APPLICATION SITE CONDITION REPORT

MERIDEN QUARRY WASTE TRANSFER STATION
CORNETS END LANE,
MERIDEN,
COVENTRY,
CV7 7LG

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Project Quality Assurance
Information Sheet

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MERIDEN WTS, CORNETS END LANE, MERIDEN, COVENTRY, CV7 7LG

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EXECUTIVE SUMMARY

Executive Summary	
Site Address:	Meriden Waste Transfer Station Cornets End Lane, Meriden, Coventry, CV7 7LG
Site National Grid Reference (NGR):	SP 23044 81103
Site Operator:	Biffa Waste Services Limited
Proposed Activity:	Operation of a Waste Transfer Facility for non-hazardous Industrial and Commercial waste streams for the principle purpose of bulking for onward transfer for recovery or disposal. Onsite treatment activities will be limited to manual and plant assisted sorting/separation. The proposed annual throughput at the site is 50,000 tonnes. This will broadly comprise general wastes, dry mixed recyclates and construction and demolition wastes Waste storage and treatment will be conducted within a fully enclosed building with roller shutter doors, fire detection systems, odour and fire suppression, impermeable surfaces and sealed drainage. The external areas of the site will also comprise impermeable surfaces and a drainage system which will direct surface water to an interceptor and subsequently the onsite surface water attenuation pond before being discharged to surface water off site (emission point S1).
Site History and Current Use:	The development history of the site includes agricultural use, sand extraction and landfilling around 1970, before returning to a field and subsequently the current development, for which construction commenced in 2017. Surrounding the site only one historic landfill was identified approximately 860m north-northwest on Somers Lane, in which inert household waste was deposited. There is one landfill currently situated 255m south-west of the site, CEMEX Berkswell Quarry and Landfill. There is also a quarry to the north-east, ~70m from the site which is to be restored within a combination of 'non-waste' overburden supplemented with suitable inert waste for recovery for part of the site, and suitable inert waste for the rest of the site.
Ground Conditions:	BGS maps show the local geology to comprise superficial Glaciofluvial Deposits comprising Sand and Gravel. Beneath the site and across the quarries areas to the north and south of the site, the sand and gravel deposits have or are in the process of being removed (in part or to the full depth). Beneath the site and many of the worked areas in the quarries to the north and south have been restored through the deposit of wastes. These superficial deposits are underlain by Bedrock of the Mercia Mudstone Group. The superficial deposits on site have been classed as having High Leaching Potential (H2). This is defined as deep, permeable, coarse textured soils which readily transmit a wide range of pollutants because of their rapid drainage and low attenuation potential. This classification does not account for the materials placed to restore the site and surrounding quarries, although the characteristic of these materials can be highly variable. The site surfaces comprise impermeable hardstanding (i.e. concrete paving). During the 2015 Ground Investigation it was proved the presence of made ground to depths in excess of 5.4m below ground level. It is suspected that Made Ground is present to a greater depth owing to the site's history as a landfill, although sand and gravel deposits have been proven to remain beneath the made ground beneath the site.
Environmental Review:	Site-specific baseline data was gathered in 2015 during a Ground Investigation due to the former land uses at the site, i.e. landfilling, therefore, the potential for ground contamination and landfill gas generation to be present was considered likely. It was found that a potential risk to groundwater was present and ground gas comprising CO2 was recorded within the boreholes on at least one occasion. Asbestos was found at 5 locations with a maximum of 0.003% asbestos within the overall mass. The baseline data gathered in 2015 has been used to establish the baseline condition of the site.

Executive Summary	
	Owing to the high level of containment at the site and the pollution prevention controls installed and maintained at the site, including impermeable surfacing, sealed drainage systems etc, the risk of contamination of the soil and groundwater underlying the site resulting from the proposed operations is considered to be very low.
This summary should be read in conjunction with the main report and reflects an assessment of the Site based on the information available at the time.	

1.0 SITE CONDITION REPORT CONTEXT

1.1 Sirius Environmental Limited ('Sirius') has been commissioned by Biffa Waste Services Limited ('Biffa') to prepare and submit a Site Condition Report to support an Environmental Permit Application for the operation of a Waste Transfer Station at Cornets End Lane, Meriden, Coventry, CV7 7LG. The relevant documentation is submitted in accordance with the Environmental Permitting (England & Wales) Regulations 2016 (referred to hereafter as the EP Regulations).

1.2 Biffa Waste Services Limited are seeking to operate a new Non-Hazardous Waste Transfer Station located near Meriden. The site will broadly accept general waste, mixed dry recyclates and construction and demolition waste. Treatment of the waste at the site will be limited to manual and plant assisted sorting/separation only, to recover recyclates. All waste treatment and storage will occur within a fully enclosed building with roller shutter doors, ensuring a high level of containment at the site. The site will comprise an external drainage system whereby surface water is directed to an interceptor and later the on-site surface water attenuation pond. A Penstock Valve is present ensure that contaminated liquid, such as fire water or contaminated surface water resulting from a large spillage or leak, can be contained and will not enter the off-site surface water system. Within the building, a channel drain is present in the centre to ensure any leaks or spills are directed to a sump, the contents of which would then be pumped out, tankered and transferred to an appropriate facility for treatment and / or disposal.

1.3 This Site Condition Report (SCR) has been compiled in accordance with the EP Regulations and with Horizonal Guidance Note 5, Site Condition Reports – Guidance and Templates (v2.0, 4th August 2008). Information has been gathered based on a desk study review of publicly available information, as well as an Envirocheck ® Report by Landmark (Report Reference: 70642001_1_1) produced in July 2015 (included within **Appendix SCR1**).

1.4 The purpose of an Application Site Condition Report is to provide a factual statement of the condition of the site at the time of the Environmental Permit Application. The Site Condition Report must describe the nature and distribution of potentially polluting substances in the ground and groundwater at the site prior to the commencement of operations under the Environmental Permit, and those handled during the course of activities on the site. The potentially polluting substances of interest are those which are to be handled at the site under the Permit.

1.5 Whilst the permitted activities will be restricted to within the green line boundary shown in **Drawing No. BF5066/12/02**, this SCR also extents to define the baseline condition of the eastern yard area that will be used to facilitate the parking of Refuse Collection Vehicles (RCVs) associated with Biffa's Industrial and Commercial waste collection services division.

2.0 SITE DETAILS

Site Setting

2.1 The proposed site to which the application will relate is an existing industrial site located on Cornets End Lane, Meriden, CV7 7LG. The National Grid Reference (NGR) for the site is SP 23044 81103. The site location has been depicted in **Drawing No. BF5066/12/01**.

2.1.1 The site was originally constructed to support other waste management activities that were regulated under two separate Environmental Permits. These activities included a Biomass Energy Plant (BEP) and Waste Water Treatment Facility (WWTF). Both companies to which the permits were issued have since been dissolved and the associated permits are to be cancelled by the Environment Agency. The existing site infrastructure will therefore be used and adapted to support the proposed waste collection services and transfer operations to be carried out by Biffa.

2.1.2 The site itself currently comprises two buildings; one of which will form the waste transfer station for the reception, storage and treatment of wastes, and another which will contain the site offices and welfare facilities. The associated external areas comprise the surface water attenuation pond, staff car and Refuse Collection Vehicles (RCVs) parking areas, staff welfare facilities, as well as rainwater tanks and sprinkler pumps for fire suppression. The yard area to the east of the environmental permit boundary will be used for the parking of RCVs associated with Biffa's Industrial and Commercial waste collection services fleet of vehicles (this activity is not required to be permitted). Entrance and egress to and from the site for heavy good vehicles is via a junction off a private road that provides access to the adjacent quarry, which junctions with Cornets End Lane to the southwest of the site. The site entrances are gated and will be locked outside of operational hours. Palisade fencing surrounds the site perimeter.

2.1.3 The proposed permitted boundary area is depicted in **Drawing No.: BF5066/12/02**. The site is bounded to the north by Cornets End Lane, beyond which lies an operational quarry and the associated mineral processing and product manufacturing plants and buildings. To the east lies undeveloped land and 'Midland Mix Concrete', a ready-mixed concrete producer. Cornets End Lane is located along the site's southern boundary, beyond which lies an operational and partially restored Berkswell Quarry and Landfill facility. The land to the west of the site is occupied by undeveloped land and trees, beyond which lies Cornets End Lane, a road-side café within a storage container named 'Rachel's Café' and a Pet Boarding Service (In The Doghouse (Solihull) Limited).

2.1.4 The village of Meriden is located approximately 1.6km to the north-east of the site, the outskirts of Coventry lie ~7.8km to the east, Solihull is located ~7.8km to the west and the junction of Cornets End Lane and the A452 is ~ 1km north-west of the site. The site lies within an area subject to extensive sand and gravel extraction (and associated restoration), together with agricultural land and Golf Courses, namely North Warwickshire Golf Club which is ~ 370m to the north of the site, as well as Stonebridge Golf Club and Midlands Golf Stonebridge, which lie approximately 1.2km and 1.7km to the north-northwest of the site respectively.

2.2 The closest residential properties are Keepers Cottage at a distance of approximately 115m to the east-southeast of the site, Cornets End Farm c.310m to the east and Hornbrook Farm c. 530m to the west. The remainder of the surrounding area is occupied predominantly by agricultural land.

2.2.1 The local topography is relatively flat with a gently undulating landscape.

2.3 The site does not lie within 2km of an Area of Outstanding Natural Beauty (AONB), Local Nature Reserve (LNR), National Nature Reserve (NNR), Ramsar site, Site of Special Scientific Interest (SSSI), Special Protected Area (SPA), Special Area of Conservation (SAC) or a Source Protection Zone (SPZ).

2.4 The site does lie within a Nitrate vulnerable Zone (NVZ). These are defined as areas designated as being at risk from agricultural nitrate pollution. The designations are made in accordance with the Nitrate Pollution Prevention Regulations 2015.

2.5 There are five ancient woodlands situated within 2km of the site. These include an The Somers woodland c. 880m north-northwest of the site, The Bogs woodland c. 1km south-east and 1.2km south, Siden Hill Wood c. 1.6km west-southwest and Garden Wood c. 1.6km south-southeast. Deciduous woodland is also present within 2km in all directions, the closest of which lies approximately 8m north-west of the site at the closest point and extends west and north of the site. Deciduous woodland is a protected priority habitat.

3.0 CONDITION OF THE LAND AT PERMIT ISSUE

Environmental Setting

Made Ground

3.1 During the 2015 Ground Investigation it was found that made ground extends over 5.4m below ground level. However, it is suspected that Made Ground is present to a greater depth owing to the site's history as a landfill. The site is currently surfaced with impermeable concrete hardstanding.

Natural Soils

3.2 Due to the quarrying history of the site it is unlikely that any natural soil profile currently exists across the site, although it is possible that natural topsoil and subsoil may have been used to support restoration of the application site.

3.3 The natural soils previously present at the site would have originally been classed as having High Leaching Potential (H2). This is defined as deep, permeable, coarse textured soils which readily transmit a wide range of pollutants because if their rapid drainage and low attenuation potential.

Geology

3.4 According to the British Geological Survey (BGS) Viewer, the site is directly underlain by superficial Glaciofluvial Deposits comprising sand and gravel. Intrusive investigations have shown that these deposits have been partially exploited beneath the site, with superficial sands and gravels present beneath the made ground. The superficial deposits are further underlain by Bedrock Geology of the Mercia Mudstone Group.

3.5 The BGS Lexicon of Named rock Units describes the Mercia Mudstone Group as:

> *"Dominantly red, less commonly green-grey, mudstone and subordinate siltstones with thick halite-bearing units in come basinal areas. Thin beds of gypsum / anhydrite widespread; sandstones are also present".*

3.6 The site has been mined by opencast working to extract the mineral sand and gravel deposits. The site is not in an area which is affected by coal mining activity.

3.7 According to data issued by the National Radiological Protection Board (NRPB) in 2002 (now the Health Protection Agency), the site is located in an area that is a lower probability radon area, as less than 1% of homes are above the action level. No radon protection measures are considered necessary by the BGS.

Hydrogeology

3.8 The hydrological characteristic of the local geological strata identified are summarised below:

- Superficial Glaciofluvial Deposits – Secondary A – permeable layers capable of supporting water supplies at a local rather than strategic scale and in some cases forming an important source of base flow to rivers.
- Mercia Mudstone Group – Secondary B – predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of former non-aquifers.

3.9 No overlying drift deposits are present on site.

3.10 The site is not located within any designated Groundwater Source Protection Zones (SPZ's).

3.11 There are three current groundwater abstractions within 2km of the site, the details of which are shown in **Table SCR1,** below. The closest of these is operated by 'Lafarge Tarmac Trading Ltd' (Licence number: 03/28/11/0123) for 'Extractive: Mineral Washing' and is located approximately 200m to the north-east of the site.

Table SCR1: Groundwater Abstractions within 2km of the Site

Name	Licence Number	Distance & Direction from Site	Location	Purpose
Lafarge Tarmac Trading Ltd	03/28/11/0123	~200m NE	Cornets End Quarry	Extractive: Mineral Washing
Cemex UK Materials Ltd	03/28/11/0133	~500m W	Berkswell Quarry, Solihull	Extractive Process Water
MR C Barber	03/28/11/0139	~1.4km E	Berryfields Farm, Meriden	General Farming and Domestic

3.12 The site is considered to be situated in an area of moderate to high sensitivity with respect to groundwater resources due to the underlying aquifers and the close proximity of groundwater abstraction (the closest abstraction being located c.200m to the north-east). This sensitivity is mitigated somewhat by the site not being directly located in a Groundwater Source Protection Zone.

Surface Waters

3.13 There are two surface water abstractions within 2km of the Site, the details of which are shown in **Table SCR2**, below. The closest of which is operated by 'North Warwickshire Golf Club Ltd' (Licence number: 03/28/11/0099) for 'Golf Courses: Spray Irrigation - Direct' and is located approximately 460m to the north-west of the site.

Table SCR2: Surface Water Abstractions within 2km of the Site

Name	Licence Number	Distance & Direction from Site	Location	Purpose
North Warwickshire Golf Club Ltd	03/28/11/0099	460m NW	North Warks Golf course – Tributary of the River Blythe	Golf Courses: Spray Irrigation – Direct

Name	Licence Number	Distance & Direction from Site	Location	Purpose
R S Beaty & Sons	03/28/11/0103	~1.45km W	Patricks Farm	General Agriculture: Spray Irrigation - Direct

3.14 The nearest surface water feature is located approximately 50m to the south of the site.

3.15 Horn Brook is located approximately 85m to the north-west and has been sampled for quality and is determined to have a "Good" classification.

3.16 The Environment Agency flood zone database indicates that the site lies entirely within Flood Zone 1 (low risk) and therefore is considered an area of low probability with regards to flooding (land assessed as having a less than 1 in 1,000 annual probability of flooding (<0.1%).

3.17 The site does not lie within a Surface Water Drinking Water Safeguard Zone.

3.18 Upon review of the Environment Agency's 'Environmental Permitting Regulations – Discharges to Water and Groundwater' register[1], there are currently five active licenced discharge consents to surface water and groundwater within 1km of the site; none of which are associated with the site itself. The details of these consented discharges are summarised in **Table SCR3**, below. The Landmark Envirocheck ® Report (**Appendix SCR1**) lists 21 recorded discharge consents located within a 1km search radius of the site, this includes both active and revoked consents.

Table SCR3: Active Discharge Consents to Controlled Waters within 1km of the Site

Name	NRS Saredon Aggregates Ltd
Site Type	Mineral / Gravel / Quarrying
Permit Reference Number	EPR/EB3996NT
Distance & Direction from Site	110m N
Location	Meriden Quarry (NGR: SP2300481268)
Local Authority	Solihull
Receiving Water	Horn Brook (Freshwater River)
Discharge Consent Issue Date	12/10/2016
Name	NRS Saredon Aggregates Ltd
Site Type	Mineral / Gravel / Quarrying
Permit Reference Number	MI/T/11/35904/T/001
Distance & Direction from Site	280m NNW
Location	Meriden Quarry (NGR: SP2318081440)
Local Authority	Solihull
Receiving Water	Horn Brook
Discharge Consent Issue Date	12/12/2003
Name	NRS Waste Management Services Ltd
Site Type	Mineral / Gravel / Quarrying
Permit Reference Number	MI/T/11/35387/T/001
Distance & Direction from Site	310 NW
Location	Meriden Quarry (NGR: SP2335581355)
Local Authority	Solihull
Receiving Water	Tributary of Horn Brook
Discharge Consent Issue Date	08/09/1999
Name	Severn Trent Water Limited

[1] https://environment.data.gov.uk/public-register/view/search-water-discharge-consents

Name	NRS Saredon Aggregates Ltd
Site Type	Wastewater Treatment Works / Sewage Treatment Works (water company)
Permit Reference Number	MI/T/11/36164/R/005
Distance & Direction from Site	810m NW
Location	Meriden Wastewater Treatment Works (NGR: SP2365081750)
Local Authority	Solihull
Receiving Water	Horn Brook
Discharge Consent Issue Date	10/04/2014
Name	Cemex UK Materials Ltd
Site Type	Quarry
Permit Reference Number	MI/T/11/09245/T/001
Distance & Direction from Site	590m W
Location	Berkswell Quarry (NGR: SP2238080980)
Local Authority	Solihull
Receiving Water	Tributary of Horn Brook
Discharge Consent Issue Date	09/04/1984

Pollution History

3.19 The following information has been obtained from a search of a publicly available database of environmental information (Envirocheck ® Report, produced by Landmark Ltd).

3.20 The database contains records of information from public registers held by environmental regulatory authorities and can be used to assess the site's sensitivity, the potential for neighbouring activities to pose a risk to the site and to determine whether specific records of pollution relate to the subject site.

Pollution Incidents Which May Have Affected the Land

3.21 There have been no pollution incidents to controlled water relating to the site or within 1km of the site.

3.22 There has been one entry in the substantiated pollution incident register. The details of in incident are shown in **Table SCR4**, below.

Table SCR4: Recorded Substantiated Pollution Incident Register within 500m of the Site

Incident Identification	Incident Date	Distance & Direction from Site	Pollutant	Details
17855	20/07/2001	785 NE	Contaminated Water; Suspended Solids	Water Impact: Category 2 (Significant Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

3.23 There are no records of pollution incidents having occurred at the site or within 500m of the site according to the Environmental Pollution Incidents (Category 1 and 2) 2001 – 2020 Database[2].

[2] *Source:* Environmental Pollution Incidents (category 1 and 2) (data.gov.uk)

Historical Land-Uses and Associated Contaminants

3.24 Publicly available historic maps have been analysed to determine the historical land uses for the site and surrounding areas. These have been reviewed to determine if there is the potential for contamination to be present on site associated with the site's historical land uses.

3.25 The historical maps are included in **Appendix SCR2** of this report. A summary of the historical development of the site and surroundings is included in **Table SCR5**, below.

3.26 The site was in agricultural use until approximately 1937, from when a Sand Pit occupied the western sector. By 1954 the Sand Pit has extended to cover the entire site. By 1962, the Sand Pit was no longer present and the site was occupied by buildings, a tank, and a hopper in the western sector and a pond in the eastern sector. The site was identified as a landfill between 1962 to 1992, and by 2006 it was shown to be occupied by a field.

3.27 There is one recorded historical landfill relating to the site. The Licence Holder was Tiling Construction Services Limited (provider reference: EAHLD23762) and the type of waste landfilled was inert, industrial, commercial, household, special waste and liquid sludge. The last input date was 31st July 1992.

3.28 Furthermore, there is one historic landfill site within 1km of the proposed site boundary. This site was a landfill for inert household waste and lies approximately 860m north-northwest of the site on Somers Lane and was operated by Caires and Packison Limited (provider reference: EAHLD23761) from the 16th May 1984, the last input date was 29th June 1993.

3.29 Meriden Quarry Landfill, operated by NRS Waste Management Services Limited from 24th November 2015 lies c. 845m north of the site. Meriden Quarry Landfill operates under the Environmental Permit Reference EPR/CB3805HC for an inert landfill and physical treatment.

3.30 CEMEX Berkswell Quarry and landfill also currently lies approximately 255m to the south-west of the site.

Table SCR5: Historical Land Use on Site

Date	Comments / Observations	Potential Contaminants
1886 – 1887	Application Site: The site is agricultural as part of a larger field. Surrounding Site: The area is in agricultural use with a road immediately to the south. To the north of the site is Packington Racecourse within an undefined boundary. A stream is located to the north of the site, at a distance of approximately 50m, which flows generally in a westward direction. Cornet's End is located approximately 100m to the southeast.	None
1904 - 1905	Application Site: The application site remains undeveloped. Surrounding Site: The immediate vicinity is unchanged; however, Packington Racecourse is no longer present, and a Golf Course occupies the northern area.	None

Date	Comments / Observations	Potential Contaminants
1937	Application Site: A sand extraction pit now occupies the western corner of the site. Surrounding Site: A smaller sand extraction pit is situated on the opposite side of Cornet's End Lane, to the south of the south-western corner of the site. No other changes are noted.	None
1954 – 1955	Application Site: The sand extraction pit now covers the entire site with a track on the north-western and north-eastern boundaries. Surrounding Site: A slope has appeared in the rectangular field to the north of the site. The surrounding area remains predominantly in agricultural use. No major changes are noted.	None
1962	Application Site: The sand extraction pit is no longer present, although the slopes along the southern and part of the north-western boundaries remain. There are buildings in the south-western corner and a tank and hopper to the north-east of the building. The eastern sector is occupied by a pond. Surrounding Site: There is a sand extraction pit, together with a pond and marshland alongside the northern bank of the river, tanks and hoppers immediately to the north-west and an extraction pit to the north-east. The smaller sand extraction pit to the south is no longer present.	Potential Contaminants Associated with Landfills: ▪ Landfill gas ▪ Organic Compounds ▪ Ammonia ▪ Iron ▪ Inorganic compounds ▪ Asbestos
1970	Application Site: The application site remains unchanged. Other information suggests that the site was subject to landfilling at this time. Surrounding Site: The surrounding area remains unchanged.	As above
1983	Application Site: The application site remains undeveloped. Surrounding Site: The surrounding area remains undeveloped.	As above
1992	Application Site: The application site remains undeveloped. Surrounding Site: The surrounding area remains undeveloped.	As above
2006	Application Site: The application site is occupied by a field. Surrounding Site: There are landfill sites to the north-west and north-east of the site, together with large ponds. Works and a track are immediately to the north-west. Part of the river is no longer present, possibly culverted as Sinks and Issues are shown. To the south of the site, on the opposite side of Cornet's End Lane, are Sand and Gravel Pits. There are other sand and gravel pits further to the north of the site.	As above

Date	Comments / Observations	Potential Contaminants
2015	Application Site: The application site remains undeveloped. Surrounding Site: The surrounding area remains relatively unchanged. However, many of the ponds that were present in 2006 are no longer present.	As above
Present Day	Application Site: The application site comprises two large buildings which were constructed in 2017 for a Biomass Energy Plant (BEP) and a Wastewater Treatment Facility (WWTF) which are adjacent to one another. These buildings are situated in the western half of the site. There is a surface water attenuation pond in the far western site area. The remaining site areas comprise impermeable concrete hardstanding. Surrounding Site: The surrounding area remains unchanged.	As above

Visual / Olfactory Evidence of Existing Contamination

3.31 All areas of the site were inspected in 2015 at the time of the application for the Environmental Permits for the Biomass Energy Plant (BEP) and Wastewater Treatment Facility (WWTF). All areas of the site were newly constructed and found to be in good condition with no visual or olfactory evidence of contamination.

3.32 Whilst the BEP and WWTF were largely constructed, it is understood that neither activity commenced operation or received any wastes prior to the operators entering administration.

3.33 A walkover survey was completed by Biffa in February 2022. During this survey it was concluded that all current site surfaces are in excellent condition and of good quality and depth. This judgement was made based on excavations near to the proposed car park area. The main yard area was awaiting concrete and the proposed car park was also under construction at the time of site walkover visit. Owing to the fact that the site was built but never operational under the previous owners, the concrete surfaces within the WTS building were never used, hence their excellent condition. Photographs were taken of the site during the walkover survey (**Appendix SCR6**) and the photographs of the external areas of the site do not highlight any visual evidence of existing contamination at the site. Since the walkover visit the external area has been concreted and further photographs have been provided.

Evidence of Damage to Pollution Prevention Measures

3.34 All internal and external areas of the site will comprise engineered concrete pavement. Internal areas of buildings, which will be used for waste storage and treatment, are already constructed. From February and March 2022 the current site owner (NRS) began concreting and constructing the external site areas (on behalf of Biffa) which will be used for the depot activity (non-permitted) and vehicle circulation routes. Photographs of the site are included in **Appendix SCR6**, these show the site surfacing. At the time of the first applications for Environmental Permits on the site in 2017, all areas of the site were subject to a visual inspection by Sol Environmental Limited shortly after the site's construction. All aspects of the installation boundary were inspected, as well as

the physical condition and the internal and external hardstanding, condition and adequacy of containment bunds and the condition and adequacy of the underground drainage and containment systems. All aspects of the site were deemed to be in good condition and in working order.

3.35 Prior to commencing operations at the site, Biffa will ensure that the pollution prevention measures including the sealed drainage system, all areas of impermeable hardstanding, the Penstock Valve, roller shutter doors etc. have been thoroughly inspected and there is no evidence of damage which would impact on the effectiveness of these measures. In the event an issue is identified, it will be rectified as soon as possible and prior to the commencement of the proposed operations.

4.0 EVIDENCE OF HISTORIC CONTAMINATION

4.1 A desk-based review of the environmental setting and development history of the application site and immediately surrounding areas have identified that landfilling occurred at the site which could be a potential source of ground and water contamination. During the August 2015 Desk study and preliminary risk assessment, it was established that due to the presence of a landfill at the proposed site and the uncertainty of whether any landfill control measures were in place (e.g. groundwater / ground gas monitoring boreholes, landfill liner etc.) there is a potential for contaminants to be present in the ground. This could include metals, hydrocarbons and asbestos together with ground gas. Following this assessment, a ground investigation was recommended to establish the baseline conditions at the site.

4.2 Site investigations in 2015 and 2016 did not identify any significant contamination at the site. Since 2017, the majority of the site has been surfaced with fully engineered impermeable concrete pavement (this includes the WTS building). Once NRS have completed construction in the external site areas (i.e. the depot area, car park and vehicle access routes), the entire site will be fully engineered and comprise impermeable concrete paving.

4.3 There have been no significant potentially contaminating land uses within 250m of the site. Generally, the surrounding areas have been utilised for quarrying and agriculture.

4.3.1 Moreover, according to the Environmental Pollution Incidents (Category 1 and 2) 2001 – 2020 Database[3], there have not been any Environmental Pollution Incidents to the air, land or water within 1km of the site boundary.

5.0 BASELINE SOIL AND GROUNDWATER REFERENCE DATA

5.1 In support of the aforementioned BEP and WWTF, site investigations were conducted for the applications for planning permission as well as the Environmental Permits (for which Site Condition Reports were prepared). Due to the previous landfilling at the site, site investigations were completed to gather the baseline soil and groundwater conditions and identify any contamination.

