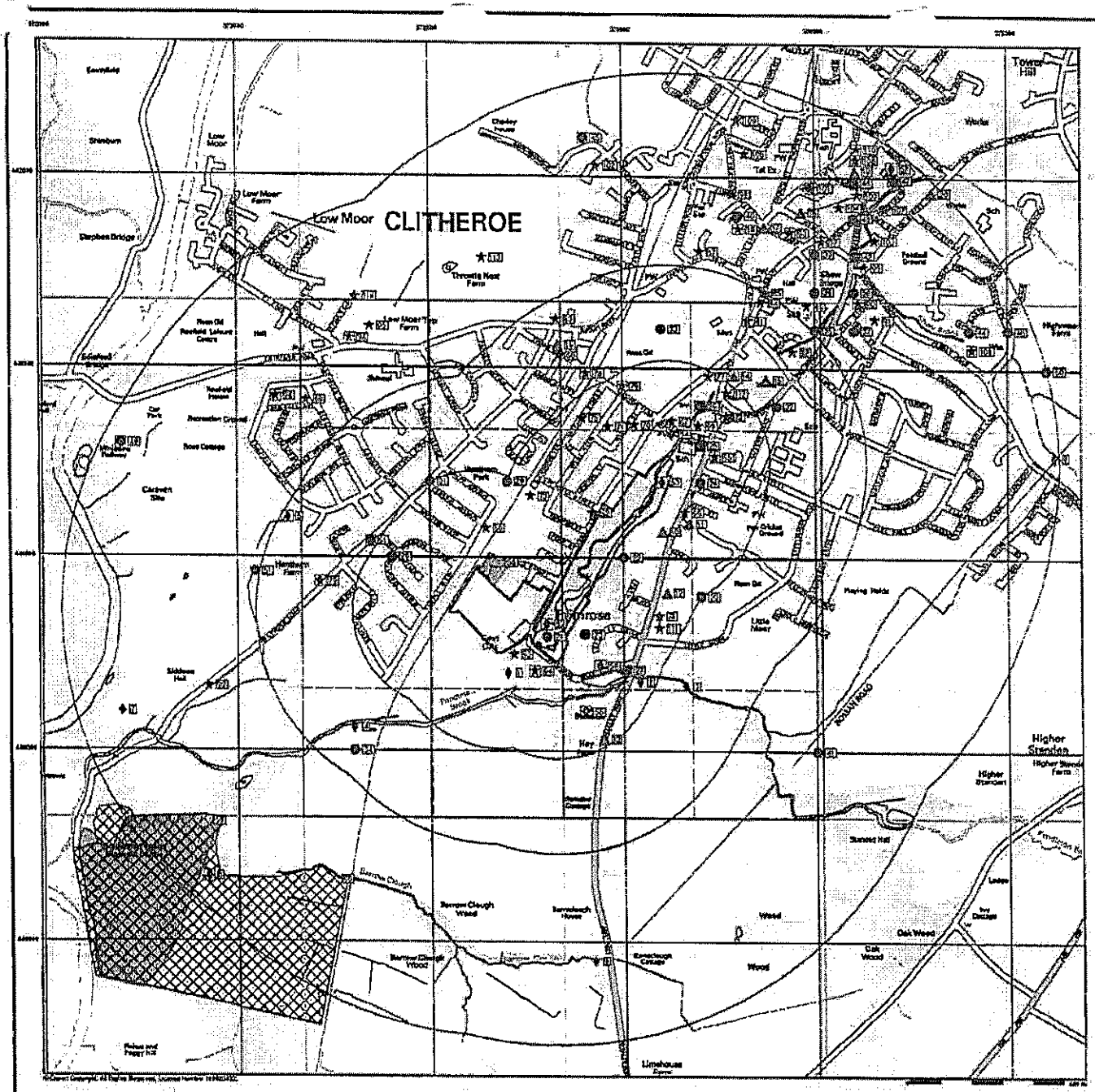


Order Details

Order Number:	25517735_1_1
Customer Ref:	J07352
National Grid Reference:	373860, 441000
Slice:	A
Site Area (Ha):	7.84
Search Buffer (m):	1000

Site Details

Site at 373870, 440980



GEA Geotechnical & Environmental Associates

General

Specified Site · Specified Buffer(s) · Bearing Reference Point · Map ID · Search or Type of Location

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

Geological

- BGS Recorded Mineral Site

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry

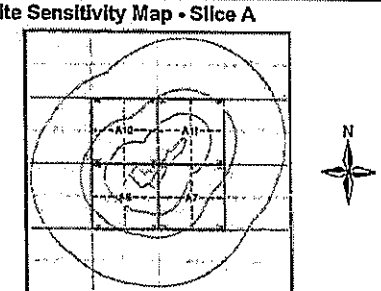
Waste

- BGS Recorded Landfill Site (Location)
- BGS Recorded Landfill Site
- EA Historic Landfill (Point)
- EA Historic Landfill (Polygon)
- Integrated Pollution Control Registered Waste Site
- Licensed Waste Management Facility (Limited Boundary)
- Licensed Waste Management Facility (Location)
- Local Authority Recorded Landfill Site (Location)
- Local Authority Recorded Landfill Site
- Registered Landfill Site
- Registered Landfill Site (Location)
- Registered Landfill Site (Point, Buffered to 100m)
- Registered Landfill Site (Point, Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

Site Sensitivity Map - Slice A



Order Details

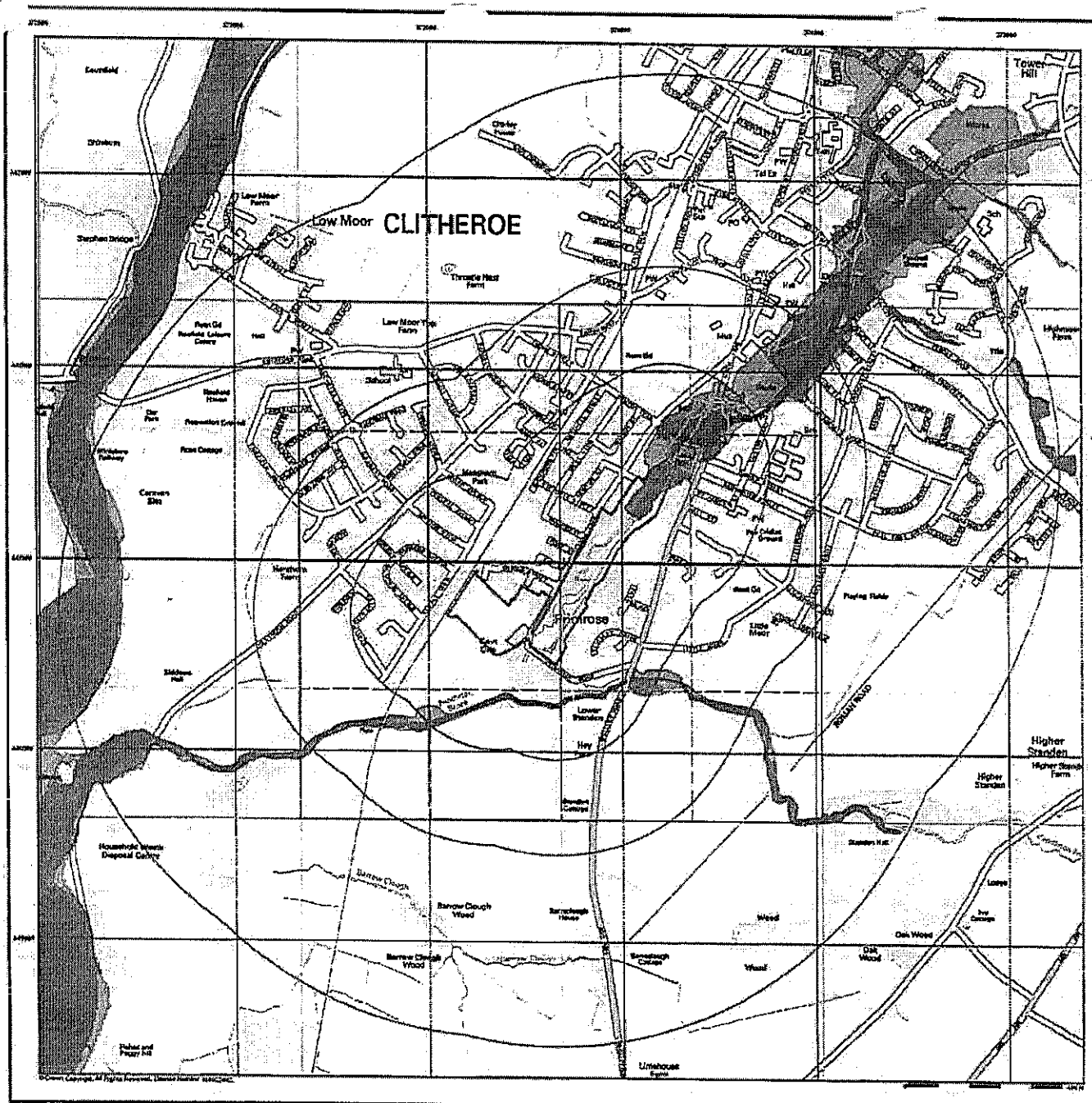
Order Number:	25517735_1_1
Customer Ref:	J07352
National Grid Reference:	373860, 441000
Slice:	A
Site Area (Ha):	7.94
Search Buffer (m):	1000

Site Details

Site at 373870, 440980

LANDMARK Information Group
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

32012056 5p



GEA Geotechnical & Environmental Associates

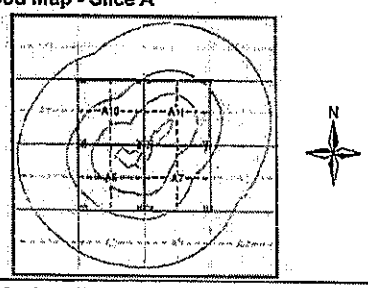
General

- Specified Site
- Specified Buffer(m)
- X Bearing Reference Point

Agency and Hydrological (Flood)

- Extreme Flooding from Rivers or Sea without Defences (Zone 2)
- Flooding from Rivers or Sea without Defences (Zone 3)
- Area Benefiting from Flood Defence
- Flood Water Storage Areas
- Flood Defence

Flood Map - Slice A



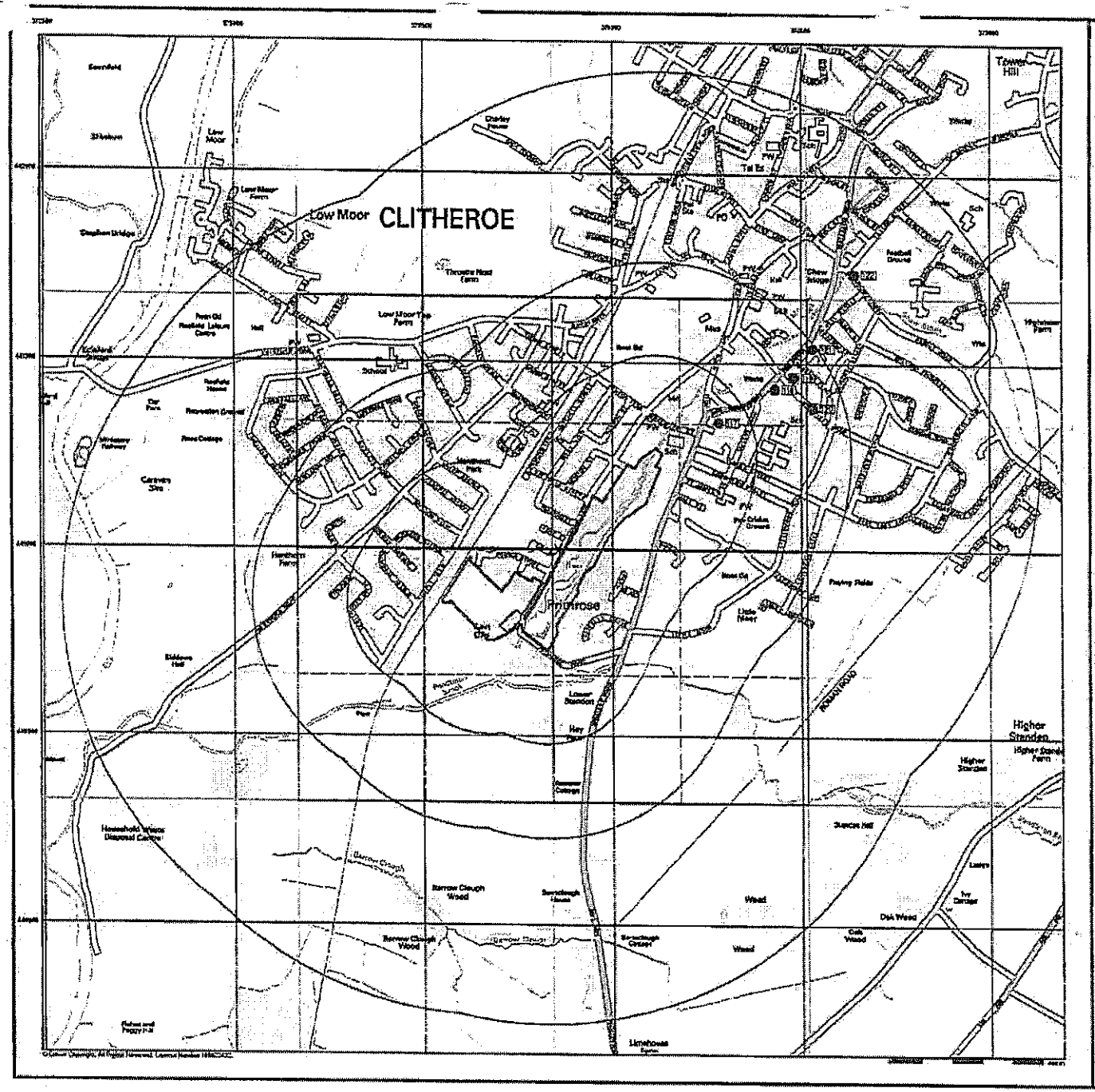
Order Details

Order Number:	25517735_1_1
Customer Ref:	J07352
National Grid Reference:	373860, 441000
Slice:	A
Site Area (Ha):	7.94
Search Buffer (m):	1000

Site Details

Site at 373870, 440980

LANDMARK Information Group
Tel: 0844 844 0952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



GEA Geotechnical & Environmental Associates

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Diamond of Type at Location

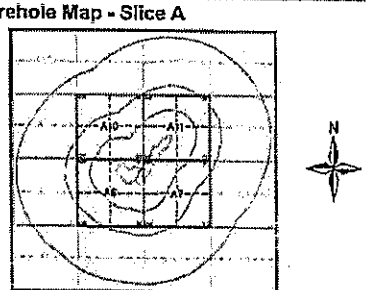
Agency and Hydrological (Boreholes)

- BGS Borehole Depth 0 - 10m
- BGS Borehole Depth 10 - 30m
- BGS Borehole Depth 30m +
- Confidential
- Other

For Borehole Information please refer to the Borehole .csv file which accompanied this slice.

A copy of the BGS Borehole Ordering Form is available to download from the Support section of www.envirocheck.co.uk.

Borehole Map - Slice A



Order Details

Order Number:	25517735_1_1
Customer Ref:	J07352
National Grid Reference:	373860, 441000
Slice:	A
Site Area (Ha):	7.94
Search Buffer (m):	1000

Site Details

Site at 373870, 440980

LANDMARK Information Group
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

Geotechnical & Environmental Associates

Unit 1, Church Farm
Gotham Road, Kingston on Soar
Notts NG11 0DE

tel 01509 674888
fax 01509 674950
email mail@gea-ltd.co.uk
web www.gea-ltd.co.uk

24 February 2011

Our ref: J10234/MC/2

Mr George Mumford
Globe Management Services Ltd
Aintree House
Trident Business Park
Daten Avenue
Risley
Warrington
WA3 6BX

Report on gas monitoring

Dear George

Re: Primrose Village, Clitheroe Lancashire Phase 1

Further to our site investigation report, reference J09126, please find below our recommendations in respect of soil gas following the additional monitoring.

The conclusions and recommendations made in this letter are limited to those that can be made on the basis of the investigation. The results of the work should be viewed in the context of the range of data sources consulted, the number of locations where the ground was sampled and the number of soil, gas or groundwater samples tested; no liability can be accepted for information in other data sources or conditions not revealed by the sampling or testing. Any comments made on the basis of information obtained from the client or other third parties are given in good faith on the assumption that the information is accurate; no independent validation of such information has been made by GEA.

Desk study research indicated that an historic landfill site lies just beyond the northwestern site boundary. The intrusive investigation revealed a relatively limited thickness of made ground beneath which Glacial Till extended to the full depth of investigation. The made ground was found to generally comprise an upper layer of humic slightly clayey sand, often within a matrix of crushed limestone gravel, which extended to depths of between 0.10 m and 0.25 m. This material was generally found to be underlain by greyish brown slightly sandy gravelly clay with scattered or abundant gravel of crushed limestone or brick rubble which was found to extend to depths of up to 0.60 m. This material was underlain by firm pale grey and pale brown mottled slightly sandy clay with scattered gravel and occasional cobbles. This material increased in strength with depth becoming stiff greyish brown slightly sandy gravelly clay with occasional cobbles below a depth of approximately 1.5 m to 2.2 m. Groundwater was only encountered within a single borehole, at 4.4 m and observed to rise to a depth of 4.2 m in 10 minutes. All other boreholes were found to be dry during investigation but subsequent monitoring of the standpipes indicated groundwater at depths of between flooded and 3.10 m.

Desk study research indicated that areas of landfill coverage are present within 250 m of the site and hence gas monitoring was undertaken on an initial three occasions followed by a further six visits. The relevant results are those from Borehole Nos 1, 2, 3 and 14; however Borehole No 3 was vandalised between the end of the 2009 visits and the 2010 work. The results of the gas monitoring are masked by the groundwater level within the borehole standpipes. In most of the monitoring visits the groundwater level was measured to be above the upper level of slots in the standpipe and therefore no flow of soil gas in or out of the standpipe could occur.

Within Borehole Nos 1, 3 and 14, no measurable concentrations of methane were detected in the nine visits and carbon dioxide was measured at concentrations of between <0.1 % and 3.4 % and with a maximum flow of 0.3 l/hr.

Methane was only detected in a single location, Borehole No 2, with mildly depleted oxygen concentrations and groundwater above the uppermost inlet slots on the standpipe. These conditions are consistent with those expected for anaerobic degradation of organic matter within what is effectively a closed cell of trapped water and are therefore not considered to constitute a methane generation risk to the site in general.

It is common practice to consider both the gas concentrations and borehole flow rates to characterise the gas regime on a site. At this site, however where groundwater is present above the slots in the standpipe there is no possibility of soil gas flow and this approach is considered inappropriate

It is considered more appropriate to return to basic principles and derive a source – pathway – receptor model to qualitatively assess the risk posed by soil gas.

CONCEPTUAL SITE MODEL – SOIL GAS

The conceptual site model assesses the risk posed by soil gas against the possible routes by which it could cause harm to a potential receptor. For the soil gas at this site the source, receptor and pathway are considered separately below.

Source

The investigation found no evidence of putrescible material being present. Humic material identified within the made ground is being removed from the building plots as part of the site preparation and therefore there is no on-site source from soil which gas can be generated. The desk study highlighted a historic landfill present beyond the northern site boundary. The source of the concentrations measured can only derive from degradation of organic matter within the stagnant water trapped in the standpipes.

Receptor

The presence of soil gas could pose any harm to the occupants of the buildings following completion and as such they are the only significant receptors.

Pathway

For the risk of soil gas to be realised then a pathway must be present for the gas to reach the end users. At this site the only pathway could be migration through the soil. The groundwater is present at shallow depth upon the largely impermeable Glacial Till. The only route for gas to migrate onto the site would therefore be within the shallow vadose zone above the groundwater. This zone is considered to be sufficiently shallow as to ensure that it has continuity with the atmosphere and will therefore remain aerobic. The depth to groundwater and the largely impermeable Glacial Till beneath are deemed sufficient so as to effectively preclude the possibility of soil gas to migrate through the soil.

CONCLUSION

There is no potential source of soil gas on-site and in addition any humic material will be removed from building footprints during preparation and construction and therefore any potential risk is eliminated. No pathway is considered to exist for soil gas to migrate onto this site from a potential off-site source and therefore no linkage is present from pollutant to receptor.

On this basis there is considered to be a negligible soil gas risk and the recommendation is made that no gas protection measures are necessary.

We trust the information above to be satisfactory; please do not hesitate in contacting us if you would like to discuss the matter further.