5.2 Previous site investigations have included a Phase 1 desk study and preliminary risk assessment report produced by TerraConsult in August 2015 (**Appendix SCR 3**). This report was completed as part of the planning application and concluded that due to the history of the site, it is considered likely that the past site activities have the potential to cause ground contamination. In order to fully

[3] *Source:* Environmental Pollution Incidents (category 1 and 2) (data.gov.uk)

establish the sources and pathways for these significant pollutant linkages, a Phase 2 Ground Investigation was carried out by TerraConsult in October 2015 (**Appendix SCR4**). The scope of this investigation included:

- 8 x Trial pits
- 4 x Cable percussive boreholes
- Installation of gas / groundwater monitoring standpipes within the boreholes
- Sampling and testing of soils and groundwater for contamination and geotechnical analysis
- Gas and groundwater monitoring
- Provision of a geo-environmental report

5.3 The findings of this Ground Investigation were as follows:

- Ground conditions comprise Made Ground to a maximum depth of 5.4m below ground level, overlying sands and gravels with Mercia Mudstone at a depth of at least 14.2m. It is anticipated that Made Ground is present to a greater depth as a result of the site's history as a landfill.
- Solid samples were collected from all exploratory holes for chemical testing. None of the contaminants, except asbestos, were present at concentrations exceeding the relevant generic assessment criteria for an industrial end use. Asbestos fibres (Chrysotile) were identified in five locations with a maximum of 0.003% asbestos within the overall mass.
- A potential risk to groundwater quality was identified. However, at this stage, the risk could not be quantified.
- Ground gas comprising carbon dioxide was recorded within the boreholes on at least one occasion.

5.4 The geotechnical conclusions of the Ground Investigation Report are detailed below:

- Ground conditions are very variable. The full depth of the landfilled material may not have been determined as it is possible that the boreholes were drilled at locations that may mark the edge of the landfills
- Where clay was encountered, i.e within BH2, this was assessed to be soft to firm. Very loose to dense sandy Made Ground was encountered and the sand and gavels were also assessed to be loose to dense.
- Moisture content ranges from 4% (clayey sand within BH2) and 25% (very sandy very clayey gravel in TP3). Sulphate and pH or the determination of design of concrete is also very variable.

5.5 Groundwater sampling was also recommended to be carried out in order to assess the risk to groundwater from contaminants in the ground. Consequently, a further Factual Report was produced by TerraConsult in January 2016 which outlined the subsequent site investigations and monitoring that had taken place and detailed the findings, including the results from laboratory analysis. This report also aimed to further define the ground conditions at the site to ensure the most appropriate construction design was reached. The report concluded that:

- Topsoil varies between 0.20m and 0.30m thick and consists of soft dark brown slightly sandy gravelly clay;

- Made Ground varies between 4.90m and 5.80m and is generally firm dark brown mottles reddish brown and light grey slightly sandy slightly gravelly clay with frequent fragments of brick, ceramic, timber, sandstone mudstone, coal, concrete, plastic and ash.
- Drift Deposits – loose locally medium dense light red to reddish brown slightly silty gravelly to very gravelly fine to coarse sand that was encountered between 5.20m to 6.10mbgl.

5.6 The groundwater and ground gas monitoring results are detailed in **Appendix SCR5** and have been summarised in **Tables SCR6** and **SCR7** below.

Table SCR6: Groundwater Strikes

BH Number	Date	Depth of Strike (m)	Depth of Groundwater after 20 mins (m)	Remarks
NBH05	10/12/2015	7	-	-
NBH06	10/12/2015	2.8	2.8	Borehole was cased at 2.9m and sealed at 4.8m.
NBH07	10/12/2015	7.8	-	-

5.7 Three rounds of ground gas monitoring were scheduled in addition to the previous two rounds carried out in September 2015. Methane was again recorded in BH1 with a maximum concentration of 3.5% v/v in the first round and 3.4% v/v in the second round. Carbon monoxide was present in all boreholes with concentrations varying from 7.0% v/v to 13.2% v/v.

5.8 A summary of the ground gas monitoring results is provided in **Table SCR7** below. The results shaded in grey relate to the results from the Site Investigation carried out in October 2015.

Table SCR7: Ground Gas Monitoring

BH Number	Date	Atmos Pressure (mb)	CH4 (% v/v)	CO2 (% v/v)	O2 (% v/v)	Flow (l/hr)	Depth to Water (m bgl)
BH1	11/09/2015	1003	1	8.6	7.7	<0.1	6.51
	18/09/2015	998	2	13.1	2	<0.1	6.6
	21/12/2015	993	3.5	13.2	0.3	<0.1	6.37
	05/01/2016	976	3.4	12.8	0.1	<0.1	6.04
BH2	11/09/2015	1002	<0.1	6.6	12.8	<0.1	7
	18/09/2015	999	<0.1	0.6	19.1	<0.1	7.03
	21/12/2015	993	<0.1	7	11.9	<0.1	6.77
	05/01/2016	976	<0.1	7.6	12.7	<0.1	6.66
BH3	11/09/2015	1004	<0.1	10	6.7	<0.1	6.3
	18/09/2015	1000	<0.1	0	20.4	<0.1	6.02
	21/12/2015	993	<0.1	10.6	7.4	<0.1	5.76
	05/01/2015	976	<0.1	7.2	10.7	<0.1	5.65
BH4	11/09/2015	1004	<0.1	6.8	9.8	<0.1	5.54
	18/09/2015	1000	<0.1	0	20.4	<0.1	6.02
	21/12/2015	993	<0.1	9.8	12.8	<0.1	5.33
	05/01/2015	976	<0.1	11.6	5.6	<0.1	5.24

5.9 It should be noted that the only contaminants found within the soils underlying the site to be in exceedance of the relevant generic assessment criteria for an industrial end use was asbestos. This material will not degrade or leach and therefore poses very little risk to further contamination at the site to the ground or water.

5.10 Furthermore, prior to the development of the site in 2017, the site was occupied by a field (c.1996 onwards). Satellite images from Google Earth show no visual evidence of ground contamination from the historic landfilling as the vegetation growth (which includes grass, trees and shrubs / hedges) is healthy and does not display yellow patches or other signs of contamination.

5.11 In the event any evidence of historic contamination is identified in the future, samples of soils will be taken and issued for laboratory analysis. In such circumstances, this SCR will be updated accordingly, in line with EA guidance.

5.12 Owing to the high level of containment at the site and the operational procedures, it is unlikely that the proposed permitted activities will result in contamination to the underlying and surrounding soil, ground and surface water.

6.0 PROPOSED PERMITTED ACTIVITIES

Proposed Permitted Activities

6.1 Biffa Waste Services Limited are applying for a bespoke Environmental Permit to operate a non-hazardous Waste Transfer Station (WTS) for Industrial and Commercial waste streams for treatment, storage and / or transfer at the site in Meriden, Coventry. Where waste is treated at the site this will only comprise manual and plant assisted sorting to recover recyclables, such as metals. The proposed annual throughput at the site is 50,000 tonnes, which will broadly comprise general waste, dry mixed recyclates, and construction and demolition waste.

6.2 Waste storage and treatment will be conducted within a fully enclosed building with roller shutter doors, fire detection systems, odour and dust suppression via an Air System which produces a fine mist, fire suppression, impermeable surfaces and sealed drainage. A ‘closed door’ policy will be employed to reduce the risk of fugitive emissions.

6.3 The external areas of the site will also comprise impermeable surfaces and a drainage system which will direct surface water to an interceptor and subsequently the onsite surface water attenuation pond. The site is fitted with a Penstock valve beyond the attenuation pond outlet to allow the system to be isolated in the event of a fire or major spillage / leak to prevent potentially contaminated water entering the offsite surface water system. Therefore, the risk to the surrounding environment will be limited.

6.4 Raw materials storage will largely involve the storage of fuel for the operation of mobile plant. This fuel store will be located in the southern edge of the southern service yard to serve site plant and equipment. A separate fuel store will be located in the eastern yard area to support the RCV depot operations which do not form part of the permitted facility.

6.5 The proposed non-hazardous Waste Transfer Station will operate according to Biffa’s written Standard Operating Procedures which includes waste pre-acceptance, acceptance, storage, non-conformance and rejection, manual sorting and transfer off-site. Furthermore, all elements associated with the operation of the non-hazardous Waste Transfer Station will accord with the relevant appropriate measures for this industry sector.

Proposed Non-Permitted Activities

6.6 Ancillary operations to support the daily running of the site will include:

- The operation of a depot for Biffa's Industrial and Commercial division's refuse collection vehicles;
- The operation of site offices and welfare facilities;
- Staff car parking;

Pollution Potential

6.7 An assessment of the pollution potential of materials stored and handled at the site is presented in **Table SCR8.**

Table SCR8: Assessment of the pollution potential of materials proposed to be stored and handled at the site

Substance	Chemical Composition	Quantity	Environmental Behaviour & Fate	Potential Environmental Impact	Storage Arrangements	Assessment of Alternatives
Non-hazardous wastes (Industrial and Commercial – General waste, mixed dry recyclates, and construction and demolition waste)	Various	Up to 50,000 tonnes per annum	Contaminated land and water. Fugitive emissions of odour and dust.	Contamination of land and controlled waters and health risk to end users (i.e. humans, wildlife). Nuisance to site workers, visitors and neighbouring land users from odour and dust. Harm to human health via inhalation and/or contaminated runoff. Dust causing nuisance to site workers, visitors and neighbouring land users.	Waste deliveries to be undertaken by fully enclosed or sheeted vehicles. Waste will be unloaded within the site building with the roller shutter doors closed to ensure containment. All waste storage will occur within the site building which comprises roller shutter doors, impermeable concrete flooring and a sealed drainage system. A 'closed door' policy will be employed to reduce the risk of fugitive emissions from exiting the building. Waste treatment will be limited to manual sorting which will also occur internally within the building. Waste will also be loaded onto fully enclosed / sheeted vehicles for transfer off site within the building. Good housekeeping measures employed on site to limit dust accumulation. Daily inspections will ensure that waste storage areas are no giving rise to fugitive emissions or pollution of any kind.	None – waste material forms primary purpose of facility.
Diesel	Hydrocarbons	5,000 litres	Insoluble and floats on water. Low biodegradation in soil. Fate is ultimately 100% to air – low volatility	Contamination of land and controlled waters and health risk to end users (i.e. humans, wildlife)	To be stored within a bunded 5,000 litre tank	Essential for operation of mobile plant. Future to use electrically powered vehicles in the future..

Substance	Chemical Composition	Quantity	Environmental Behaviour & Fate	Potential Environmental Impact	Storage Arrangements	Assessment of Alternatives
Engine oils	Hydrocarbons	40 litres	Insoluble and floats on water. Low biodegradation in soil. Fate is ultimately 100% to air – low volatility	Contamination of land and controlled waters and health risk to end users (i.e. humans, wildlife)	To be stored within 20 litre containers on a drip tray in a covered area or building	Essential for operation of mobile plant.
Hydraulic oils	Hydrocarbons	40 litres	Insoluble and floats on water. Low biodegradation in soil. Fate is ultimately 100% to air – low volatility	Contamination of land and controlled waters and health risk to end users (i.e. humans, wildlife)	To be stored within 20 litre containers on a drip tray in a covered area or building	Essential for operation of mobile plant.
Batteries	Lead acid	0.1 tonnes approx.	Contain toxic chemicals which can be absorbed by soil.	Contamination of land and controlled waters and health risk to end users (i.e. humans, wildlife)	To be stored in a battery box	Essential for operation of mobile plant.
Ad Blue (vehicle exhaust treatment additive)	Urea (~33%) and distilled water	<1000 litres (1 tonne)	Water Soluble. Readily Biodegradable. Product is not classed as hazardous or dangerous.	Contamination of land and controlled waters and health risk to end users (i.e. humans, wildlife)	To be stored in a 1,000 litre bunded tank in cool, dry location, over areas of impermeable pavement. Diesel exhaust fluid deployed to vehicles only upon areas of impermeable pavement. Spill kits to be located in strategic locations across the facility.	Essential for operation of vehicles transferring waste to/from site. No alternatives available

7.0 SUMMARY STATEMENT OF THE SITE CONDITION

7.1 A desk-based study of the application site setting and development history has identified a moderate to low risk from historic contamination sources having impacted the condition of the land, owing to previous landfilling at the site. However, site Ground Investigations did not identify significant levels of contamination. The existing site infrastructure was constructed in 2017 and comprises impermeable concrete surfacing within internal sealed drainage and an external drainage network consisting of an interceptor and Penstock Valve at the surface water attenuation pond.

7.2 During the operation of the proposed non-hazardous Waste Transfer Station, all wastes will be fully characterised prior to acceptance at the site, with appropriate inspections and compliance / verification tests carried out by the operator. Appropriate pollution control measures will also be implemented to reduce the pollution potential of the site as well as support the storage and handling of raw materials (e.g. oils and fuels) required to support the proposed activities.

7.3 During the site's operation, records of all environmental incidents on and off site which are likely to have an impact on the condition of the land will be maintained for the life of the Permit, with appropriate investigations implemented to determine the extent of any such incidents.

7.4 The development history of the application site includes quarrying for sand and gravels, landfilling, agriculture and, in recent years, commercial development. It is now proposed to utilise the existing site infrastructure for a non-hazardous WTS. The site itself underwent landfilling, however, site Ground Investigations in 2015 and 2016 did not find any significant contamination.

7.5 Due to the engineered containment measures to be present and maintained at the site and proposed storage arrangements, the risk from the waste operations contaminating the site is low.

APPENDICES

APPENDIX SCR1

Envirocheck Report (2015)

TerraConsult

Envirocheck® Report:

Datasheet

Order Details:

Order Number:
70642001_1_1

Customer Reference:
10122

National Grid Reference:
423070, 281110

Slice:
A

Site Area (Ha):
3.11

Search Buffer (m):
1000

Site Details:

Cornets End Lane, Meriden
Coventry
CV7 7LG

Client Details:

Dr S Slaven
TerraConsult
TerraConsult (South) Ltd
Dugard House
Peartree Road
Colchester
Essex
CO3 0UL

Landmark Information Group

TerraConsult

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/Natural Resources Wales 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.

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Ove Arup Copyright Notice

Peter Brett Associates Copyright Notice

Radon Potential dataset Copyright Notice

Report Version v49.0

TerraConsult

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		5	1	16
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 6		3	1	
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature	pg 7		Yes		
Pollution Incidents to Controlled Waters					
Prosecutions Relating to Authorised Processes					
Prosecutions Relating to Controlled Waters					
Registered Radioactive Substances					
River Quality	pg 7		1		
River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points					
Substantiated Pollution Incident Register	pg 7				1
Water Abstractions	pg 7		4	1	6 (*2)
Water Industry Act Referrals					
Groundwater Vulnerability	pg 10	Yes	n/a	n/a	n/a
Bedrock Aquifer Designations	pg 10	Yes	n/a	n/a	n/a
Superficial Aquifer Designations	pg 10	Yes	n/a	n/a	n/a
Source Protection Zones	pg 10				1
Extreme Flooding from Rivers or Sea without Defences				n/a	n/a
Flooding from Rivers or Sea without Defences				n/a	n/a
Areas Benefiting from Flood Defences				n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences				n/a	n/a
Detailed River Network Lines	pg 11		Yes	Yes	n/a
Detailed River Network Offline Drainage	pg 12			Yes	n/a

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Waste					
BGS Recorded Landfill Sites					
Historical Landfill Sites	pg 13	1			1
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)	pg 13		2	4	7
Local Authority Recorded Landfill Sites	pg 16			2	
Registered Landfill Sites	pg 17		1		2
Registered Waste Transfer Sites					
Registered Waste Treatment or Disposal Sites	pg 19		1		
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 1:625,000 Solid Geology	pg 20	Yes	n/a	n/a	n/a
BGS Estimated Soil Chemistry	pg 20	Yes	Yes	Yes	Yes
BGS Recorded Mineral Sites	pg 37	1	2	2	2
BGS Urban Soil Chemistry					
BGS Urban Soil Chemistry Averages					
Brine Compensation Area			n/a	n/a	n/a
Coal Mining Affected Areas	pg 38	Yes	n/a	n/a	n/a
Mining Instability	pg 38	Yes	n/a	n/a	n/a
Man-Made Mining Cavities					
Natural Cavities					
Non Coal Mining Areas of Great Britain				n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 38	Yes		n/a	n/a
Potential for Compressible Ground Stability Hazards	pg 39	Yes		n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 39	Yes		n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 39	Yes	Yes	n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 39		Yes	n/a	n/a
Radon Potential - Radon Affected Areas			n/a	n/a	n/a
Radon Potential - Radon Protection Measures			n/a	n/a	n/a

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Industrial Land Use					
Contemporary Trade Directory Entries	pg 40		4	2	1
Fuel Station Entries					
Sensitive Land Use					
Areas of Adopted Green Belt	pg 41	1			1
Areas of Unadopted Green Belt	pg 41	1			
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 41	1	1		
Ramsar Sites					
Sites of Special Scientific Interest					
Special Areas of Conservation					
Special Protection Areas					

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**Discharge Consents** Operator: Tarmac Central Limited Property Type: Undefined Or Other Location: The Workshop Meriden Quarry, Cornets End Lane, Meriden, Warwickshire Authority: Environment Agency, Midlands Region Catchment Area: Upper Blythe To Confluence With Cole Reference: Wq/72/29 Permit Version: 1 Effective Date: 23rd May 1975 Issued Date: 23rd May 1975 Revocation Date: 19th June 2001 Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Land/Soakaway Receiving Water: Underground Strata **Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 100m	A13SW (W)	28	2	422900 281100
2	**Discharge Consents** Operator: Tarmac Central Limited Property Type: Undefined Or Other Location: The Office Meriden Quarry, Cornets End Lane, Meriden, Warwickshire Authority: Environment Agency, Midlands Region Catchment Area: Upper Blythe To Confluence With Cole Reference: Wq/72/30 Permit Version: 1 Effective Date: 23rd May 1975 Issued Date: 23rd May 1975 Revocation Date: 19th June 2001 Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Land/Soakaway Receiving Water: Underground Strata **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 100m	A13NW (W)	38	2	422950 281150
3	**Discharge Consents** Operator: Tarmac Central Limited Property Type: Extraction Of Stone, Gravel Etc. Location: Meriden Quarry, Cornets End Lane, Meriden, Warwickshire Authority: Environment Agency, Midlands Region Catchment Area: Upper Blythe To Confluence With Cole Reference: T/11/07079/T Permit Version: 1 Effective Date: 26th July 1983 Issued Date: 26th July 1983 Revocation Date: 11th December 2003 Discharge Type: Trade Effluent Discharge-Site Drainage Discharge Environment: Freshwater Stream/River Receiving Water: Horn Brook **Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 100m	A13NE (N)	110	2	423120 281320
4	**Discharge Consents** Operator: Lafarge Tarmac Trading Limited Property Type: Extraction Of Stone, Gravel Etc. Location: Meriden Quarry, Cornets End Lane, Meriden, Warwickshire Authority: Environment Agency, Midlands Region Catchment Area: Upper Blythe To Confluence With Cole Reference: T/11/35904/T Permit Version: 1 Effective Date: 12th December 2003 Issued Date: 12th December 2003 Revocation Date: Not Supplied Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Horn Brook **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	A13NE (N)	223	2	423180 281440

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
5	**Discharge Consents** Operator: Coleman & Co (Plant Hire) Limited Property Type: Extraction Of Stone, Gravel Etc. Location: Meriden Quarry, Cornets End Lane, Meriden, Warwickshire Authority: Environment Agency, Midlands Region Catchment Area: Upper Blythe To Confluence With Cole Reference: T/11/35387/T Permit Version: 1 Effective Date: 8th September 1999 Issued Date: 8th September 1999 Revocation Date: Not Supplied Discharge Type: Trade Discharge - Mineral Workings Discharge Environment: Freshwater Stream/River Receiving Water: Trib Of Horn Brook **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	A13NE (NE)	226	2	423350 281350
6	**Discharge Consents** Operator: J Dawson Property Type: Domestic Property (Single) Location: Cornets End Farm, Cornets End Lane, Meriden, Warwickshire Authority: Environment Agency, Midlands Region Catchment Area: Upper Blythe To Confluence With Cole Reference: T/11/03275/S Permit Version: 1 Effective Date: 12th July 1972 Issued Date: 12th July 1972 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Freshwater Stream/River Receiving Water: River Blythe (Trib) **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 100m	A14SW (SE)	288	2	423400 280900
7	**Discharge Consents** Operator: Cemex Uk Materials Ltd Property Type: Undefined Or Other Location: Berkswell Quarry Cornets End Lane, Meriden, Coventry, Warwickshire Authority: Environment Agency, Midlands Region Catchment Area: Upper Blythe To Confluence With Cole Reference: T/11/09245/T Permit Version: 1 Effective Date: 9th April 1984 Issued Date: 9th April 1984 Revocation Date: Not Supplied Discharge Type: Trade Discharge - Mineral Workings Discharge Environment: Freshwater Stream/River Receiving Water: Tributary Of The Horn Brook **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 100m	A12SE (SW)	518	2	422460 280830
8	**Discharge Consents** Operator: M T Davies Property Type: Not Given Location: Cornets End Cottage, Cornets End Lane, MERIDEN, Warwickshire Authority: Environment Agency, Midlands Region Catchment Area: Not Given Reference: T/11/03273/S/1 Permit Version: Not Supplied Effective Date: Not Supplied Issued Date: 12th July 1972 Revocation Date: Not Supplied Discharge Type: Sewage Treatment Works - Final Effluent Discharge Environment: Freshwater Stream/River Receiving Water: River Blythe **Status: Not Supplied** Positional Accuracy: Located by supplier to within 100m	A9NW (SE)	621	2	423600 280600

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
9	**Discharge Consents** Operator: D L Williams Property Type: Domestic Property (Single) Location: Mercote Mill Farm, Kenilworth Road, Hampton In Arden, Solihull, O Authority: Environment Agency, Midlands Region Catchment Area: Upper Blythe To Confluence With Cole Reference: T/11/03274/S Permit Version: 1 Effective Date: 12th July 1972 Issued Date: 12th July 1972 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Freshwater Stream/River Receiving Water: River Blythe (Trib) **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 100m	A7NE (SW)	649	2	422600 280500
10	**Discharge Consents** Operator: Severn Trent Water Limited Property Type: Sewage Disposal Works - Water Company Location: Meriden Sewage Treatment Works Hampton Lane, Hampton Lane, Meriden, Coventry, Cv7 7jr Authority: Environment Agency, Midlands Region Catchment Area: Upper Blythe To Confluence With Cole Reference: T/11/36164/R Permit Version: 4 Effective Date: 31st March 2010 Issued Date: 24th March 2010 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Horn Brook **Status: Modified (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A19SW (NE)	719	2	423650 281750
10	**Discharge Consents** Operator: Severn Trent Water Limited Property Type: Sewage Disposal Works - Water Company Location: Meriden Sewage Treatment Works Hampton Lane, Hampton Lane, Meriden, Coventry, Cv7 7jr Authority: Environment Agency, Midlands Region Catchment Area: Upper Blythe To Confluence With Cole Reference: T/11/36164/R Permit Version: 3 Effective Date: 1st January 2010 Issued Date: 14th October 2008 Revocation Date: 30th March 2010 Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Horn Brook **Status: Modified (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A19SW (NE)	719	2	423650 281750
10	**Discharge Consents** Operator: Severn Trent Water Limited Property Type: Sewage Disposal Works - Water Company Location: Meriden Sewage Treatment Works Hampton Lane, Hampton Lane, Meriden, Coventry, Cv7 7jr Authority: Environment Agency, Midlands Region Catchment Area: Upper Blythe To Confluence With Cole Reference: T/11/36164/R Permit Version: 1 Effective Date: 28th October 2005 Issued Date: 28th October 2005 Revocation Date: 30th December 2005 Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Horn Brook **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	A19SW (NE)	719	2	423650 281750

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
10	**Discharge Consents** Operator: Severn Trent Water Limited Property Type: Sewage Disposal Works - Water Company Location: Meriden Sewage Treatment Works Hampton Lane, Hampton Lane, Meriden, Coventry, Cv7 7jr Authority: Environment Agency, Midlands Region Catchment Area: Upper Blythe To Confluence With Cole Reference: T/11/36164/R Permit Version: 2 Effective Date: 31st December 2005 Issued Date: 28th October 2005 Revocation Date: 31st December 2009 Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Horn Brook **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	A19SW (NE)	719	2	423650 281750
10	**Discharge Consents** Operator: Severn Trent Water Limited Property Type: Sewage Disposal Works - Water Company Location: Meriden Sewage Treatment Works Hampton Lane, Hampton Lane, Meriden, Coventry, Cv7 7jr Authority: Environment Agency, Midlands Region Catchment Area: Upper Trent Catchment Reference: T/11/36164/R Permit Version: 2 Effective Date: 31st December 2005 Issued Date: 28th October 2005 Revocation Date: Not Supplied Discharge Type: Discharge Of Other Matter-Crude Effluent Discharge Environment: Freshwater Stream/River Receiving Water: Horn Brook **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	A19SW (NE)	719	2	423650 281750
10	**Discharge Consents** Operator: Severn Trent Water Limited Property Type: Sewage Disposal Works - Water Company Location: Meriden Sewage Treatment Works Hampton Lane, Hampton Lane, Meriden, Coventry, Cv7 7jr Authority: Environment Agency, Midlands Region Catchment Area: Upper Blythe To Confluence With Cole Reference: T/11/35533/R Permit Version: 1 Effective Date: 9th April 2001 Issued Date: 9th April 2001 Revocation Date: 27th October 2005 Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Horn Brook **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	A19SW (NE)	719	2	423650 281750
10	**Discharge Consents** Operator: Severn Trent Water Limited Property Type: Sewage Disposal Works - Water Company Location: Meriden Sewage Treatment Works Hampton Lane, Hampton Lane, Meriden, Coventry, Cv7 7jr Authority: Environment Agency, Midlands Region Catchment Area: Upper Trent Catchment Reference: T/11/35533/R Permit Version: 2 Effective Date: 31st December 2005 Issued Date: 9th April 2001 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Horn Brook **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	A19SW (NE)	719	2	423650 281750