Yours sincerely
GEOTECHNICAL & ENVIRONMENTAL ASSOCIATES

Martin Cooper

Encs

Site: Primrose Valley, Clitheroe Date: 9/8/10

Job No.: 43576

Ground Gas Monitoring Results

Borehole	Gas Flow (l/hr)	Methane (%v/v)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		Depth to Water (m bgl)	Depth to Base (m bgl)	PID	Thickness of free phase
		Peak	Steady	Peak	Steady	Low	Steady				
		<0.1	<0.1	1.5	0.6	18.5	18.9	0.690	2.882	—	—
BH3	<0.1	<0.1	<0.1	1.4	1.1	16.8	16.9	1.825	3.840	—	—

Notes:
Monitoring order is from left to right across table.
Monitoring should be for not less than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes
* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring		
Monitored by (name, position):	Stephanie Towers	
Atmospheric Pressure (mB):	1021	
Weather:	Sunny, warm	
Equipment Used:	GA 2000	Last calibrated:
	Dip meter.	Last calibrated:
Other Comments / Observations:		
Boreholes Sampled For Analysis:		

Site:
Job No.:

320120565P

Site:
Job No.:
Date:

Ground Gas Monitoring Results

Borehole	Gas Flow (l/hr)	Methane (%v/v)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		Depth to Water (m bgl)	Depth to Base (m bgl)	PID	Thickness of free phase
		Peak	Steady	Peak	Steady	Low	Steady				
BH1	<0.1	<0.1	<0.1	<0.1	<0.1	19.8	19.9	0.813	3.865	–	–
BH2	<0.1	<0.1	<0.1	1.5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	–	–
BH3	[illegible]	[illegible]	<0.1	1.5	[illegible]	–	[illegible]	[illegible]	[illegible]	–	–

Notes:
Monitoring order is from left to right across table.
Monitoring should be for not less than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes
* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring		
Monitored by (name, position):		
Atmospheric Pressure (mB):		
Weather:		
Equipment Used:		Last calibrated:
		Last calibrated:
Other Comments / Observations:		
Boreholes Sampled For Analysis:		

Site:
Job No.:

Site: Primrose Village, Clitheroe Date: 11/2/10

Job No.: 43576

Ground Gas Monitoring Results

Borehole	Gas Flow (l/hr)	Methane (%v/v)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		Depth to Water (m bgl)	Depth to Base (m bgl)	PID	Thickness of free phase
		Peak	Steady	Peak	Steady	Low	Steady				
BH2	<0.1	<0.1	<0.1	0.2	0.1	19.7	19.8	0.955	3.860	–	–
BH3	<0.1	<0.1	<0.1	1.3	1.1	16.6	17.0	3.099	3.861	–	–

Notes:
Monitoring order is from left to right across table.
Monitoring should be for not less than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes
* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring		
Monitored by (name, position):	Stephanie Towers	
Atmospheric Pressure (mB):	1015	
Weather:	Sunny	
Equipment Used:	GA 2000	Last calibrated:
	Dip meter	
		Last calibrated:
Other Comments / Observations:		
Boreholes Sampled For Analysis:		

Site:
Job No.:

320120595P

GAS SCREENING ASSESSMENT

Well	Date	Methane Peak	Methane Steady	Carbon Dioxide Peak	Carbon Dioxide Steady	Oxygen %v/v	Atmos.	Flow	Response Zone	Depth to Base	Depth to Water	Groundwater Level Comments
		%v/v	%v/v	%v/v	%v/v							
BH1	10/11/2010	<0.1	<0.1	2.0	1.1	11.40	990	-7.7		3.954	0.653	
	25/11/2010	<0.1	<0.1	2.0	1.9	14.0	1003	-8.3		3.846	0.623	
	14/12/2010	<0.1	<0.1	1.4	1.2	13.00	1025	-6.3		3.846	0.557	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				
	02/02/2011	0.10	0.10	0.2	0.2	17.70	1001	4.1		3.850	0.300	
BH2	10/11/2010	0.60	0.30	2.0	0.9	17.10	990	<0.1		3.004	0.575	Gas Tap had been left open prior to monitoring
	25/11/2010	0.20	<0.1	2.5	2.4	16.60	1003	<0.1		2.888	0.567	
	14/12/2010	0.30	0.30	2.9	1.8	15.50	1025	-0.1		2.887	0.640	
	21/12/2010	<0.1	<0.1	2.4	2.3	17.10	997	<0.1		2.888	0.586	
	06/01/2011	0.20	<0.1	2.1	2.1	16.10	986	-4.2		2.888	0.414	
	02/02/2011	0.20	0.20	2.9	2.9	16.20	1001	-0.3		2.890	0.460	
BH3	10/11/2010											BH3 not located, spent 30mins trying to locate.
	25/11/2010											
	14/12/2010											
	21/12/2010											
	06/01/2011											
	02/02/2011											
BH14	10/11/2010	<0.1	<0.1	0.6	0.6	16.30	990	-14.3		3.977	0.105	
	25/11/2010	<0.1	<0.1	3.4	3.4	15.40	1003	<0.1		3.234	1.031	
	14/12/2010	18 1 tonne bags of salt stored over this location										
	21/12/2010	1 tonne bags of salt stored over this location										
	06/01/2011	<0.1	<0.1	1.4	1.3	12.9	986	-10.9		3.695	flooded	
	02/02/2011	Unable to Monitor										
BH11	10/11/2010	<0.1	<0.1	1.6	1.6	15.6	990	-0.2		3.336	0.742	
	25/11/2010	<0.1	<0.1	3.2	2.0	14.2	1003	-3.4		3.552	1.107	
	14/12/2010	<0.1	<0.1	2.5	2.5	10.30	1025	<0.1		3.235	1.029	
	21/12/2010	<0.1	<0.1	3.7	3.7	15.50	997	<0.1		3.230	1.097	
	06/01/2011	<0.1	<0.1	2.0	2.0	5.50	986	<0.1		3.232	0.618	
	02/02/2011	0.10	0.10	3.6	3.6	2.60	1001	-1.2		3.240	0.865	
BH13	10/11/2010	<0.1	<0.1	4.3	1.5	14.10	990	-7.2		3.672	0.920	
	25/11/2010	<0.1	<0.1	0.90	0.90	17.20	1003	-17.8		3.703	0.075	
	14/12/2010	<0.1	<0.1	1.10	0.90	15.80	1025	<0.1			1.055	
	21/12/2010	<0.1	<0.1	2.50	2.50	15.10	997	<0.1		3.571	1.212	
	06/01/2011	<0.1	<0.1	1.6	0.9	16.00	986	6.0		3.556	0.771	
	02/02/2011	0.10	0.10	2.80	2.80	11.50	1001	3.0		3.565	0.910	

Notes

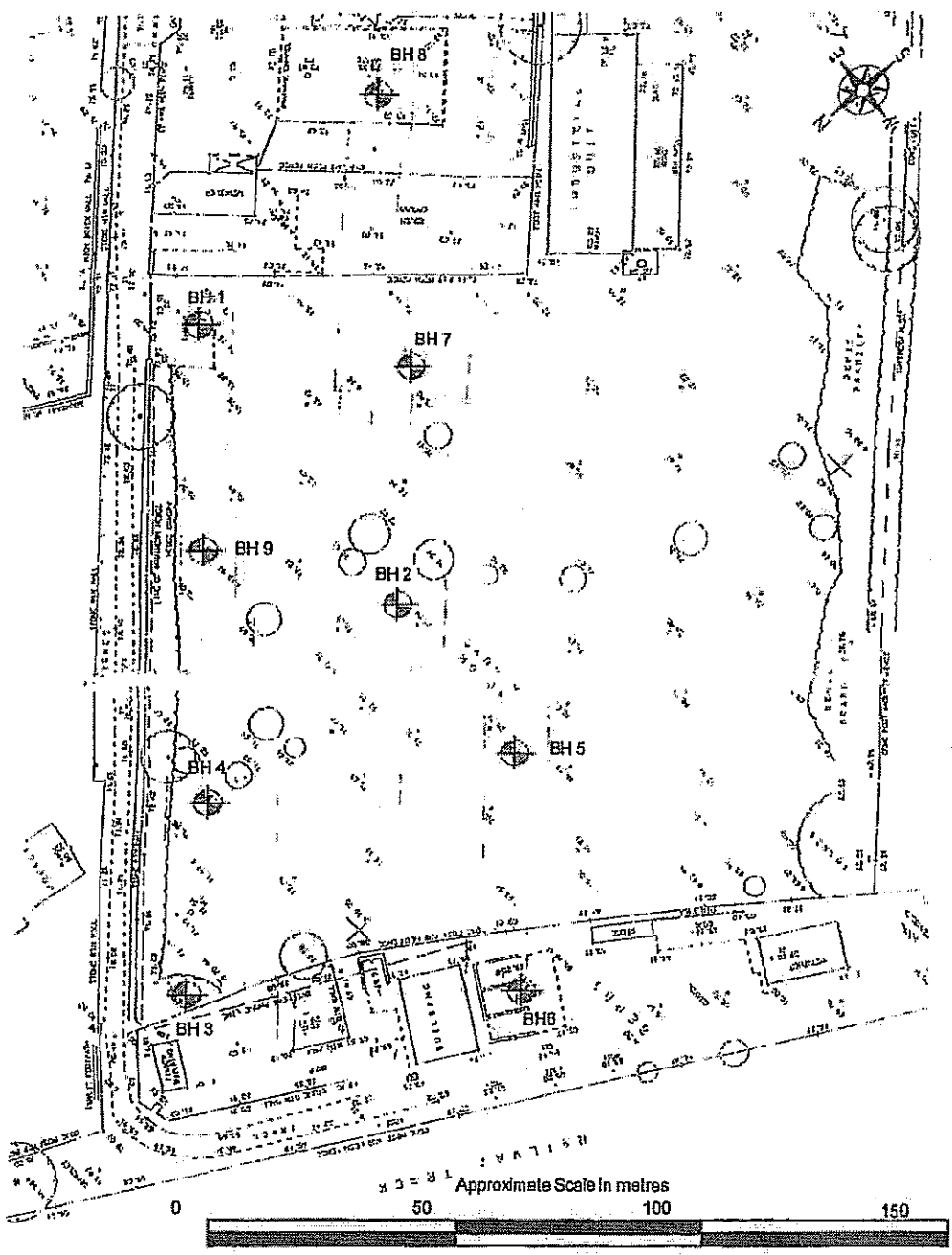
NR = Not recorded

Values in Bold exceed the CO_2 Building Regulations threshold (>1.5%)

Values in Red exceed the Buildings Regulations Action Level (CO_2 >5.0% and CH_4 >1.5%)

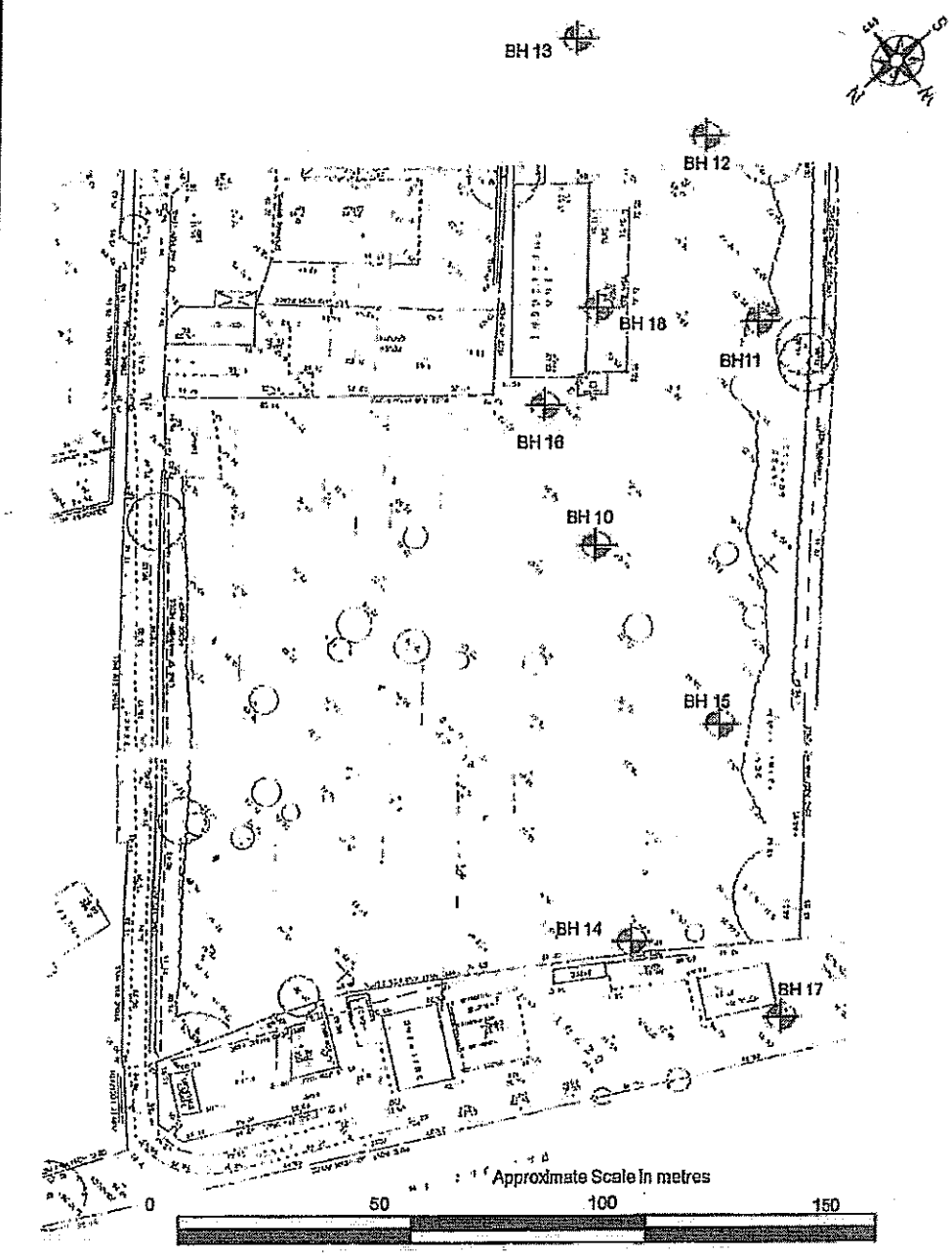
320120565P

GEA Geotechnical & Environmental Associates	Tytlershanger House Coursers Road St Albans AL4 0PG	**Site Plan**
Site : Primrose Village, Clitheroe, Lancs		Job Number J09126B
Client : Beck Developments		Sheet 1 / 1
Engineer : Beck Developments		



Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site Plan**

Site	: Primrose Village Phase 2, Clitheroe, Lancs	Job Number J09126F
Client	: Beck Developments Limited	Sheet 1/1
Engineer	:	



3201205 65P

Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site Plan**

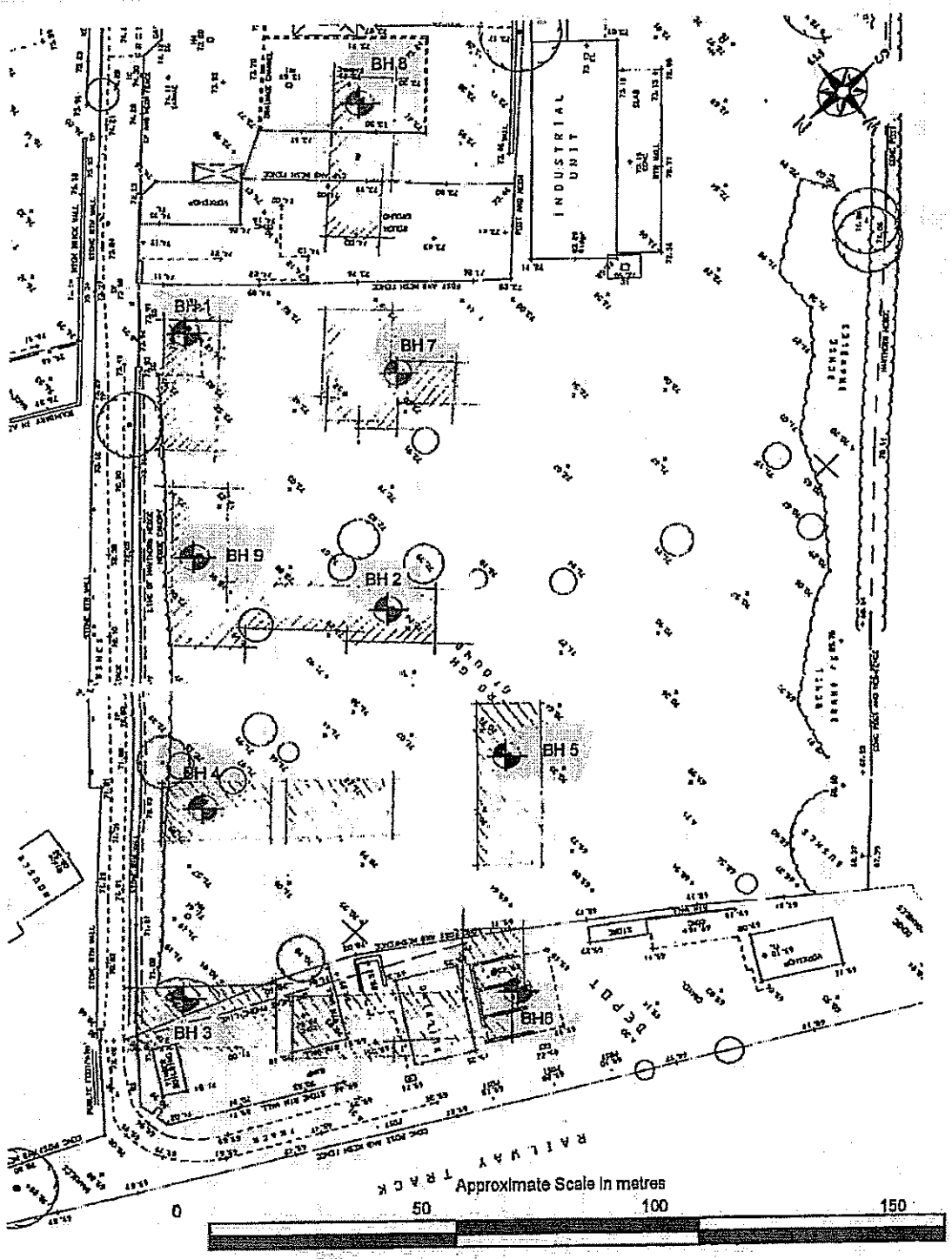
Site : Primrose Village, Clitheroe, Lancs

Client : Beck Developments

Engineer : Beck Developments

Job Number J091268

Sheet 1/1



Site:	[illegible]
Job No.:	[illegible]
Date:	[illegible]

Ground Gas Monitoring Results

Borehole	Gas Flow (l/hr)	Methane (%v/v)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		Depth to Water (m bgl)	Depth to Base (m bgl)	PID	Thickness of free phase
		Peak	Steady	Peak	Steady	Low	Steady				
BH1	<0.1	<0.1	<0.1	<0.1	<0.1	19.8	19.9	0.813	3.865	—	—
BH2	<0.1	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	1.500	[illegible]	—	—
SW3	[illegible]	[illegible]	[illegible]	[illegible]	—	[illegible]	[illegible]	[illegible]	3.220	—	—

Notes:
Monitoring order is from **left to right** across table.
Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes
* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring		
Monitored by (name, position):	[illegible]	
Atmospheric Pressure (mB):	999	
Weather:	[illegible]	
Equipment Used:	GA2000	**Last calibrated:**
	[illegible]	**Last calibrated:**
Other Comments / Observations:		
Boreholes Sampled For Analysis:		

Site: Primrose Village, Clitheroe Date: 11/2/10

Job No.: 43576

REC

Ground Gas Monitoring Results

Borehole	Gas Flow (l/hr)	Methane (%v/v)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		Depth to Water (m bgl)	Depth to Base (m bgl)	PID	Thickness of free phase
		Peak	Steady	Peak	Steady	Low	Steady				
BH1	<0.1	<0.1	<0.1	0.2	0.1	19.7	19.8	0.935	3.860	–	–
BH2	<0.1	<0.1	<0.1	0.7	0.5	19.7	19.7	0.703	2.900	–	–
BH3	<0.1	<0.1	<0.1	1.3	1.1	16.6	17.0	3.093	3.861	–	–

Notes:

Monitoring order is from **left to right** across table.