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
10	**Discharge Consents** Operator: Severn Trent Water Limited Property Type: Sewage Disposal Works - Water Company Location: Meriden Sewage Treatment Works Hampton Lane, Hampton Lane, Meriden, Coventry, Cv7 7jr Authority: Environment Agency, Midlands Region Catchment Area: Upper Trent Catchment Reference: T/11/35533/R Permit Version: 2 Effective Date: 31st December 2005 Issued Date: 9th April 2001 Revocation Date: Not Supplied Discharge Type: Discharge Of Other Matter-Crude Effluent Discharge Environment: Freshwater Stream/River Receiving Water: Horn Brook **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	A19SW (NE)	719	2	423650 281750
10	**Discharge Consents** Operator: Severn Trent Water Limited Property Type: Sewage Disposal Works - Water Company Location: Meriden Sewage Treatment Works Hampton Lane, Hampton Lane, Meriden, Coventry, Cv7 7jr Authority: Environment Agency, Midlands Region Catchment Area: Upper Blythe To Confluence With Cole Reference: T/11/35076/R Permit Version: 1 Effective Date: 29th July 1997 Issued Date: 29th July 1997 Revocation Date: 8th April 2001 Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Horn Brook **Status: Post National Rivers Authority Legislation where issue date > 31/08/1989** Positional Accuracy: Located by supplier to within 10m	A19SW (NE)	719	2	423650 281750
10	**Discharge Consents** Operator: Severn Trent Water Authority Property Type: Not Given Location: Authority: Environment Agency, Midlands Region Catchment Area: Not Given Reference: T/11/08729/R/1 Permit Version: Not Supplied Effective Date: Not Supplied Issued Date: 26th September 1981 Revocation Date: Not Supplied Discharge Type: Sewage Effluent Discharge-Treated Effluent Discharge Environment: Freshwater Stream/River Receiving Water: Meriden Brook(Blythe) **Status: Not Supplied** Positional Accuracy: Located by supplier to within 100m	A19SW (NE)	719	2	423650 281750
10	**Discharge Consents** Operator: Severn Trent Water Limited Property Type: Sewage Disposal Works - Water Company Location: Meriden Sewage Treatment Works Hampton Lane, Hampton Lane, Meriden, Coventry, Cv7 7jr Authority: Environment Agency, Midlands Region Catchment Area: Upper Blythe To Confluence With Cole Reference: T/11/35076/R Permit Version: 1 Effective Date: 29th July 1997 Issued Date: 29th July 1997 Revocation Date: 8th April 2001 Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Horn Brook **Status: Post National Rivers Authority Legislation where issue date > 31/08/1989** Positional Accuracy: Located by supplier to within 10m	A19SW (NE)	720	2	423650 281751

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
11	**Discharge Consents** Operator: Severn Trent Water Limited Property Type: Sewage Disposal Works - Water Company Location: Meriden Sewage Treatment Works Hampton Lane, Hampton Lane, Meriden, Coventry, Cv7 7jr Authority: Environment Agency, Midlands Region Catchment Area: Upper Blythe To Confluence With Cole Reference: T/11/36164/R Permit Version: 4 Effective Date: 31st March 2010 Issued Date: 24th March 2010 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Horn Brook **Status: Modified (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A19SW (NE)	792	2	423735 281769
12	**Discharge Consents** Operator: T Barnacle Property Type: Domestic Property (Single) Location: Marsh Farm House, Bradnoke Marsh, Berkswell, Nr Coventry Authority: Environment Agency, Midlands Region Catchment Area: Upper Blythe To Confluence With Cole Reference: T/11/03631/S Permit Version: 1 Effective Date: 14th November 1973 Issued Date: 14th November 1973 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Freshwater Stream/River Receiving Water: River Blythe (Trib) **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 100m	A3NE (S)	913	2	423200 280100
13	**Local Authority Pollution Prevention and Controls** Name: Tarmac Building Products Location: Cornets End Lane, Meriden, COVENTRY, West Midlands, CV7 7LG Authority: Solihull Metropolitan Borough Council, Environmental Health Department Permit Reference: Me021/9999/2a Dated: 24th September 1993 Process Type: Local Authority Air Pollution Control Description: PG3/1Blending, packing, loading and use of bulk cement **Status: Authorised** Positional Accuracy: Manually positioned to the address or location	A13NE (N)	38	3	423123 281244
14	**Local Authority Pollution Prevention and Controls** Name: Tarmac Lafarge Location: Cornets End Lane, Solihull, Coventry, West Midlands, Cv7 7lh Authority: Solihull Metropolitan Borough Council, Environmental Health Department Permit Reference: Not Supplied Dated: Not Supplied Process Type: Local Authority Pollution Prevention and Control Description: PG3/1Blending, packing, loading and use of bulk cement **Status: Permitted** Positional Accuracy: Manually positioned to the road within the address or location	A13SW (W)	89	3	422831 281056
14	**Local Authority Pollution Prevention and Controls** Name: Hope Rmc Ltd Location: Cornets End Lane, Solihull, Coventry, West Midlands, Cv7 7lh Authority: Solihull Metropolitan Borough Council, Environmental Health Department Permit Reference: Not Supplied Dated: Not Supplied Process Type: Local Authority Pollution Prevention and Control Description: PG3/1Blending, packing, loading and use of bulk cement **Status: Permitted** Positional Accuracy: Manually positioned to the road within the address or location	A13SW (W)	89	3	422831 281056
15	**Local Authority Pollution Prevention and Controls** Name: Cemex Uk Operations Ltd Location: Cornets End Lane, Meriden, COVENTRY, West Midlands, CV7 7LH Authority: Solihull Metropolitan Borough Council, Environmental Health Department Permit Reference: ME021/9999/2/000 Dated: 17th September 1993 Process Type: Local Authority Air Pollution Control Description: PG3/1Blending, packing, loading and use of bulk cement **Status: Authorised** Positional Accuracy: Located by supplier to within 100m	A12SE (W)	496	3	422450 280910

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Nearest Surface Water Feature	A13SE (S)	51	-	423080 280977
	River Quality Name: Horn Bk GQA Grade: River Quality B Reach: Meriden Stw To Conf. R. Blythe Estimated Distance (km): 3.1 Flow Rate: Flow less than 0.31 cumecs Flow Type: River Year: 2000	A13NW (NW)	84	2	422962 281231
16	**Substantiated Pollution Incident Register** Authority: Environment Agency - Midlands Region, Upper Trent Area Incident Date: 20th July 2001 Incident Reference: 17855 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: Contaminated Water: Suspended Solids	A19SE (NE)	785	2	423770 281720
17	**Water Abstractions** Operator: Lafarge Tarmac Trading Limited Licence Number: 03/28/11/0123 Permit Version: 104 Location: Cornets End Quarry - Lagoon Authority: Environment Agency, Midlands Region Abstraction: Extractive: Mineral Washing Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Cornets End Quarry - Lagoon Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 26th September 2013 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A13NE (NE)	203	2	423230 281410
17	**Water Abstractions** Operator: Tarmac Limited Licence Number: 03/28/11/0123 Permit Version: 103 Location: Cornets End Quarry - Lagoon Authority: Environment Agency, Midlands Region Abstraction: Extractive: Mineral Washing Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Cornets End Quarry - Lagoon Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 1st January 2008 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A13NE (NE)	203	2	423230 281410
17	**Water Abstractions** Operator: Tarmac Central Limited Licence Number: 03/28/11/0123 Permit Version: 102 Location: Cornets End Quarry - Lagoon Authority: Environment Agency, Midlands Region Abstraction: Extractive: Mineral Washing Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Cornets End Quarry - Lagoon Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 17th February 2004 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A13NE (NE)	203	2	423230 281410

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
17	**Water Abstractions** Operator: Nash Rocks Limited Licence Number: 03/28/11/0123 Permit Version: 101 Location: Cornets End Quarry - Lagoon Authority: Environment Agency, Midlands Region Abstraction: Extractive: Mineral Washing Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Cornets End Quarry - Lagoon Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 1st July 1999 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A13NE (NE)	203	2	423230 281410
18	**Water Abstractions** Operator: North Warwickshire Golf Club Ltd Licence Number: 03/28/11/0099 Permit Version: 100 Location: North Warks Golf Course - Un-Named Trib R Blythe Authority: Environment Agency, Midlands Region Abstraction: Golf Courses: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: North Warks Golf Course - Trib R Blythe Authorised Start: 01 April Authorised End: 30 September Permit Start Date: 2nd May 2006 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A18SW (NW)	461	2	422850 281580
19	**Water Abstractions** Operator: Cemex Uk Materials Limited Licence Number: 03/28/11/0133 Permit Version: 102 Location: Berkswell Quarry, Meriden - Lagoon Authority: Environment Agency, Midlands Region Abstraction: Extractive: Process water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Berkswell Quarry, Solihull Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 1st April 2008 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A12SE (W)	501	2	422460 280870
19	**Water Abstractions** Operator: Cemex Uk Materials Limited Licence Number: 03/28/11/0132 Permit Version: 103 Location: Berkswell Quarry, Meriden - Lagoon Authority: Environment Agency, Midlands Region Abstraction: Extractive: Mineral Washing Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Berkswell Quarry Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 1st March 2005 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A12SE (W)	501	2	422460 280870

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
19	**Water Abstractions** Operator: Rmc Aggregates (Western) Limited Licence Number: 03/28/11/0132 Permit Version: 101 Location: Berkswell Quarry, Meriden - Lagoon Authority: Environment Agency, Midlands Region Abstraction: Extractive: Mineral Washing Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Berkswell Quarry Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 29th April 1999 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A12SE (W)	501	2	422460 280870
19	**Water Abstractions** Operator: Rmc Aggregates (Western) Limited Licence Number: 03/28/11/0133 Permit Version: 101 Location: Berkswell Quarry, Meriden - Lagoon Authority: Environment Agency, Midlands Region Abstraction: Extractive: Process water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Berkswell Quarry, Solihull Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 29th April 1999 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A12SE (W)	501	2	422460 280870
19	**Water Abstractions** Operator: Western Aggregates Ltd Licence Number: 03/28/11/0133 Permit Version: 100 Location: Berkswell Quarry, Meriden - Lagoon Authority: Environment Agency, Midlands Region Abstraction: Extractive: Process water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Berkswell Quarry, Solihull Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 16th June 1993 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A12SE (W)	501	2	422460 280870
19	**Water Abstractions** Operator: Western Aggregates Ltd Licence Number: 03/28/11/0132 Permit Version: 100 Location: Berkswell Quarry, Meriden - Lagoon Authority: Environment Agency, Midlands Region Abstraction: Extractive: Mineral Washing Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Berkswell Quarry Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 16th June 1993 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A12SE (W)	501	2	422460 280870

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Mr C Barber Licence Number: 03/28/11/0139 Permit Version: 100 Location: Berryfields Farm, Meriden - Borehole Authority: Environment Agency, Midlands Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Berryfields Farm, Meriden Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 22nd December 1989 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A20SE (E)	1394	2	424550 281500
	Water Abstractions Operator: R S Beaty & Sons Licence Number: 03/28/11/0103 Permit Version: 100 Location: Patricks Farm, Kenilworth Road - River Blythe Authority: Environment Agency, Midlands Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Patricks Farm Authorised Start: 01 June Authorised End: 31 August Permit Start Date: 7th March 1992 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A11SW (W)	1445	2	421500 280800
	Groundwater Vulnerability Soil Classification: Soils of High Leaching Potential (H2) - Deep, permeable, coarse textured soils which readily transmit a wide range of pollutants because of their rapid drainage and low attenuation potential Map Sheet: Sheet 23 Leicestershire Scale: 1:100,000	A13SE (NE)	0	2	423072 281108
	Groundwater Vulnerability Soil Classification: Not classified Map Sheet: Sheet 23 Leicestershire Scale: 1:100,000	A13NE (NE)	0	2	423089 281124
	Drift Deposits None				
	Bedrock Aquifer Designations Aquifer Designation: Secondary Aquifer - B	A13SE (NE)	0	4	423072 281108
	Superficial Aquifer Designations Aquifer Designation: Secondary Aquifer - A	A13SW (SW)	0	4	423056 281100
20	**Source Protection Zones** Name: Various Source: Environment Agency, Head Office Reference: Not Supplied Type: Zone III (Total Catchment): The total area needed to support the discharge from the protected groundwater source.	A14SE (E)	757	2	423951 281026
	Extreme Flooding from Rivers or Sea without Defences None				
	Flooding from Rivers or Sea without Defences None				
	Areas Benefiting from Flood Defences None				
	Flood Water Storage Areas None				
	Flood Defences None				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
21	**Detailed River Network Lines** River Type: Secondary River River Name: Not Supplied Hydrographic Area: D004 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk Other Rivers Management Status: Water Course Name: Not Supplied Water Course Reference: Not Supplied	A13NW (NW)	55	2	423020 281211
22	**Detailed River Network Lines** River Type: Extended Culvert (greater than 50m) River Name: Not Supplied Hydrographic Area: D004 River Flow Type: Primary Flow Path River Surface Level: Below Surface Drain Feature: Not a Drain Flood Risk Other Rivers Management Status: Water Course Name: Not Supplied Water Course Reference: Not Supplied	A13NE (N)	75	2	423063 281267
23	**Detailed River Network Lines** River Type: Secondary River River Name: Not Supplied Hydrographic Area: D004 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk Other Rivers Management Status: Water Course Name: Not Supplied Water Course Reference: Not Supplied	A13NW (N)	84	2	423059 281267
24	**Detailed River Network Lines** River Type: Secondary River River Name: Not Supplied Hydrographic Area: D004 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk Other Rivers Management Status: Water Course Name: Not Supplied Water Course Reference: Not Supplied	A13NW (N)	86	2	423059 281267
25	**Detailed River Network Lines** River Type: Secondary River River Name: Not Supplied Hydrographic Area: D004 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk Other Rivers Management Status: Water Course Name: Not Supplied Water Course Reference: Not Supplied	A13NE (NE)	179	2	423300 281338
26	**Detailed River Network Lines** River Type: Tertiary River River Name: Drain Hydrographic Area: D004 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Drain (ditch, Reen, Rhyne, Drain) Flood Risk Other Rivers Management Status: Water Course Name: Not Supplied Water Course Reference: Not Supplied	A13NW (NW)	291	2	422804 281357

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
27	**Detailed River Network Lines** River Type: Tertiary River River Name: Not Supplied Hydrographic Area: D004 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk Management Status: Other Rivers Water Course Name: Not Supplied Water Course Reference: Not Supplied	A18SW (N)	431	2	422942 281608
28	**Detailed River Network Lines** River Type: Tertiary River River Name: Not Supplied Hydrographic Area: D004 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk Management Status: Other Rivers Water Course Name: Not Supplied Water Course Reference: Not Supplied	A12NE (NW)	432	2	422585 281356
29	**Detailed River Network Lines** River Type: Tertiary River River Name: Not Supplied Hydrographic Area: D004 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk Management Status: Other Rivers Water Course Name: Not Supplied Water Course Reference: Not Supplied	A12NE (W)	438	2	422553 281320
30	**Detailed River Network Lines** River Type: Tertiary River River Name: Drain Hydrographic Area: D004 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Drain (ditch, Reen, Rhyne, Drain) Flood Risk Management Status: Other Rivers Water Course Name: Not Supplied Water Course Reference: Not Supplied	A18SE (N)	440	2	423143 281658
31	**Detailed River Network Lines** River Type: Tertiary River River Name: Not Supplied Hydrographic Area: D004 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk Management Status: Other Rivers Water Course Name: Not Supplied Water Course Reference: Not Supplied	A18SE (N)	440	2	423143 281658
32	**Detailed River Network Offline Drainage** River Type: Tertiary River Hydrographic Area: D004	A12SE (W)	348	2	422599 280934
33	**Detailed River Network Offline Drainage** River Type: Tertiary River Hydrographic Area: D004	A8NW (SW)	409	2	422768 280684

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
34	**Historical Landfill Sites** Licence Holder: Tilling Construction Services Limited Location: Cornets End Lane, Meriden, West Midlands Name: Meriden Quarry Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD23762 First Input Date: 1st January 1962 Last Input Date: 31st July 1992 Specified Waste Type: Deposited Waste included Inert, Industrial, Commercial, Household and Special Waste, and Liquid Sludge EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 4600/0076 BGS Ref: Not Supplied Other Ref: 644/205, SL/286, 4600/0512	A13SE (NE)	0	2	423072 281108
35	**Historical Landfill Sites** Licence Holder: Caires and Packison Limited Location: Somers Lane, Meriden, Solihull, West Midlands Name: Somer Lane Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD23761 First Input Date: 31st December 1984 Last Input Date: 29th June 1993 Specified Waste Type: Deposited Waste included Inert and Household Waste EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 4600/0202 BGS Ref: Not Supplied Other Ref: SL/456, 644/779	A18NW (N)	819	2	422736 281926
36	**Licensed Waste Management Facilities (Locations)** Licence Number: 102016 Location: Meriden Quarry, Cornets End Lane, Meriden, Coventry, West Midlands, CV7 7LG Operator Name: N R S Waste Care Ltd Operator Location: Not Supplied Authority: Environment Agency - Midlands Region, Central Area Site Category: Use of waste for reclamation etc <50,000 tps **Licence Status: Issued** Issued: 11th November 2010 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	A13NE (N)	42	2	423121 281247
37	**Licensed Waste Management Facilities (Locations)** Licence Number: 42811 Location: Meriden Quarry, Cornets End Lane, Meriden, Solihull, West Midlands, CV7 7LH Operator Name: Coleman & Company Ltd Operator Location: Not Supplied Authority: Environment Agency - Midlands Region, Central Area Site Category: Physical Treatment Facilities **Licence Status: Modified** Issued: 16th December 1998 Last Modified: 19th January 2009 Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 100m	A14NW (E)	205	2	423400 281200

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
38	**Licensed Waste Management Facilities (Locations)** Licence Number: 400960 Location: Meriden Quarry, Cornets End Lane, Meriden, Warickshire, CV7 7LG Operator Name: N R S Waste Care Limited Operator Location: Not Supplied Authority: Environment Agency - Midlands Region, Central Area Site Category: Use of waste for reclamation etc <100,000 tps **Licence Status: Issued** Issued: 6th February 2014 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	A14NW (NE)	302	2	423456 281328
39	**Licensed Waste Management Facilities (Locations)** Licence Number: 103211 Location: Berkswell Quarry, Cornets End Lane, Meriden, Warwickshire, CV7 7LH Operator Name: Cemex U K Materials Ltd Operator Location: Not Supplied Authority: Environment Agency - Midlands Region, Central Area Site Category: Other Landfill Sites Taking Special Waste **Licence Status: Issued** Issued: 2nd April 2012 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	A8NW (SW)	302	2	422909 280758
40	**Licensed Waste Management Facilities (Locations)** Licence Number: 102753 Location: Berkswell Quarry, Cornets Ends Lane, Meriden, Coventry, Warwickshire, CV7 7LH Operator Name: Cemex U K Materials Ltd Operator Location: Not Supplied Authority: Environment Agency - Midlands Region, Central Area Site Category: Management of inert or extractive waste at mine **Licence Status: Issued** Issued: 13th July 2011 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 100m	A12SE (SW)	344	2	422700 280800
41	**Licensed Waste Management Facilities (Locations)** Licence Number: 400769 Location: Meriden Quarry, Cornets End Lane, Meriden, Warwickshire, CV7 7LG Operator Name: A & A Recycling Services Ltd Operator Location: Not Supplied Authority: Environment Agency - Midlands Region, Central Area Site Category: Treatment of waste wood <75000 tps **Licence Status: Modified** Issued: 23rd September 2013 Last Modified: 19th December 2013 Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A14NW (NE)	360	2	423470 281413

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
42	**Licensed Waste Management Facilities (Locations)** Licence Number: 102788 Location: Meriden Quarry, Cornets End Lane, Meriden, Warwickshire, CV7 7LG Operator Name: U K Coal Operations Limited Operator Location: Not Supplied Authority: Environment Agency - Midlands Region, Central Area Site Category: Mining Waste Operations **Licence Status: Expired** Issued: 17th December 2012 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 100m	A19SW (NE)	586	2	423500 281700
43	**Licensed Waste Management Facilities (Locations)** Licence Number: 104829 Location: Meriden Quarry, Cornets End Lane, Meriden, Warwickshire, CV7 7LG Operator Name: N R S Waste Care Limited Operator Location: Not Supplied Authority: Environment Agency - Midlands Region, Central Area Site Category: Other Landfill Sites Taking Special Waste **Licence Status: Issued** Issued: 10th March 2014 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	A18NE (N)	667	2	423374 281851
44	**Licensed Waste Management Facilities (Locations)** Licence Number: 102732 Location: Meriden Quarry, Cornets End Lane, Meriden, Coventry, Warwickshire, CV7 7LG Operator Name: Lafarge Tarmac Trading Limited Operator Location: Not Supplied Authority: Environment Agency - Midlands Region, Central Area Site Category: Management of inert or extractive waste at mine **Licence Status: Modified** Issued: 20th May 2011 Last Modified: 14th April 2014 Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 100m	A18NE (N)	695	2	423300 281900
45	**Licensed Waste Management Facilities (Locations)** Licence Number: 100884 Location: Cornets End Lane, Meriden, West Midlands, CV7 7LH Operator Name: Jack Moody Ltd Operator Location: Not Supplied Authority: Environment Agency - Midlands Region, Central Area Site Category: Composting **Licence Status: Modified** Issued: 30th September 2009 Last Modified: 12th December 2012 Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A8SW (S)	704	2	422806 280367

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
46	**Licensed Waste Management Facilities (Locations)** Licence Number: 103860 Location: Meriden Quarry, Cornet End Lane, Meriden, Warwickshire, CV7 7LG Operator Name: N R S Waste Care Ltd Operator Location: Not Supplied Authority: Environment Agency - Midlands Region, Central Area Site Category: Other Landfill Sites Taking Special Waste **Licence Status: Issued** Issued: 11th June 2012 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	A19NW (NE)	784	2	423439 281953
46	**Licensed Waste Management Facilities (Locations)** Licence Number: 104990 Location: Meriden Quarry, Cornets Lane End, Meriden, Warwickshire, CV7 7LG Operator Name: N R S Waste Care Ltd Operator Location: Not Supplied Authority: Environment Agency - Midlands Region, Central Area Site Category: Treatment of waste to produce soil <75,000 tpy **Licence Status: Surrendered** Issued: 22nd March 2013 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: 18th September 2013 IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A19NW (NE)	821	2	423442 281991
47	**Licensed Waste Management Facilities (Locations)** Licence Number: 104725 Location: Meriden Quarry, Cornets End Lane, Meriden, Warwickshire, CV7 7LG Operator Name: N R S Waste Care Ltd Operator Location: Not Supplied Authority: Environment Agency - Midlands Region, Central Area Site Category: Other Landfill Sites Taking Special Waste **Licence Status: Issued** Issued: 2nd April 2013 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	A23SE (N)	945	2	423095 282160
	Local Authority Landfill Coverage Name: Solihull Metropolitan District Council - Has supplied landfill data		0	5	423072 281108
	Local Authority Landfill Coverage Name: North Warwickshire Borough Council - Has supplied landfill data		872	11	422764 281997
	Local Authority Landfill Coverage Name: Warwickshire County Council - Had landfill data but passed it to the relevant environment agency		872	12	422764 281997
48	**Local Authority Recorded Landfill Sites** Location: Meriden Quarry Reference: N Authority: Solihull Metropolitan Borough Council **Last Reported Status: Unknown** Types of Waste: Not Supplied Date of Closure: Not Supplied Positional Accuracy: Positioned by the supplier Boundary Quality: Moderate	A18SE (NE)	410	5	423310 281602
49	**Local Authority Recorded Landfill Sites** Location: Meriden Quarry, Cornets End Lane, Meriden, Solihull Reference: SL286 Authority: Solihull Metropolitan Borough Council **Last Reported Status: Unknown** Types of Waste: Not Supplied Date of Closure: Not Supplied Positional Accuracy: Positioned by the supplier Boundary Quality: Moderate	A18SE (NE)	410	5	423310 281602

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
50	**Registered Landfill Sites** Licence Holder: Ready Mixed Concrete (Uk) Ltd Licence Reference: SL 2012 Site Location: Berkswell Quarry, Cornets End Lane, Meriden, COVENTRY, West Midlands, CV7 7LH Licence Easting: 423300 Licence Northing: 281500 Operator Location: RMC House, High Street, FELTHAM, Middlesex, TW13 4HD Authority: Environment Agency - Midlands Region, Upper Trent Area Site Category: Landfill Max Input Rate: Undefined Waste Source Restrictions: No known restriction on source of waste Status: Licence never issuedUnder Review Dated: Not Supplied Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Approximate location provided by supplier Boundary Accuracy: Not Applicable Authorised Waste: Licenced Wastes Not To Hand	A13NE (NE)	62	2	423175 281283

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
51	**Registered Landfill Sites** Licence Holder: Tilling Construction Services Licence Reference: SL 286 Site Location: Meriden Quarry, Cornets End Lane, Solihull, West Midlands Licence Easting: 423500 Licence Northing: 281900 Operator Location: Conyngham Hall, KNARESBOROUGH, North Yorkshire, HG5 9AY Authority: Environment Agency - Midlands Region, Upper Trent Area Site Category: Landfill Max Input Rate: Very Large (Equal to or greater than 250,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 1st June 1980 Preceded By Licence: Not Given Superseded By Licence: SL 2042 Positional Accuracy: Manually positioned to the address or location Boundary Accuracy: Not Applicable Authorised Waste: Aluminium Asbestos Barium Compounds (Water Soluble) Borates Calcium Hydroxide Calcium Oxide Cellulose Wastes (Natural/Synth.) Construction And Demolition Wastes Contaminated Rubbish/Bags/Sacks Copper Compounds Empty Used Containers Ferrous Metal Scrap House. + Com. Baled Waste House. + Com. Pulverised Waste House. + Com. Untreated Waste Incinerator Residues Ind. Non-Haz. Inert, Non-Flammable Ind. Non-Haz. Potentially Combustible Ion-Exchange Resin Wastes Iron Compounds Mineral Processing Wastes Nickel Compounds Nitrates Nitrites Non-Ferrous Metal Scrap Paint Waste $ Polymeric Material, Products/Scrap Scrap Rubber (Including Tyres) Sewage Silt And Dredgings Slag, Boiler/Flue Cleanings Sodium/Potassium Oxides/Hydroxides Sodium/Potassium Carbonates Tar, Pitch, Bitumen, Asphalts Used Filter Materials $ Waste Treated Timber Zinc Compounds Environment Agency must give specific authorisation for this waste to be acceptedWaste requires prior approval: Carcinogenic Wastes Controlled Wastes Explosive Waste Medical (Misuse Of Drugs Act) Medical, Surgical, Veterinary Wastes Radioactive Wastes Sludge Wastes Waste Flammable Solvents	A19NW (NE)	760	2	423500 281900