Monitoring should be for **not** less than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring		
Monitored by (name, position):	Stephanie Towers	
Atmospheric Pressure (mB):	1015	
Weather:	Sonny	
Equipment Used:	GA 2000	Last calibrated:
	Dip meter	
		Last calibrated:
Other Comments / Observations:		
Boreholes Sampled For Analysis:		

Site:

Job No.:

3012056 5P

Site: Primrose Village, Clutterbe Date: 9/3/10
Job No.: 43576

REL

Ground Gas Monitoring Results

Borenole	Gas Flow (l/hr)	Methane (%v/v)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		Depth to Water (m bgl)	Depth to Base (m bgl)	PID	Thickness of free phase
		Peak	Steady	Peak	Steady	Low	Steady				
BH1	<0.1	<0.1	<0.1	0.4	0.4	19.3	19.3	~~0.819~~ 1.019	3.848	–	–
BH2	<0.1	<0.1	<0.1	1.5	0.6	18.5	18.9	0.690	2.882	–	–
BH3	<0.1	<0.1	<0.1	1.4	1.1	16.8	16.9	1.825	3.840	–	–

Notes:
Monitoring order is from left to right across table.
Monitoring should be for not less than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes
* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring		
Monitored by (name, position):	Stephanie Towers	
Atmospheric Pressure (mB):	1021	
Weather:	Sunny, warm	
Equipment Used:	GA 2000	Last calibrated:
	Dip meter.	
		Last calibrated:
Other Comments / Observations:		
Boreholes Sampled For Analysis:		

320120565 P

Geotechnical & Environmental Associates Tyttenhanger House Coursers Road St Albans AL4 0PG	Site Primrose Village, - Phase 1, Clitheroe, Lancs	Number BH1	
Excavation Method Dynamic Opendrive sampler rig (Terrier 2000) cased to 1.0m	Dimensions	Ground Level (mOD)	Client Beck Developments Limited
	Location	Dates 20/01/2010	Engineer

Job Number J09126B

Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.10)	Made Ground (greyish brown humic sandy clay with coarse gravel of broken limestone)		
0.30	D1				0.10 (0.40)			
0.60	D2				0.50	Made Ground (pale grey coarse gravel of broken limestone over brick fragments)		
1.00-1.45	SPT N=14	DRY	2,3/5,3,3,3		(1.70)	Firm becoming stiff by approximately 1.0m pale grey, pale brown and greyish brown mottled slightly sandy CLAY with occasional gravel and cobbles of limestone		
1.40	D3							
2.00-2.45	CPT N=28	DRY	1,4/5,7,8,8		2.20	Stiff becoming very stiff by approximately 2.5m greyish brown mottled slightly sandy gravelly CLAY with scattered cobbles of limestone		
3.00-3.45	SPT N=39	DRY	7,8/7,7,10,15		(2.25)			
4.00-4.45	SPT N=35	DRY	4,6/7,8,9,11 slow(1) at 4.30m, rose to 4.20m in 20 mins.		4.45	Complete at 4.45m		

Remarks
Standpipe piezometer installed with response zone from 1.0m to 4m with bentonite seal above

Scale (approx)	Logged By
1:50	MRP

Figure No. J09126B.BH1

Geotechnical Engineering Limited Tyttenhanger House Coursers Road St Albans AL4 0PG	Site Primrose Village, - Phase 1, Clitheroe, Lancs		Number BH2
Excavation Method Dynamic Opendrive sampler rig (Terrier 2000) cased to 1.0m	Dimensions	Ground Level (mOD)	Client Beck Developments Limited	Job Number J09126B
	Location	Dates 20/01/2010	Engineer	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.25) 0.25	Made Ground (greyish brown humic clayey sand with coarse gravel of broken limestone and brick fragments)		
					(0.45)	Made Ground (brick ruble in a matrix of grey sandy clay)		
0.65	D1				0.70 (0.40)	Firm dark grey becoming greenish grey slightly sandy CLAY with occasional gravel		
1.00-1.45	SPT N=7	DRY	1 1/2,1 2,2		1.10	Firm pale brown slightly sandy CLAY with occasional gravel with a pocket of soft very sandy silty clay from 1.5m to 1.55m		
1.50	D2				(0.80)			
2.00-2.45	CPT N=18	DRY	6,8/5,4,4,5		1.90 (1.24)	Stiff greyish brown mottled grey slightly sandy gravelly CLAY with scattered cobbles of limestone		
3.00-3.14	CPT 25*/100 50/35	DRY	15,10/50		3.14	Complete at 3.14m		

Remarks
Standpipe piezometer installed with response zone from 1.0m to 3m with bentonite seal above
Groundwater not encountered

Scale (approx)	Logged By
1:50	MRP

Figure No.
J09126B.BH2

320120565 P

Geotechnical & Environmental Associates Tytenhanger House Coursers Road St Albans AL4 0PG			Site Primrose Village, - Phase 1, Clitheroe, Lancs	Number BH3
Excavation Method Dynamic Opendrive sampler rig (Terrier 2000) cased to 1.0m	Dimensions	Ground Level (mOD)	Client Beck Developments Limited	Job Number J09126B
	Location	Dates 20/01/2010	Engineer	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.10)	Made Ground (greyish brown humic sandy clay with roots)		
0.10 0.30	D1 D2				0.10 (1.00)	Firm becoming stiff by approximately 1.0m pale grey, pale brown and greyish brown mottled slightly sandy gravelly CLAY with occasional cobbles of limestone		
1.00-1.45	SPT N=16	DRY	4,2/3 4,5,4		1.10	Driving cobble - no recovery		
2.00-2.44	CPT 50/290	DRY	6,12/11,12,13,14		(1.50)			
3.00-3.45	CPT N=30	DRY	4,6/6,7,8,9		2.60	Very stiff greyish brown mottled pale grey slightly sandy gravelly CLAY with scattered cobbles of limestone		
3.50	D3				(1.85)			
4.00-4.45	CPT N=34	DRY	3,6/7,7,9,11		4.45	Complete at 4.45m		

Remarks
Groundwater not encountered
Standpipe piezometer installed with response zone from 1.0m to 4m with bentonite seal above
Cobble driven from 1.1m to 2.6m - no recovery

Scale (approx)	Logged By
1:50	MRP

Figure No.
J09126B.BH3

GEA Ltd. Geotechnical Associates	Tyttenhanger House, Coursers Road, St Albans, AL4 0PG	Site: Primrose Village, - Phase 1, Clitheroe, Lancs	Number: BH4
Excavation Method: Dynamic Opendrive sampler rig (Terrier 2000) cased to 1.0m	Dimensions	Ground Level (mOD)	Client: Beck Developments Limited	Job Number: J09126B
	Location	Dates: 20/01/2010	Engineer	Sheet: 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10	D1				(0.25) 0.25	Made Ground (grey gravel of crushed limestone in a matrix of brown humic sandy clay)		
					(0.30) 0.55	Made Ground (firm greyish brown slightly sandy gravelly clay with scattered brick fragments)		
0.60	D2				(0.10) 0.65	Made Ground (sandstone cobble)		
1.00-1.45	SPT N=15	DRY	1,2/2,3,6,4		(1.25)	Firm becoming pale grey, pale brown and greyish brown mottled slightly sandy gravelly CLAY with occasional cobbles of limestone		
1.60	D3							
2.00-2.44	CPT 26/290	DRY	7,7/4,5,8,9		1.90 (0.40) 2.30	Pale brown sandstone COBBLE in a matrix of greyish brown sandy clay		
					(1.00)	Driving cobble - no recovery		
3.00-3.45	CPT N=24	DRY	4,7/6,5,6,7		3.30 (0.70) 4.00	Very stiff greyish brown mottled pale grey slightly sandy gravelly CLAY with scattered cobbles of limestone		
						Complete at 4.00m		

Remarks
Cobble driven from 2.3m to 3.3m - no recovery
Groundwater not encountered

Scale (approx)	Logged By
1:50	MRP

Figure No. J09126B.BH4

3201205 65 P

Geotechnical & Environmental Association Tyttenhanger House Coursers Road St Albans AL4 0PG		Site Primrose Village, - Phase 1, Clitheroe, Lancs	Number BH5
Excavation Method Dynamic Opendrive sampler rig (Terrier 2000) cased to 1.0m	Dimensions	Ground Level (mOD)	Client Beck Developments Limited	Job Number J09126B
	Location	Dates 20/01/2010	Engineer	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.10)	Made Ground (very soft greyish brown humic sandy clay)		
					0.10			
					(0.50)	Made Ground (firm greyish brown slightly sandy gravelly clay with scattered brick and tarmac fragments)		
0.40	D1				0.60			
0.80	D2					Firm pale grey, pale brown and greyish brown mottled slightly sandy gravelly CLAY with occasional cobbles of limestone		
1.00-1.45	SPT N=18	DRY	2,3/3,5,4,6		(0.85)			
					1.45			
1.60	D3					Very stiff greyish brown mottled pale grey slightly sandy gravelly CLAY with scattered cobbles of limestone		
2.00-2.44	CPT 16/200	DRY	2,2/3,4,4,5		(1.85)			
3.00-3.30	CPT 50/145	DRY	1.4/5,45		3.30			
						Complete at 3.30m		

Remarks	Scale (approx)	Logged By
Groundwater not encountered	1:50	MRP
	Figure No. J09126B.BH5	

Geotechnical & Environmental Associates Tyttenhanger House Coursers Road St Albans AL4 0PG		Site Primrose Village - Phase 1, Clitheroe, Lancs	Number BH6
Excavation Method Dynamic Opendrive sampler rig (Terrier 2000) cased to 1.0m	Dimensions	Ground Level (mOD)	Client Beck Developments Limited	Job Number J09126B
	Location	Dates 21/01/2010	Engineer	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.18) 0.18	Made Ground (Concrete)		
					(0.12) 0.30	Made Ground (Pale grey and brown sandy limestone gravel sub-base)		
0.50	D1							
0.70	D2				(0.10) 0.40	Made Ground (Greyish brown sandy clay with occasional gravel and brick fragments)		
1.00-1.45	SPT N=10	DRY	1,2/2,3,2,3		(0.20) 0.60	Made Ground (Pale brown very sandy clay with scattered gravel and rare fragments of clinker and brick)		
					(0.40) 1.00	Soft pale grey and grey very silty sandy CLAY with shell fragments and scattered gravel		
1.70	D3				(0.80)			
2.00-2.35	CPT 50/195	DRY	1,2/20,21,9		1.80	Stiff pale brown and grey mottled slightly sandy gravelly CLAY with occasional cobbles of limestone		
						Driving cobble - no recovery		
					(1.20)			
3.00-3.45	CPT N=29	DRY	4,10/6,6,8,9		3.00	Stiff greyish brown mottled pale grey slighily sandy gravelly CLAY with scattered cobbles of limestone		
					(1.45)			
4.00-4.45	CPT N=41	DRY	6,6/13,8,9,11		4.45	Complete at 4.45m		

Remarks
Cobble driven from 1.8 m to 3.0 m - no recovery
Groundwater at 1.24 m on completion

Scale (approx)	Logged By
1:50	MC

Figure No.
J09126B.BH6

320120565 P

Geotechnical & Environmental Association Tytlenhanger House Coursers Road St Albans AL4 0PG	Site Primrose Village, - Phase 1, Clitheroe, Lancs	Number BH7	
Excavation Method Dynamic Opendrive sampler rig (Terrier 2000) cased to 1.0m	Dimensions	Ground Level (mOD)	Client Beck Developments Limited	Job Number J09126B
	Location	Dates 21/01/2010	Engineer	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	Made Ground (Pale grey and pale brown sandy limestone gravel)		
0.20	D1				0.30	Stiff grey becoming brown by 1.3 m silty sandy gravelly CLAY		
0.50	D2							
					(1.25)			
1.00-1.45	SPT N=17	DRY	1,4/4,4,3,6					
1.50	D3				1.55	Stiff greyish brown mottled pale grey sandy gravelly CLAY with scattered cobbles of limestone		
2.00-2.45	SPT N=16	DRY	3,2/4,4,4,4					
2.60	D4							
					(2.90)			
3.00-3.45	SPT N=35	DRY	3,4/5,6,12,12					
4.00-4.45	SPT N=29	DRY	4,6/6,7,7,9					
					4.45	Complete at 4.45m		

Remarks	Scale (approx)	Logged By
Groundwater at 4.34 m on completion	1:50	MC
	Figure No. J09126B.BH7	

GEA Ltd
Environmental Assessment

Tytlenhanger House
Coursers Road
St Albans
AL4 0PG

Site	Number
Primrose Village, - Phase 1, Clitheroe, Lancs	BH8

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Dynamic Opendrive sampler rig (Terrier 2000) cased to 1.0m			Beck Developments Limited	J09128B
	Location	Dates 21/01/2010	Engineer	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.15)	Made Ground (Tarmac)		
0.30	D1				0.15 (0.20) 0.35	Made Ground (Pale brown sandy limestone gravel sub-base with occasional fragments of tarmac and clinker)		
0.60	D2					Soft becoming firm pale orange brown very sandy CLAY		
1.00-1.45	SPT N=21	DRY	1,3/3,7,7,4		(1.15)			
1.10	D3				1.50			
1.90	D4					Stiff greyish brown mottled pale grey sandy gravelly CLAY with scattered cobbles of limestone and occasional pockets of pale brown sand		
2.00-2.45	SPT N=22	DRY	3,3/5 5,5,7					
2.60	D5							
3.00-3.45	SPT N=37	DRY	4,4/4,10,12,11		(2.95)			
4.00-4.45	SPT 50/295	DRY	4,4/6,8,11,25		4.45	Complete at 4.45m		

Remarks
Groundwater at 4.10 m on completion

Scale (approx)	Logged By
1:50	MC

Figure No.
J09128B.BH8

320120565P

Geotechnical & Environmental Associates Tyttenhanger House Coursers Road St Albans AL4 0PG	Site Primrose Village, - Phase 1, Clitheroe, Lancs	Number BH9	
Excavation Method Dynamic Opendrive sampler rig (Terrier 2000) cased to 1.0m	Dimensions	Ground Level (mOD)	Client Beck Developments Limited
Job Number J09126B	Location	Dates 21/01/2010	Engineer
Sheet 1/1			

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20) 0.20	Made Ground (Pale greyish brown pale grey and pale brown sandy limestone gravel sub-base)		
0.30	D1				(0.25) 0.45	Made Ground (Black and dark brownclay with fragments of slate, sandstone and mortar)		
0.90	D2				(0.95)	Stiff greenish brown and greyish brown sandy CLAY with scattered gravel		
1.00-1.45	CPT N=19	DRY	5,8/5,4,5,5		1.40 (0.15) 1.55	Grey COBBLES of limestone		
1.45	D3					Driving cobble - no recovery		
1.60	D4							
2.00-2.45	CPT N=28	DRY	4,4/8,5,6,11		(1.45)			
3.00-3.45	CPT N=35	DRY	3,6/7,9,9,10		3.00	Stiff greyish brown mottled pale grey sandy gravelly CLAY with scattered cobbles of limestone and occasional pockets of pale brown sand		
3.60	D5				(1.45)			
4.00-4.45	SPT N=41	DRY	9,9/8,13,10,10		4.45	Complete at 4.45m		

Remarks
Cobble driven from 2.0 m to 3.0 m - no recovery
Groundwater at 3.4 m on completion

Scale (approx)	Logged By
1:50	MC

Figure No.
J09126B.BH9

Geotechnical & Environmental Associates
Tyttenhanger House
Coursers Road
St Albans
AL4 0PG

Standard Penetration Test Results

Site : Primrose Village - Phase 1, Clitheroe, Lancs

Client : Beck Developments Limited

Engineer:

Job Number J09126B

Sheet 1 / 1

Borehole Number	Base of Borehole (m)	End of Seating Drive (m)	End of Test Drive (m)	Test Type	Seating Blows per 75mm		Blows for each 75mm penetration				Result	Comments
					1	2	1	2	3	4		
BH1	1.00	1.15	1.45	SPT	2	3	5	3	3	3	N=14	
BH1	2.00	2.15	2.45	CPT	1	4	5	7	8	8	N=28	
BH1	3.00	3.15	3.45	SPT	7	8	7	7	10	15	N=39	
BH1	4.00	4.15	4.45	SPT	4	6	7	8	9	11	N=35	
BH2	1.00	1.15	1.45	SPT	1	1	2	1	2	2	N=7	
BH2	2.00	2.15	2.45	CPT	6	8	5	4	4	5	N=18	
BH2	3.00	3.10	3.14	CPT	15	10	50				25*/100mm 50/35mm	
BH3	1.00	1.15	1.45	SPT	4	2	3	4	5	4	N=16	
BH3	2.00	2.15	2.44	CPT	6	12	11	12	13	14	50/290mm	
BH3	3.00	3.15	3.45	CPT	4	6	6	7	8	9	N=30	
BH3	4.00	4.15	4.45	CPT	3	6	7	7	9	11	N=34	
BH4	1.00	1.15	1.45	SPT	1	2	2	3	6	4	N=15	
BH4	2.00	2.15	2.44	CPT	7	7	4	5	8	9	26/290mm	
BH4	3.00	3.15	3.45	CPT	4	7	6	5	6	7	N=24	
BH5	1.00	1.15	1.45	SPT	2	3	3	5	4	6	N=18	
BH5	2.00	2.15	2.44	CPT	2	2	3	4	4	5	16/290mm	
BH5	3.00	3.15	3.30	CPT	1	4	5	45			50/145mm	
BH6	1.00	1.15	1.45	SPT	1	2	2	3	2	3	N=10	
BH6	2.00	2.15	2.35	CPT	1	2	20	21	9		50/185mm	
BH6	3.00	3.15	3.45	CPT	4	10	6	6	8	9	N=29	
BH6	4.00	4.15	4.45	CPT	6	6	13	8	9	11	N=41	
BH7	1.00	1.15	1.45	SPT	1	4	4	4	3	6	N=17	
BH7	2.00	2.15	2.45	SPT	3	2	4	4	4	4	N=16	
BH7	3.00	3.15	3.45	SPT	3	4	5	6	12	12	N=35	
BH7	4.00	4.15	4.45	SPT	4	6	8	7	7	9	N=29	
BH8	1.00	1.15	1.45	SPT	1	3	3	7	7	4	N=21	
BH8	2.00	2.15	2.45	SPT	3	3	5	5	5	7	N=22	
BH8	3.00	3.15	3.45	SPT	4	4	4	10	12	11	N=37	
BH8	4.00	4.15	4.45	SPT	4	4	6	8	11	25	50/295mm	
BH9	1.00	1.15	1.45	CPT	5	6	5	4	5	5	N=19	
BH9	2.00	2.15	2.45	CPT	4	4	6	5	6	11	N=28	
BH9	3.00	3.15	3.45	CPT	3	6	7	9	9	10	N=35	
BH9	4.00	4.15	4.45	SPT	9	9	9	13	10	10	N=41	

GEA
Tyttenhanger House
Coursers Road
St Albans Herts
AL4 0PG

FAO Martin Cooper

LABORATORY TEST REPORT

Results of analysis of 8 samples received 29 January 2010

Clitheroe Primrose Village - J09126/order 1

Chemtest

Report Date
02 February 2010

Login Batch No					98510									
Chemtest LIMS ID					AE64622	AE64623	AE64624	AE64625	AE64626	AE64628	AE64629	AE64630		
Sample ID					BH1	BH2	BH3	BH4	BH5	BH7	BH8	BH9		
Sample No					D1	D1	D1	D1	D1	D1	D1	D1		
Sampling Date					28/1/2010	28/1/2010	28/1/2010	28/1/2010	28/1/2010	28/1/2010	28/1/2010	28/1/2010		
Depth					0.3m	0.7m	0.1m	0.1m	0.4m	0.2m	0.3m	0.3m		
Matrix					*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*		
SOP↓	Determinand↓	CAS No↓	Units↓	*										
2300	Cyanide (total)	57125	mg kg^{-1}	M	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		
2325	Sulfide	18496258	mg kg^{-1}	M	4.4	2.4	2.8	3.8	1.9	1.7	3.2	2.8		
2625	Total Organic Carbon		%	M	1.9	3.7	4.5	1.5	5.3	0.39	3.4	3.4		
2220	Chloride (extractable)	16887006	g l^{-1}	M	0.025	0.011	0.018	0.01	0.015	<0.01	<0.01	<0.01		
2430	Sulfate (total)	14808798	mg kg^{-1}	M	2500	1200	3700	2200	1200	600	700	1500		
2450	Arsenic	7440382	mg kg^{-1}	M	10	17	12	15	20	11	15	22		
	Cadmium	7440439	mg kg^{-1}	M	0.50	1.1	0.88	0.64	0.70	0.24	0.88	1.4		
	Chromium	7440473	mg kg^{-1}	M	18	30	18	19	19	10	13	19		
	Copper	7440508	mg kg^{-1}	M	37	47	25	19	70	10	29	250		
	Mercury	7439976	mg kg^{-1}	M	0.15	0.16	0.11	<0.10	0.40	<0.10	<0.10	0.51		
	Nickel	7440020	mg kg^{-1}	M	28	44	35	29	31	12	27	36		
	Lead	7439921	mg kg^{-1}	M	98	300	68	46	260	9.9	51	340		
	Selenium	7782492	mg kg^{-1}	M	<0.20	0.47	0.55	0.29	0.52	<0.20	<0.20	0.31		
	Zinc	7440666	mg kg^{-1}	M	150	250	130	98	190	17	380	200		
2676	TPH >C5-C6		mg kg^{-1}	U	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		
	TPH >C6-C7		mg kg^{-1}	U	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		
	TPH >C7-C8		mg kg^{-1}	M	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		
	TPH >C8-C10		mg kg^{-1}	M	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		
	TPH >C10-C12		mg kg^{-1}	M	< 0.1	< 0.1	< 0.1	< 0.1	2.1	< 0.1	< 0.1	0.6		
	TPH >C12-C16		mg kg^{-1}	M	5.4	2.0	2.4	< 0.1	36	< 0.1	0.7	3.6		
	TPH >C16-C21		mg kg^{-1}	M	30	11	9.3	< 0.1	250	< 0.1	6.2	4.9		
	TPH >C21-C35		mg kg^{-1}	M	300	190	25	< 0.1	560	< 0.1	150	58		
	Total Petroleum Hydrocarbons		mg kg^{-1}	U	330	200	36	< 10	840	< 10	160	67		
2700	Naphthalene	91203	mg kg^{-1}	M	0.57	1.2	0.32	0.19	4.2	0.17	0.37	0.31		
	Acenaphthylene	208968	mg kg^{-1}	M	< 0.1	0.14	< 0.1	< 0.1	0.36	< 0.1	0.15	< 0.1		
	Acenaphthene	83329	mg kg^{-1}	M	0.2	1.2	0.14	< 0.1	3.3	< 0.1	0.1	0.12		
	Fluorene	86737	mg kg^{-1}	M	0.22	0.97	< 0.1	< 0.1	2.5	< 0.1	< 0.1	< 0.1		
	Phenanthrene	85018	mg kg^{-1}	M	1.6	13	0.8	0.65	35	0.62	0.97	0.28		
	Anthracene	120127	mg kg^{-1}	M	0.39	1.7	< 0.1	< 0.1	5.5	< 0.1	0.11	< 0.1		