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
52	**Registered Landfill Sites** Licence Holder: Packington Estate Enterprises Licence Reference: SL 456 Site Location: The Somers, Somers Road, Meriden, Coventry, West Midlands Licence Easting: 422500 Licence Northing: 282000 Operator Location: Packington Hall, Meriden, COVENTRY, West Midlands, CV7 7HF Authority: Environment Agency - Midlands Region, Upper Trent Area Site Category: Landfill Max Input Rate: Undefined Waste Source Restrictions: No known restriction on source of waste Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 1st May 1984 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the address or location Boundary Accuracy: Not Applicable Authorised Waste: Sub/Top Soil Prohibited Waste: Asbestos Poisonous, Noxious, Polluting Wastes	A17NE (NW)	1000	2	422500 282000
53	**Registered Waste Treatment or Disposal Sites** Licence Holder: Coleman & Co (Plant Hire) Ltd Licence Reference: SL 2042 Site Location: Meriden Quarry, Cornets End Lane, Meriden, Coventry, West Midlands Operator Location: 43 Station Road, Stetchford, BIRMINGHAM, West Midlands, B33 9AX Authority: Environment Agency - Midlands Region, Upper Trent Area Site Category: Transfer - with treatment Max Input Rate: Medium (Equal to or greater than 25,000 and less than 75,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Licence Status: Operational as far as is knownOperational Dated: 16th December 1998 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the address or location Boundary Quality: Not Supplied Authorised Waste: Excavated Tarmacadam Hardcore Inert Excavation Materials Max.Waste Permitted By Licence Prohibited Waste: Biodegradable Waste Liquid Wastes Sludge Wastes Spec.Waste (Epa'90:S62/1996 Regs) Waste N.O.S.	A13SE (E)	200	2	423350 281000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: Triassic Rocks (Undifferentiated)	A13SE (NE)	0	4	423072 281108
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A13SW (SW)	0	4	423056 281100
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A13SW (W)	0	4	423000 281108
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A13SW (W)	0	4	422942 281102
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A13SE (NE)	0	4	423072 281108
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A13SE (S)	10	4	423072 281000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13NW (NW)	37	4	423000 281176

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A13SW (SW)	50	4	423000 281000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A13SW (SW)	58	4	422947 281000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13NW (NW)	64	4	422939 281173
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A13NW (W)	76	4	422894 281161
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A13SE (SE)	76	4	423215 281000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A13SE (SE)	78	4	423228 281022

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SE (E)	82	4	423239 281042
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A13SE (E)	83	4	423271 281101
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A13SW (SW)	140	4	422934 280909
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SE (SE)	143	4	423286 281000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SE (SE)	156	4	423301 281000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A13SE (SE)	173	4	423309 280979

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A13NW (NW)	180	4	422849 281255
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A14SW (E)	235	4	423412 281034
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SE (SE)	235	4	423315 280860
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A14SW (E)	239	4	423408 281019
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SE (SE)	254	4	423364 280901
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A14SW (E)	272	4	423431 281000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A14NW (E)	280	4	423480 281176
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A18SE (N)	325	4	423081 281535
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A13NW (NW)	334	4	422830 281421
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A14NW (E)	335	4	423514 281270
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A13NW (NW)	380	4	422787 281450
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A18SW (N)	382	4	423046 281583

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A8NW (S)	383	4	423000 280652
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A14NW (E)	388	4	423561 281295
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12SE (SW)	408	4	422604 280792
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A14NW (E)	420	4	423624 281130
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A8NE (S)	436	4	423273 280597
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A14NW (E)	439	4	423623 281269

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A14NW (NE)	456	4	423603 281377
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A18SW (N)	457	4	423000 281646
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A18SW (N)	457	4	422953 281631
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A12NE (NW)	472	4	422607 281444
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A12SE (W)	514	4	422444 280874
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A18SE (N)	539	4	423312 281736

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A19SW (NE)	631	4	423557 281714
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A18NW (N)	634	4	423000 281839
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A18NW (N)	641	4	422968 281832
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A19SW (NE)	653	4	423566 281735
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A19SW (NE)	657	4	423568 281738
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A19SW (NE)	659	4	423573 281736

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A19SW (NE)	678	4	423554 281774
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NE (E)	685	4	423886 281171
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NE (E)	691	4	423892 281182
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NE (E)	693	4	423894 281156
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A19SW (NE)	705	4	423589 281782
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12NW (W)	705	4	422269 281346

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A19NW (NE)	732	4	423601 281807
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A19NW (NE)	736	4	423603 281811
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A19NW (NE)	754	4	423622 281819
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SE (E)	758	4	423952 281026
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A14SE (E)	762	4	423961 281098
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SE (E)	762	4	423962 281100

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SE (E)	764	4	423951 281000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NE (E)	773	4	423975 281144
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A19NW (NE)	775	4	423641 281831
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A8SE (S)	779	4	423223 280236
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A18NE (N)	782	4	423072 282000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NE (E)	786	4	423988 281134

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A14NE (E)	792	4	423992 281192
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NE (E)	798	4	424000 281119
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A14NE (E)	799	4	424000 281188
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NE (E)	799	4	424000 281150
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A14SE (E)	799	4	424000 281108
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A18NW (N)	799	4	423000 282000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A14NE (E)	801	4	424000 281212
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A14NE (E)	810	4	424000 281283
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SE (E)	812	4	424000 281000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A17SW (NW)	818	4	422242 281555
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A14NE (E)	831	4	424023 281278
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A19NW (NE)	839	4	423468 282000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A18NW (N)	843	4	422846 282000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A9NE (SE)	857	4	423897 280620
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SE (E)	871	4	424016 280841
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A11SE (W)	886	4	422036 281000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A11SE (W)	886	4	422036 281000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A19SE (NE)	888	4	424000 281547

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A19NW (NE)	890	4	423645 281968
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A15NW (E)	896	4	424087 281288
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A19NW (NE)	906	4	423679 281965
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A9NE (SE)	907	4	424000 280718
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A9NE (SE)	911	4	423941 280586
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A17SW (NW)	912	4	422322 281775

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A19SE (NE)	914	4	424000 281608
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A11SE (W)	919	4	422000 281108
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A11SE (W)	920	4	422000 281111
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A11SE (W)	922	4	422000 281000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A11SE (W)	930	4	422000 280932
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15SW (E)	939	4	424112 280917

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A9NE (SE)	941	4	424000 280642
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11NE (W)	943	4	421979 281137
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A19NW (NE)	945	4	423697 282000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A20SW (NE)	957	4	424082 281530
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11NE (W)	960	4	422000 281347
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A20SW (NE)	963	4	424084 281540

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 20 - 40 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A6NE (W)	972	4	422000 280753
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15SW (E)	975	4	424175 281095
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 40 - 60 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A19NE (NE)	998	4	423874 281922
54	**BGS Recorded Mineral Sites** Site Name: Cornet'S End Sand Pit Location: , Cornet'S End, Meriden, Coventry, West Midlands Source: British Geological Survey, National Geoscience Information Service Reference: 39240 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Quaternary Geology: Glaciofluvial Deposits, Mid Pleistocene Commodity: Sand Positional Accuracy: Located by supplier to within 10m	A13NW (W)	0	4	423030 281115
55	**BGS Recorded Mineral Sites** Site Name: Cornet'S End Sand Pit Location: , Cornet'S End, Meriden, Coventry, West Midlands Source: British Geological Survey, National Geoscience Information Service Reference: 39808 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Quaternary Geology: Glaciofluvial Deposits, Mid Pleistocene Commodity: Sand and Gravel Positional Accuracy: Located by supplier to within 10m	A13NE (E)	139	4	423340 281155
56	**BGS Recorded Mineral Sites** Site Name: Berkswell A Location: , Cornets End Lane, Meriden, Coventry, West Midlands, Cv7 7Ih Source: British Geological Survey, National Geoscience Information Service Reference: 3968 Type: Opencast **Status: Ceased** Operator: Rmc Aggregates (Western) Ltd Operator Location: Rmc Aggregates (Western) Ltd, Wolverhampton Road, Oldbury, Warley, West Midlands, B69 4rj Periodic Type: Quaternary Geology: River Blyth Gravel Commodity: Sand and Gravel Positional Accuracy: Unknown	A13SE (S)	213	4	423100 280800

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
57	**BGS Recorded Mineral Sites** Site Name: Cornet'S End Sand Pit Location: , Cornet'S End, Meriden, Coventry, West Midlands Source: British Geological Survey, National Geoscience Information Service Reference: 39807 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Quaternary Geology: Glaciofluvial Deposits, Mid Pleistocene Commodity: Sand and Gravel Positional Accuracy: Located by supplier to within 10m	A13NW (N)	256	4	422995 281425
58	**BGS Recorded Mineral Sites** Site Name: Cornet'S End Sand Pit Location: , Cornet'S End, Meriden, Coventry, West Midlands Source: British Geological Survey, National Geoscience Information Service Reference: 39809 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Quaternary Geology: Glaciofluvial Deposits, Mid Pleistocene Commodity: Sand and Gravel Positional Accuracy: Located by supplier to within 10m	A19SW (NE)	464	4	423475 281565
59	**BGS Recorded Mineral Sites** Site Name: Berkswell Quarry Location: , Cornets End Lane, Meriden, Coventry, West Midlands, Cv7 7lh Source: British Geological Survey, National Geoscience Information Service Reference: 3967 Type: Opencast **Status: Active** Operator: Cemex Uk Materials Ltd Operator Location: Cemex Uk Materials Ltd, Cemex House, Coldharbour Lane, Thorpe, Egham, Surrey, Tw20 8td Periodic Type: Quaternary Geology: Glaciofluvial Deposits, Mid Pleistocene Commodity: Sand and Gravel Positional Accuracy: Unknown	A12SE (SW)	585	4	422400 280800
60	**BGS Recorded Mineral Sites** Site Name: Meriden Quarry Location: Cornets End Lane, Meriden, Coventry, West Midlands, Cv7 7lg Source: British Geological Survey, National Geoscience Information Service Reference: 3971 Type: Opencast **Status: Active** Operator: Lafarge-Tarmac Operator Location: Lafarge-Tarmac, Portland House, Bickenhill Lane, Solihull, Birmingham, B37 7bq Periodic Type: Quaternary Geology: Glaciofluvial Terrace Deposits, Mid Pleistocene Commodity: Sand and Gravel Positional Accuracy: Located by supplier to within 10m	A19NW (NE)	741	4	423455 281900
	BGS Measured Urban Soil Chemistry No data available				
	BGS Urban Soil Chemistry Averages No data available				
	Coal Mining Affected Areas Description: In an area which may be affected by coal mining activity. It is recommended that a coal mining report is obtained from the Coal Authority. Contact details are included in the Useful Contacts section of this report.	A13SE (NE)	0	6	423072 281108
	Mining Instability Mining Evidence: Inconclusive Coal Mining Source: Ove Arup & Partners Boundary Quality: As Supplied	A13SE (NE)	0	-	423072 281108
	Non Coal Mining Areas of Great Britain No Hazard				
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (NE)	0	4	423072 281108

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Collapsible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NW (W)	76	4	422894 281161
	Potential for Collapsible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	140	4	422934 280909
	Potential for Compressible Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SE (NE)	0	4	423072 281108
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	0	4	423056 281100
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (NE)	0	4	423072 281108
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (NE)	0	4	423072 281108
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (NE)	0	4	423072 281108
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NW (W)	76	4	422894 281161
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	140	4	422934 280909
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	157	4	422876 281244
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	235	4	423315 280860
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (NE)	0	4	423072 281108
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (W)	76	4	422894 281161
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	140	4	422934 280909
	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	A13SE (NE)	0	4	423072 281108
	Radon Potential - Radon Affected Areas Affected Area: The property is in a lower probability radon area, as less than 1% of homes are above the action level Source: British Geological Survey, National Geoscience Information Service	A13SE (NE)	0	4	423072 281108

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
61	**Contemporary Trade Directory Entries** Name: Tilcon Ltd Location: Cornets End Lane, Meriden, Coventry, CV7 7LG Classification: Concrete & Mortar Ready Mixed **Status: Inactive** Positional Accuracy: Automatically positioned in the proximity of the address	A13NE (NE)	33	-	423139 281245
61	**Contemporary Trade Directory Entries** Name: Tarmac Central Location: Cornets End Lane, Meriden, Coventry, CV7 7LG Classification: Sand, Gravel & Other Aggregates **Status: Inactive** Positional Accuracy: Automatically positioned in the proximity of the address	A13NE (NE)	33	-	423139 281245
61	**Contemporary Trade Directory Entries** Name: Lafarge Tarmac Location: Meriden, Meriden Depot, Meriden, Coventry, West Midlands, CV7 7LG Classification: Quarries **Status: Active** Positional Accuracy: Manually positioned within the geographical locality	A13NE (N)	37	-	423124 281243
61	**Contemporary Trade Directory Entries** Name: Hope Construction Location: Cornets End Lane, Meriden, Coventry, CV7 7LG Classification: Concrete & Mortar Ready Mixed **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NE (N)	37	-	423124 281243
62	**Contemporary Trade Directory Entries** Name: Berkswell Forgework Location: Cornets End Lane, Meriden, Coventry, CV7 7LH Classification: Wrought Ironwork **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (W)	488	-	422444 281176
62	**Contemporary Trade Directory Entries** Name: Farm & Industrial Cladding Ltd Location: Hornbrook Farm, Cornets End Lane, Meriden, Coventry, CV7 7LH Classification: Cladding Suppliers & Installers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (W)	488	-	422444 281176
63	**Contemporary Trade Directory Entries** Name: Ready Mixed Concrete (West Midlands) Ltd Location: Cornets End La, Meriden, Coventry, West Midlands, CV7 7LH Classification: Concrete & Mortar Ready Mixed **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A12NE (W)	574	-	422407 281336

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
64	**Areas of Adopted Green Belt** Authority: Solihull Metropolitan Borough Council Plan Name: Solihull Unitary Development Plan 2006 **Status:** **Adopted** Plan Date: 28th February 2006	A13SE (NE)	0	5	423072 281108
65	**Areas of Adopted Green Belt** Authority: North Warwickshire Borough Council, Planning Administration Plan Name: North Warwickshire Local Plan **Status:** **Adopted** Plan Date: 4th July 2006	A18NW (N)	867	7	422760 281990
66	**Areas of Unadopted Green Belt** Authority: Solihull Metropolitan Borough Council Plan Name: Solihull Local Plan **Status:** **Submission Draft** Plan Date: 30th September 2012	A13SE (NE)	0	5	423072 281108
67	**Nitrate Vulnerable Zones** Name: Not Supplied Description: Surface Water Source: Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	A13SE (NE)	0	8	423072 281108
68	**Nitrate Vulnerable Zones** Name: Not Supplied Description: Groundwater Source: Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	A13SE (SE)	76	8	423228 281022

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices		
Solihull Metropolitan Borough Council - Environmental Health Department	March 2015	Annual Rolling Update
North Warwickshire Borough Council - Environmental Health Department	October 2014	Annual Rolling Update
Coventry City Council - Environmental Health Department	September 2014	Annual Rolling Update
Discharge Consents		
Environment Agency - Midlands Region	April 2015	Quarterly
Enforcement and Prohibition Notices		
Environment Agency - Midlands Region	March 2013	As notified
Integrated Pollution Controls		
Environment Agency - Midlands Region	October 2008	Not Applicable
Integrated Pollution Prevention And Control		
Environment Agency - Midlands Region	April 2015	Quarterly
Local Authority Integrated Pollution Prevention And Control		
Coventry City Council - Environmental Health Department	August 2014	Annual Rolling Update
Solihull Metropolitan Borough Council - Environmental Health Department	August 2014	Annual Rolling Update
North Warwickshire Borough Council - Environmental Health Department	September 2014	Annual Rolling Update
Local Authority Pollution Prevention and Controls		
Coventry City Council - Environmental Health Department	August 2014	Annual Rolling Update
Solihull Metropolitan Borough Council - Environmental Health Department	August 2014	Annual Rolling Update
North Warwickshire Borough Council - Environmental Health Department	September 2014	Annual Rolling Update
Local Authority Pollution Prevention and Control Enforcements		
Coventry City Council - Environmental Health Department	August 2014	Annual Rolling Update
Solihull Metropolitan Borough Council - Environmental Health Department	August 2014	Annual Rolling Update
North Warwickshire Borough Council - Environmental Health Department	September 2014	Annual Rolling Update
Nearest Surface Water Feature		
Ordnance Survey	July 2012	Quarterly
Pollution Incidents to Controlled Waters		
Environment Agency - Midlands Region	December 1999	Not Applicable
Prosecutions Relating to Authorised Processes		
Environment Agency - Midlands Region	March 2013	As notified
Prosecutions Relating to Controlled Waters		
Environment Agency - Midlands Region	March 2013	As notified
River Quality		
Environment Agency - Head Office	November 2001	Not Applicable
River Quality Biology Sampling Points		
Environment Agency - Head Office	July 2012	Annually
River Quality Chemistry Sampling Points		
Environment Agency - Head Office	July 2012	Annually
Substantiated Pollution Incident Register		
Environment Agency - Midlands Region - Central Area	April 2015	Quarterly
Environment Agency - Midlands Region - Lower Severn Area	April 2015	Quarterly
Environment Agency - Midlands Region - Upper Trent Area	April 2015	Quarterly
Water Abstractions		
Environment Agency - Midlands Region	April 2015	Quarterly
Water Industry Act Referrals		
Environment Agency - Midlands Region	April 2015	Quarterly
Groundwater Vulnerability		
Environment Agency - Head Office	April 2015	Not Applicable
Drift Deposits		
Environment Agency - Head Office	January 1999	Not Applicable
Bedrock Aquifer Designations		
British Geological Survey - National Geoscience Information Service	October 2012	As notified

Agency & Hydrological	Version	Update Cycle
Superficial Aquifer Designations British Geological Survey - National Geoscience Information Service	January 2015	As notified
Source Protection Zones Environment Agency - Head Office	April 2015	Quarterly
Extreme Flooding from Rivers or Sea without Defences Environment Agency - Head Office	May 2015	Quarterly
Flooding from Rivers or Sea without Defences Environment Agency - Head Office	May 2015	Quarterly
Areas Benefiting from Flood Defences Environment Agency - Head Office	May 2015	Quarterly
Flood Water Storage Areas Environment Agency - Head Office	May 2015	Quarterly
Flood Defences Environment Agency - Head Office	May 2015	Quarterly
Detailed River Network Lines Environment Agency - Head Office	March 2012	Annually
Detailed River Network Offline Drainage Environment Agency - Head Office	March 2012	Annually
Surface Water 1 in 30 year Flood Extent Environment Agency - Head Office	October 2013	As notified
Surface Water 1 in 100 year Flood Extent Environment Agency - Head Office	October 2013	As notified
Surface Water 1 in 1000 year Flood Extent Environment Agency - Head Office	October 2013	As notified
Surface Water Suitability Environment Agency - Head Office	October 2013	As notified

Waste	Version	Update Cycle
BGS Recorded Landfill Sites		
British Geological Survey - National Geoscience Information Service	June 1996	Not Applicable
Historical Landfill Sites		
Environment Agency - Midlands Region - Central Area	May 2015	Quarterly
Environment Agency - Midlands Region - Lower Severn Area	May 2015	Quarterly
Environment Agency - Midlands Region - Upper Trent Area	May 2015	Quarterly
Integrated Pollution Control Registered Waste Sites		
Environment Agency - Midlands Region	October 2008	Not Applicable
Licensed Waste Management Facilities (Landfill Boundaries)		
Environment Agency - Midlands Region - Central Area	August 2014	Quarterly
Environment Agency - Midlands Region - Lower Severn Area	August 2014	Quarterly
Environment Agency - Midlands Region - Upper Trent Area	August 2014	Quarterly
Licensed Waste Management Facilities (Locations)		
Environment Agency - Midlands Region - Central Area	April 2015	Quarterly
Environment Agency - Midlands Region - Lower Severn Area	April 2015	Quarterly
Environment Agency - Midlands Region - Upper Trent Area	April 2015	Quarterly
Local Authority Landfill Coverage		
Coventry City Council - Planning Department	May 2000	Not Applicable
North Warwickshire Borough Council - Environmental Health Department	May 2000	Not Applicable
Solihull Metropolitan Borough Council	May 2000	Not Applicable
Warwickshire County Council	May 2000	Not Applicable
Local Authority Recorded Landfill Sites		
Coventry City Council - Planning Department	May 2000	Not Applicable
North Warwickshire Borough Council - Environmental Health Department	May 2000	Not Applicable
Solihull Metropolitan Borough Council	May 2000	Not Applicable
Warwickshire County Council	May 2000	Not Applicable
Registered Landfill Sites		
Environment Agency - Midlands Region - Lower Severn Area	March 2003	Not Applicable
Environment Agency - Midlands Region - Upper Trent Area	March 2003	Not Applicable
Registered Waste Transfer Sites		
Environment Agency - Midlands Region - Lower Severn Area	March 2003	Not Applicable
Environment Agency - Midlands Region - Upper Trent Area	March 2003	Not Applicable
Registered Waste Treatment or Disposal Sites		
Environment Agency - Midlands Region - Lower Severn Area	March 2003	Not Applicable
Environment Agency - Midlands Region - Upper Trent Area	March 2003	Not Applicable

Hazardous Substances	Version	Update Cycle
Control of Major Accident Hazards Sites (COMAH)		
Health and Safety Executive	June 2015	Bi-Annually
Explosive Sites		
Health and Safety Executive	June 2015	Bi-Annually
Notification of Installations Handling Hazardous Substances (NIHHS)		
Health and Safety Executive	November 2000	Not Applicable
Planning Hazardous Substance Enforcements		
North Warwickshire Borough Council - Planning Administration	December 2014	Annual Rolling Update
Solihull Metropolitan Borough Council	January 2015	Annual Rolling Update
Warwickshire County Council	July 2007	Annual Rolling Update
Coventry City Council - Planning Department	September 2014	Annual Rolling Update
Planning Hazardous Substance Consents		
North Warwickshire Borough Council - Planning Administration	December 2014	Annual Rolling Update
Solihull Metropolitan Borough Council	January 2015	Annual Rolling Update
Warwickshire County Council	July 2007	Annual Rolling Update
Coventry City Council - Planning Department	September 2014	Annual Rolling Update

Data Currency

Geological	Version	Update Cycle
BGS 1:625,000 Solid Geology British Geological Survey - National Geoscience Information Service	January 2009	Not Applicable
BGS Estimated Soil Chemistry British Geological Survey - National Geoscience Information Service	January 2010	Annually
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	May 2015	Bi-Annually
Brine Compensation Area Cheshire Brine Subsidence Compensation Board	August 2011	Not Applicable
Coal Mining Affected Areas The Coal Authority - Mining Report Service	March 2014	As notified
Mining Instability Ove Arup & Partners	October 2000	Not Applicable
Non Coal Mining Areas of Great Britain British Geological Survey - National Geoscience Information Service	July 2014	Not Applicable
Potential for Collapsible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	Annually
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	Annually
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	Annually
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	Annually
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	Annually
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	Annually
Radon Potential - Radon Affected Areas British Geological Survey - National Geoscience Information Service	July 2011	As notified
Radon Potential - Radon Protection Measures British Geological Survey - National Geoscience Information Service	July 2011	As notified
Industrial Land Use	**Version**	**Update Cycle**
Contemporary Trade Directory Entries Thomson Directories	May 2015	Quarterly
Fuel Station Entries Catalist Ltd - Experian	May 2015	Quarterly

Sensitive Land Use	Version	Update Cycle
Areas of Adopted Green Belt		
Coventry City Council	May 2015	As notified
North Warwickshire Borough Council - Planning Administration	May 2015	As notified
Solihull Metropolitan Borough Council	May 2015	As notified
Areas of Unadopted Green Belt		
Coventry City Council	May 2015	As notified
North Warwickshire Borough Council - Planning Administration	May 2015	As notified
Solihull Metropolitan Borough Council	May 2015	As notified
Areas of Outstanding Natural Beauty		
Natural England	February 2015	Bi-Annually
Environmentally Sensitive Areas		
Natural England	August 2014	Annually
Forest Parks		
Forestry Commission	April 1997	Not Applicable
Local Nature Reserves		
Natural England	April 2015	Bi-Annually
Marine Nature Reserves		
Natural England	July 2013	Bi-Annually
National Nature Reserves		
Natural England	March 2015	Bi-Annually
National Parks		
Natural England	February 2015	Bi-Annually
Nitrate Sensitive Areas		
Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	February 2012	Not Applicable
Nitrate Vulnerable Zones		
Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	July 2014	Annually
Ramsar Sites		
Natural England	March 2014	Bi-Annually
Sites of Special Scientific Interest		
Natural England	April 2015	Bi-Annually
Special Areas of Conservation		
Natural England	March 2014	Bi-Annually
Special Protection Areas		
Natural England	April 2015	Bi-Annually

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	
Natural Resources Wales	
Scottish Natural Heritage	
Natural England	
Public Health England	
Ove Arup	
Peter Brett Associates	

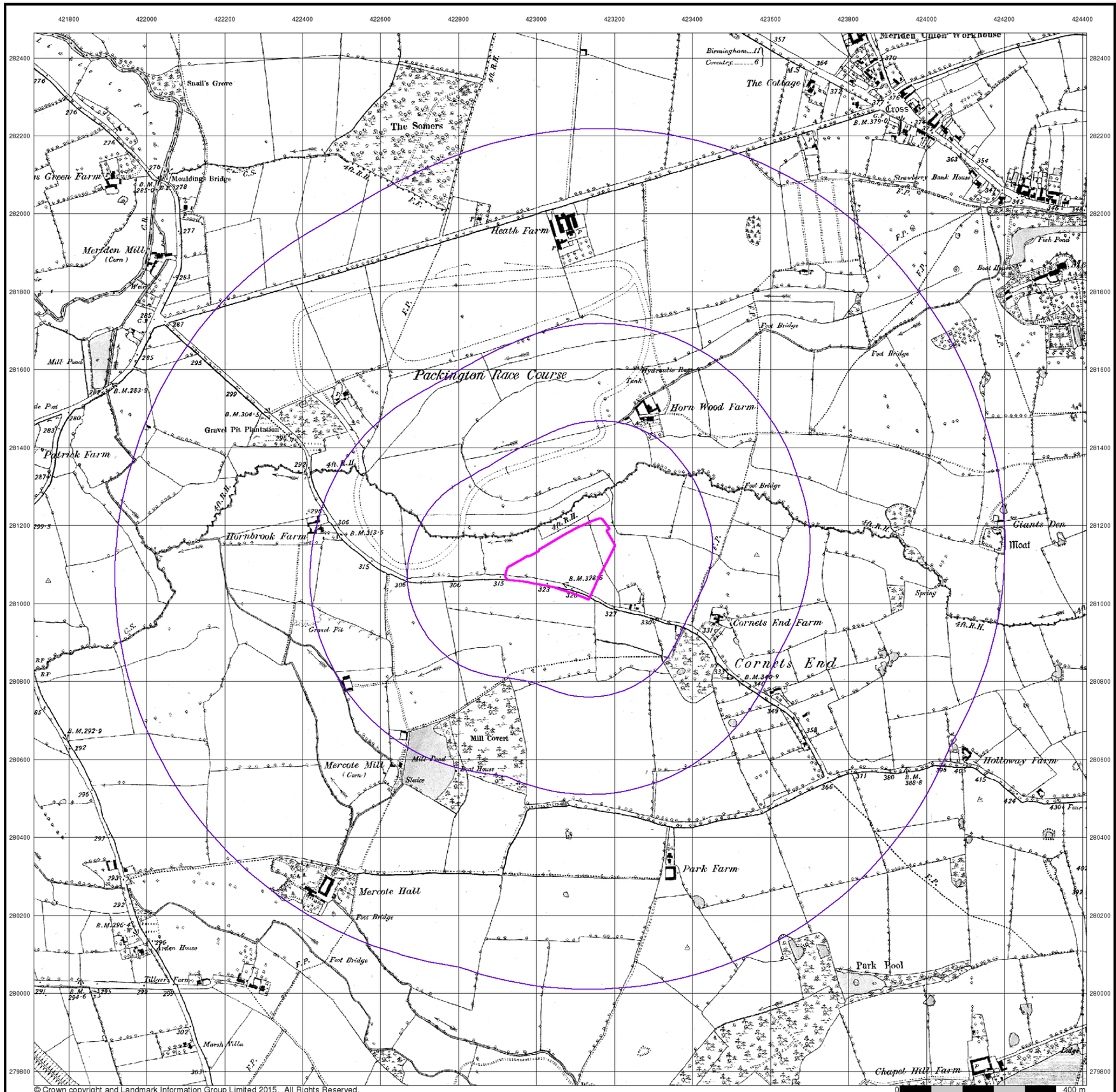
Useful Contacts

Contact	Name and Address	Contact Details
2	**Environment Agency - National Customer Contact Centre (NCCC)** PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 08708 506 506 Email: enquiries@environment-agency.gov.uk
3	**Solihull Metropolitan Borough Council - Environmental Health Department** P O Box 24, Council House, Solihull, West Midlands, B91 3QT	Telephone: 0121 704 8086 Fax: 0121 704 6404 Website: www.solihull.gov.uk
4	**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
5	**Solihull Metropolitan Borough Council** P O Box 19, Council House, Solihull, West Midlands, B91 3QT	Telephone: 0121 704 6000 Fax: 0121 704 6404 Website: www.solihull.gov.uk
6	**The Coal Authority - Mining Report Service** 200 Lichfield Lane, Mansfield, Nottinghamshire, NG18 4RG	Telephone: 0845 7626848 Email: thecoalauthority@coal.gov.uk
7	**North Warwickshire Borough Council - Planning Administration** Po Box 6, Council House, South Street, Atherstone, Warwickshire, CV9 1BG	Telephone: 01827 715341 Fax: 01827 719225 Website: www.northwarks.gov.uk
8	**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
9	**Natural England** Suite D, Unex House, Bourges Boulevard, Peterborough, Cambridgeshire, PE1 1NG	Telephone: 0845 600 3078 Email: enquiries@naturalengland.org.uk Website: www.naturalengland.org.uk
10	**Environment Agency - Head Office** Rio House, Waterside Drive, Aztec West, Almondsbury, Bristol, Avon, BS32 4UD	Telephone: 01454 624400 Fax: 01454 624409
11	**North Warwickshire Borough Council - Environmental Health Department** P O Box 6, Old Bank House, 129 Long Street, Atherstone, North Warwickshire, CV9 1BG	Telephone: 01827 715341 Fax: 01827 719399 Website: www.northwarks.gov.uk
12	**Warwickshire County Council** PO Box 43, Shire Hall, Warwick, Warwickshire, CV34 4SX	Telephone: 01926 410410 Website: www.warwickshire.gov.uk
-	**Public Health England - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards** Chilton, Didcot, Oxfordshire, OX11 0RQ	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@phe.gov.uk Website: www.ukradon.org
-	**Landmark Information Group Limited** Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk

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

APPENDIX SCR2

Historical Maps



TerraConsult

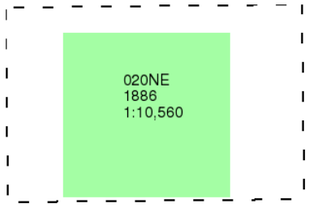
Warwickshire

Published 1886

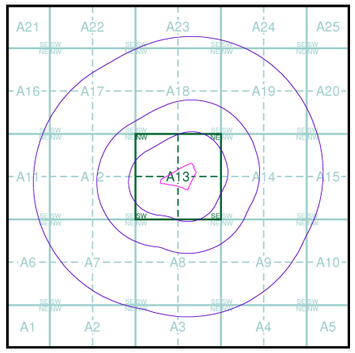
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

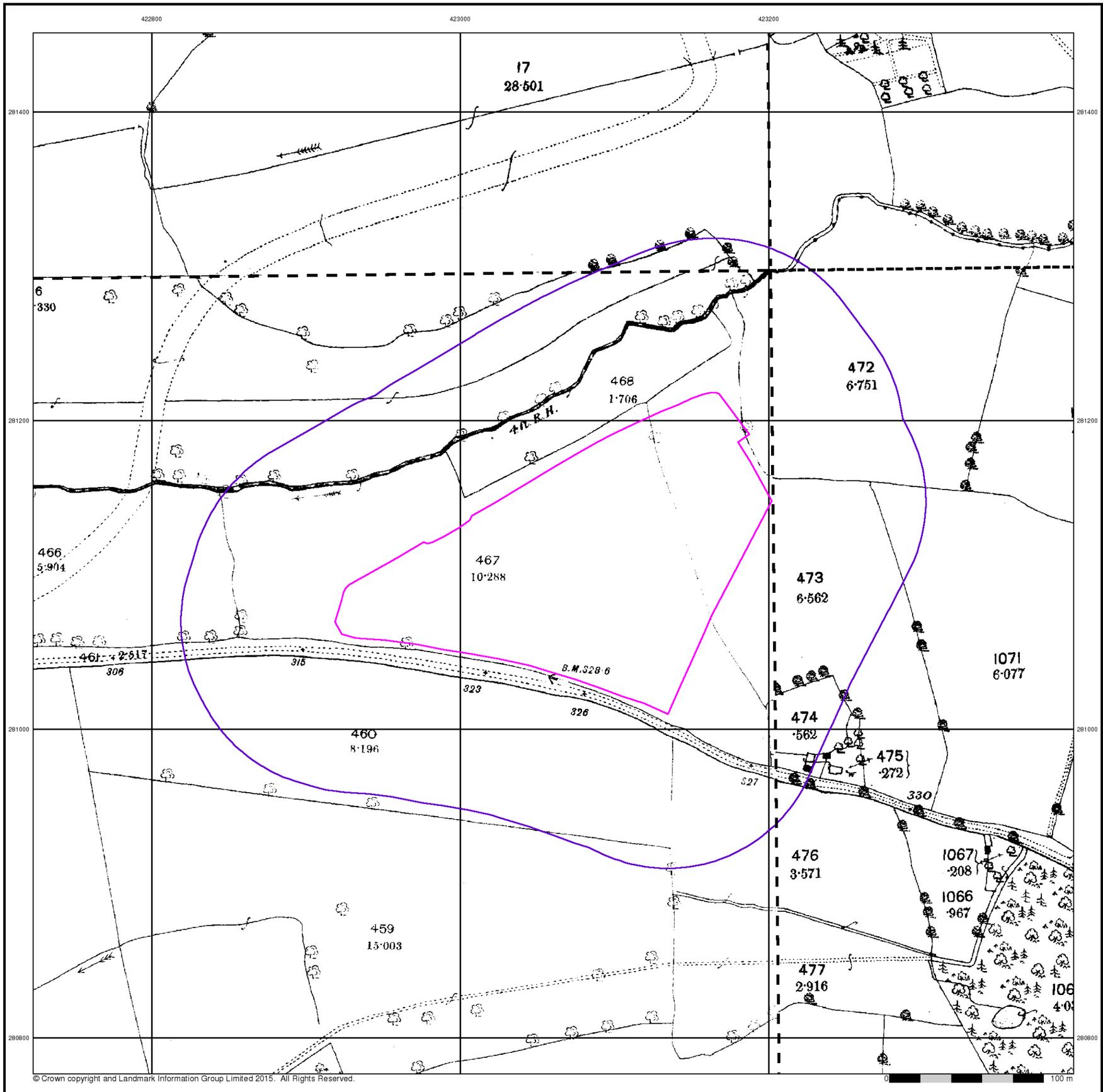
Order Number:	70642001_1_1
Customer Ref:	10122
National Grid Reference:	423070, 281110
Slice:	A
Site Area (Ha):	3.11
Search Buffer (m):	1000

Site Details

Cornets End Lane, Meriden, Coventry, CV7 7LG

Landmark Information Group

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



TerraConsult

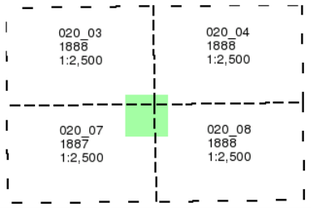
Warwickshire

Published 1887 - 1888

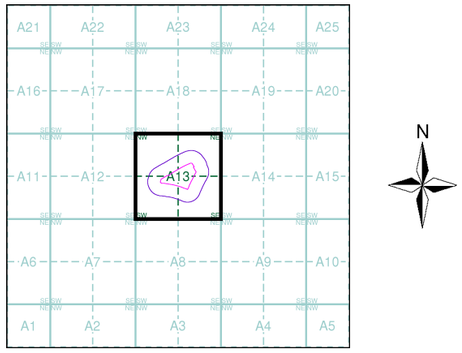
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

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Customer Ref:	10122
National Grid Reference:	423070, 281110
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Site Area (Ha):	3.11
Search Buffer (m):	100

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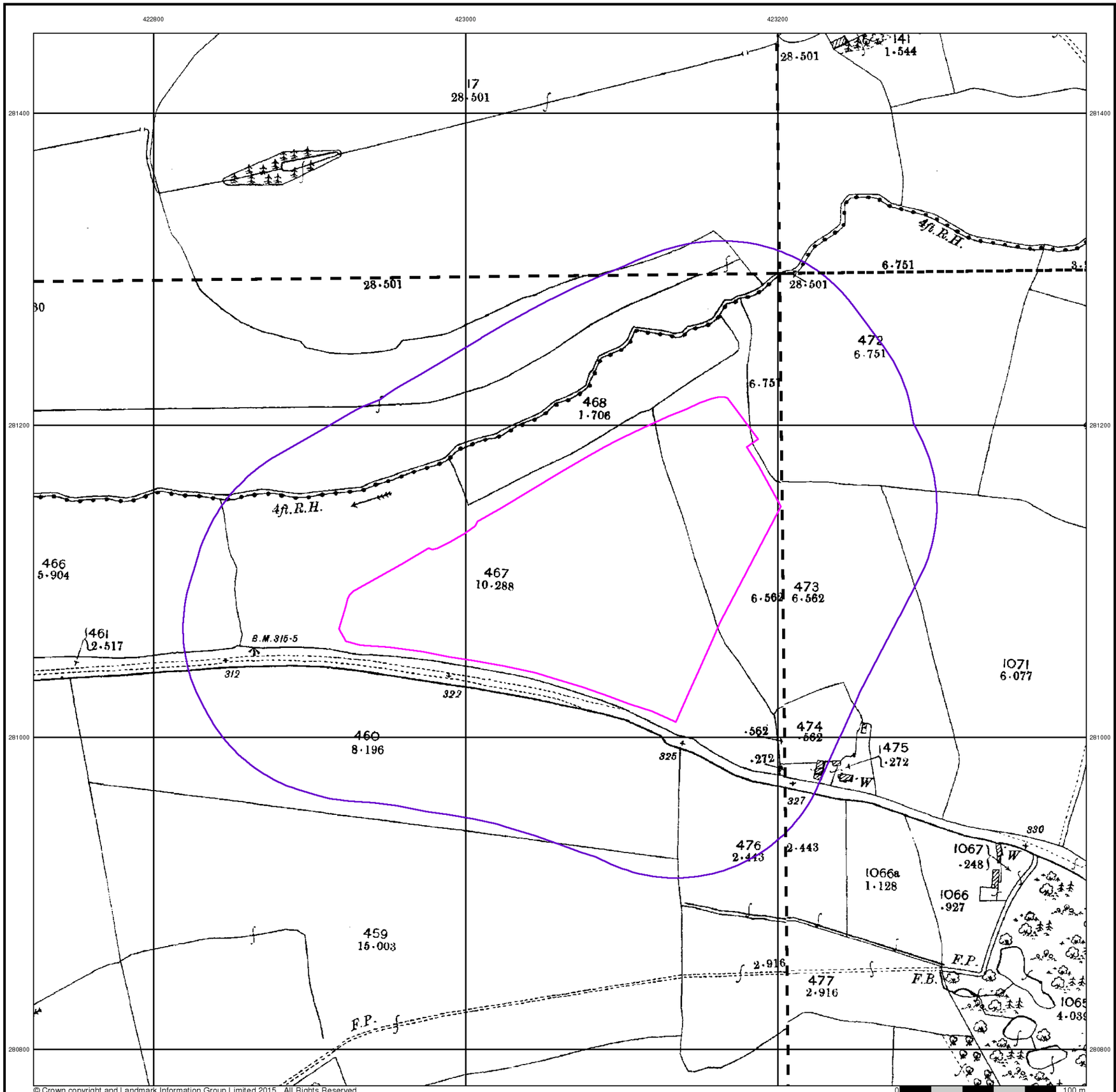

TerraConsult

Warwickshire

Published 1904

Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

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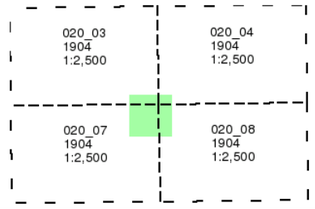
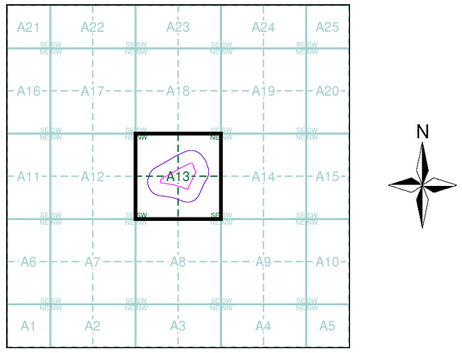


Historical Map - Segment A13



Order Details

Order Number:	70642001_1_1
Customer Ref:	10122
National Grid Reference:	423070, 281110
Slice:	A
Site Area (Ha):	3.11
Search Buffer (m):	100

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Cornets End Lane, Meriden, Coventry, CV7 7LG

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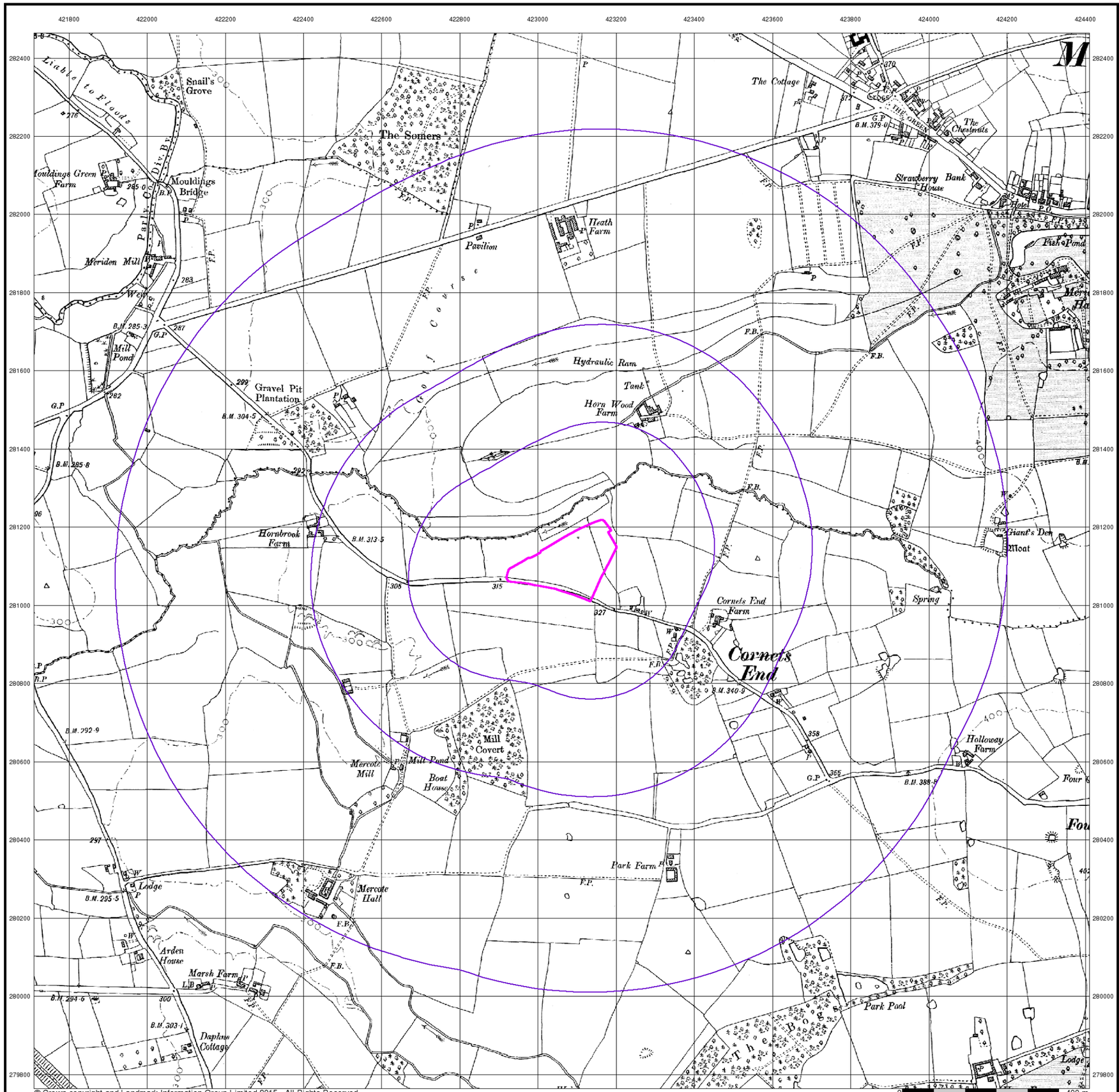

TerraConsult

Warwickshire

Published 1905

Source map scale - 1:10,560

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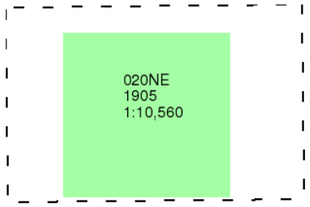
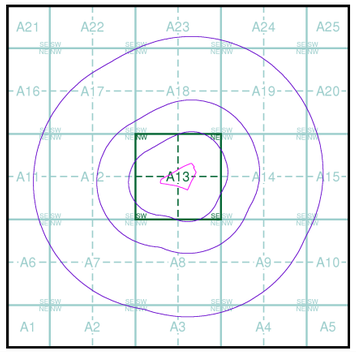
Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number:	70642001_1_1
Customer Ref:	10122
National Grid Reference:	423070, 281110
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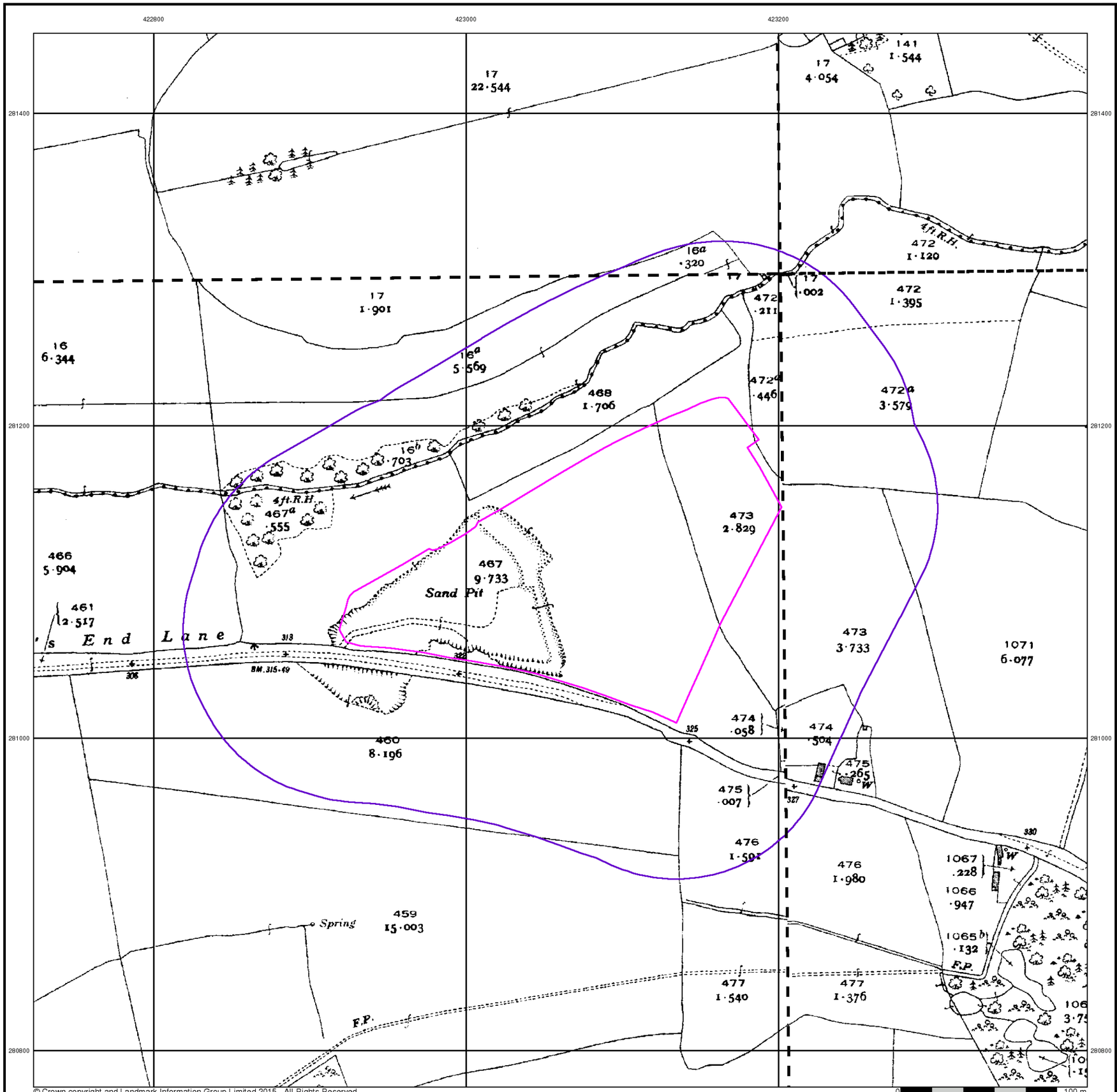


0 100 m

TerraConsult

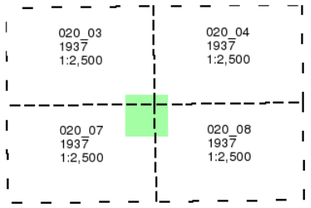
Warwickshire

Published 1937

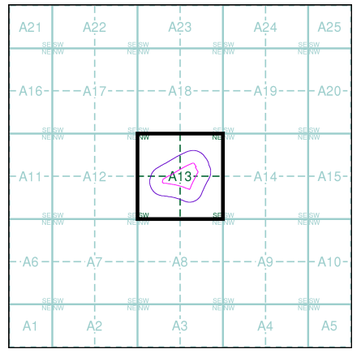
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

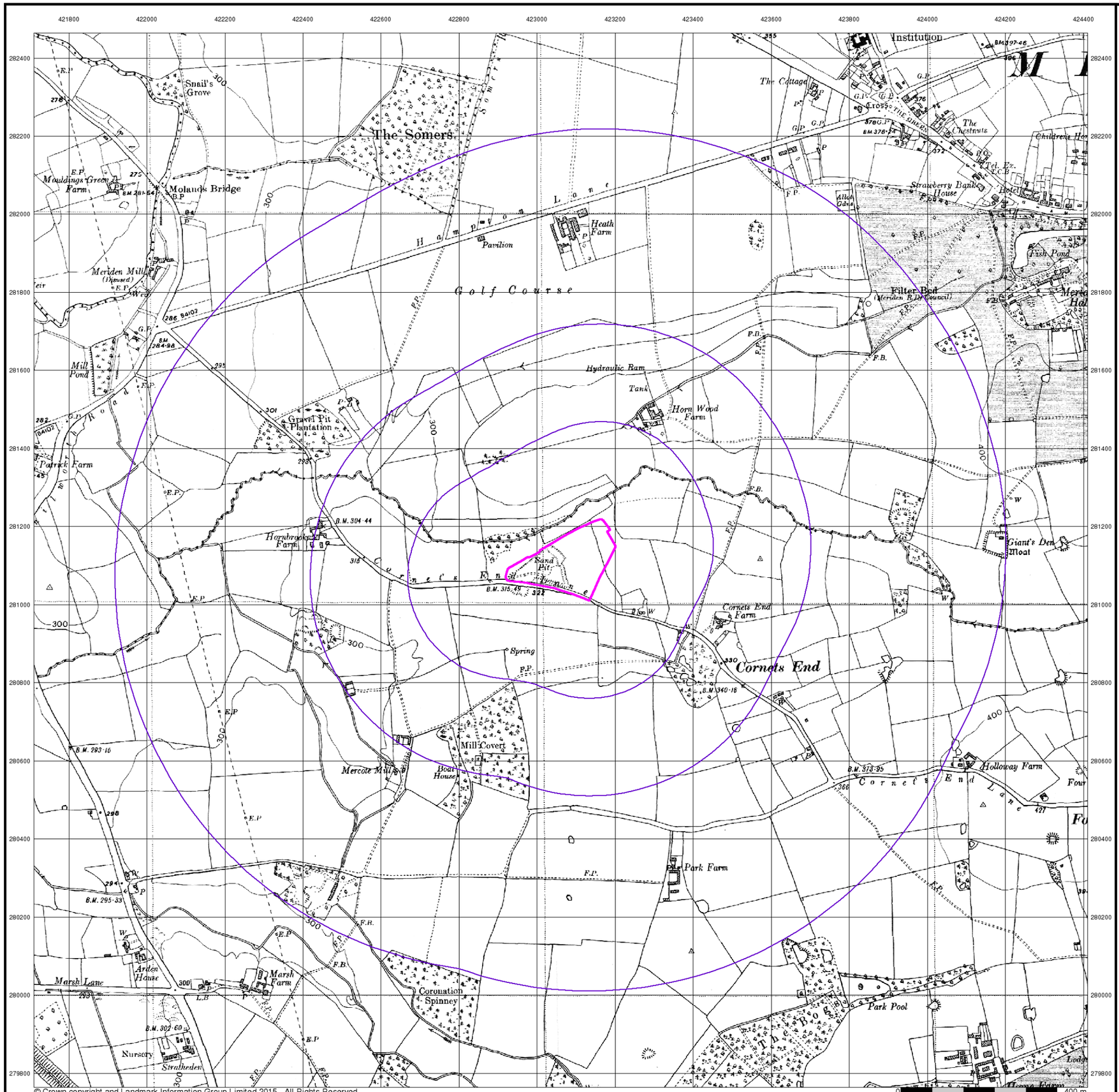
Order Number:	70642001_1_1
Customer Ref:	10122
National Grid Reference:	423070, 281110
Slice:	A
Site Area (Ha):	3.11
Search Buffer (m):	100