All tests undertaken between 29-Jan-2010 and 2-Feb-2010

* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page

Column page 1
Report page 1 of 2
Report sample ID range AE64622 to AE64630

GEA
Tyttenhanger House
Coursers Road
St Albans Herts
AL4 0PG

FAO Martin Cooper

LABORATORY TEST REPORT

Results of analysis of 8 samples
received 29 January 2010

Clitheroe Primrose Village - J09126/order 1

Chemtest

Report Date
02 February 2010

					98510							
					AE64622	AE64623	AE64624	AE64625	AE64626	AE64628	AE64629	AE64630
					BH1	BH2	BH3	BH4	BH5	BH7	BH8	BH9
					D1	D1	D1	D1	D1	D1	D1	D1
					28/1/2010	28/1/2010	28/1/2010	28/1/2010	28/1/2010	28/1/2010	28/1/2010	28/1/2010
					0.3m	0.7m	0.1m	0.1m	0.4m	0.2m	0.3m	0.3m
					SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
2700	Fluoranthene	206440	mg kg-1	M	2.7	16	0.8	1.4	43	0.57	2.7	0.75
	Pyrene	129000	mg kg-1	M	2.4	15	1.3	1.1	34	0.31	2.6	0.89
	Benzo[a]anthracene	56553	mg kg-1	M	1.3	6.2	0.54	0.84	17	0.46	1.6	0.72
	Chrysene	218019	mg kg-1	M	1.5	8.3	0.47	1	20	0.39	2.2	0.62
	Benzo[b]fluoranthene	205992	mg kg-1	M	1.6	8.4	0.49	1.2	17	< 0.1	2.6	0.79
	Benzo[k]fluoranthene	207089	mg kg-1	M	0.72	4.4	0.28	0.86	12	< 0.1	2.1	0.45
	Benzo[a]pyrene	50328	mg kg-1	M	1.8	9.6	0.41	1.4	20	< 0.1	2.7	0.84
	Dibenzo[a,h]anthracene	53703	mg kg-1	M	0.27	1.3	< 0.1	0.13	2.6	< 0.1	0.39	0.18
	Indeno[1,2,3-cd]pyrene	193395	mg kg-1	M	1.4	5.3	0.33	0.9	12	< 0.1	1.8	0.48
	Benzo[g,h,i]perylene	191242	mg kg-1	M	1.2	4.7	0.56	0.9	11	< 0.1	1.8	0.58
	Total (of 16) PAHs		mg kg-1	M	18	97	6.6	11	240	2.5	22	7.1
2920	Phenols (total)		mg kg-1	N	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
2010	pH		-	M	7.9	7.4	7.4	7.9	7.9	8.2	8.1	8.2
2030	Moisture		%	n/a	8.28	24.3	26.2	11.1	14.3	3.84	10.6	15.8
	Stones content (>50mm)		%	n/a	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2140	Soil colour			n/a	brown	brown	brown	brown	brown	brown	brown	brown
	Soil texture			n/a	sand	clay	clay	clay	clay	sand	sand	sand
	Other material			n/a	stones	stones	roots	none	stones	stones	stones	stones

All tests undertaken between 29-Jan-2010 and 2-Feb-2010

* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page

3201205 65 P

Client: GEA Project no: J09126B

Our job no: 9003

Borehole No:	Sample No:	Depth m	Description	pH	Sulphate content (g/l)
BH1	3	1.40	Grey and grey brown slightly sandy gravelly CLAY (gravel is fm and sub angular)	7.9	0.15
BH2	2	1.50	Grey slightly gravelly CLAY (gravel is fm and sub angular)	7.8	0.19
BH4	2	0.80	Dark brownish grey slightly gravelly CLAY (gravel is fine and sub angular)	6.3	0.14
BH7	2	0.50	Dark blue grey clayey SAND with occasional mudstone fragments	6.9	0.13
BH9	3	1.45	Grey brown slightly sandy clayey GRAVEL (gravel is fine and sub angular)	7.8	0.11

Date 10/02/2010

Summary of Test Results

BS 1377 : Part 3 :Clause 5 : 1990

Determination of sulphate content of soil and ground water ; gravimetric method

Checked and Approved

Initials : kp

Client:	GEA	Project no:	J09126B
		Our job no:	9003

Borehole No:	Sample No:	Depth m	Description	pH	Sulphate content (g/l)

Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU

320120565P

Client:	GEA			Project Started:	02/02/2010
Project No:	J09126B	Our job/report no:	9003	Testing Started:	08/02/2010
				Date Reported:	10/02/2010

Borehole No:	Sample No:	Depth (m)	Description	Moisture content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 0.425 mm (%)	Remarks
BH1	2	0.60	Dark brownish grey slightly gravelly CLAY (gravel is fine and sub angular)	26	63	23	40	97	
BH2	2	1.50	Grey slighlly gravelly CLAY (gravel is fm and sub angular)	37	52	25	27	75	
BH3	2	0.30	Grey gravelly CLAY with occasional brick fragments and rootlets (gravel is fm and sub angular)	17	36	18	18	64	
BH4	2	0.80	Dark brownish grey slightly gravelly CLAY (gravel is fine and sub angular)	29	66	26	40	96	
BH5	2	0.80	Dark brownish grey CLAY with occasional rootlets and decayed roots	35	75	29	46	100	
BH7	4	2.60	Grey gravelly CLAY (gravel is fm and rounded to sub angular)	15	29	14	15	60	
BH8	2	0.60	Brown slightly silty, slightly gravelly CLAY (gravel is fine and sub angular)	13	24	16	8	75	
BH8	3	1.10	Brown slightly gravelly CLAY (gravel is fm and sub angular)	17	25	14	11	67	
BH9	2	0.90	Dark brownish grey gravelly CLAY (gravel is fm and angular to sub angular)	15	33	16	17	62	

Summary of Test Results

BS 1377 : Part 2 : Clause 4.3 : 1990 Determination of the liquid limit by the cone penetrometer method.
BS 1377 : Part 2 : Clause 5 : 1990 Determination of the plastic limit and plasticity index.
BS 1377 : Part 2 : Clause 3.2 : 1990 Determination of the moisture content by the oven-drying method.

UKAS TESTING 2619

Checked and Approved
Initials: K.P
Date: 10/02/2010

Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU

Test Results relate only to the sample numbers shown above. Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

Geotechnical & Environmental Associates

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Gotham Road, Kingston on Soar
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web www.gea-ltd.co.uk

11 August 2011

Our ref: J10234/MC/4

Analysis of excess spoil heap on site. Some material used to build up gardens prior to topsoil. Full report sent to material receiving site. Confirmed as acceptable.

Mr George Mumford
Globe Management Services Ltd
Aintree House
Trident Business Park
Daten Avenue
Risley
Warrington
WA3 6BX

Dear George

Re: Primrose Village, Clitheroe Lancashire Phase 1

Further to your instruction we have visited site to collect samples from the stockpile with a view to either its re-use on site or its disposal off site.

The conclusions and recommendations made in this letter are limited to those that can be made on the basis of the investigation. The results of the work should be viewed in the context of the range of data sources consulted, the number of locations where the ground was sampled and the number of soil, gas or groundwater samples tested; no liability can be accepted for information in other data sources or conditions not revealed by the sampling or testing. Any comments made on the basis of information obtained from the client or other third parties are given in good faith on the assumption that the information is accurate; no independent validation of such information has been made by GEA.

TOTAL ANALYSIS (Sample Nos S1, S2 and S6)
The measured soil concentrations are all below our generic threshold concentrations for a residential end use with plant uptake with the exception of the total polyaromatic hydrocarbons (PAH) concentration of Sample 1 which marginally exceeds our interpreted target value for total PAH. This target value is based on an assumption of the benzo(a)pyrene (BaP) content of the PAH being approximately 15 % of the total PAH. However at this site we have a reasonable number of analyses where we have confirmed the PAH to result from tarmac inclusions with a BaP content of no greater than 13 % and more generally of 10 % or less, thus the measured total PAH content of 6.7 mg/kg is likely to indicate a BaP content of less than 0.87 mg/kg which is below our adopted generic screening value. These soils should thus be suitable for re-use in garden areas below the imported topsoil.

WAC ANALYSIS (Sample Nos S3, S4 and S5)
The results of the WAC leachate testing indicate that the material represented by Sample Nos S3 and S4 should be classified as an inert waste, whilst the material within Sample No 6 falls outside the limits for inert only by the Dissolved Organic Carbon where the measured concentration of 740 mg/kg lies beyond the 500 mg/kg limit for inert but falls within the 800 mg/kg limit for Stable Non-Reactive Waste. This advice with regard to the classification of the excavated soils is provided for guidance only and should be confirmed by the receiving landfill now that the soils to be discarded have been identified and tested.

We trust that the information is satisfactory, but please do not hesitate to contact us if you would like to discuss the matter further.

Yours sincerely
GEOTECHNICAL & ENVIRONMENTAL ASSOCIATES

Martin Cooper

Encs

Scientific Analysis Laboratories is a limited company registered in England and Wales (No 2514788) whose address is at Hadfield House, Hadfield Street Manchester M16 9FE

Scientific Analysis Laboratories

Certificate of Analysis

Hadfield House
Hadfield Street
Combrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 245060-1

Date of Report: 09-Aug-2011

Customer: Resource Environmental Consultants Ltd
Osprey House
Pacific Quay
Broadway
Salford
M50 2UE

Customer Contact: Mr Simon Howard

Customer Job Reference: 43576
Date Job Received at SAL: 25-Jul-2011
Date Analysis Started: 27-Jul-2011
Date Analysis Completed: 09-Aug-2011

The results reported relate to samples received in the laboratory
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
Tests covered by this certificate were conducted in accordance with SAL SOPs

UKAS TESTING
1549

Report checked
and authorised by :
Mr Ross Walker
Customer Services Manager

Issued by :

320120565P

Waste Acceptance Criteria

Customer Sample Reference : S3
SAL Sample Reference : 245060 001
SAL Reference : 245060
Customer Reference : 43576
Test Portion Mass (g) : 175
Date Sampled : 25-JUL-2011

Soil Summary					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
PCB EC7 (Sum)	Calc	0.00035	mg/kg	U	[9] <0.0035	1.0		
Acid Neutralising Capacity (pH 7)	Titration	2.0	Mol/kg	N	<2.0			
BTEX (Sum)	Calc	0.0040	mg/kg	U	<0.0040	6.0		
Loss on Ignition	Grav	0.1	%	N	4.8			10.0
pH	Probe	0.0		U	8.2		>6.0	
Total Organic Carbon	OX/IR	0.1	%	N	1.9	3.0	5.0	6.0
TPH C10-C40 (sum)	Calc	1	mg/kg	N	190	500.0		
PAH (Sum)	Calc	1.6	mg/kg	N	<1.6	100.0		

10:1 Leachate					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Antimony (Dissolved)	Calc / ICP/MS (Filtered)	0.010	mg/kg	N	0.014	0.06	0.7	5.0
Arsenic (Dissolved)	Calc / ICP/MS (Filtered)	0.0020	mg/kg	N	0.017	0.5	2.0	25.0
Barium (Dissolved)	Calc / ICP/MS (Filtered)	0.010	mg/kg	N	0.55	20.0	100.0	300.0
Cadmium (Dissolved)	Calc / ICP/MS (Filtered)	0.00020	mg/kg	N	0.00039	0.04	1.0	5.0
Chloride	Calc / IC	0.50	mg/kg	N	22	800.0	15000.0	25000.0
Chromium (Dissolved)	Calc / ICP/MS (Filtered)	0.010	mg/kg	N	0.014	0.5	10.0	70.0
Copper (Dissolved)	Calc / ICP/MS (Filtered)	0.0050	mg/kg	N	0.039	2.0	50.0	100.0
Dissolved Organic Carbon	Calc / OX/IR	10	mg/kg	N	380	500.0	800.0	1000.0
Fluoride	Calc / IC	10	mg/kg	N	[9] <10	10.0	150.0	500.0
Lead (Dissolved)	Calc / ICP/MS (Filtered)	0.0030	mg/kg	N	<0.0030	0.5	10.0	50.0
Mercury (Dissolved)	Calc / ICP/MS (Filtered)	0.00050	mg/kg	N	<0.00050	0.01	0.2	2.0
Molybdenum (Dissolved)	Calc / ICP/MS (Filtered)	0.010	mg/kg	N	0.12	0.5	10.0	30.0
Nickel (Dissolved)	Calc / ICP/MS (Filtered)	0.010	mg/kg	N	0.032	0.4	10.0	40.0
Phenols (Mono)	Calc / Colorimetry	1.0	mg/kg	N	<1.0	1.0		
Selenium (Dissolved)	Calc / ICP/MS (Filtered)	0.0050	mg/kg	N	0.0068	0.1	0.5	7.0
SO4--	Calc / IC	0.50	mg/kg	N	300	1000.0	20000.0	50000.0
Total Dissolved Solids	Calc / Grav	1000	mg/kg	N	2000	4000.0	60000.0	100000.0
Zinc (Dissolved)	Calc / ICP/MS (Filtered)	0.020	mg/kg	N	0.048	4.0	50.0	200.0

From: EC Directive 99/31/EC and Landfill Regulations 2002 (as ammended)

Notes:- Cumulative release at L/S=10 (mg/kg of dry matter) in accordance with BS EN 12457. Soil leaching procedure is not covered by our UKAS accreditation

Waste Acceptance Criteria

Customer Sample Reference : S4
SAL Sample Reference : 245080 002
SAL Reference : 245080
Customer Reference : 43575
Test Portion Mass (g) : 175
Date Sampled : 25-JUL-2011

Soil Summary					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
PCB EC7 (Sum)	Calc	0.00035	mg/kg	U	0.0018	1.0		
Acid Neutralising Capacity (pH 7)	Titration	2.0	Mol/kg	N	<2.0			
BTEX (Sum)	Calc	0.0040	mg/kg	U	<0.0040	6.0		
Loss on Ignition	Grav	0.1	%	N	3.9			10.0
pH	Probe	0.0		U	8.2		>6.0	
Total Organic Carbon	OX/IR	0.1	%	N	1.5	3.0	5.0	6.0
TPH C10-C40 (sum)	Calc	1	mg/kg	N	20	500.0		
PAH (Sum)	Calc	1.6	mg/kg	N	<1.6	100.0		

10:1 Leachate					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Antimony (Dissolved)	Calc / ICP/MS (Filtered)	0.010	mg/kg	N	0.011	0.06	0.7	5.0
Arsenic (Dissolved)	Calc / ICP/MS (Filtered)	0.0020	mg/kg	N	0.012	0.5	2.0	25.0
Barium (Dissolved)	Calc / ICP/MS (Filtered)	0.010	mg/kg	N	0.19	20.0	100.0	300.0
Cadmium (Dissolved)	Calc / ICP/MS (Filtered)	0.00020	mg/kg	N	0.00025	0.04	1.0	5.0
Chloride	Calc / IC	0.50	mg/kg	N	38	800.0	15000.0	25000.0
Chromium (Dissolved)	Calc / ICP/MS (Filtered)	0.010	mg/kg	N	<0.010	0.5	10.0	70.0
Copper (Dissolved)	Calc / ICP/MS (Filtered)	0.0050	mg/kg	N	0.016	2.0	50.0	100.0
Dissolved Organic Carbon	Calc / OX/IR	10	mg/kg	N	260	500.0	800.0	1000.0
Fluoride	Calc / IC	10	mg/kg	N	[3] <10	10.0	150.0	500.0
Lead (Dissolved)	Calc / ICP/MS (Filtered)	0.0030	mg/kg	N	<0.0030	0.5	10.0	50.0
Mercury (Dissolved)	Calc / ICP/MS (Filtered)	0.00050	mg/kg	N	<0.00050	0.01	0.2	2.0
Molybdenum (Dissolved)	Calc / ICP/MS (Filtered)	0.010	mg/kg	N	0.12	0.5	10.0	30.0
Nickel (Dissolved)	Calc / ICP/MS (Filtered)	0.010	mg/kg	N	0.012	0.4	10.0	40.0
Phenols(Mono)	Calc / Colorimetry	1.0	mg/kg	N	<1.0	1.0		
Selenium (Dissolved)	Calc / ICP/MS (Filtered)	0.0050	mg/kg	N	0.015	0.1	0.5	7.0
SO4--	Calc / IC	0.50	mg/kg	N	580	1000.0	20000.0	50000.0
Total Dissolved Solids	Calc / Grav	1000	mg/kg	N	1400	4000.0	60000.0	100000.0
Zinc (Dissolved)	Calc / ICP/MS (Filtered)	0.020	mg/kg	N	0.051	4.0	50.0	200.0

From: EC Directive 99/31/EC and Landfill Regulations 2002 (as ammended)

Notes:- Cumulative release at L/S=10 (mg/kg of dry matter) in accordance with BS EN 12457. Soil leaching procedure is not covered by our UKAS accreditation

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Waste Acceptance Criteria

Customer Sample Reference : S5
SAL Sample Reference : 245060 003
SAL Reference : 245060
Customer Reference : 43576
Test Portion Mass (g) : 175
Date Sampled : 25-JUL-2011

Soil Summary					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
PCB EC7 (Sum)	Calc	0.00035	mg/kg	U	0.013	1.0		
Acid Neutralising Capacity (pH 7)	Titration	2.0	Mol/kg	N	<2.0			
BTEX (Sum)	Calc	0.0040	mg/kg	U	<0.0040	6.0		
Loss on Ignition	Grav	0.1	%	N	4.6			10.0
pH	Probe	0.0		U	8.2		>6.0	
Total Organic Carbon	OX/IR	0.1	%	N	1.6	3.0	5.0	6.0
TPH C10-C40 (sum)	Calc	1	mg/kg	N	70	500.0		
PAH (Sum)	Calc	1.6	mg/kg	N	18	100.0		

10:1 Leachate					Result	Inert Waste Landfill	Stable non reactive	Hazardous Waste Landfill
Determinand	Technique	LOD	Units	Symbol				
Antimony (Dissolved)	Calc / ICP/MS (Filtered)	0.010	mg/kg	N	<0.010	0.06	0.7	5.0
Arsenic (Dissolved)	Calc / ICP/MS (Filtered)	0.0020	mg/kg	N	<0.0020	0.5	2.0	25.0
Barium (Dissolved)	Calc / ICP/MS (Filtered)	0.010	mg/kg	N	0.10	20.0	100.0	300.0
Cadmium (Dissolved)	Calc / ICP/MS (Filtered)	0.00020	mg/kg	N	<0.00020	0.04	1.0	5.0
Chloride	Calc / IC	0.50	mg/kg	N	83	800.0	15000.0	25000.0
Chromium (Dissolved)	Calc / ICP/MS (Filtered)	0.010	mg/kg	N	0.012	0.5	10.0	70.0
Copper (Dissolved)	Calc / ICP/MS (Filtered)	0.0050	mg/kg	N	0.0067	2.0	50.0	100.0
Dissolved Organic Carbon	Calc / OX/IR	10	mg/kg	N	740	500.0	800.0	1000.0
Fluoride	Calc / IC	0.3	mg/kg	N	[6]<0.3	10.0	150.0	500.0
Lead (Dissolved)	Calc / ICP/MS (Filtered)	0.0030	mg/kg	N	<0.0030	0.5	10.0	50.0
Mercury (Dissolved)	Calc / ICP/MS (Filtered)	0.00050	mg/kg	N	<0.00050	0.01	0.2	2.0
Molybdenum (Dissolved)	Calc / ICP/MS (Filtered)	0.010	mg/kg	N	0.034	0.5	10.0	30.0
Nickel (Dissolved)	Calc / ICP/MS (Filtered)	0.010	mg/kg	N	<0.010	0.4	10.0	40.0
Phenols(Mono)	Calc / Colorimetry	1.0	mg/kg	N	<1.0	1.0		
Selenium (Dissolved)	Calc / ICP/MS (Filtered)	0.0050	mg/kg	N	0.0098	0.1	0.5	7.0
SO4--	Calc / IC	0.50	mg/kg	N	430	1000.0	20000.0	50000.0
Total Dissolved Solids	Calc / Grav	1000	mg/kg	N	2500	4000.0	60000.0	100000.0
Zinc (Dissolved)	Calc / ICP/MS (Filtered)	0.020	mg/kg	N	0.035	4.0	50.0	200.0

From: EC Directive 99/31/EC and Landfill Regulations 2002 (as ammended)

Notes: Cumulative release at L/S=10 (mg/kg of dry matter) in accordance with BS EN 12457. Soil leaching procedure is not covered by our UKAS accreditation

SAL Reference: 245060
Customer Reference: 43576

Soil Analysed as Soil
PAH EPA 16, Coronene

				SAL Reference	245060 001	245060 002	245060 003
				Customer Sample Reference	S3	S4	S5
				Test Sample	AR	AR	AR
				Date Sampled	25-JUL-2011	25-JUL-2011	25-JUL-2011
Determinand	Method	LOD	Units	Symbol			
Naphthalene	GC/MS	0.1	mg/kg	U	<0.1	<0.1	<0.1
Acenaphthylene	GC/MS	0.1	mg/kg	U	<0.1	<0.1	<0.1
Acenaphthene	GC/MS	0.1	mg/kg	U	<0.1	<0.1	<0.1
Fluorene	GC/MS	0.1	mg/kg	U	<0.1	<0.1	<0.1
Phenanthrene	GC/MS	0.1	mg/kg	U	0.2	0.2	0.8
Anthracene	GC/MS	0.1	mg/kg	U	<0.1	<0.1	0.3
Fluoranthene	GC/MS	0.1	mg/kg	U	0.2	0.3	4.0
Pyrene	GC/MS	0.1	mg/kg	U	0.2	0.2	3.4
Benzo(a)Anthracene	GC/MS	0.1	mg/kg	U	<0.1	<0.1	1.3
Chrysene	GC/MS	0.1	mg/kg	U	0.1	0.1	1.0
Benzo(b/k)Fluoranthene	GC/MS	0.1	mg/kg	U	0.2	0.2	2.4
Benzo(e)Pyrene	GC/MS	0.1	mg/kg	U	0.1	0.1	1.3
Indeno(123-cd)Pyrene	GC/MS	0.1	mg/kg	U	<0.1	<0.1	0.9
Dibenzo(ah)Anthracene	GC/MS	0.1	mg/kg	U	<0.1	<0.1	0.4
Benzo(ghi)Perylene	GC/MS	0.1	mg/kg	U	<0.1	<0.1	1.0
Coronene	GC/MS	0.1	mg/kg	N	0.1	0.1	1.3

SAL Reference: 245060
Customer Reference: 43576

Soil Analysed as Soil
TPH

				SAL Reference	245060 001	245060 002	245060 003
				Customer Sample Reference	S3	S4	S5
				Test Sample	AR	AR	AR
				Date Sampled	25-JUL-2011	25-JUL-2011	25-JUL-2011
Determinand	Method	LOD	Units	Symbol			
Total Petroleum Hydrocarbons	GC/FID	1	mg/kg	U	150	20	59
Total Petroleum Hydrocarbons (C35-C40)	GC/FID	1	mg/kg	N	44	<1	11

SAL Reference: 245060
Customer Reference: 43576

Soil Analysed as Soil
BTEX

				SAL Reference	245060 001	245060 002	245060 003
				Customer Sample Reference	S3	S4	S5
				Test Sample	AR	AR	AR
				Date Sampled	25-JUL-2011	25-JUL-2011	25-JUL-2011
Determinand	Method	LOD	Units	Symbol			
Benzene	GC/MS (Headspace)	0.001	mg/kg	U	[13] <0.001	[13] <0.001	[13] <0.001
EthylBenzene	GC/MS (Headspace)	0.001	mg/kg	U	<0.001	<0.001	<0.001
Toluene	GC/MS (Headspace)	0.001	mg/kg	U	<0.001	<0.001	<0.001
Xylene (Total)	GC/MS (Headspace)	0.001	mg/kg	U	<0.001	<0.001	<0.001

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SAL Reference: 245060
Customer Reference: 43576

Soil Analysed as Soil
PCB EC7

	SAL Reference	245060 001	245060 002	245060 003
	Customer Sample Reference	S3	S4	S5
	Test Sample	AR	AR	AR
	Date Sampled	25-JUL-2011	25-JUL-2011	25-JUL-2011
Determinand	Method	LOD	Units	Symbol			
Polychlorinated biphenyl BZ#101	GC/MS (HR)	0.00005	mg/kg	U	[9] <0.00050	0.00037	0.00046
Polychlorinated biphenyl BZ#118	GC/MS (HR)	0.00005	mg/kg	U	[9] <0.00050	0.00027	0.00014
Polychlorinated biphenyl BZ#138	GC/MS (HR)	0.00005	mg/kg	U	[9] <0.00050	0.00015	0.0036
Polychlorinated biphenyl BZ#153	GC/MS (HR)	0.00005	mg/kg	U	[9] <0.00050	0.00009	0.0036
Polychlorinated biphenyl BZ#180	GC/MS (HR)	0.00005	mg/kg	U	[9] <0.00050	<0.00005	0.0054
Polychlorinated biphenyl BZ#28	GC/MS (HR)	0.00005	mg/kg	U	[9] <0.00050	0.00028	<0.00005
Polychlorinated biphenyl BZ#52	GC/MS (HR)	0.00005	mg/kg	U	[9] <0.00050	0.00068	<0.00005

Index to symbols used in 245060-1

Value	Description
AR	As Received
2:1	Leachate to BS EN 12457-3 (2:1)
8:1	Leachate to BS EN 12457-3 (8:1)
13	Results have been blank corrected.
9	LOD raised due to dilution of sample
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Scientific Analysis Laboratories is a limited company registered in England and Wales (No 2514788) whose address is at Hadfield House, Hadfield Street Manchester M16 9FE

Scientific Analysis Laboratories

Certificate of Analysis

Hadfield House
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Report Number: 245061-1

Date of Report: 02-Aug-2011

Customer: Resource Environmental Consultants Ltd
Osprey House
Pacific Quay
Broadway
Salford
M50 2UE

Customer Contact: Mr Simon Howard

Customer Job Reference: 43576
Customer Site Reference: Primrose Village
Date Job Received at SAL: 25-Jul-2011
Date Analysis Started: 27-Jul-2011
Date Analysis Completed: 02-Aug-2011

The results reported relate to samples received in the laboratory
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
Tests covered by this certificate were conducted in accordance with SAL SOPs

UKAS TESTING 1549

MCERTS

Report checked and authorised by :
Mr Ross Walker
Customer Services Manager

Issued by :
Mr Ross Walker
Customer Services Manager

320120565P

SAL Reference: 245081
Project Site: Primrose Village
Customer Reference: 43576

Soil — Analysed as Soil
GEA Suite 1a

					SAL Reference	245081 001	245081 002	245081 003
					Customer Sample Reference	S1	S2	S6
					Date Sampled	25-JUL-2011	25-JUL-2011	25-JUL-2011
					Type	Clay	Clay	Clay
Determinand	Method	Test Sample	LOD	Units				
Moisture	T277	AR	0.1	%		15	12	12
Moisture @ 105 C	T182	AR	0.1	%		11	7.9	23
Arsenic	T6	M40	2	mg/kg		11	9	10
Cadmium	T6	M40	1	mg/kg		1	<1	1
Chromium	T6	M40	1	mg/kg		17	16	20
Copper	T6	M40	1	mg/kg		31	22	26
Lead	T6	M40	1	mg/kg		84	40	47
Mercury	T6	M40	1	mg/kg		<1	<1	<1
Nickel	T6	M40	1	mg/kg		31	34	36
Selenium	T6	M40	3	mg/kg		<3	<3	<3
Zinc	T6	M40	1	mg/kg		130	120	150
Chloride (2:1)	T218	AR	2	mg/kg		34	11	8
Cyanide(Total)	T4	AR	1	mg/kg		<1	<1	<1
pH	T7	AR				7.8	8.0	7.9
Phenols(Mono)	T4	AR	1	mg/kg		<1	<1	<1
SO4(Total)	T6	M40	0.01	%		0.48	0.57	0.52
Sulphide	T4	AR	10	mg/kg		<10	<10	<10
Total Organic Carbon	T21	M40	0.1	%		1.9	1.2	1.8
PAH(total)	T149	AR	0.01	mg/kg		6.7	0.39	4.4
TPH (C8-C10)	T8	AR	1	mg/kg		<1	<1	<1
TPH (C10-C12)	T8	AR	1	mg/kg		<1	<1	2
TPH (C12-C16)	T8	AR	1	mg/kg		9	<1	5
TPH (C16-C21)	T8	AR	1	mg/kg		18	<1	14
TPH (C21-C35)	T8	AR	1	mg/kg		130	4	34

Index to symbols used in 245061-1

Value	Description
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
AR	As Received
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Method Index

Value	Description
T182	Grav (1 Dec) (105 C)
T277	Grav (1 Dec) (40 C)
T7	Probe
T21	OX/IR
T6	ICP/OES
T4	Colorimetry
T8	GC/FID
T149	GC/MS (SIR)
T218	IC (D)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
Moisture	T277	AR	0.1	%	N	001-003
Moisture @ 105 C	T182	AR	0.1	%	N	001-003

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
Arsenic	T6	M40	2	mg/kg	M	001-003
Cadmium	T6	M40	1	mg/kg	M	001-003
Chromium	T6	M40	1	mg/kg	M	001-003
Copper	T6	M40	1	mg/kg	M	001-003
Lead	T6	M40	1	mg/kg	M	001-003
Mercury	T6	M40	1	mg/kg	M	001-003
Nickel	T6	M40	1	mg/kg	M	001-003
Selenium	T6	M40	3	mg/kg	M	001-003
Zinc	T6	M40	1	mg/kg	M	001-003
Chloride (2:1)	T218	AR	2	mg/kg	N	001-003
Cyanide(Total)	T4	AR	1	mg/kg	U	001-003
pH	T7	AR			M	001-003
Phenols(Mono)	T4	AR	1	mg/kg	U	001-003
SO4(Total)	T6	M40	0.01	%	N	001-003
Sulphide	T4	AR	10	mg/kg	N	001-003
Total Organic Carbon	T21	M40	0.1	%	N	001-003
PAH(total)	T149	AR	0.01	mg/kg	U	001-003
TPH (C8-C10)	T8	AR	1	mg/kg	N	001-003
TPH (C10-C12)	T8	AR	1	mg/kg	U	001-003
TPH (C12-C16)	T8	AR	1	mg/kg	U	001-003
TPH (C16-C21)	T8	AR	1	mg/kg	U	001-003
TPH (C21-C35)	T8	AR	1	mg/kg	U	001-003

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of a hotspot

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27 June 2011

Our ref: J10234/MC/4

Mr George Mumford
Globe Management Services Ltd
Aintree House
Trident Business Park
Daten Avenue
Risley
Warrington
WA3 6BX

remediation Plot 7

Dear George

Re: Plot 7, Primrose Village, Clitheroe Lancashire Phase 1

Our letter of December 2010 set out the remediation strategy for dealing with contaminated soils encountered on site.

This letter confirms that the removal of the elevated TPH from within the garden of Plot No 7 has taken place and that the remaining soils pose acceptable risk to end users.

The conclusions and recommendations made in this letter are limited to those that can be made o the basis of the investigation. The results of the work should be viewed in the context of the range of data sources consulted, the number of locations where the ground was sampled and the number of soil, gas or groundwater samples tested; no liability can be accepted for information in other data sources or conditions not revealed by the sampling or testing. Any comments made on the basis of information obtained from the client or other third parties are given in good faith on the assumption that the information is accurate; no independent validation of such information has been made by GEA.

SOIL CONTAMINATION

A desk study of the site was undertaken and reported by GEA in April 2008 as J07352 Rep Issue 2. The desk study concluded that the site posed a moderate potential for soil contamination as a result of its previous usage as rail sidings and locally where some of the structures had been used for vehicle repairs.

The site was subsequently investigated by GEA and the findings were reported in Report ref J09126B Rep Issue 1, dated February 2010. The investigation found evidence of elevated PAH across much of th site and recommended that the made ground should be removed from the garden areas.

Following the finalisation of the scheme and the definition of the garden areas, GEA visited the site and sampled the near surface soil from the garden areas of individual plots with the assistance of a setting out engineer from Globe Management Services Limited. A total of 24 samples were obtained and 12 of them were subjected to chemical analyses to determine concentrations of a range of typical soil contamination indicative parameters.

The results indicated generally similar conditions to those measured in the previous report. Widespread elevated concentrations of Benzo(a)pyrene were present across much of the site and localised elevated TPH was encountered within Plot No 7.

REMEDIATION – Benzo(a)pyrene

The remedial measures require the placement of a layer of clean cover to break the pathway from the Benzo(a)pyrene present in the made ground to the end users of the site through ingestion of soil, dust or home-grown produce. The depth of clean imported cover required of 550 mm was specified for garden areas to ensure that the contaminant concentration within the likely soil mixing zone will not exceed the guideline value in accordance with recommendations from BRE[1]. At this stage the excavation to formation or import of material had not commenced and the validation of the remedial measures will take place in due course.

REMEDIATION – TPH

An elevated concentration, 1400 mg/kg, of TPH was measured in the sample from Plot No 7 at a depth of 0.25 m and is associated with a direct contact and vapour risk. The sample from 0.5 m in the same trial pit did not contain elevated TPH and suggested that the contamination was localised in terms of depth. This sample was one of twelve taken at relatively close spacing from garden areas and the fact that it was the only sample with such TPH concentrations suggests that the contamination is also localised in area.

GEA visited site on 11 May 2011 to try and establish the source of the elevated TPH within this plot and oversee its removal.

A trial pit was excavated within the garden area of Plot 7 to natural soils. No obvious visual or olfactory evidence of contamination was revealed however odour emanating from the northern face led to further excavation and revealed a large cobble sized fragment of solidified tar with a strong odour. This was removed and placed within a sealed skip for onward disposal as hazardous waste.

Following the removal of all fragments of the tar type material, no further visual or olfactory evidence was observed or identified by screening of the garden area using a photo-ionisation detector (PID); validation samples were therefore taken from the base and edges of the excavation. The testing of these samples has confirmed that the general soil conditions are representative of those assessed within the group data set for the other garden areas and therefore the 550 mm depth of imported subsoil and topsoil will be required. The results of these tests are attached and include Sample No V6 which comprised a fragment of the tar which is clearly the source of the contamination. The analysis of the speciated PAH concentrations indicates that this suspect material is consistent with coal tar and is likely to be of pyrogenic origin. The particle size of this material is likely to be relatively large and is thus unlikely to be significantly involved in the dusting pathway, furthermore being present in a solid form these large particles are also unlikely to adhere to the skin and be involved in the accidental ingestion pathway and as such the risk posed by any residual fragments of this material is likely to be significantly lower than that suggested by the results of the laboratory testing where the soil was crushed prior to analysis.

COMPLETION

In our opinion, the source of the hydrocarbon contamination has been clearly identified and has been removed from site where it has been identified. Testing of soil samples from the garden area confirms that significant TPH contamination is no longer present and therefore following this source removal the risk posed by it is considered to have been adequately mitigated.

The validation test results, sample location plan and photographic record is attached.

ONGOING WORKS

If further odourous, discoloured or suspect material should be encountered during preparation of the garden areas please do not hesitate to contact us so that a similar process may take place. We look forward to inspecting the records of level and material imported into garden areas so that the site-wide completion report may be compiled prior to project completion and the handover of the plots for sale.

---

1 BRE (2004) *Cover systems for land regeneration. Thickness of cover systems for contaminated land.* BRE pub 465

320120565P

We trust that the above to be satisfactory.

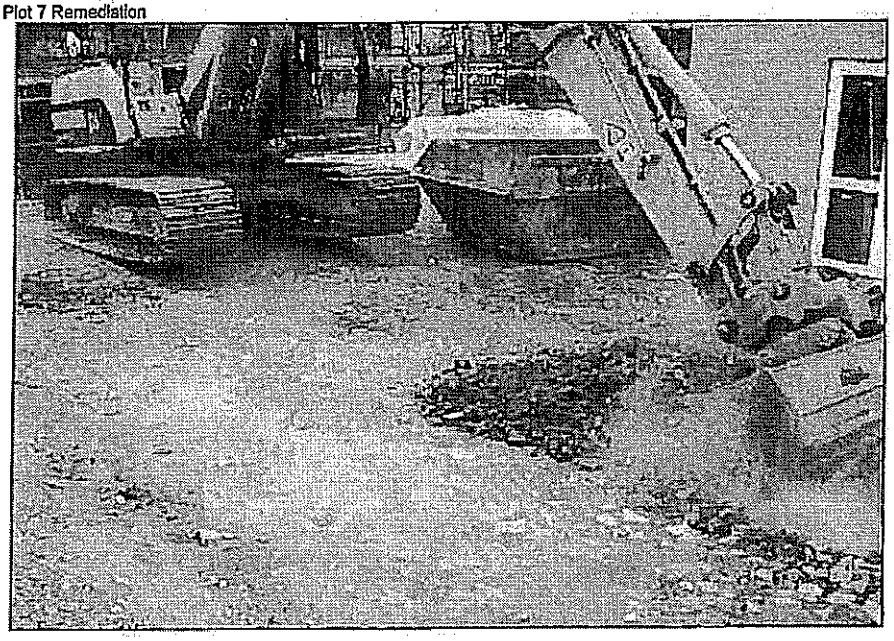
Yours faithfully
GEOTECHNICAL & ENVIRONMENTAL ASSOCIATES

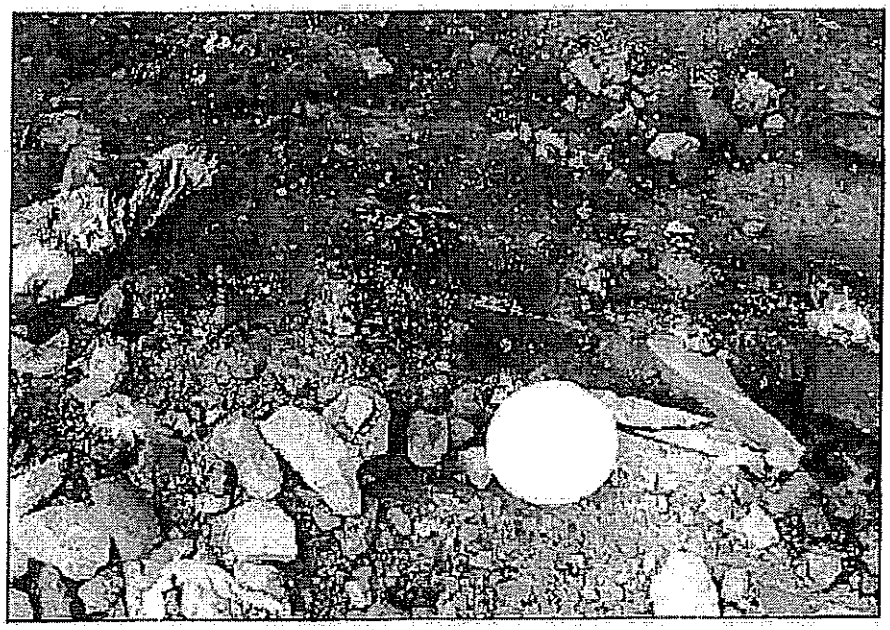
Martin Cooper

GEA Geotechnical Environmental Associates	Tyttenhanger House Coursers Road St Albans Herts AL4 0PG	**Site Photographs**

Site	: Primrose Village Phase 1, Clitheroe	Job Number J10234
Client	: Globe Management Services Limited	Sheet 1 / 2
Engineer	:	

Plot 7 Remediation





320120565P

Geotechnical & Environmental Associates
Tyttenhanger House
Coursers Road
St Albans
Herts AL4 0PG