Site Details

Cornets End Lane, Meriden, Coventry, CV7 7LG

Landmark Information Group

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



TerraConsult

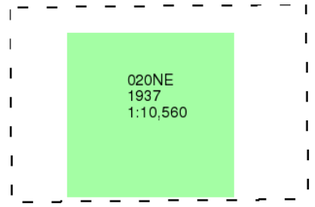
Warwickshire

Published 1937

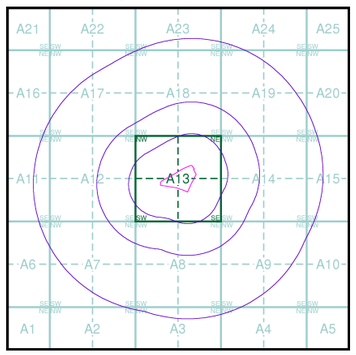
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

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National Grid Reference:	423070, 281110
Slice:	A
Site Area (Ha):	3.11
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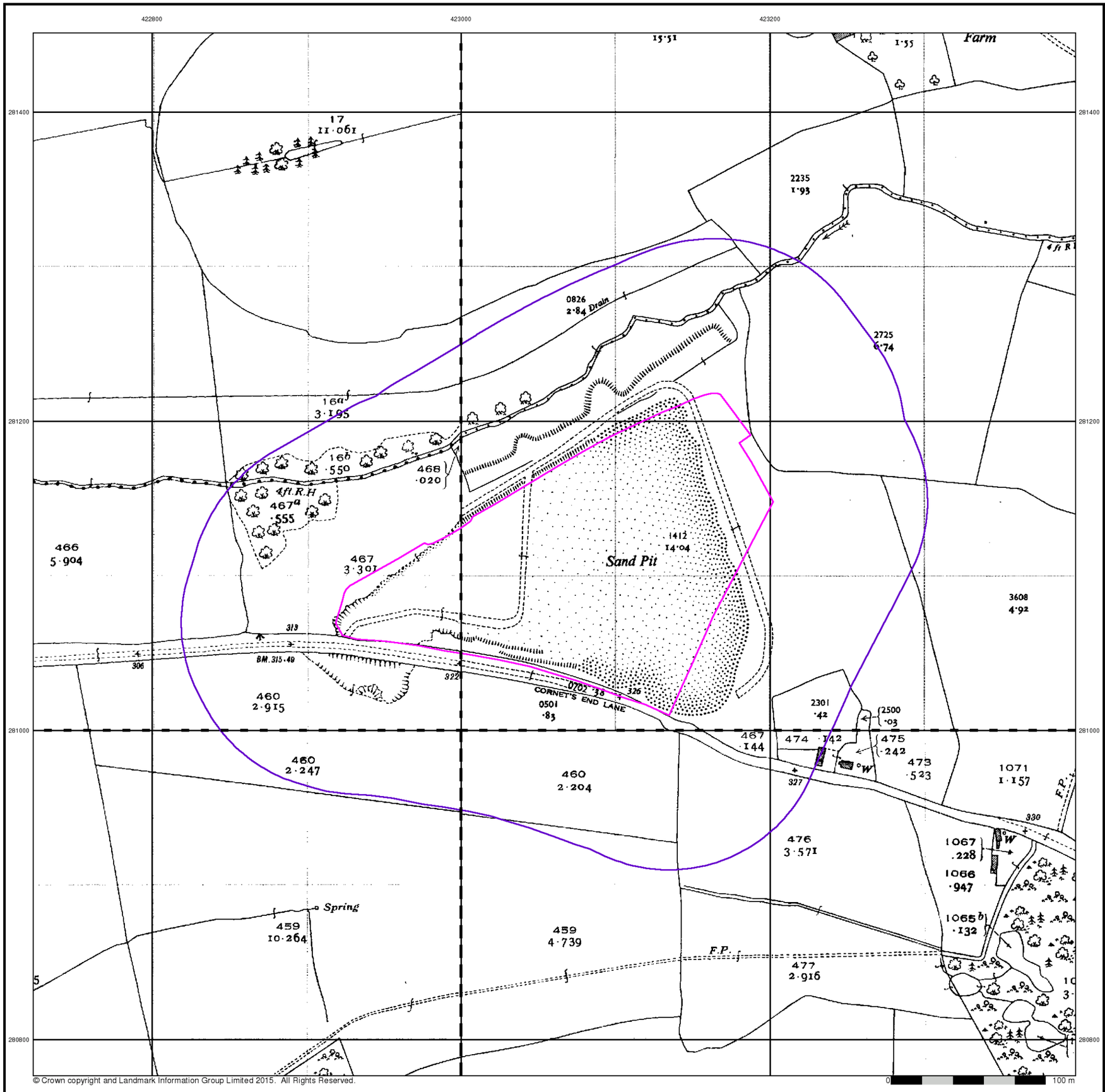

TerraConsult

Ordnance Survey Plan

Published 1954 - 1955

Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

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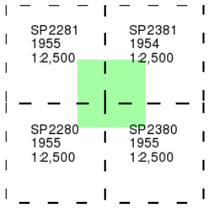
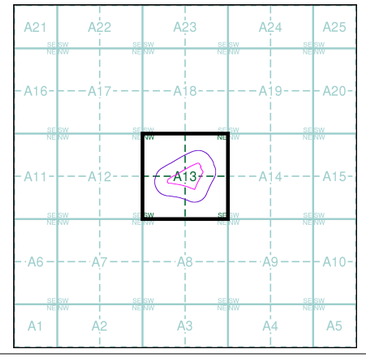


Historical Map - Segment A13



Order Details

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National Grid Reference:	423070, 281110
Slice:	A
Site Area (Ha):	3.11
Search Buffer (m):	100

Site Details

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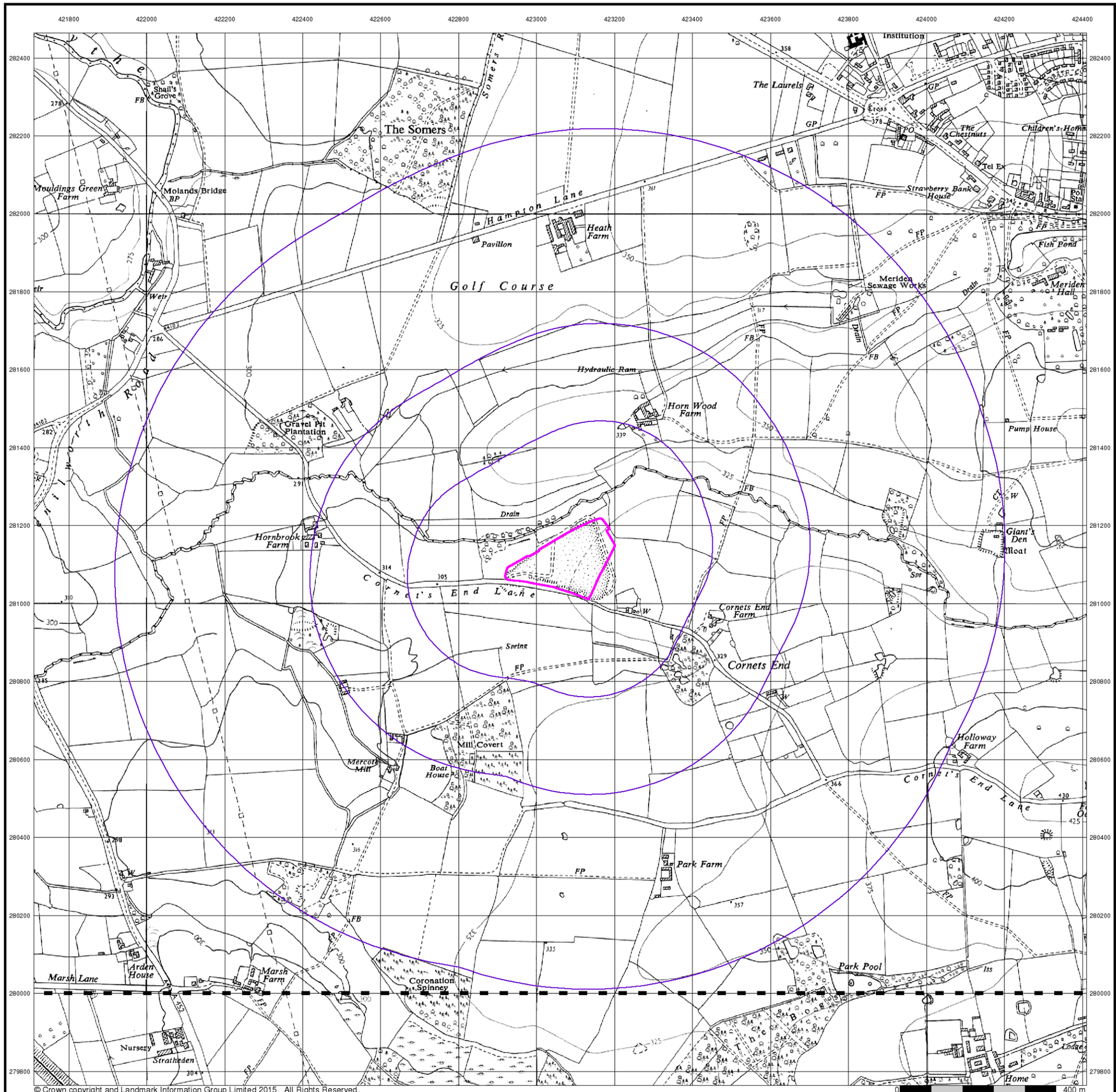


TerraConsult

Ordnance Survey Plan

Published 1955

Source map scale - 1:10,000

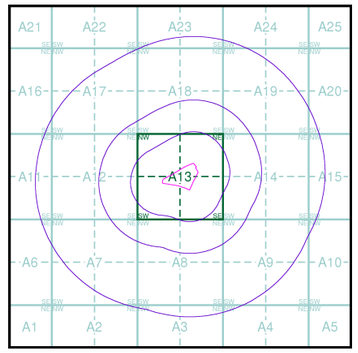
The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

SP28SW
1955
1:10,560

SP27NW
1955
1:10,560

Historical Map - Slice A



Order Details

Order Number:	70642001_1_1
Customer Ref:	10122
National Grid Reference:	423070, 281110
Slice:	A
Site Area (Ha):	3.11
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Site Details

Cornets End Lane, Meriden, Coventry, CV7 7LG

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Tel: 0844 844 9952
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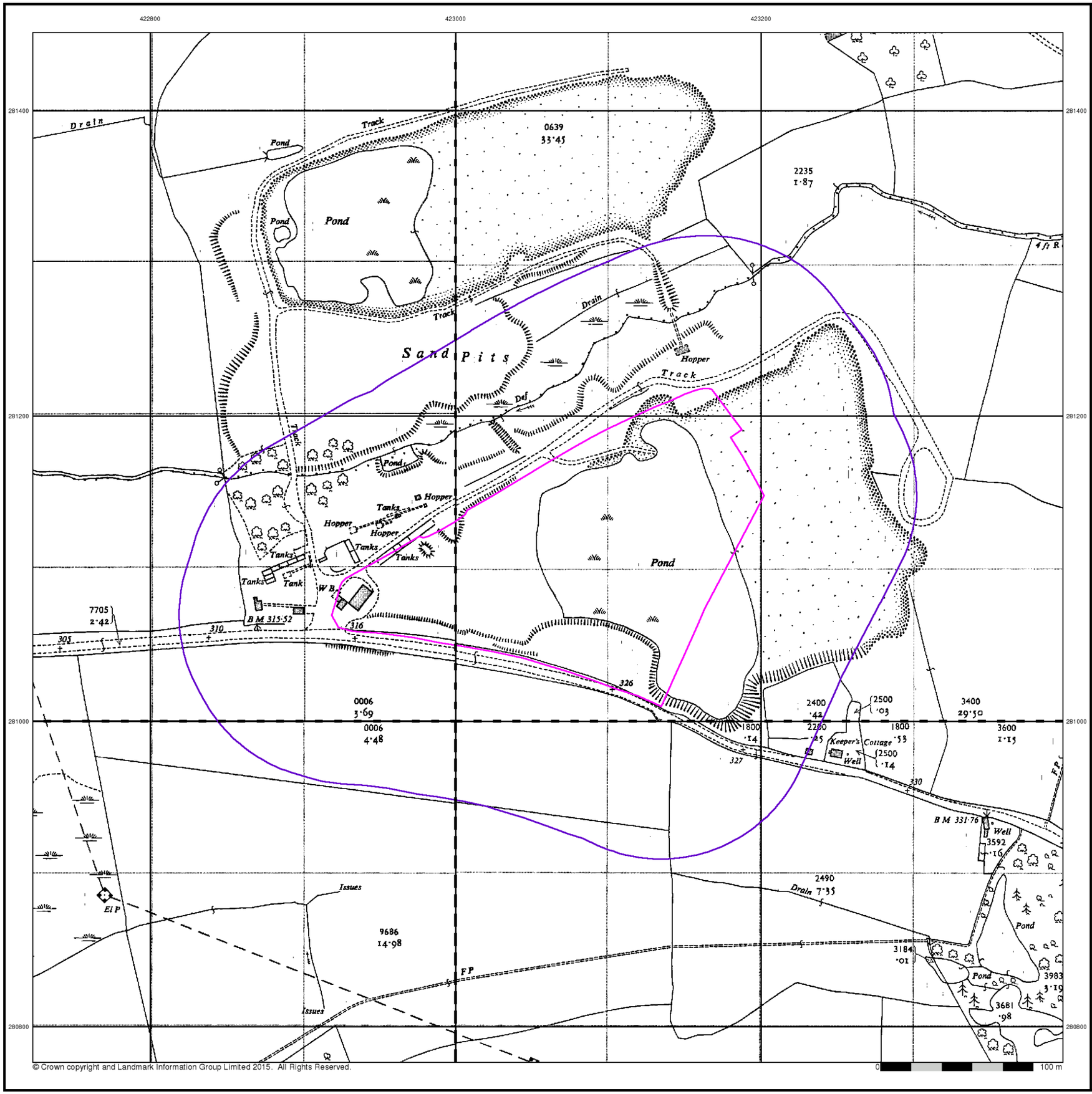

TerraConsult

Ordnance Survey Plan

Published 1962

Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

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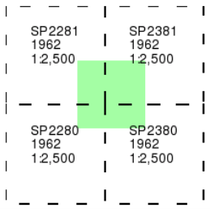
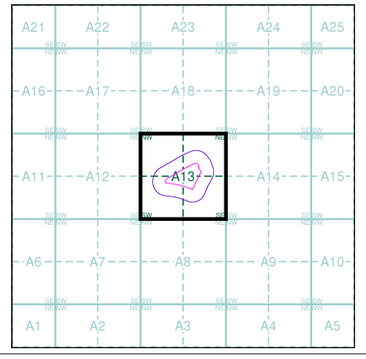


Historical Map - Segment A13



Order Details

Order Number:	70642001_1_1
Customer Ref:	10122
National Grid Reference:	423070, 281110
Slice:	A
Site Area (Ha):	3.11
Search Buffer (m):	100

Site Details

Cornets End Lane, Meriden, Coventry, CV7 7LG

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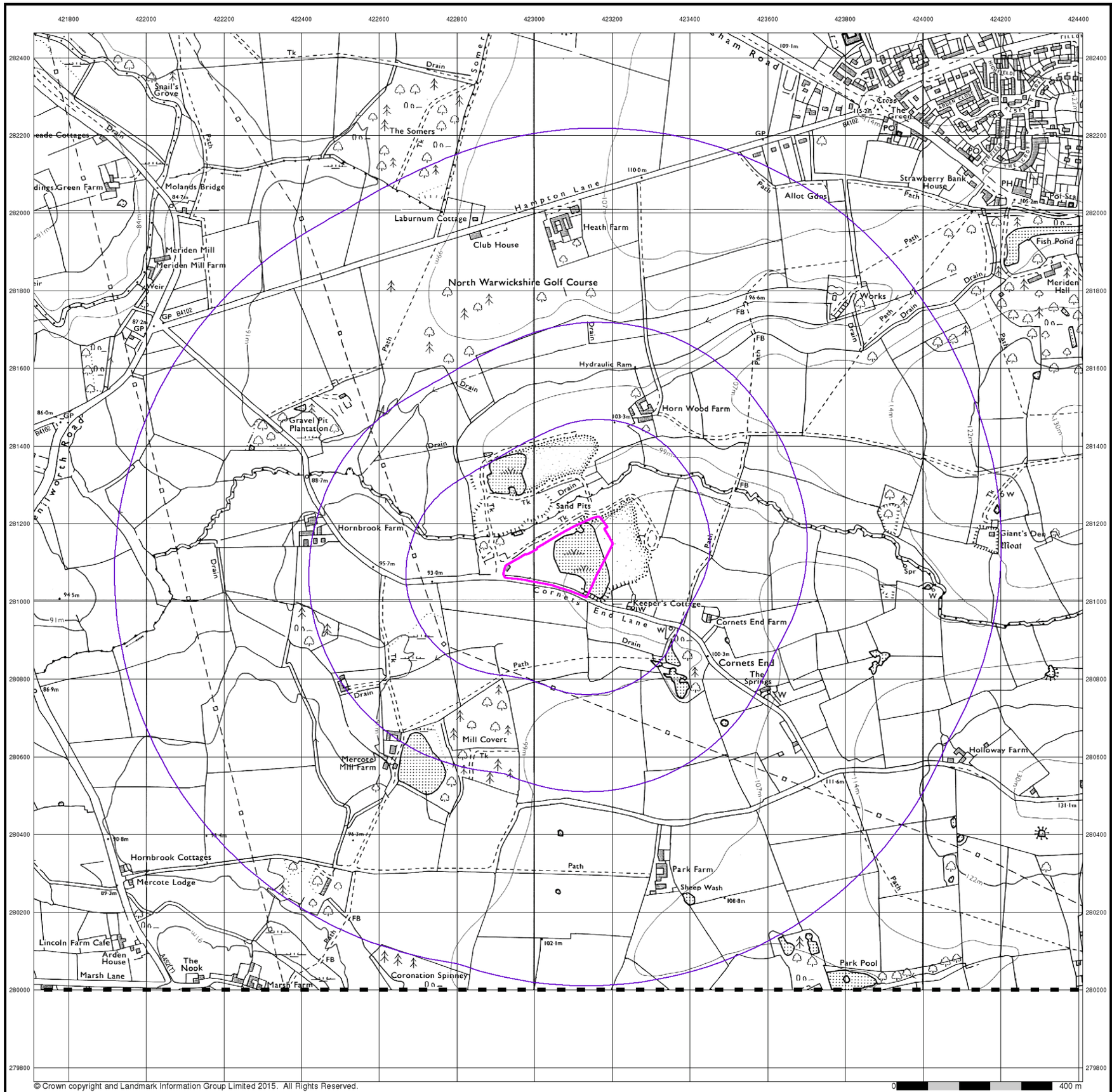


TerraConsult

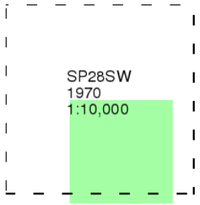
Ordnance Survey Plan

Published 1970

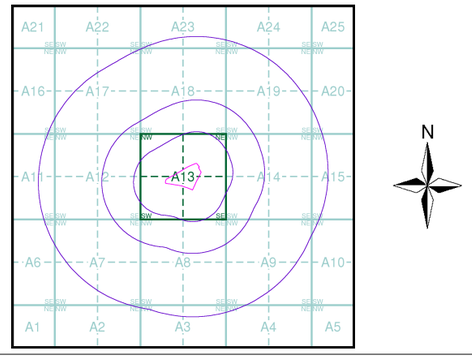
Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number:	70642001_1_1
Customer Ref:	10122
National Grid Reference:	423070, 281110
Slice:	A
Site Area (Ha):	3.11
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Site Details

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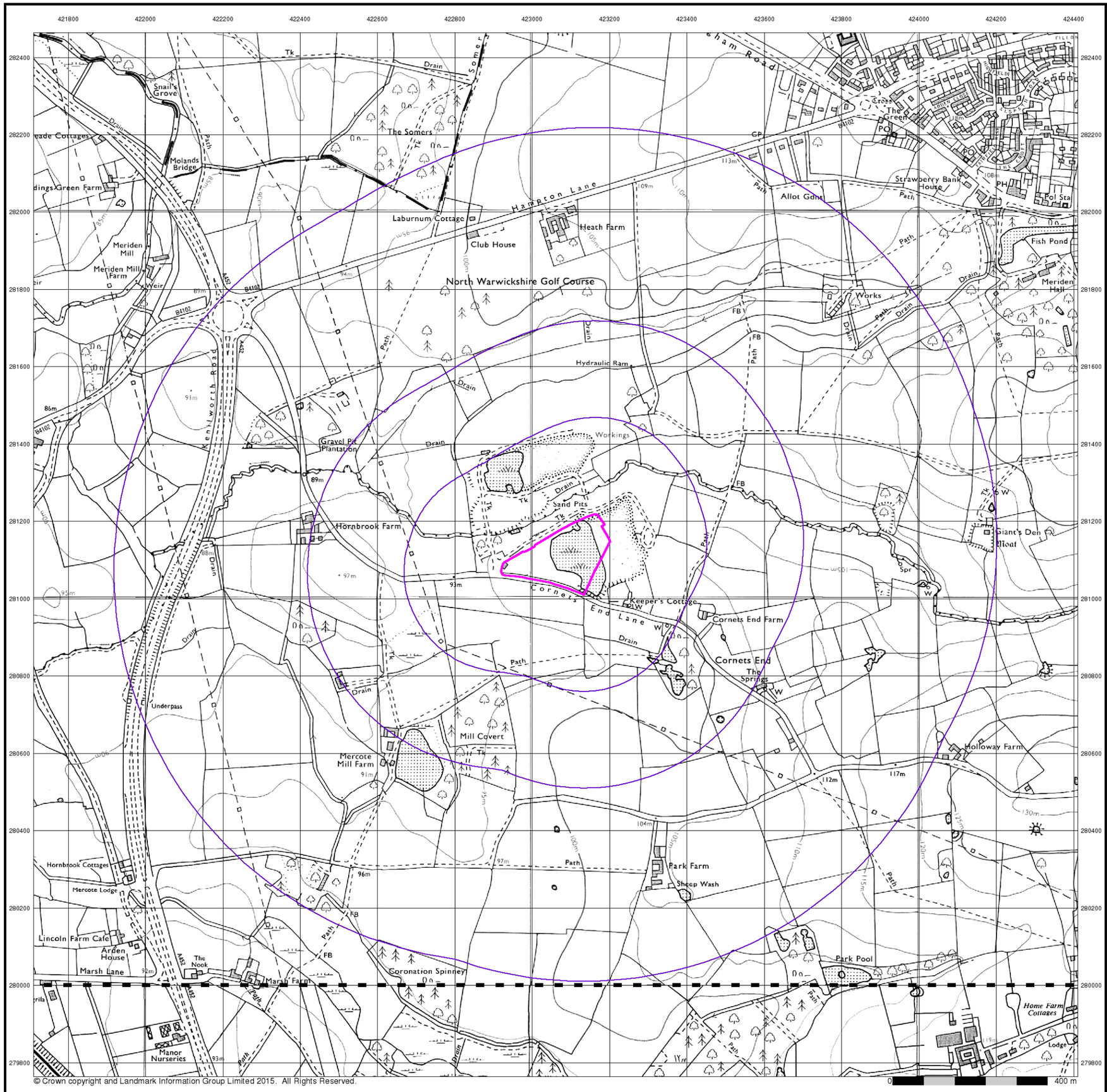


TerraConsult

Ordnance Survey Plan

Published 1983 - 1986

Source map scale - 1:10,000

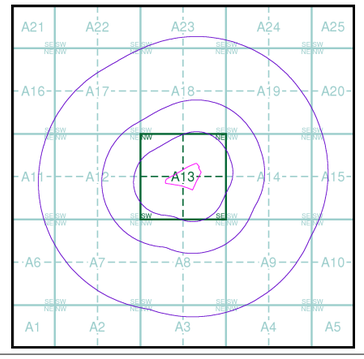
The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

SP28SW
1983
1:10,000

SP27NW
1986
1:10,000

Historical Map - Slice A



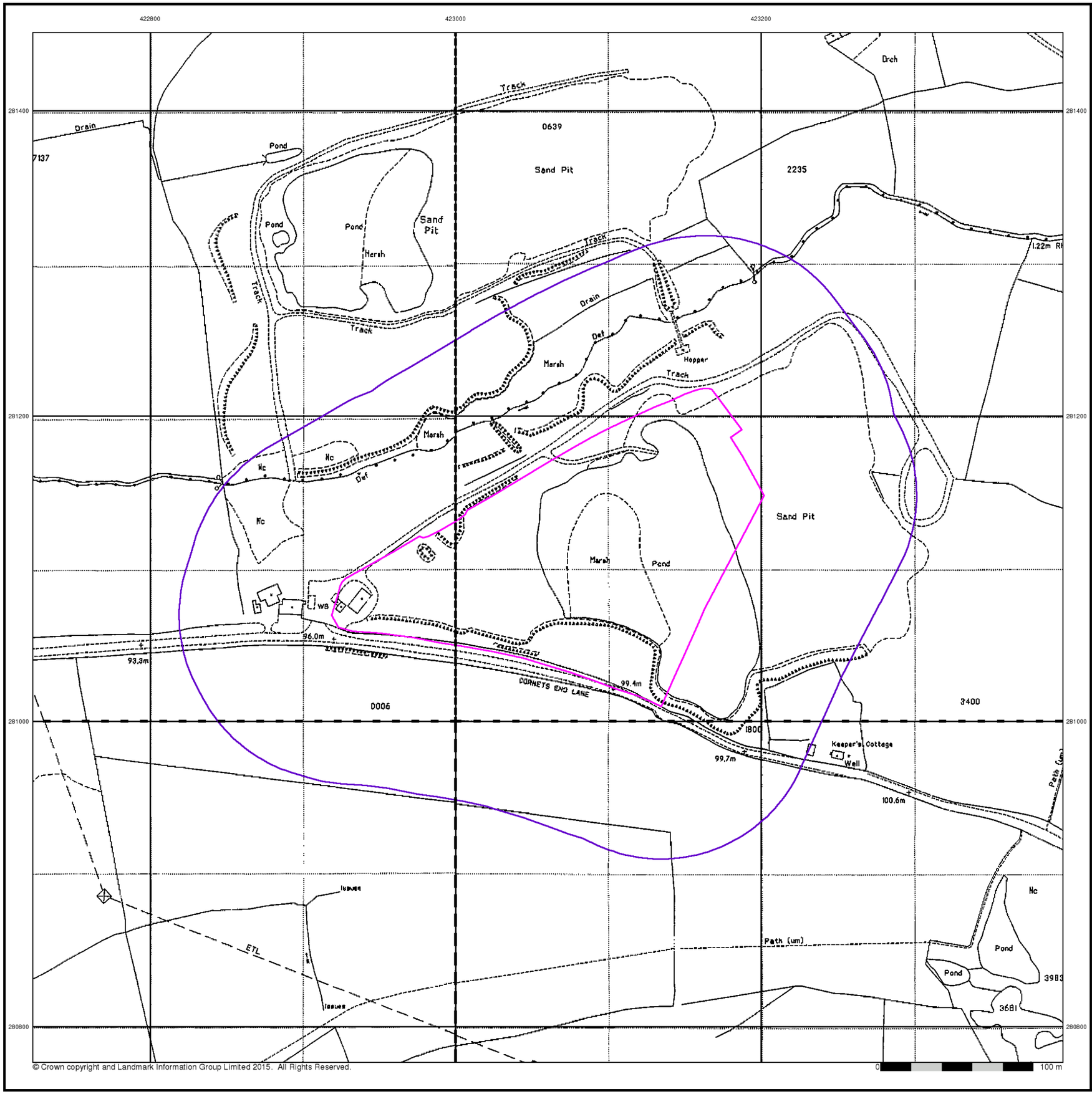
Order Details

Order Number:	70642001_1_1
Customer Ref:	10122
National Grid Reference:	423070, 281110
Slice:	A
Site Area (Ha):	3.11
Search Buffer (m):	1000