Site Photographs

Site : Primrose Village Phase 1, Clitheroe

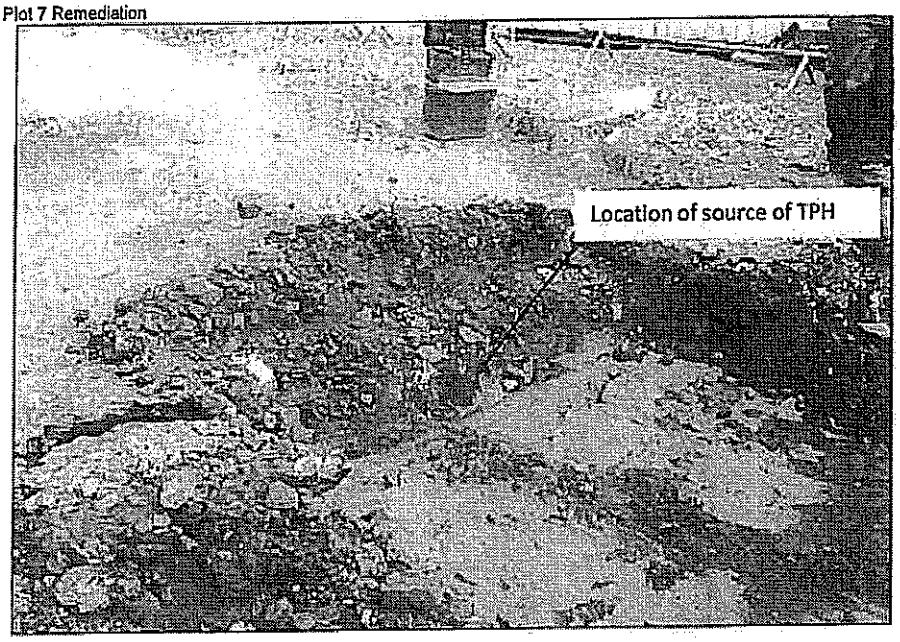
Client : Globe Management Services Limited

Engineer :

Job Number J10234

Sheet 2 / 2

Plot 7 Remediation



GEA Geotechnical & Environmental Associates

Tytlenhangar House
Coursers Road
St Albans
Herts AL4 0PG

Speciated PAH

Site	Plot 7, Primrose Village, Clitheroe	Job Number J10234
Client	Globe Menegement Services Limited	Sheet 1 / 1
Engineer		

PAH SOURCE

Indicative PAH origin indicator V 1.02 MRP 08/02/2010

Enter concentration data in purple cells below, if any species is below detection limit enter the concentration as the detection limit

Borehole / TP No. Plot 7
Depth (m) 0.2

Sample description

Made Ground (Black malodourous tarmac / tar)

PAH Species	Concentration mg/kg
naphthalene	540.00
acenaphthylene	36.00
acenaphthene	510.00
fluorene	410.00
phenanthrene	1,600.00
anthracene	530.00
fluoranthene	1,200.00
pyrene	800.00
benzo(a)anthracene	400.00
chrysene	420.00
benzo(b)fluoranthene	220.00
benzo(k)fluoranthene	130.00
benzo(a)pyrene	320.00
indeno(1,2,3-cd)pyrene	190.00
dibenzo(a,h)anthracene	43.00
benzo(ghi)perylene	150.00
Total PAH	**7,499.00**

Flouranthene:pyrene and Phenanthrene:anthracene ratios suggest this material to be;

Less common PAH from specific source

and to be of a **pyrogenic** origin

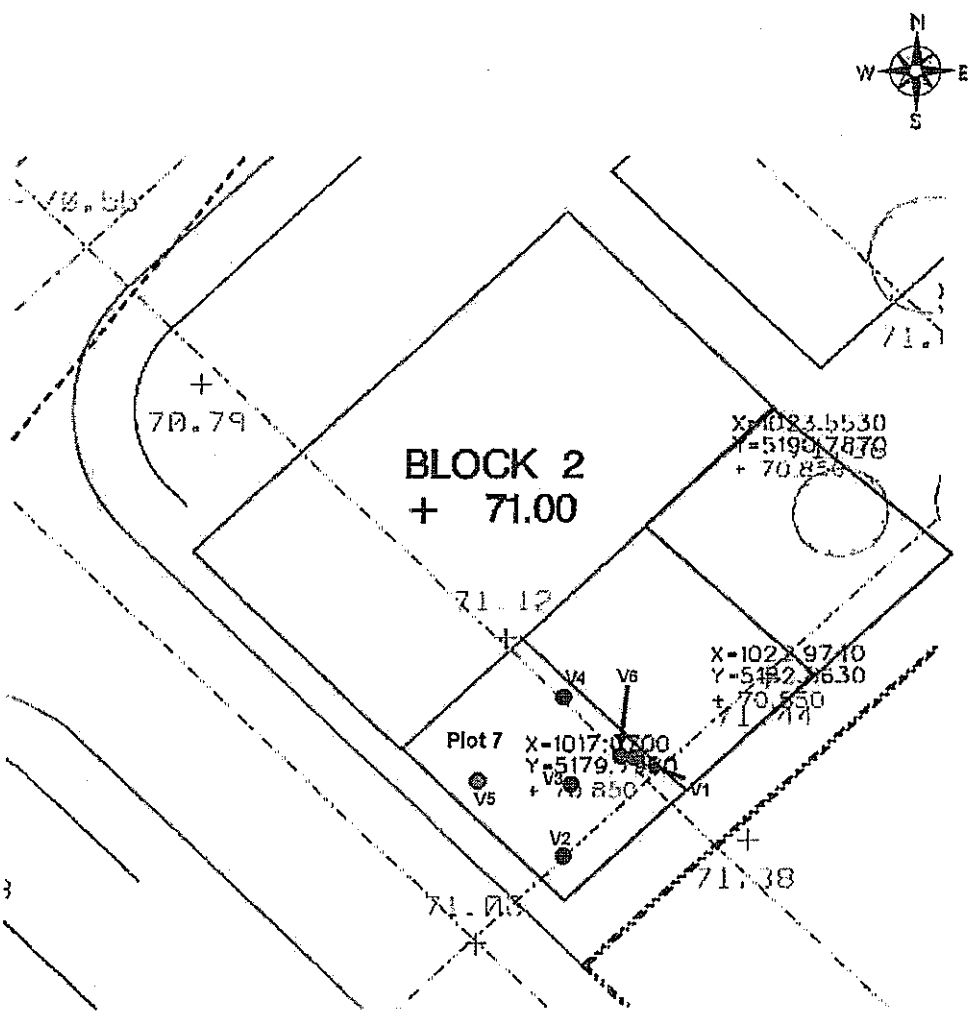
I.e it originates from the partial combustion of hydrocarbons

Specific proportions of individual PAHs are indicative of this material being;

-Coal Tar/part burnt coal- an unknown material

320120565P

Geotechnical & Environmental Associates	Tylerhanger House, Coursers Road, St Albans, AL4 0PG	Plot 7 Site Plan
Site : Primrose Village Phase 1 Cliffords		Job Number J10234
Client : Globe Management Services		Sheet 1 / 1
Engineer :		



GEA
Tyttenhanger House
Coursers Road
St Albans Herts
AL4 0PG

FAO Martin Cooper

LABORATORY TEST REPORT

Results of analysis of 6 samples received 16 May 2011

J10234 Plot 7 Validation - Primrose Village Plot 7, Clitheroe

Chemtest
The right chemistry to deliver results

Report Date
24 May 2011

						123705					
						AG04113	AG04114	AG04115	AG04116	AG04117	AG04118
						Plot 7 V1 15/05/2011	Plot 7 V2 15/05/2011	Plot 7 V3 15/05/2011	Plot 7 V4 15/05/2011	Plot 7 V5 15/05/2011	Plot 7 V6 15/05/2011
						SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2700	Chrysene	218019	mg kg^{-1}	M	2.6	1.3	< 0.1	< 0.1	< 0.1	420
	Benzo[b]fluoranthene	205992	mg kg^{-1}	M	2.6	1.5	< 0.1	< 0.1	< 0.1	220
	Benzo[k]fluoranthene	207089	mg kg^{-1}	M	1.8	0.72	< 0.1	< 0.1	< 0.1	170
	Benzo[a]pyrene	50328	mg kg^{-1}	M	2.4	1.4	< 0.1	< 0.1	< 0.1	320
	Dibenzo[a,h]anthracene	53703	mg kg^{-1}	M	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	43
	Indeno[1,2,3-cd]pyrene	193395	mg kg^{-1}	M	1.5	0.94	< 0.1	< 0.1	< 0.1	190
	Benzo[g,h,i]perylene	191242	mg kg^{-1}	M	0.25	0.1	< 0.1	< 0.1	< 0.1	150
	Total (of 16) PAHs		mg kg^{-1}	M	34	20	< 2	< 2	< 2	7500

All tests undertaken between 18/05/2011 and 23/05/2011

* Accreditation status

This repor ***be interpreted in conjuction with the notes on the accompanyi*** *page,*

Remediation of Pit 3 after removal of buried tank. concrete

0120565P

Material within Pit No 1

Martin Cooper [Martin@gea-ltd.co.uk]

Sent: 27 January 2011 11:08
To: George Mumford
Attachments: 115621.pdf (79 KB) ; 115620 pdf (81 KB)

George

Further to our visit last week and the sampling and testing of the material from the pit we attach the results.

Our analysis suggests that the material is likely to be classified as non-hazardous; indeed it is below the parameters for use in garden areas! However the material clearly needs to be disposed so that your foundation can be constructed. If you pass on the results, your tip will provide confirmation of this.

The results of the water testing suggests that contaminants in the water are at concentrations below the United Utilities drinking water standards and that the water could be therefore pumped from the excavation into the foul drain on site.

The solids / sludge can then be disposed of and on the basis of the results there is no need for us to inspect and validate the excavation. Just get it done!

Regards

Martin

Geotechnical & Environmental Associates
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Offices in
Hertfordshire
Nottinghamshire
Wiltshire

Chemtest
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LABORATORY TEST REPORT

Waste Acceptance Criteria Waste Parameters

GEA
Tyttenhanger House
Coursers Road
St Albans Herts
AL4 0PG
FAO Matt Legg

Results of analysis of 1 sample
received 20 January 2011
Primrose Village, Clitheroe J10234

Report Date
26 January 2011

Login Batch No						Limit values		115620
Chemtest LIMS ID					Inert waste landfill	Stable non-reactive hazardous waste in non-hazardous landfill	Hazardous waste landfill	AF66146
Sample ID								A+B+C+D
Sample No								Combined
Depth								
Matrix								*SOIL*
Determinand↓	SOP↓	*	CAS No↓	Units↓				
Total Organic Carbon	2625	M		%	3	5	6	4.6
Loss on ignition	2610	N		%			10	9.98
Acid Neutralisation Capacity	2015	N	ANC	mol kg^{-1}		To evaluate	To evaluate	0.022

All tests undertaken between 25-Jan-2011 and 26-Jan-2011

Accreditation status

Report sample ID range AF66146 to AF66147

This report should be interpreted in conjunction with the notes on the accompanying cover page

3201205655P

Chemtest
The right chemistry to deliver results

LABORATORY TEST REPORT

Waste Acceptance Criteria BS EN 12457 Part 3 2 Stage

GEA
Tyttenhanger House
Coursers Road
St Albans Herts
AL4 0PG
FAO Matt Legg

Results of analysis of 1 sample
received 20 January 2011
Primrose Village, Clitheroe J10234

Report Date
26 January 2011

Login Batch No								115620
Chemtest LIMS ID								AF66147
Sample ID						Limit values		A+B+C+D
Sample No					Inert waste landfill	Stable non-reactive hazardous waste in non-hazardous landfill	Hazardous waste landfill	Combined
Depth								
Matrix								*LEACHATE*
Determinand↓	SOP↓	*	CAS No↓	Units↓				
As (arsenic) L/S=2	1450	N	7440382	mg kg-1				<0.05
Ba (barium) L/S=2	1450	N	7440393	mg kg-1				<0.5
Cd (cadmium) L/S=2	1450	N	7440439	mg kg-1				<0.01
Cr (chromium) L/S=2	1450	N	7440473	mg kg-1				<0.05
Cu (copper) L/S=2	1450	N	7440508	mg kg-1				<0.05
Hg (mercury) L/S=2	1450	N	7439976	mg kg-1				<0.005
Mo (molybdenum) L/S=2	1450	N	7439987	mg kg-1				0.13
Ni (nickel) L/S=2	1450	N	7440020	mg kg-1				<0.05
Pb (lead) L/S=2	1450	N	7439921	mg kg-1				<0.05
Sb (antimony) L/S=2	1450	N	7440360	mg kg-1				0.01
Se (selenium) L/S=2	1450	N	7782492	mg kg-1				0.01
Zn (zinc) L/S=2	1450	N	7440666	mg kg-1				<0.5
Cl (chloride) L/S=2	1220	N	16887006	mg kg-1				158
F (fluoride) L/S=2	1220	N	16984488	mg kg-1				1.42
SO4 (sulfate) L/S=2	1220	N	14808798	mg kg-1				188
Total Dissolved Solids L/S=2	1610	N	TDS	mg kg-1				659
Phenol Index L/S=2	1920	N	108952	mg kg-1				<0.5
Dissolved Organic Carbon L/S=2	1610	N	DOC	mg kg-1				132
As (arsenic) L/S=10	1450	N	7440382	mg kg-1	0.5	2	25	0.08
Ba (barium) L/S=10	1450	N	7440393	mg kg-1	20	100	300	<0.5
Cd (cadmium) L/S=10	1450	N	7440439	mg kg-1	0.04	1	5	<0.01
Cr (chromium) L/S=10	1450	N	7440473	mg kg-1	0.5	10	70	<0.05
Cu (copper) L/S=10	1450	N	7440508	mg kg-1	2	50	100	0.18
Hg (mercury) L/S=10	1450	N	7439976	mg kg-1	0.01	0.2	2	<0.005
Mo (molybdenum) L/S=10	1450	N	7439987	mg kg-1	0.5	10	30	0.26
Ni (nickel) L/S=10	1450	N	7440020	mg kg-1	0.4	10	40	0.05
Pb (lead) L/S=10	1450	N	7439921	mg kg-1	0.5	10	50	<0.05
Sb (antimony) L/S=10	1450	N	7440360	mg kg-1	0.06	0.7	5	0.03
Se (selenium) L/S=10	1450	N	7782492	mg kg-1	0.1	0.5	7	0.02
Zn (zinc) L/S=10	1450	N	7440666	mg kg-1	4	50	200	<0.5
Cl (chloride) L/S=10	1220	N	16887006	mg kg-1	800	15000	25000	198
F (fluoride) L/S=10	1220	N	16984488	mg kg-1	10	150	500	5.13
SO4 (sulfate) L/S=10	1220	N	14808798	mg kg-1	1000	20000	50000	303
Total Dissolved Solids L/S=10	1610	N	TDS	mg kg-1	4000	60000	100000	1510
Phenol Index L/S=10	1920	N	108952	mg kg-1	1			<0.5
Dissolved Organic Carbon L/S=10	1610	N	DOC	mg kg-1	500	800	1000	606

All tests undertaken between 25-Jan-2011 and 26-Jan-2011

Column page 1

Accreditation status

Report sample ID range AF66146 to AF66147

This report should be interpreted in conjunction with the notes on the accompanying cover page

GEA
Tyttenhanger House
Coursers Road
St Albans Herts
AL4 0PG

FAO Matt Legg

LABORATORY TEST REPORT

Results of analysis of 2 sample received 20 January 2011

Primrose Village, Clitheroe J10234

Chemtest

Report Date
26 January 2011

Login Batch No					115621
Chemtest LIMS ID					AF66151
Sample ID					PIT1 A+B+C+D Combined
Sample No					
Sampling Date					19/1/2011
Depth					
Matrix					*SOIL*
SOP↓	Determinand↓	CAS No↓	Units↓	*	
2300	Cyanide (total)	57125	mg kg^{-1}	M	<0.50
2325	Sulfide	18496258	mg kg^{-1}	M	4.4
2625	Total Organic Carbon		%	M	5.8
2220	Chloride (extractable)	16887006	g l^{-1}	M	0.066
2430	Sulfate (total)	14808798	mg kg^{-1}	M	2800
2450	Arsenic	7440382	mg kg^{-1}	M	13
	Cadmium	7440439	mg kg^{-1}	M	0.56
	Chromium	7440473	mg kg^{-1}	M	11
	Copper	7440508	mg kg^{-1}	M	34
	Mercury	7439976	mg kg^{-1}	M	<0.10
	Nickel	7440020	mg kg^{-1}	M	23
	Lead	7439921	mg kg^{-1}	M	54
	Selenium	7782492	mg kg^{-1}	M	<0.20
	Zinc	7440666	mg kg^{-1}	M	93
2676	TPH >C5-C6		mg kg^{-1}	U	< 0.1
	TPH >C6-C7		mg kg^{-1}	U	< 0.1
	TPH >C7-C8		mg kg^{-1}	M	< 0.1
	TPH >C8-C10		mg kg^{-1}	M	9.0
	TPH >C10-C12		mg kg^{-1}	M	11
	TPH >C12-C16		mg kg^{-1}	M	23
	TPH >C16-C21		mg kg^{-1}	M	25
	TPH >C21-C35		mg kg^{-1}	M	52
	Total Petroleum Hydrocarbons		mg kg^{-1}	U	120
2700	Naphthalene	91203	mg kg^{-1}	M	0.25
	Acenaphthylene	208968	mg kg^{-1}	M	0.55
	Acenaphthene	83329	mg kg^{-1}	M	0.74
	Fluorene	86737	mg kg^{-1}	M	0.5
	Phenanthrene	85018	mg kg^{-1}	M	3.1
	Anthracene	120127	mg kg^{-1}	M	0.49

All tests undertaken between 21-Jan-2011 and 26-Jan-2011

* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page

GEA
Tyttenhanger House
Coursers Road
St Albans Herts
AL4 0PG

FAO Matt Legg

LABORATORY TEST REPORT

Results of analysis of 2 sample
received 20 January 2011

Primrose Village, Clitheroe J10234

Chemtest

Report Date
26 January 2011

					115621 AF66151 PIT1 A+B+C+D Combined 19/1/2011
					SOIL
2700	Fluoranthene	206440	mg kg^{-1}	M	2
	Pyrene	129000	mg kg^{-1}	M	1.5
	Benzo[a]anthracene	56553	mg kg^{-1}	M	0.73
	Chrysene	218019	mg kg^{-1}	M	0.74
	Benzo[b]fluoranthene	205992	mg kg^{-1}	M	0.44
	Benzo[k]fluoranthene	207089	mg kg^{-1}	M	0.21
	Benzo[a]pyrene	50328	mg kg^{-1}	M	0.52
	Dibenzo[a,h]anthracene	53703	mg kg^{-1}	M	< 0.1
	Indeno[1,2,3-cd]pyrene	193395	mg kg^{-1}	M	0.32
	Benzo[g,h,i]perylene	191242	mg kg^{-1}	M	0.25
	Total (of 16) PAHs		mg kg^{-1}	M	12
2920	Phenols (total)		mg kg^{-1}	N	<0.3
2010	pH		*	M	9.0
2030	Moisture		%	n/a	22.5
	Stones content (>50mm)		%	n/a	<0.02
2140	Soil colour			n/a	black
	Soil texture			n/a	sand
	Other material			n/a	stones

All tests undertaken between 21-Jan-2011 and 26-Jan-2011

* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page

Column page 1
Report page 2 of 3
Report sample ID range AF66151 to AF66152

3201205655P

GEA
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Coursers Road
St Albans Herts
AL4 0PG

FAO Matt Legg

LABORATORY TEST REPORT

Results of analysis of 2 sample
received 20 January 2011

Primrose Village, Clitheroe J10234

Chemtest

Report Date
26 January 2011

Login Batch No					115621
Chemtest LIMS ID					AF66152
Sample ID					PIT
Sample No					W1
Sampling Date					19/1/2011
Depth					
Matrix					*WATER*
SOP↓	Determinand↓	CAS No↓	Units↓	*	
1010	pH	PH	-	U	7.4
1020	Electrical Conductivity	EC	µS cm⁻¹	U	1000
1220	Chloride	16887006	mg l⁻¹	U	190
	Ammonia (free)	7664417	mg l⁻¹	U	0.04
	Nitrate	14797558	mg l⁻¹	U	<0.50
1325	Sulfide	18496258	mg l⁻¹	U	<0.050
1610	Total Organic Carbon	TOC	mg l⁻¹	N	13
1220	Sulfate	14808798	mg l⁻¹	U	100
1450	Arsenic	7440382	µg l⁻¹	U	4.1
	Cadmium	7440439	µg l⁻¹	U	<0.080
	Chromium (total)	7440473	µg l⁻¹	U	9.4
	Mercury	7439976	µg l⁻¹	U	<0.50
	Nickel	7440020	µg l⁻¹	U	3.2
	Lead	7439921	µg l⁻¹	U	11
1670	TPH (Aqueous Phase)		µg l⁻¹	U	<10
1920	Phenols (total)		mg l⁻¹	N	< 0.03

All tests undertaken between 21-Jan-2011 and 26-Jan-2011

* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page

320120565P

Recommendations relative to rear garden areas.