Site Details

Cornets End Lane, Meriden, Coventry, CV7 7LG

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



TerraConsult

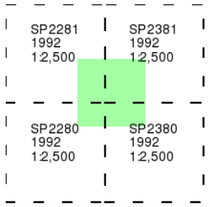
Large-Scale National Grid Data

Published 1992

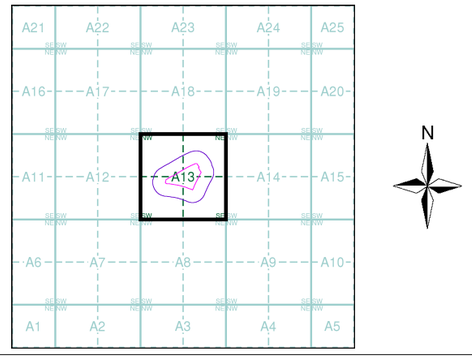
Source map scale - 1:2,500

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number:	70642001_1_1
Customer Ref:	10122
National Grid Reference:	423070, 281110
Slice:	A
Site Area (Ha):	3.11
Search Buffer (m):	100

Site Details

Cornets End Lane, Meriden, Coventry, CV7 7LG

Landmark Information Group
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Fax: 0844 844 9951
Web: www.envirocheck.co.uk

TerraConsult

10k Raster Mapping

Published 2006

Source map scale - 1:10,000

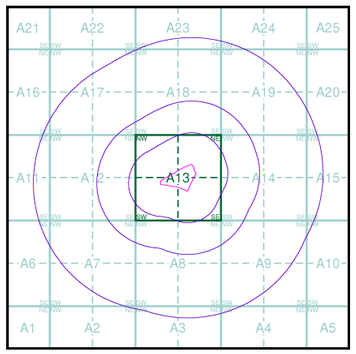
The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)

SP28SW
2006
1:10,000

SP27NW
2006
1:10,000

Historical Map - Slice A



Order Details

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Customer Ref:	10122
National Grid Reference:	423070, 281110
Slice:	A
Site Area (Ha):	3.11
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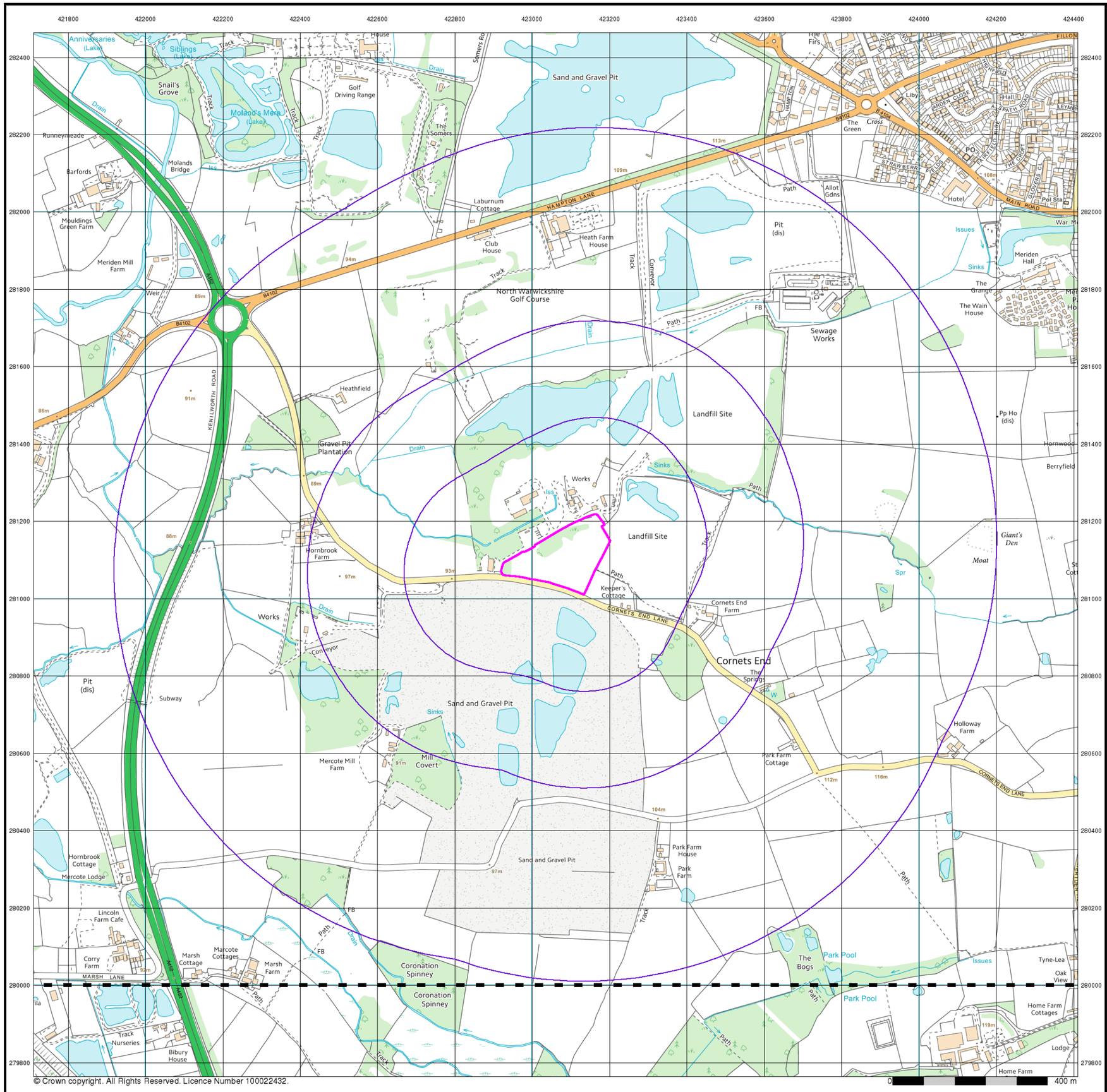


TerraConsult

VectorMap Local

Published 2015

Source map scale - 1:10,000

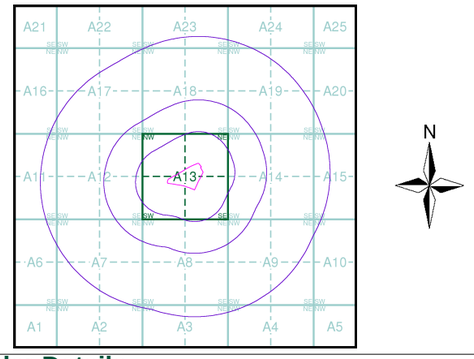
VectorMap Local (Raster) is Ordnance Survey's highest detailed 'backdrop' mapping product. These maps are produced from OS's VectorMap Local, a simple vector dataset at a nominal scale of 1:10,000, covering the whole of Great Britain, that has been designed for creating graphical mapping. OS VectorMap Local is derived from large-scale information surveyed at 1:1250 scale (covering major towns and cities),1:2500 scale (smaller towns, villages and developed rural areas), and 1:10 000 scale (mountain, moorland and river estuary areas).

Map Name(s) and Date(s)

SP28SW
2015
Variable

SP27NW
2015
Variable

Historical Map - Slice A



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Site Area (Ha):	3.11
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APPENDIX SCR3

Phase 1 Desk Study & Risk Assessment (2015)

TerraConsult

August 2015
Report No 10122/R01 Issue 2

LAND AT MERIDEN QUARRY

PHASE 1 DESK STUDY AND PRELIMINARY RISK ASSESSMENT REPORT

Prepared for

Midlands Planning Services

LAND AT MERIDEN QUARRY

PHASE 1 DESK STUDY AND PRELIMINARY RISK ASSESSMENT REPORT

August 2015

Carried Out For:

Midlands Planning Services

Browns Road
Daventry
Northamptonshire
NN11 4NS

Prepared By:

TerraConsult (South) Ltd

Dugard House
Peartree Road
Colchester
Essex
CO3 0UL

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DOCUMENT INFORMATION AND CONTROL SHEET

Document Status and Approval Schedule

Report No 10122/R01 Issue 2	Title
	LAND AT MERIDEN QUARRY PHASE 1 DESK STUDY AND PRELIMINARY RISK ASSESSMENT REPORT

Issue History

Issue	Status	Date		Signature	Date
1	Final	4 August 2015	**Prepared By:** Sue Slaven MIEnvSc CEnv SiLC	*Sue Slaven*	03/08/15
			Checked By: Tim Slaven MRICS FIQ MCIWM CEnv	*Tim Slaven*	03/08/15
			Authorised By: Sue Slaven MIEnvSc CEnv SiLC	*Sue Slaven*	04/08/15
2	Draft for client comment incorporating detailed development proposals	19 August 2015	**Prepared By:** Sue Slaven MIEnvSc CEnv SiLC	*Sue Slaven*	19/08/15
			Checked By: Mat Nicholson	*Mat Nicholson*	19/08/15
			Authorised By: Sue Slaven MIEnvSc CEnv SiLC	*Sue Slaven*	19/08/15
3	Final	27 August 2015	**Prepared By:** Sue Slaven MIEnvSc CEnv SiLC	*Sue Slaven*	27/08/15

DISCLAIMER

This report should be read with the Service Constraints Report Limitations & Planning Requirements set out in Appendix A.

bsi. ISO 9001 Quality Management FS573193

bsi. ISO 14001 Environmental Management EMS573194

EXECUTIVE SUMMARY

Item	Description
Client	Midlands Planning Services
The Site	Land at Meriden Quarry, Cornets End Lane, Meriden, Coventry, CV7 7LG
Report Objective	This report presents the findings of a desk-based assessment and an environmental risk assessment relating to the site. This report is to accompany a planning application to redevelop the site to an industrial end-use.
Land Use History	The site was in agricultural use until circa. 1937 when a Sand Pit occupied the western sector. By 1954 the Sand Pit had extended to cover the entire site. By 1962, the Sand Pit was no longer present and the site was occupied by buildings, a tank and a hopper in the western sector and a pond in the eastern sector. The site was a landfill between 1962 and 1992 and by 2006, it was occupied by a field.
Development	It is proposed to develop the site to an industrial end-use comprising an In-Vessel Composting Facility, a Biomass Facility and Waste Water Treatment Plant.
Geo-environmental Setting	**Geology:** The site has been mined by opencast working to extract the mineral sand and gravel deposits. The bedrock geology comprises the Mercia Mudstone Group. **Hydrogeology:** The bedrock geology is classified as a Secondary B aquifer. The site is not situated within a groundwater Source Protection Zone and the nearest groundwater abstraction point is 200m to the north of the site, which is used for mineral washing. **Hydrology:** Horn Brook is located approximately 85m to the north west. **Flood Risk:** The site is located in an area with a low risk of flooding (Flood Zone 1). **Unexploded Ordnance:** A high risk of UXO has been identified in the area. However, mining activities will have effectively cleared the land within the footprint of the site and immediate vicinity.
Phase 1 Preliminary Risk Assessment	Based on the former land uses at the site, i.e. landfilling, the potential for ground contamination to be present is considered to be likely, together with the potential for the generation of landfill gas. The principal receptors of concern are neighbouring residents, future site occupiers, construction workers, controlled waters and buildings. Due to the potential presence of ground gas and in the absence of mitigation measures, the possible consequences on receptors (i.e. future site occupiers) are estimated to be SEVERE and the probability of the identified risks occurring is considered to be HIGH. A site investigation is therefore recommended to determine ground conditions and thus, the presence of landfill gas. Dependent upon the findings and if necessary, it is proposed that gas control measures will be incorporated into the design of the development. Thus reducing the potential consequences to LOW.
Further Work	Phase 2 site investigation is required to address geo-environmental issues, and is to include: • Trial pitting • Installation of boreholes • Sampling and testing of soils and groundwater; • Gas and groundwater monitoring; • Provision of a geoenvironmental report.
This summary forms part of a Tier 1 Risk Assessment (Ground Condition) report prepared by TerraConsult and contains an overview of the key findings and conclusions. The summary should not be treated as an independent document.	

LAND AT MERIDEN QUARRY

PHASE 1 DESK STUDY AND PRELIMINARY RISK ASSESSMENT REPORT

CONTENTS

TABLES

FIGURES

APPENDICES

LAND AT MERIDEN QUARRY

PHASE 1 DESK STUDY AND PRELIMINARY RISK ASSESSMENT REPORT

1. INTRODUCTION

1.1 Background Information

TerraConsult (South) Limited (TerraConsult) was commissioned by Midlands Planning Services to carry out a preliminary investigation for the site known as Land at Meriden Quarry, near Coventry. The purpose of the report is to provide a preliminary assessment of the site using published information with regards to the potential redevelopment of the site. It is understood that this report is to support a planning application to redevelop the site to an industrial end-use.

This report has been devised to comply with the relevant principles and requirements of a range of guidance with regards to potentially contaminated land, including (but not limited to):

- BS10175:2011+A1:2013: "Investigation of potentially contaminated sites - Code of practice";
- BS5930:1999+A2:2010: "Code of practice for site investigations";
- Contaminated Land (England) (Amendment) Regulations 2012 and Contaminated Land Statutory Guidance (Defra, April 2012);
- Defra/Environment Agency (2004) Report CLR11 "Model Procedures for the Management of Land Contamination";
- Environment Agency (2011) Report GPLC1 "Guiding Principles for Land Contamination";
- Environment Agency (2012) Report GP3 "Groundwater protection: Principles and Practice";
- National Planning Policy Framework (HCA, March 2012); and
- Part IIA of the Environmental Protection Act, 1990.

TerraConsult's service constraints and report limitations are presented in Appendix A and a description of environmental risk assessment methodology and terminology is presented in Appendix B.

In preparation of this report, it is assumed that any information provided to TerraConsult by the client in connection with the commission is accurate, complete and not misleading. TerraConsult cannot guarantee the accuracy or validity of this information.

1.2 Development Proposals

It is understood that the site is to be redeveloped to an industrial end-use comprising an In-Vessel Composting Facility, a Biomass Energy Facility and Waste Water Treatment Plant.

The proposed facility will be designed to process up to 45,000 tonnes per annum of co-mingled green and food waste and wood waste. The green and food waste will be composted via an In-Vessel Composting system to produce 0-12mm grade compost which can be mixed with sand to manufacture topsoil to BS3883 certification. Oversized compost (10mm+) will be mixed with wood waste and treated in the Biomass Facility to produce renewable energy. .

It is understood that the majority of the site will be covered with building and hardstanding with small areas of landscaping on the boundaries. This is indicated in Figure 1 below.

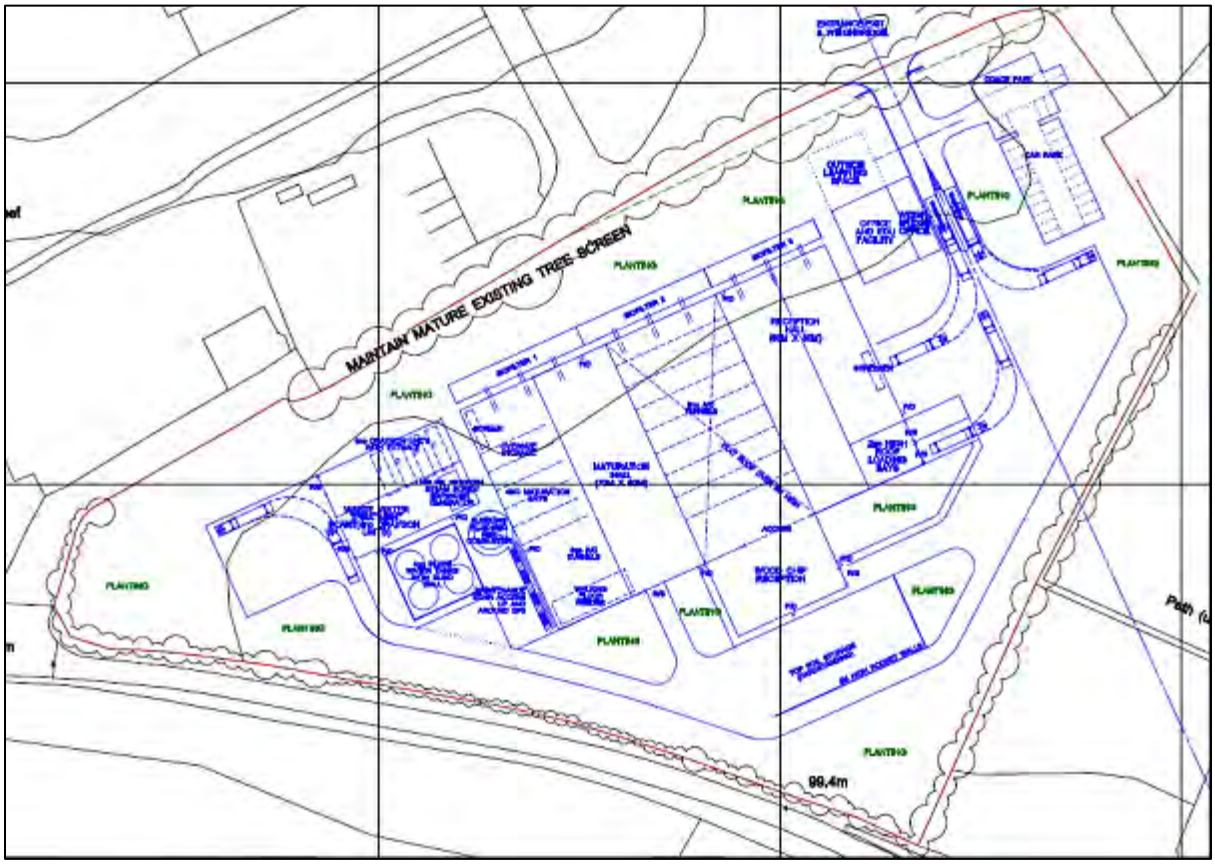

Figure 1 Proposed Site Plan (not to scale)
(Taken from Vagdia & Holmes; Drawing No. 16364-SK-003EC - Preliminary)

The foundation design of the development has not, at this stage, been determined as it will depend upon ground conditions as determined by intrusive investigation. However, if required, ground gas control remediation measures can be incorporated into the foundation design of new buildings, such as the installation of a gas protection membrane and a monolithic concrete plinth, if required.

1.3 Scope of the Investigation

The scope of the Phase I desk study is to meet the requirements to provide information for planning purposes and for the design of future development. The specific activities carried out are as follows:

- undertake a desk study of available information to include a review of the history of the site and geo-environmental data;
- develop a preliminary conceptual site model; and

- provide recommendations for a Phase 2 Ground Investigation, if this is required.

1.4 Previous Investigations

It is understood that the site has not been subject to any previous intrusive investigations.

2. SITE LOCATION AND DESCRIPTION

2.1 Site Location

The location of the site is indicated in Figure 1 below and a summary and a brief description is presented in Table 1.

Table 1 Summary of Description of the Site and its Environs

Location	The site is located approximately 1.6km to the south west of the village of Meriden, 5.3km west of the outskirts of Coventry, 7,8km to the east of Solihull and 1km south east of the junction with the A452. The site is situated within an area subject to sand and gravel extraction, together with agricultural land and a Golf Course.
Grid Reference	423070, 281110
Post Code	CV7 7LG
Site Area	3.11ha
Topography	The site is relatively flat in a gently undulating landscape.

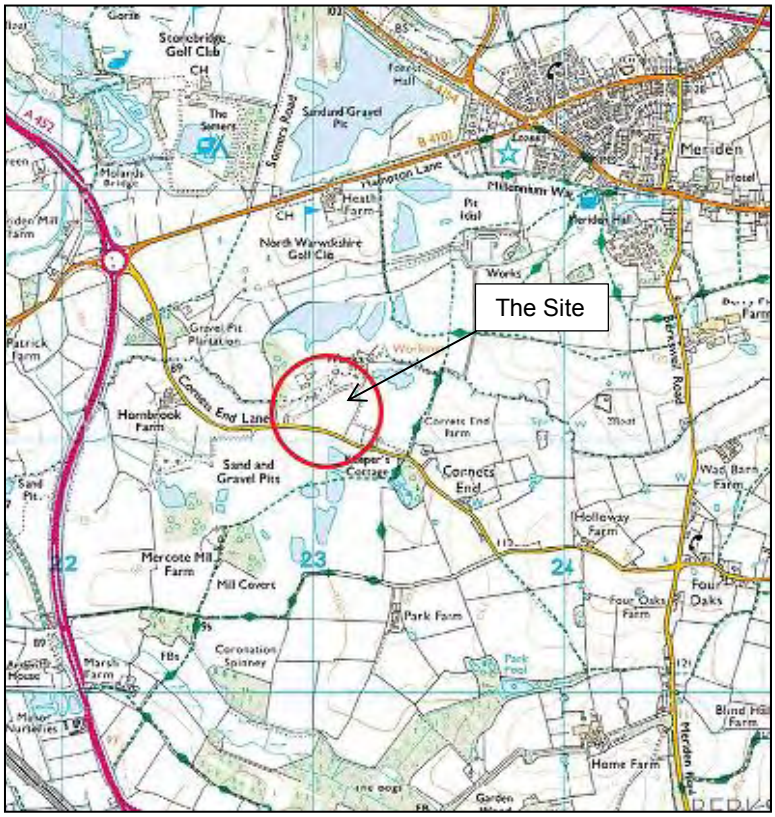

Figure 2 Site Location (Not to Scale)

2.2 Site Description

A site walkover survey has not been carried out. However, a review of an aerial photograph provided within GP Planning Limited's Pre-Application Advice Note indicates that the site is covered with vegetation comprising grass, trees and bushes. There is a hedge of small trees on the southern boundary adjacent to the road, trees mainly alongside the north western boundary. Overhead lines are also present in the southern sector and alongside the eastern boundary. There is a patch of bare ground in the northern sector and the north eastern sector may be defined by a wooden fence or brick wall.

The Surrounding Area

To the north and east of the site is an operational quarry that is accessed along a road immediately adjacent to the site's north western boundary. Quarry buildings are located to the north west of the site at distances of approximately 40m and 80m. A large one storey office building is located immediately to the west of the south western corner of the site.. An operational quarry, together with man-made lakes, occupies the land to the south of the site, on the opposite side of Cornet's End Lane.

The nearest residential properties are Keepers Cottage at a distance of approximately 125m to the east, Cornets End Farm approximately 315m to the south east and Hornbrook Farm 530m to the west. The remainder of the surrounding area is occupied predominantly by agricultural land.

2.3 Site Ownership

The owners of the site are not known at the time of preparation of this report.

2.4 History

A summary of the historical development of the site and surrounding area is presented in Table 2. This has been based on historical Ordnance Survey (OS) maps obtained from Envirocheck®, which are included within Appendix D. The age and general activity/land use can often be determined from the layout of structures depicted on historical OS maps, however, specific elements of site operations may not be determined from these maps.

Table 2 Summary of Reviewed Ordnance Survey Historical Maps

OS Map Date and Scale	On-site Features	Off-site Features
1886 - 1:10,560 1887 - 1:2,500	The site is in agricultural as part of a larger field.	The area is in agricultural use with a road immediately to the south. To the north of the site is Packington Race Course within an undefined boundary. A stream is located to the north of the site, at a distance of approximately 50m, which flows generally in a westwards direction. Cornet's End is located approximately 100m to the south east.
1904 - 1:2,500 1905 - 1:10,560	The site remains unchanged.	The immediately vicinity remains unchanged. However, Packington Race Course is no longer present and a Golf Course occupies the northern area.

OS Map Date and Scale	On-site Features	Off-site Features
1937 1:2,500 & 1:10,560	A Sand Pit occupies the western corner of the site.	A smaller sand pit is situated on the opposite side of Cornet's End Lane, to the south of the south western corner of the site.
1954 - 1955 1:2,500 & 1:10,000	The Sand Pit covers the entire site with a track on the north western and north eastern boundaries.	A slope has appeared in the rectangular field to the north of the site. The surrounding area remains predominantly in agricultural use.
1962 - 1:2,500	The Sand Pit is no longer present, although the slopes along the southern and part of the north western boundaries remain. There are buildings in the south western corner and a tank and hopper to the north east of the building. The eastern sector is occupied by a Pond.	There is a Sand Pit, together with a pond, marshland alongside the northern bank of the river, tanks and hoppers immediately to the north west and also a Sand Pit to the north east. The smaller Sand Pit to the south is no longer present.
1970 - 1:10,000	The site remains unchanged. Other information suggests that the site was subject to landfilling at this time.	The surrounding area remains unchanged.
1983 - 1:10,000	The site remains unchanged.	The surrounding area remains unchanged.
1992 - 1:2,500	The site remains unchanged.	The surrounding area remains unchanged.
2006 - 1:10,000	The site is occupied by a field.	There are landfill sites to the north west and north east of the site, together with large ponds. Works and a track are immediately to the north west. Part of the river is no longer present, possibly culverted as Sinks and Issues are shown. To the south of the site, on the opposite side of Cornet's End Lane, are Sand and Gravel Pits. There are other sand and gravel pits further to the north of the site.
2015 - 1:10,000	The site remains unchanged.	The surrounding area remains relatively unchanged. However, many of the ponds that were present in 2006 are no longer present.

2.5 Planning and Other Constraints

A review of Warwickshire County Council's planning website[1] did not identify any current planning applications relating to the site.

A review of the Solihull Metropolitan Borough Council planning website[2] indicates that there have been several planning applications relating to the site as part of the larger Meriden

[1] https://planning.warwickshire.gov.uk/swiftlg/apas/run/WPHAPPCRITERIA

Quarry, together with applications in the vicinity. These are briefly described in Table 3 and indicated on Figure 1 below.