13 December 2010

Our ref: J10234/MC/1

GEA Geotechnical & Environmental Associates

Unit 1 Church Farm
Gotham Road
Kingston on Soar
Notts NG11 0DE

tel 01509 674888
fax 01509 674980
email [illegible]
web [illegible]

Mr George Mumford
Globe Management Services Ltd
Aintree House
Trident Business Park
Daten Avenue
Risley
Warrington
WA3 6BX

Dear George

Re: Primrose Village, Clitheroe Lancashire Phase 1

Further to your instruction dated 1st November 2010 we confirm that we have visited the site and taken samples of soil from the garden areas of the proposed houses. This letter provides recommendations in respect of soil contamination and in disposal of surplus material off site.

The conclusions and recommendations made in this letter are limited to those that can be made on the basis of the investigation. The results of the work should be viewed in the context of the range of data sources consulted, the number of locations where the ground was sampled and the number of soil, gas or groundwater samples tested; no liability can be accepted for information in other data sources or conditions not revealed by the sampling or testing. Any comments made on the basis of information obtained from the client or other third parties are given in good faith on the assumption that the information is accurate; no independent validation of such information has been made by GEA.

SOIL CONTAMINATION

A desk study of the site was undertaken and reported by GEA in April 2008 as J07352 Rep Issue 2. The desk study concluded that the site posed a moderate potential for soil contamination as a result of its previous usage as rail sidings and locally where some of the structures had been used for vehicle repairs.

The site was subsequently investigated by GEA and the findings were reported in Report ref J09126B Rep Issue 1, dated February 2010. The investigation found evidence of elevated PAH across much of the site and recommended that the made ground should be removed from the garden areas.

Following the finalisation of the scheme and the definition of the garden areas, GEA visited the site nd sampled from the gardens of individual plots with the assistance of a setting out engineer from Globe Management Services Limited. A total of 24samples were obtained and 12 of them were subjected to chemical analyses to determine concentrations of a range of typical soil contamination indicative parameters.

The results are attached and indicate generally similar conditions to those measured in the previous report. Widespread elevated concentrations of Benzo(a)pyrene were present across much of the site and localised elevated TPH was encountered within Plot No 7 Plot Nos 8, 11 and 21 did not contain elevated concentrations

REMEDIATION PROPOSALS – Benzo(a)pyrene

The locations from which the samples have been taken were surveyed and the current and proposed levels are known. There is therefore a high degree of confidence that the results relate to specific parts of the site and that remedial measures can be established on a plot by plot basis.

The remedial measures require the placement of a layer of clean cover to break the pathway from the Benzo(a)pyrene present in the made ground to the end users of the site through ingestion of soil, dust or home-grown produce. The depth of clean cover has been determined by comparing the concentrations of B(a)p present with a range of values for typical clean imported soil of between 0.1 mg/kg and 0.5 mg/kg. The cover calculations in accordance with the BRE methodology which assumes a maximum likely mixing zone of 600mm have determined that a depth of clean material of 550 mm should be imported into garden areas.

In parts of the site the existing site level needs to be reduced; in such cases the made ground will require excavation to allow a depth of 550 mm of imported clean cover to up to the proposed ground level. If the natural soils are exposed during this excavation however, the excavation may cease and sufficient clean material placed to achieve the desired final level.

Where the site requires raising then the site may need reducing first to ensure that 550 mmm of clean material can be placed.

The soils encountered within Plot Nos 8 to 11 were different from the rest of the site as the made ground comprised humic sandy gravel with no extraneous material and was limited to a depth of 0.2 m. The made ground was underlain by natural Glacial Till and on this basis no further action is required other than importing enough topsoil to support plant growth.

The following table summarises the measures required on a plot by plot basis.

Plot No	Existing Ground Level (mOD)	Proposed Ground Level (mOD)	Required Cut (-ve) or Fill (+ve) (m)	Remedial Measures	Relevant Plot Nos
2	72.15	71.3	-0.85	Excavate 1.4 m, place 0.55 m cover	1,2
4	71.87	71.3	-0.57	Excavate 1.1 m, place 0.55 m cover	3,4
5	71.7	70.85	-0.85	Excavate 1.4 m, place 0.55 m cover	5,6
7	71.2	70.85	-0.35	Excavate 0.9 m, place 0.55 m cover	7
8	70.8	70.85	+0.05	None Required	8,9
11	70.53	70.85	+0.52	None Required	10,11
12	69.1	69.3	+0.2	Excavate 0.35 m, place 0.55 m cover	12,13,14
15	69.2	69.6	+0.4	Excavate 0.15 m, place 0.55 m cover	15,16
18	69.3	69.6	+0.3	Excavate 0.25 m, place 0.55 m cover	17,18
21	69.7	70.2	+0.5	Excavate 0.05 m, place 0.55 m cover	19,20,21,22
25	69.79	69.8	+0.03	Excavate 0.52 m, place 0.55 m cover	23,24,25

320120565P

Treated individually see report 27/6

REMEDIATION PROPOSALS – TPH

An elevated concentration of TPH was measured in the sample from Plot No 7 at a depth of 0.25 m. The sample from 0.5 m in the same trial pit did not contain elevated TPH and indicates that the contamination is highly localised in terms of area and probably results from a surface spillage. Since a depth of 0.9 m will need to be removed, it is suggested that the material from this plot be separated from the rest of the excavation and stored in a separate sealed skip pending testing or simply removing from site. Further testing could be undertaken to determine a waste classification but the results indicate this small volume is likely to be a hazardous waste whilst the made ground from the remainder of the site would generally be classified as a non-hazardous waste.

Completion

The remedial proposals as described above must be monitored and validated through records of levels in excavations and tickets must be retained confirming the quality of any imported material. On completion of the works a report will be compiled that describes the remediation undertaken and documents each stage in the process. This report would set out the scale of any residual risk resulting from the remaining known contaminants.

Site Workers

Site workers will be made aware of the contamination and a programme of working will be identified to protect workers handling any soil. The method of site working will be in accordance with guidelines set out by HSE[1] and CIRIA[2] and the requirements of the Local Authority Environmental Health Officer.

We trust that the above sufficiently clarifies the remediation strategy but would be pleased to discuss these issues further if requested

Yours faithfully
GEOTECHNICAL & ENVIRONMENTAL ASSOCIATES

Martin Cooper

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1 HSE (1992) HS(G)66 *Protection of workers and the general public during the development of contaminated land* HMSO

2 CIRIA (1996) *A guide for safe working on contaminated sites* Report 132, Construction Industry Research and Information Association

GLOBE CONSTRUCTION

LOCATIONS FOR TRIAL HOLE INVESTIGATIONS AT PRIMROSE VILLAGE, CLITHEROE - TAKEN TUESDAY 9TH

PT ID	EASTING	NORTHING	Proposed Finished Level
1	1041.403	5196.012	71.300
2	1033.795	5198.332	71.300
3	1029.994	5195.311	71.300
4	1031.192	5189.733	71.300
5	1023.553	5190.787	70.850
6	1022.974	5182.863	70.850
7	1017.070	5179.798	70.850
8	992.139	5165.617	70.850
9	994.561	5157.689	70.850
10	1000.658	5157.043	70.850
11	1000.370	5151.192	70.850
12	959.564	5187.171	69.300
13	966.075	5188.052	69.300
14	963.315	5194.423	69.300
15	970.115	5197.199	69.600
16	968.390	5204.298	69.600
17	975.423	5206.170	69.600
18	974.533	5214.198	69.600
19	983.934	5217.589	70.200
20	981.913	5226.285	70.200
21	989.069	5226.696	70.200
22	992.430	5231.760	69.800
23	990.375	5239.726	69.800
24	997.973	5239.830	69.800
25	999.175	5248.044	69.800

320120565P

BLOCK 1
+ 71.45
BLOCK 2
+ 71.00
BLOCK 3
+ 71.00
BLOCK 4
+ 69.50
BLOCK 5
+ 69.80
BLOCK 6
+ 70.40
BLOCK 7
+ 71.00
PRIMROSE VILLAGE
TRIAL HOLE INVESTIGATIONS
GLOBE

GEA
Tyttenhanger House
Coursers Road
St Albans Herts
AL4 0PG

FAO Martin Cooper

LABORATORY TEST REPORT

Results of analysis of 12 samples
received 15 November 2010

Primrose Village, Clitheroe J10234

Chemtest

Report Date
23 November 2010

Login Batch No					103227							
Chemtest LIMS ID					AF47930	AF47931	AF47932	AF47933	AF47934	AF47935	AF47936	AF47937
Sample ID					Plot 2	Plot 4	Plot 5	Plot 7	Plot 7	Plot 8	Plot 11	Plot 12
Sample No					D1	D1	D1	D1	D2	D1	D1	D1
Sampling Date					9/11/2010	9/11/2010	9/11/2010	9/11/2010	9/11/2010	9/11/2010	9/11/2010	9/11/2010
Depth					0.2m	0.1m	0.4m	0.25m	0.5m	0.3m	0.1m	0.5m
Matrix					*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
SOP↓	Determinand↓	CAS No↓	Units↓	*								
2300	Cyanide (total)	57125	mg kg^{-1}	M	2.3	<0.50	0.50	<0.50	<0.50	<0.50	<0.50	<0.50
2325	Sulfide	18496258	mg kg^{-1}	M	3.0	3.3	3.8	7.4	6.1	7.8	6.5	3.9
2625	Total Organic Carbon		%	M	5.2	5.9	3.7	4.0	3.8	5.9	6.0	28
2220	Chloride (extractable)	16887006	g l^{-1}	M	<0.010	<0.010	<0.010	0.013	<0.010	0.014	<0.010	<0.010
2430	Sulfate (total)	14808798	mg kg^{-1}	M	5300	3700	7500	6100	7000	5500	6700	2600
2450	Arsenic	7440382	mg kg^{-1}	M	23	15	19	13	21	8.4	9.3	15
	Cadmium	7440439	mg kg^{-1}	M	0.42	0.60	0.67	0.60	1.00	1.3	0.61	0.14
	Chromium	7440473	mg kg^{-1}	M	18	24	21	15	26	<5.0	7.7	10
	Copper	7440508	mg kg^{-1}	M	67	44	36	34	45	8.0	9.4	49
	Mercury	7439976	mg kg^{-1}	M	0.24	0.29	0.27	0.15	0.23	0.18	<0.10	0.13
	Nickel	7440020	mg kg^{-1}	M	23	27	21	17	27	19	14	22
	Lead	7439921	mg kg^{-1}	M	210	260	270	180	270	25	21	45
	Selenium	7782492	mg kg^{-1}	M	0.47	<0.20	<0.20	<0.20	<0.20	0.35	<0.20	<0.20
	Zinc	7440666	mg kg^{-1}	M	130	140	150	120	170	150	70	28
2676	TPH >C5-C6		mg kg^{-1}	U	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	TPH >C6-C7		mg kg^{-1}	U	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	2.3
	TPH >C7-C8		mg kg^{-1}	M	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	9.2
	TPH >C8-C10		mg kg^{-1}	M	< 0.1	< 0.1	< 0.1	0.56	< 0.1	< 0.1	< 0.1	14
	TPH >C10-C12		mg kg^{-1}	M	1.4	0.12	0.11	4.3	0.37	2.8	< 0.1	9.6
	TPH >C12-C16		mg kg^{-1}	M	3.1	1.2	2.9	31	2.8	5.3	< 0.1	21
	TPH >C16-C21		mg kg^{-1}	M	7.9	8.6	6.8	64	11	42	< 0.1	26
	TPH >C21-C35		mg kg^{-1}	M	32	30	20	1300	26	13	< 0.1	15
	Total Petroleum Hydrocarbons		mg kg^{-1}	U	45	40	30	1400	40	63	< 10	97
2700	Naphthalene	91203	mg kg^{-1}	M	0.8	1.6	1.7	1.3	0.99	< 0.1	< 0.1	1.6
	Acenaphthylene	208968	mg kg^{-1}	M	0.2	0.54	0.81	0.5	0.18	< 0.1	< 0.1	2.4
	Acenaphthene	83329	mg kg^{-1}	M	0.53	2.9	3.1	1.5	1.3	< 0.1	< 0.1	0.86
	Fluorene	86737	mg kg^{-1}	M	0.7	2.2	2.6	2	1.6	< 0.1	< 0.1	1.7
	Phenanthrene	85018	mg kg^{-1}	M	3.5	11	12	9.8	7.6	1.2	0.32	4.3
	Anthracene	120127	mg kg^{-1}	M	1	3	2.8	3	2.3	1.3	< 0.1	1

All tests undertaken between 16-Nov-2010 and 22-Nov-2010

* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page

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FAO Martin Cooper

LABORATORY TEST REPORT

Results of analysis of 12 samples received 15 November 2010

Primrose Village, Clitheroe J10234

Chemtest

Report Date 23 November 2010

					103227							
					AF47930	AF47931	AF47932	AF47933	AF47934	AF47935	AF47936	AF47937
					Plot 2 D1 9/11/2010 0.2m SOIL	Plot 4 D1 9/11/2010 0.1m SOIL	Plot 5 D1 9/11/2010 0.4m SOIL	Plot 7 D1 9/11/2010 0.25m SOIL	Plot 7 D2 9/11/2010 0.5m SOIL	Plot 8 D1 9/11/2010 0.3m SOIL	Plot 11 D1 9/11/2010 0.1m SOIL	Plot 12 D1 9/11/2010 0.5m SOIL
2700	Fluoranthene	206440	mg kg^{-1}	M	5.3	10	13	15	11	1.3	0.31	3
	Pyrene	129000	mg kg^{-1}	M	4.8	8.2	9.4	12	8	0.93	0.23	2.7
	Benzo[a]anthracene	56553	mg kg^{-1}	M	2.8	4	4.7	6.8	4.3	0.42	< 0.1	1.3
	Chrysene	218019	mg kg^{-1}	M	3	4.9	6	6.9	4.7	0.52	< 0.1	1.7
	Benzo[b]fluoranthene	205992	mg kg^{-1}	M	3.8	4.9	5.6	7.8	4.9	0.58	< 0.1	1.3
	Benzo[k]fluoranthene	207089	mg kg^{-1}	M	2.4	2.9	3.1	3.7	2.7	0.38	< 0.1	0.64
	Benzo[a]pyrene	50328	mg kg^{-1}	M	3	3.9	4.5	6	3.7	0.45	< 0.1	1.1
	Dibenzo[a,h]anthracene	53703	mg kg^{-1}	M	0.23	0.53	0.61	0.63	< 0.1	< 0.1	< 0.1	0.27
	Indeno[1,2,3-cd]pyrene	193395	mg kg^{-1}	M	1.8	2.3	2.8	3.9	2.3	0.29	< 0.1	0.34
	Benzo[g,h,i]perylene	191242	mg kg^{-1}	M	1.6	2.2	2.2	3	2	0.28	< 0.1	0.38
	Total (of 16) PAHs		mg kg^{-1}	M	35	65	75	84	58	7.7	< 2	25
2920	Phenols (total)		mg kg^{-1}	N	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
2010	pH		-	M	8.9	8.5	8.3	9.8	9.3	8.6	8.6	7.8
2030	Moisture		%	n/a	13.2	17.1	11.3	10.7	18.8	6.67	11	22.1
	Stones content (>50mm)		%	n/a	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2140	Soil colour			n/a	brown	brown	brown	brown	brown	brown	brown	brown
	Soil texture			n/a	sand	sand	sand	sand	clay	sand	sand	sand
	Other material			n/a	stones	stones	stones	stones	stones	stones	stones	stones

All tests undertaken between 16-Nov-2010 and 22-Nov-2010

" Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page

Column page 1
Report page 2 of 2
Report sample ID range AF47930 to AF47941

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LABORATORY TEST REPORT

Results of analysis of 12 samples received 15 November 2010

Primrose Village, Clitheroe J10234

Chemtest

Report Date
23 November 2010

Login Batch No					103227			
Chemtest LIMS ID					AF47938	AF47939	AF47940	AF47941
Sample ID					Plot 15	Plot 18	Plot 21	Plot 25
Sample No					D1	D1	D1	D1
Sampling Date					9/11/2010	9/11/2010	9/11/2010	9/11/2010
Depth					0.15m	0.3m	0.35m	0.4m
Matrix					*SOIL*	*SOIL*	*SOIL*	*SOIL*
SOP↓	Determinand↓	CAS No↓	Units↓					
2300	Cyanide (total)	57125	mg kg-1	M	<0.50	<0.50	<0.50	<0.50
2325	Sulfide	18496258	mg kg-1	M	3.5	4.4	3.3	3.3
2625	Total Organic Carbon		%	M	11	11	20	18
2220	Chloride (extractable)	16887006	g l-1	M	<0.010	<0.010	0.016	<0.010
2430	Sulfate (total)	14808798	mg kg-1	M	4400	3500	4700	3300
2450	Arsenic	7440382	mg kg-1	M	12	12	7.5	12
	Cadmium	7440439	mg kg-1	M	0.62	0.49	0.14	0.29
	Chromium	7440473	mg kg-1	M	18	7.5	<5.0	9.3
	Copper	7440508	mg kg-1	M	35	24	11	38
	Mercury	7439976	mg kg-1	M	0.11	0.10	<0.10	<0.10
	Nickel	7440020	mg kg-1	M	19	15	5.9	17
	Lead	7439921	mg kg-1	M	94	81	22	160
	Selenium	7782492	mg kg-1	M	<0.20	0.36	<0.20	0.29
	Zinc	7440666	mg kg-1	M	160	68	16	100
2676	TPH >C5-C6		mg kg-1	U	< 0.1	< 0.1	< 0.1	< 0.1
	TPH >C6-C7		mg kg-1	U	< 0.1	< 0.1	5.2	5.2
	TPH >C7-C8		mg kg-1	M	< 0.1	8.9	16	8.7
	TPH >C8-C10		mg kg-1	M	< 0.1	11	25	14
	TPH >C10-C12		mg kg-1	M	3.2	4.4	13	12
	TPH >C12-C16		mg kg-1	M	45	13	44	22
	TPH >C16-C21		mg kg-1	M	90	16	37	22
	TPH >C21-C35		mg kg-1	M	380	52	46	33
	Total Petroleum Hydrocarbons		mg kg-1	U	520	100	190	120
2700	Naphthalene	91203	mg kg-1	M	0.69	1.5	< 0.1	2.9
	Acenaphthylene	208968	mg kg-1	M	1.1	1.4	< 0.1	2.8
	Acenaphthene	83329	mg kg-1	M	0.77	0.45	< 0.1	0.67
	Fluorene	86737	mg kg-1	M	0.59	0.98	< 0.1	1.8
	Phenanthrene	85018	mg kg-1	M	4.3	2.5	2.2	3.7
	Anthracene	120127	mg kg-1	M	1.3	0.7	0.24	0.63

All tests undertaken between 16-Nov-2010 and 22-Nov-2010

This report should be interpreted in conjunction with the notes on the accompanying cover page

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LABORATORY TEST REPORT

Results of analysis of 12 samples received 15 November 2010

Primrose Village, Clitheroe J10234

Chemtest

Report Date 23 November 2010

					103227			
					AF47938	AF47939	AF47940	AF47941
					Plot 15	Plot 18	Plot 21	Plot 25
					D1	D1	D1	D1
					9/11/2010	9/11/2010	9/11/2010	9/11/2010
					0.15m	0.3m	0.35m	0.4m
					SOIL	SOIL	SOIL	SOIL
2700	Fluoranthene	206440	mg kg^{-1}	M	7.5	3.8	0.75	4.6
	Pyrene	129000	mg kg^{-1}	M	6.2	3.2	0.59	3.7
	Benzo[a]anthracene	56553	mg kg^{-1}	M	3.5	1.8	0.24	1.9
	Chrysene	218019	mg kg^{-1}	M	4.6	2.3	0.58	2.4
	Benzo[b]fluoranthene	205992	mg kg^{-1}	M	6.2	2.7	0.29	2.8
	Benzo[k]fluoranthene	207089	mg kg^{-1}	M	3.1	2.1	0.21	1.3
	Benzo[a]pyrene	50328	mg kg^{-1}	M	5.6	2.7	0.12	2
	Dibenzo[a,h]anthracene	53703	mg kg^{-1}	M	0.16	0.15	< 0.1	< 0.1
	Indeno[1,2,3-cd]pyrene	193395	mg kg^{-1}	M	3.2	1.8	0.13	1
	Benzo[g,h,i]perylene	191242	mg kg^{-1}	M	3	1.6	< 0.1	1.2
	Total (of 16) PAHs		mg kg^{-1}	M	52	30	5.4	33
2920	Phenols (total)		mg kg^{-1}	N	<0.3	<0.3	<0.3	<0.3
2010	pH		-	M	8.4	8.4	8.1	8.1
2030	Moisture		%	n/a	9.77	9.87	8.51	18.9
	Stones content (>50mm)		%	n/a	<0.02	<0.02	<0.02	<0.02
2140	Soil colour			n/a	brown	brown	brown	brown
	Soil texture			n/a	sand	sand	sand	sand
	Other material			n/a	stones	stones	stones	stones

All tests undertaken between 16-Nov-2010 and 22-Nov-2010

This report should be interpreted in conjunction with the notes on the accompanying cover page

Column page 2
Report page 2 of 2
Report sample ID range AF47930 to AF47941

3201205 65 P

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FAO Martin Cooper

LABORATORY TEST REPORT

Results of analysis of 1 sample received 24 November 2010

Primrose Village, Clitheroe J10234

Chemtest
The right chemistry to deliver results

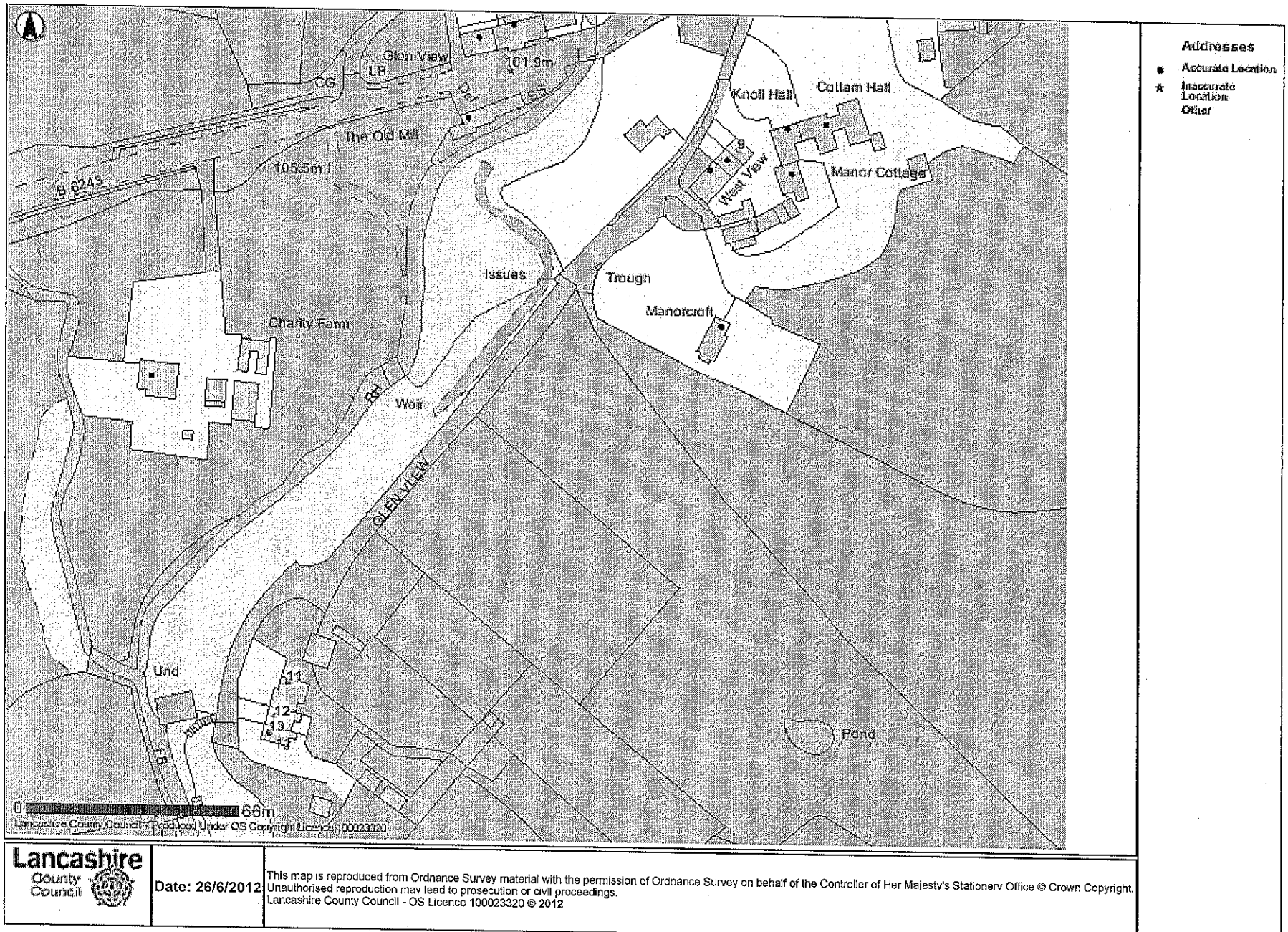
Report Date
02 December 2010

Login Batch No					121566
Chemtest LIMS ID					AF51546
Sample ID					Plot 7
Sample No					D1
Sampling Date					15/11/2010
Depth					0.25m
Matrix					*SOIL*
SOP↓	Determinand↓	CAS No↓	Units↓	*	
2675	TPH aliphatic >C5-C6		mg kg^{-1}	N	< 0.1
	TPH aliphatic >C6-C8		mg kg^{-1}	N	< 0.1
	TPH aliphatic >C8-C10		mg kg^{-1}	N	< 0.1
	TPH aliphatic >C10-C12		mg kg^{-1}	N	< 0.1
	TPH aliphatic >C12-C16		mg kg^{-1}	N	< 0.1
	TPH aliphatic >C16-C21		mg kg^{-1}	N	< 0.1
	TPH aliphatic >C21-C35		mg kg^{-1}	N	< 0.1
	TPH aliphatic >C35-C44		mg kg^{-1}	N	< 0.1
	TPH aromatic >C5-C7		mg kg^{-1}	N	< 0.1
	TPH aromatic >C7-C8		mg kg^{-1}	N	< 0.1
	TPH aromatic >C8-C10		mg kg^{-1}	N	< 0.1
	TPH aromatic >C10-C12		mg kg^{-1}	N	< 0.1
	TPH aromatic >C12-C16		mg kg^{-1}	N	1.3
	TPH aromatic >C16-C21		mg kg^{-1}	N	7.7
	TPH aromatic >C21-C35		mg kg^{-1}	N	22
	TPH aromatic >C35-C44		mg kg^{-1}	N	43
	Total Petroleum Hydrocarbons		mg kg^{-1}	N	< 0.1
			mg kg^{-1}	N	75

All tests undertaken between 15/11/2010 and 15/11/2010

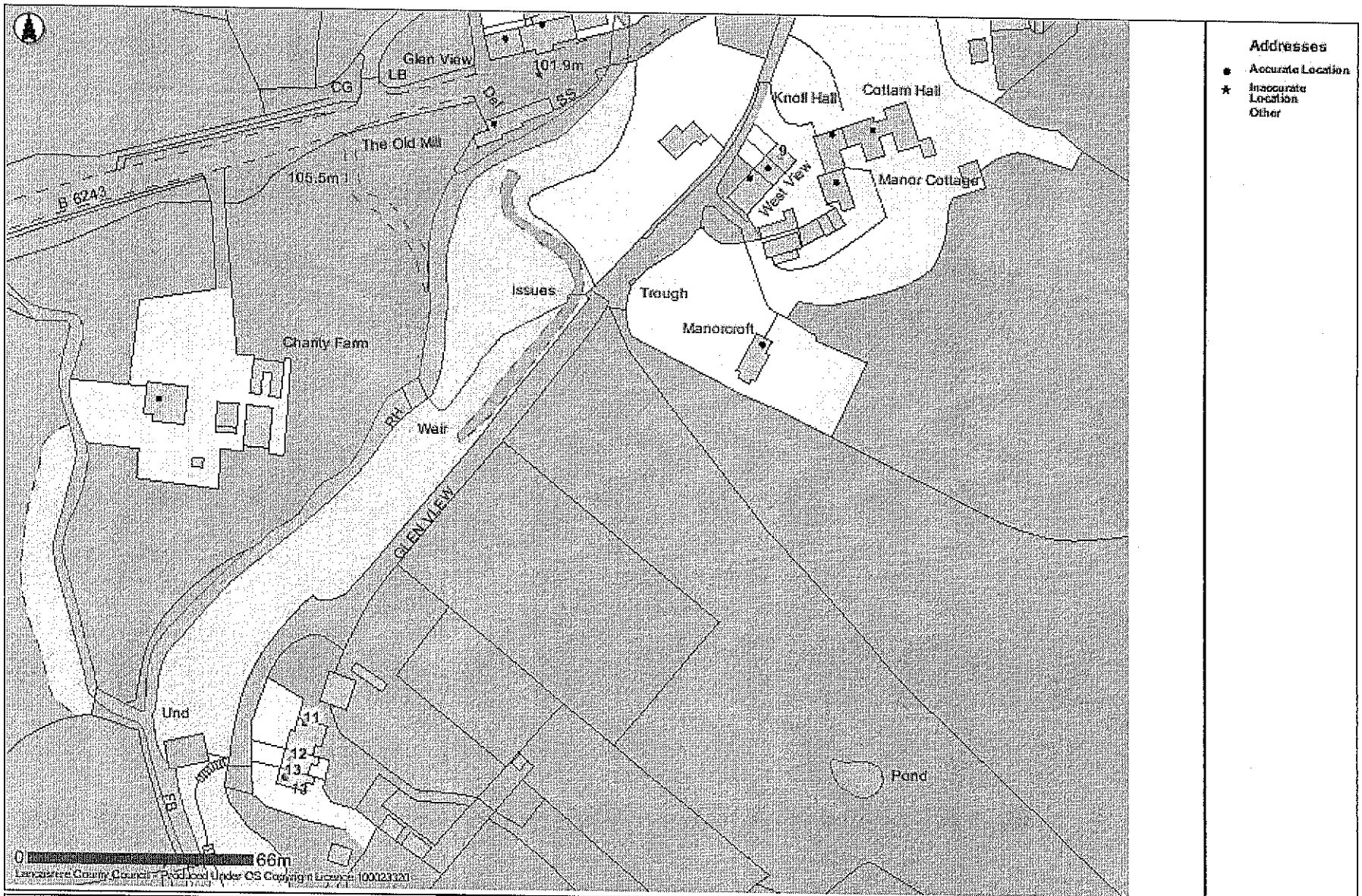
* Accreditation status

This report should be interpreted in conjuction with the notes on the accompanying cover page.



Lancashire County Council

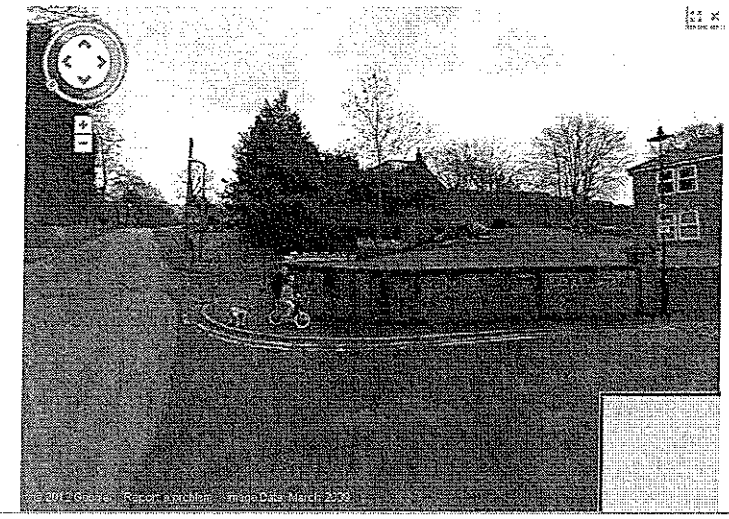
Date: 26/6/2012



3201205650

Google

To see all the details that are visible on the screen, use the "Print" link next to the map.



3201205652

DATE INSPECTED: 18/05/2012

Ribble Valley Borough Council

3/2012/0565/P

DELEGATED ITEM FILE REPORT - APPROVAL

Ref: GT

Application No:	3/2012/0424/P
Development Proposed:	The proposal is for ground mounted PV array to be installed in the field to the NW of Worston House, in a low profile arrangement. The proposal also includes the planting of a Thuja screen hedge and the creation of a wildflower meadow in the area of the field surrounding the PV modules. Worston House, Worston, Lancashire, BB7 1QA.

CONSULTATIONS: Parish/Town Council

Worston and Mearley Parish Council – The PC have received a number of comments from villagers suggesting that the Thuja hedging would not be appropriate for this village environment. The suggestion is that beech and hawthorn are appropriate.

CONSULTATIONS: Highway/Water Authority/Other Bodies

N/A

CONSULTATIONS: Additional Representations

One letter of objection has been received with the following points being raised,

1. It will be visually offensive in an AONB,
2. It will be seen from several footpaths,
3. It will have an adverse affect on local amenity, and
4. It is likely to be more financially attractive to the applicant that environmentally attractive to the local or wider community.

RELEVANT POLICIES:

Policy G1 - Development Control.
Policy ENV3 – Development in Open Countryside.
Policy ENV9 – Important Wildlife Site.
Policy ENV16 – Conservation Areas (setting; views out of)
Policy ENV24 - Renewable Energy.
Policy ENV25 - Renewable Energy
Planning (Listed Buildings and Conservation Areas) Act 1990.
NPPF
Worston Conservation Area Appraisal (April 2007).
Biological Heritage Sites guidelines (1998).

COMMENTS/ENVIRONMENTAL/AONB/HUMAN RIGHTS ISSUES/RECOMMENDATION:

This proposed development is for a 20kW ground mounted solar photovoltaic (PV) system to be installed in the field to the NW of Worston House, Worston The PV modules will be installed on individual mounting consoles that are anchored in position by using gravel as ballast. This method has been proposed as this ensures no concrete foundations are required, therefore ensuring that the sustainable technique will not leave a legacy in the field when the system is de-commissioned. The PV modules are an all black panel with a black frame, chosen so as to minimise the visual impact of the installation. The applicant intends to surround the site with a new hedgerow so as to screen the development, as well as planting wild meadow seeds to grow around the modules The key considerations with regards to this

proposal are therefore the visual impact on the setting and character of the Conservation Area, as well as the visual impact of the scheme in general.

The site lies to the south east of Worston, some 60m outside the village boundary of Worston, and lies within open countryside (RVDLP Policy ENV2) The field in question sits adjacent to Brookside Cottage, which is within the ownership of the applicant (owner of Worston House) and is currently enclosed by an existing stone wall to the northern boundary, a hedgerow to the western boundary and a traditional, agricultural timber fence to the south and eastern boundaries. The Agent notes within the Planning, Heritage, Design & Access Statement that the site has had no use other than by the Applicant to plant fruit bushes in, and that in the past 12 months the field has been cleared and levelled in order to prepare for this development. From an ecological point of view, the site appears to lay adjacent to/partially within a Biological Heritage site, however the site maps on the LCC Mapzone are unclear as to the correct boundary. Historic maps and 20th century aerial photos show the land be building free since the late 19th Century. The public right of way FP1 runs immediately to the north of the site, with views of the site also available from FP7 to the south/east of the site. The site, along with the rest of the land to the south of Worston Brook, is highlighted as significant open space on the Worston Conservation Area Appraisal, and is also part of the land over which 'Important Views' are highlighted.

Within paragraph 17 of the National Planning Policy Framework, one of the core planning principals supports the 'transition to a low carbon future in a changing climate, and encourage the use of renewable resources (for example, by the development of renewable energy)' However given the sites location within the Worston Conservation Area, this must be achieved by 'conserving heritage assets in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of this and future generations', another core planning principal within paragraph 17. The site is highlighted within the Worston Conservation Area Appraisal section 'Green Spaces, Trees and Other Natural Elements', as a 'green' space of particular note, and mentions the sites historical use as a bullring and that the stone and ring to where the bulls were tethered can still be found. The development proposed seeks no engineering works on site with all the modules sited on the land, weighed down by gravel ballasts. The meadow is therefore maintained in its current state and could easily be returned to its existing state by the removal of the modules, thereby conserving the heritage asset in a manner appropriate to its significance.

As the scheme relates to a scheme for the harnessing of a renewable energy, paragraph 98 of the NPPF is relevant. It advises that 'When determining planning applications, local planning authorities should:

- not require applicants for energy development to demonstrate the overall need for renewable or low carbon energy and also recognise that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions; and
- approve the application if its impacts are (or can be made) acceptable

Whilst visually the introduction of the modules onto the site will change the nature of the site, due to their low level appearance (0.53m off the ground) and the proposed screen planting on the boundaries, this minimal visual impact is more than successfully mitigated by the proposed screen planting.

The site lies within the Worston Conservation Area (a heritage asset) and as such paragraph 132 of the NPPF is considered to be important when considering the impact of a proposed development on the significance of a designated heritage asset. It notes that 'great weight should be given to the asset's conservation, and the more important the asset, the greater the weight should be Significance can be harmed or lost through alteration or destruction of the heritage asset or development within its setting As heritage assets are irreplaceable, any harm or loss should require clear and convincing justification. Paragraph 134 continues noting that 'Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public

benefits of the proposal, including securing its optimum viable use.

As noted earlier, the site is highlighted within the Worston Conservation Area Appraisal section 'Green Spaces, Trees and Other Natural Elements', as a 'green' space of particular note, and mentions the sites historical use as a bullring and that the stone and ring to where the bulls were tethered can still be found. The important views out of the Conservation Area, highlighted within the Conservation Area Appraisal, do not mention this site, or indeed the other land to the south of the brook, and seem to highlight the looming presence of Pendle Hill and the view of the surrounding countryside. This site is not significantly visible from the Calf's Head Car Park (the location of one of the 'Important Views'), and given the development proposed seeks no engineering works on site with all the modules sited on the land, weighed down by gravel ballasts, whilst visually the introduction of the modules onto the site will change the nature of the site, due to their low level appearance (0.53m off the ground) and the proposed screen planting on the boundaries, this minimal visual impact is more than successfully mitigated by the proposed screen planting. Therefore, due to the meadow being maintained in its current state and could easily be returned to its existing state by the removal of the modules, and that the bullring is retained on site, the heritage asset is preserved in a manner appropriate to its significance.

With regards to the potential impact on flora and fauna, paragraph 118 of the NPPF notes that 'When determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the following principle, amongst others:

- opportunities to incorporate biodiversity in and around developments should be encouraged.

The site appears to lay adjacent to/partially within a Biological Heritage site, however the site maps on the LCC Mapzone are unclear as to the correct boundary. The Biological Heritage Sites guidelines (1998) for this BHS note that the site forms an area of old established semi-natural grassland (Gr3), with the likely species on this site also including those falling within category Ff4. As noted earlier in this report, the site has had no use other than by the Applicant to plant fruit bushes in and in the past 12 months the field has been cleared and levelled in order to prepare for this development. The applicant proposes to re-seed the land once the modules are in place, however the proposed mix would need to be approved before it is sown.

Local plan policies are also considerations when assessing proposals of this nature, namely Policy ENV24 which states that *'In view of the general environmental benefits associated with harnessing renewable energy sources, the Borough Council will support the development of renewable energy schemes provided it can be shown that such developments would not cause unacceptable harm to interests of acknowledged importance in the local environment'.* Policy ENV25 continues this guidance stating that *'In assessing proposals for renewable energy schemes, the Borough Council will have particular regard to the following issues: -*

(i) The immediate and wider impact of the proposed development on the landscape, and AONB in particular the need to protect features and areas of natural, cultural, historic and archaeological interest;

(ii) The measures that would be taken, during and after construction, to minimise the impact of the development on local land use and residential amenity,

(iii) The local and wider benefits the proposal may bring; and

(iv) The fact that certain renewable energy resources can only be harnessed where the resource occurs.

The accompanying text at 4.11.5 states *'The Borough Council will need to consider both the immediate impact of renewable energy projects on the local environment and their wider contribution to reducing emissions of greenhouse gases'.*

Policy ENV16 of the Ribble Valley Districtwide Local Plan is 'saved' and concerns development proposals and conservation areas. This states *'... the desirability of preserving*

or enhancing the character or appearance of a conservation area will also be a material consideration in deciding development proposals outside the designated area which would affect its setting or views into or out of the area'.

In my opinion, the benefits of the scheme outweigh any harm to the character (including setting) and significance of the Conservation Area, the open space character of the site is retained thanks to the low level nature of the development, as are the important views out of the Conservation Area and the landscape character of the area is sufficiently protected by virtue of the mitigation planting proposed. On this basis, the application is recommended accordingly.

SUMMARY OF REASONS FOR APPROVAL:

The proposal represents an appropriate form of development and given its design, size and location would not result in visual detriment to the Worston Conservation Area or surrounding countryside, nor would its use have an adverse impact on the character and setting of the Conservation Area.

RECOMMENDATION: That planning permission be granted.