Table 3 Planning Applications for Postcode CV7 7LG (Meriden Quarry)

Planning Application	Location	Ref. No.	Date	Status
Restoration of former quarry area to E to use as sports ground with two football pitches, cricket pitch, pavilion, car parking, new trees and hedgerows	Meriden Quarry, Cornets End Lane, Meriden, Solihull, CV7 7LG	PL/2015/50773	April 2015	Decided
Change of use from minerals extraction land to waste management, to allow for expanded waste wood treatment operation and associated operational development at Meriden Quarry recycling facility.	Meriden Quarry, Meriden, CV7 LG	PL/2014/00490/FULM	Jan 2015	Decided
Change for use from B1 to commercial dog boarding establishment to include the provision of dog day care.	Tarmac Construction Ltd, Cornets End Lane, Meriden, Coventry, CV7 LG	PL/2014/01297/CU	May 2014	Decided
Vary condition no. 7 on planning application 1987/2730 and 1997/525 to allow importation of inert soils instead of colliery spoil for land restoration in part of area C	Meriden Quarry, Cornets End Lane, Meriden, CV7 7LG	PL/2013/01640/FULL	Sept 2013	Decided
Expansion of activities at the Meriden Quarry recycling facility (in area C of the wider Meriden Quarry site) to allow for the treatment of waste wood.	Meriden CV7 7LG	PL/2013/01100/INV	Jul 2013	Unknown
Vary condition no. 7 on planning application 1987/2730 and 1997/525 to allow importation of inert soils instead of colliery spoil for land restoration in part of area C for 12 months	NRS Waste Care Ltd, Meriden Quarry, Cornets End Lane, Meriden, CV7 7LG	PL/2013/01176/FULL	Jul 2013	Decided
Vary condition no. 7 on planning application 1987/2730 and 1997/525 to enable the importation of inert construction for restoration purposes	Tarmac Construction Ltd, Cornets End Lane, Meriden, CV7 7LG	PL/2012/01917/FULL	Oct 2012	Decided

[2] http://publicaccess.solihull.gov.uk/online-applications/simpleSearchResults.do?action=firstPage

Planning Application	Location	Ref. No.	Date	Status
Extend time limit on approved planning application 2006/2064 (sand and gravel extraction, inert waste disposal, restoration to agriculture and nature conservation)	Tarmac Construction Ltd, Meriden Quarry, Cornets End Lane, Meriden, CV7 7LG	PL/2012/00471/FULM	Jan 2012	Decided
Variation of condition no. 7 of planning application 87/2730 to enable the infilling of material	Tarmac Construction Ltd, Cornets End Lane, Meriden, CV7 7LG	PL/2011/01575/FULL	Sept 2011	Decided
Variation of condition no. 7 of planning application 1987/2730 and 97/535 to allow the importation of inert construction soil for restoration purposes	Tarmac Construction Ltd, Cornets End Lane, Meriden, CV7 7LG	PL/2010/00548/FULL	Mar 2010	Decided
Sand and gravel extraction, inert waste disposal, restoration to agriculture and nature conservation	Tarmac Construction Ltd, Cornets End Lane, Meriden, CV7 7LG	PL/2006/00391/FULL	Oct 2006	Decided
Variation of condition 03 and 08 of planning consent 1996/1563 to extend the working life of the site by 20 years	Cornets End Quarry, Cornets End Lane, Meriden, CV7 7LG	PL/2004/01258/FULL	Dec 2004	Decided
Erection of a dry silo mortar plant under condition 3 of planning consent 97/635 and part 19 of the gpdo 1995	Tilcon Ltd, Meriden Quarry, Cornets End Lane, Meriden, Coventry, CV7 7LF	PL/2002/02459/FULL	Oct 2002	Decided
Erection of building for a bagging plant, stock bays, hoppers for bagging aggregates and building for canteen facilities	Tilcon Ltd, Meriden Quarry, Cornets End Lane, Meriden, Coventry, CV7 7LF	PL/2002/02276/FULL	Oct 2002	Decided
Determination of planning conditions for mineral extraction	Meriden Quarry, Tilcon Ltd, Cornets End Lane, Meriden, CV7 7LG	PL/1997/00168/RM	Mar 1997	Unknown
Renewal of consent 83/1044 for sand processing plant	Meriden Quarry, Cornets End Lane, Meriden, CV7 7LG	PL/1994/00067/FULL	Mar 1994	Decided
Domestic refuse tip	Meriden Quarry, Cornets End Lane, Meriden, CV7 7LG	PL/1990/00300/FULL	Oct 1990	Decided
Mortar batching plant	Tilcon, Meriden Quarry, Cornets End Lane, Meriden, CV7 7LG	PL/1990/01761/FULL	Aug 1990	Unknown
Demolition of asbestos garage and workshops and erection of temporary offices and landscaping works	Meriden Quarry, Cornets End Lane, Meriden, CV7 7LG	PL/1989/00598/FULL	Mar 1989	Decided

Planning Application	Location	Ref. No.	Date	Status
Erection of silo	Meriden Quarry, Cornets End Lane, Meriden, CV7 7LG	PL/1987/00798/FULL	Apr 1987	Decided

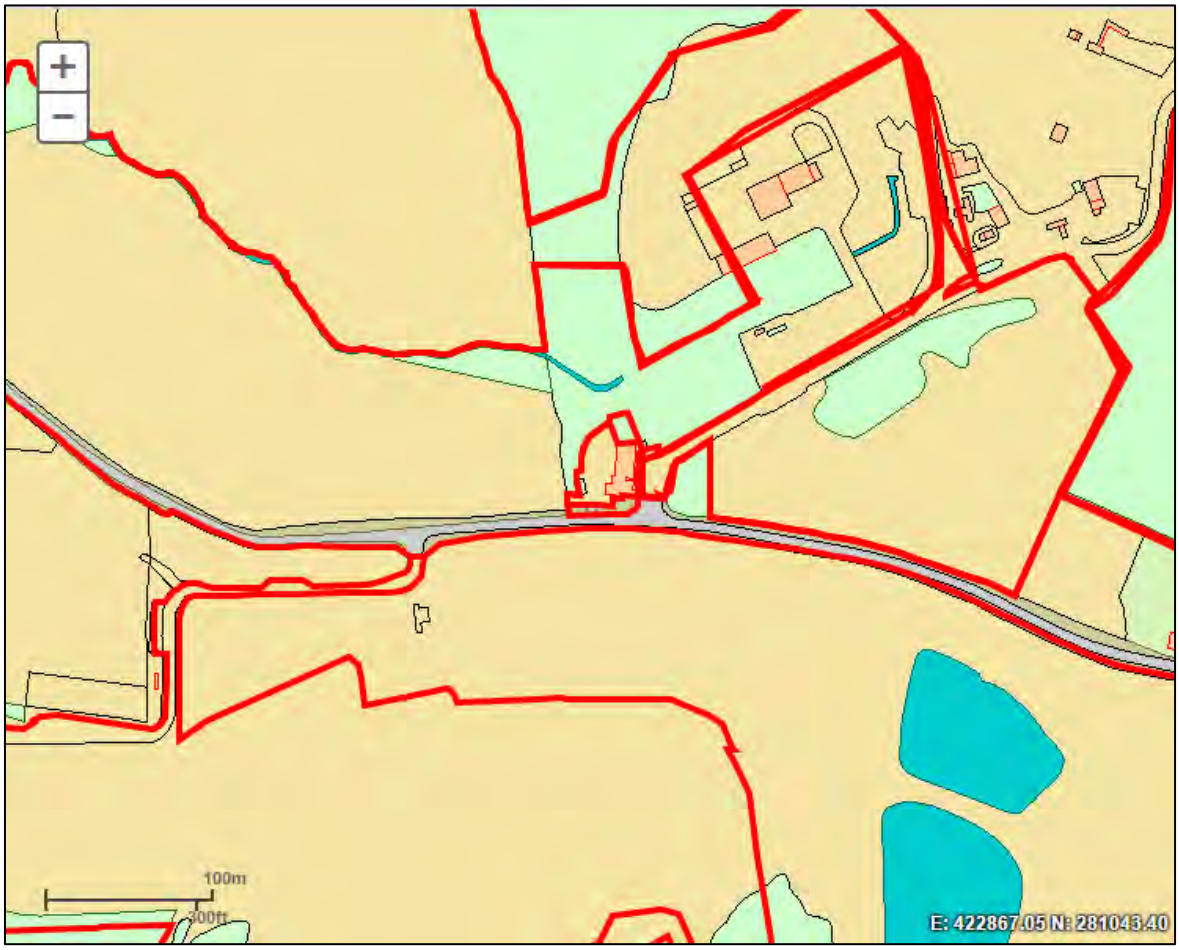

Figure 3 Site Boundaries for Planning Applications relating to Postcode: CV7 7LG (from Solihull Metropolitan Borough Council website)

2.6 Services Search

A check for underground services has not been carried out for the site. However, this will be required prior to any intrusive investigation and/or groundworks. The search should, as a minimum, include for water, gas, electricity and telephone.

3. ENVIRONMENTAL SETTING

3.1 Data Summary

A summary of the environmental background information (geology, hydrology, hydrogeology, database information *etc*.) and regulator consultation information has been presented in Table 4. The Envirocheck Report is included within Appendix D of this report. This information, together with the site history, represents the base data used to formulate the conceptual ground model.

Table 4 Data Summary - Environmental Setting

	Data Source	Data Summary
Regional Geology	BGS Website - 29 July 2015 http://mapapps.bgs.ac.uk/geologyofbritain/	The site is not shown to be underlain by superficial deposits, however, the area has been worked by opencast mining for sand and gravel. The bedrock geology is the Mercia Mudstone Group.
Hydrogeology	Envirocheck® Report Environment Agency Website - What's in my Backyard - 30 July 2015 http://maps.environment-agency.gov.uk/wiyby/	The bedrock geology is classified as a Secondary B aquifer and the site does not lie within a Source Protection Zone (SPZ) for groundwater. However, Zone III of an SPZ is located approximately 760m to the east. The nearest abstraction for groundwater is a lagoon in Cornets End Quarry, located approximately 200m to the north east and is used for mineral washing. Groundwater for the purpose of general farming and domestic is abstracted by Mr Barber at Berryfields Farm, located approximately 1.4km to the east.
Hydrology	Envirocheck® Report	The nearest surface water feature is located approximately 50m to the south of the site. Horn Brook at a location approximately 85m to the north west has been sampled for quality and is determined to be "Good". The site is not in an area at risk from flooding and is therefore within Flood Zone 1. There are no current surface water abstraction licences held within 250m of the site. There have been no pollution incidents to controlled waters within 250m of the site. There is one discharge consent located approximately 40m to the west at The Office of Meriden Quarry. The consent is held by Tarmac Central Limited for the discharge of final/treated effluence to land/soakaway. Tarmac Central Limited held another consent at a location approximately 110m to the north of the site. This was for the discharge of site drainage into the Horn Brook.
	Drainage Plans	No drainage plans have been made available.
	Buried Culverts	There is no evidence that culverts exist on-site.
Radon Potential	Envirocheck® Report Building Research Establishment - BR211 'Radon: Guidance on protective measures for new buildings' 2007	The site is not situated in an area where radon protective measures are necessary in the construction of new buildings. However, it should be noted that the Health Protection Agency, now Public Health England (PHE) published advice in July 2010 recommending that all new buildings in the UK include minimum basic radon protective measures. Further advice is available on the PHE website. (http://www.ukradon.org/information/reducelevels)
Other Radiation	Envirocheck® Report	There are no reasonable grounds for believing the land to be radioactively contaminated (in accordance with the 2005 extension of Part IIA of The Environmental Protection Act 1990).

	Data Source	Data Summary
Ordnance	Zetica Bomb Risk Map - West Midlands	There is a high risk of unexploded ordnance in the area. However, the site was being quarried during the time of the 2nd World War.
Industrial Processes	Envirocheck® Report Environment Agency Website - What's in my Backyard - 30 July 2015 http://maps.environment-agency.gov.uk/wiyby/	There are three sites subject to Local Authority Pollution Prevention and Controls within 250m of the site. One is located approximately 40m to the north for the blending, packing, loading and use of bulk cement by Tarmac Building Products. The other two are located approximately 90m to the west and are also for the blending, packing, loading and use of bulk cement by Tarmac Lafarge and Hope RMC Ltd. There have been no major or significant pollution incidents in the area.
Waste	Envirocheck® Report Environment Agency Website - What's in my Backyard - 30 July 2015 http://maps.environment-agency.gov.uk/wiyby/	The site is part of a former landfill site, named Meriden Quarry and operated by Tilling Construction Services Limited (Tilcon). The site received inert, industrial, commercial, household, special waste and liquid sludge in the period between 1 January 1962 and 31 July 1992. There are two licensed waste management facilities within 250m both at Meriden Quarry. One located approximately 40m to the north is operated by NRS Waste Care Limited for use of the waste for reclamation. The other is held by Coleman & Co Ltd at a location approximately 200m to the east for physical treatment facilities. Authorised waste includes tarmacadam, hardcore and inert excavation materials. Approximately 60m to the north east of the site is a registered landfill site operated by Ready Mixed Concrete (UK) Limited at Berkswell Quarry. There is no known restriction on the source of waste.
Mineral Extraction	Envirocheck® Report	The site was subject to the extraction of sand and gravel by opencast mining, which extended a further 140m to the east and at least 260m to the north. The site is named Cornet's End Sand Pit and the operator is unknown. Another sand and gravel pit, named Berkswell A, was located approximately 215m to the south, which was operated by RMC Aggregates (Western) Limited. The site is located in an area that may be affected by coal mining. However, a Coal Mining Report issued by the Coal Authority (included in Appendix D) indicates that the site is not within the zone of likely physical influence on the surface from past underground workings, nor in the likely zone of influence of any present underground coal workings.
Trade Directory	Envirocheck® Report	There are two active trades within 250m of the site: both located approximately 40m to the north. Lafarge Tarmac operate quarries at Meriden Quarry and Hope Construction produce concrete and mortar ready mixed at Cornet's End Lane.

	Data Source	Data Summary
Ecology	Envirocheck® Report MAGIC website - 31 July 2015 http://www.magic.gov.uk/MagicMap.aspx	The site is located within an Area of Adopted Green Belt for Solihull Metropolitan Borough Council. There are no areas of ecological importance within the surrounding area, including Special Scientific Interest (SSSI), Special Protection Areas, Areas of Outstanding Natural Beauty or RAMSAR (wetlands).
Archaeological & Building Heritage	English Heritage website - 31 July 2015 http://list.english-heritage.org.uk/mapsearch.aspx	There are no archaeological or heritage features within 250m of the site.
Regulatory Contact	Solihull Metropolitan Borough Council / North Warwickshire Borough Council	Contact with the Environmental health departments has not been made at this stage.
	Warwickshire County Council	Contact with WCC has not been made at this stage.
	Environment Agency	Contact with the Environment Agency has not been made at this stage.

4. HAZARD ASSESSMENT & PRELIMINARY CONCEPTUAL SITE MODEL

4.1 Hazards Identified with the Proposed Development

The hazard identification is based on the assumption that the site is to be developed to a commercial/industrial end-use, including soft landscaping on the perimeter and car parking, as shown in Figure 1. It is assumed that drinking water will be supplied by underground pipes.

4.2 Potential Sources of Contamination

The site was occupied by a sand and gravel pit in the period between 1937 and 1962, when it became a landfill site until 1992. The landfill site may have received inert, industrial, commercial, household, special and liquid sludge and was operated by Tilling Construction Services Limited. It is not known whether any landfill control measures are installed such as gas/groundwater monitoring boreholes, leachate monitoring points, landfill liner etc. Thus, it is considered that there is the potential for contaminants to be present in the ground and could include metals, hydrocarbons and asbestos, together with ground gas.

There were also landfill sites to the north west and north east and thus, these could also impact upon the site through migration of contaminants including ground gas.

4.3 Potential Receptors of Contamination

Based on the data previously discussed, the following potential receptors have been identified in Table 5.

Table 5 Identified Potential Receptors

Sensitive Receptors	
A	Current site occupiers (possibly casual users of the field) and neighbouring residents
B	Future site occupiers (those to be employed at the development)
C	Construction workers (those involved with the redevelopment of the site)
D	Controlled Waters - groundwater (Secondary B aquifer) and surface water (Horn Brook)
E	Local flora and fauna.
F	Building structures, hardstanding and services.

The preliminary assessment of risks undertaken for the development considers potential risks to receptors identified in Table 4. The receptors A to F incorporate each of the receptors that may be required to be considered in planning conditions relating to land contamination;

- Human Health (A, B and C);
- Property (which includes buildings, crops, livestock, pets, service lines) (F);
- Adjoining land (A, B and E);
- Controlled waters (D);
- Ecological systems (E);
- Buildings and structures (F).

Archaeological sites and ancient monuments are considered not to be within the zone of influence of the site. Therefore, they have not been considered further in the risk assessment.

The closest of each of the above receptor categories to the site are considered to be;

On-site

- Site users - casual
- Flora and fauna
- Secondary B Aquifer

Off-site

- Horn Brook (85m to the north west)
- Industrial/Commercial - Meriden Quarry immediately to the north west with quarry buildings (40m and 80m to the north west)
- Office building (30m to the west)
- Residential property - Keepers Cottage (125m to the east), Hornbrook Farm (520m to the west)
- Road - Cornets End Lane (<10m south)
- Road - quarry road (<10m north west)

The possible contaminant linkages are discussed below. It should be noted that not all may be formed between contaminant sources and receptors.

4.4 Identification of Pathways

4.4.1 Pathways to Human Health

There are various routes by which a potential contaminant may reach a receptor. For example, in areas where contaminated material is exposed, dermal contact with the material, inhalation or indigestion of soil and dust may occur.

Currently ground cover across the site is predominantly grass and trees. Therefore, with regards to any current site users, inhalation or ingestion of soil and dust could occur should the ground be disturbed. Pathways from dermal contact with soil may also arise.

Contact with contaminants during demolition and clearance is typically a short-term hazard, mainly concerning construction workers. Potential risks are repeated contact with contaminated ground containing substances that are skin irritants and may cause dermatitis. Therefore, with respect to site operatives, it would be prudent to exercise good hygiene practices, *e.g.* the use of gloves, the avoidance of any eating and smoking on-site, and the provision of washing facilities. In addition, any specific advice given by the Health & Safety Executive should be followed. Assuming good site practices are followed, such incidents should be considered a low risk, although a site investigation would be required to fully assess this risk.

Post construction, the surface of the development area is likely to be predominantly occupied with buildings and hardstanding, together with landscaping on the site boundaries. This is significant in that a number of potential pathways will be significantly reduced as the presence of hardstanding will act as a barrier between potential contaminants in the ground and identified receptors, with the exception of ground gas.

The entry of ground gas into future permanent buildings is considered to be a possible pathway. Ground gas can enter buildings through pathways including gaps around services pipes and ducts, fractures/cracks/gaps in subsurface walls and solid concrete slabs, construction joints and wall cavities. Ground gas can also accumulate in voids created by settlement beneath the floor slab, in drains and soakaways and confined spaces within buildings, such as cupboards and sub-floor voids. There is also a potential risk of ground gas migration though the ground to nearby residential and commercial buildings.

4.4.2 Pathways to Controlled Waters

The site overlies a Secondary B Aquifer which is capable of supporting water supplies at a local level and may form an important source of base flow to rivers. However, the site is not located within an SPZ and there are no recorded licensed abstractions for potable water within a radius of 1km of the site. Groundwater levels are unknown.

Lateral migration of potentially contaminated groundwater off-site (either via permeable waste or the underlying aquifer) must be considered. The vertical leaching of contaminants from any waste materials on-site into the groundwater is a potential pathway for contaminants to impact upon groundwater.

There is a surface watercourse (Horn Brook) located approximately 70m to the north west of the site. Thus surface water is considered a potential receptor to the migration of contaminants.

4.4.3 Other Pathways

Concrete foundations are at risk of attack from sulphate and other deleterious matter in the subsoil. The effect of sulphate on concrete can be very severe due to the reaction of sulphate with aluminium salts in the concrete. The product of this reaction has a larger volume than the original salt and so causes internal disruption.

Plastic water mains can be affected by contaminated soil through aggressive substances such as phenols, chlorides and sulphates producing acid conditions. Consideration should be given to an appropriate specification for drainage and other service pipes with particular attention paid to the suitability of the proposed pipe material.

Plants are also susceptible to the presence of contaminants in the ground, thus there is the potential for contaminant uptake through roots.

4.5 Contaminant Linkages

For each contamination source, there are potential contaminant linkages with all receptors. However, in the context of this site, not all of the contaminant linkages are plausible. The likelihood of the various pathways linking the contaminants to the receptors is presented in Table 5 below:

Table 6 Matrix of Potential Contaminant Linkages

Source/ Contaminated Medium	Pathway	Receptor					
		A - Current Site Occupiers	B - Future Site Occupiers	C - Construction Workers	D - Controlled Waters	E - Flora and fauna	F - Buildings and Services
Soil/Waste Materials	Ingestion	U	U	P	-	U	-
	Dermal Contact/Direct Contact	U	U	P	-	U	P
	Inhalation	P	U	P	-	U	-
	Infrastructure/Drainage	-	U	-	U	U	P
	Groundwater	U	U	U	P	-	-
	Surface water	-	-	-	P	-	-
Groundwater	Ingestion	U	U	U	-	-	-
	Inhalation	U	U	U	-	U	-
	Dermal Contact	U	U	U	-	U	-
	Groundwater	U	U	U	P	U	-
	Surface Water	U	U	U	P	U	-
Gas (CH_4 CO_2)	Migration through ground	P	P	P	-	-	P
Key to significance of contaminant linkages: S = Significant Pathway; P = Possible Pathway; U = Unlikely Pathway; - =Not Applicable							

Table 6 has identified contaminant linkages which are considered to be Possible. These are considered further as part of the risk assessment.

4.6 Conceptual Site Model

In accordance with BS 10175, a general schematic section has been developed for the site based on the previously presented data and contaminant linkage assessment. This is shown in Figure 2.

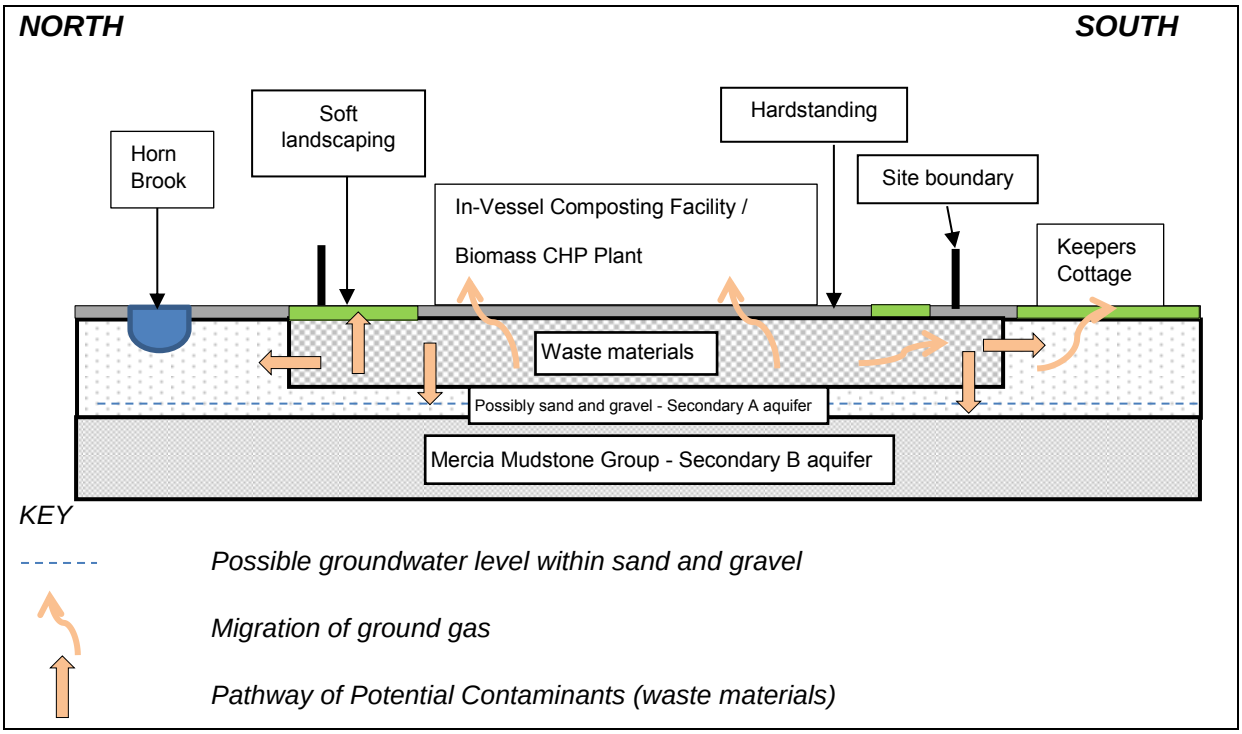

Figure 4 Preliminary Conceptual Site Model (not to scale).

The model for the site shows the anticipated geology, proposed site usage and potential sources of contamination. The information presented above represents the preliminary conceptual ground model that may need to be revised based on data obtained during any future investigation, either desk-based or intrusive. The conceptual site model and proposed end use described above should be considered very broadly representative of an industrial land use, as defined in SR3 “Updated Technical Model to the CLEA Model” (SC050021/SR3, 2011) for the purpose of this report.

4.7 Preliminary Contamination Hazard Assessment

The preliminary hazard assessment is based on current available guidance published by a number of sources and is summarised in Appendix B. A preliminary conceptual site model for this site has been established using the desk study information and has been used as a basis for the preliminary hazard assessment. The possible potential pathways are only considered for the hazard assessment.

The preliminary hazard assessment is a qualitative assessment of the risks posed by each viable contaminant link identified. The hazard assessment leads to a recommended subsequent activity that could be:

- Action Required (AR) in the short term to break existing contaminant-pathway-receptor (CPR) link;
- Site Investigation Required (SIR) with objectives for risk estimation, or
- No Action Required (NAR) at this stage.

The hazard assessment is summarised in Table 7.

Table 7 Preliminary Hazard Assessment

Hazard Identification				Hazard Assessment			
Link	**Contaminant**	**Pathway**	**Receptor**	**Probability**	**Consequence**	**Risk**	**Hazard Assessment**
1	Possible waste materials (metals, hydrocarbons, asbestos etc.)	Soil/dust ingestion; dust/soil inhalation; and dermal contact.	A - Current Site Users	Negligible	Mild	**Low**	NAR - It is likely that any current site users will be on-site for a short period.
2	Possible waste materials (metals, hydrocarbons, asbestos etc.)	Soil/dust ingestion; dust/soil inhalation; and dermal contact.	A - Neighbouring residents	Negligible	Mild	**Low**	NAR - Whilst the site remains in its current state i.e. undisturbed, there is unlikely to be a risk to neighbouring land. In addition, it is understood that no complaints have been received.
3	Possible waste materials (metals, hydrocarbons, asbestos etc.)	Soil/dust ingestion; dust/soil inhalation; and dermal contact.	B - Future Site Occupiers	Negligible	Mild	**Low**	NAR - The proposed development is to comprise buildings and hardstanding which will act as a barrier between future site occupiers and the underlying ground.
4	Possible waste materials (metals, hydrocarbons, asbestos etc.)	Soil/dust ingestion; dust/soil inhalation; and dermal contact.	C - Construction Workers	Low / Unlikely	Medium	**Medium / Low**	AR - Health and safety practices should be in place during construction works, as detailed above.
5	Possible waste materials (metals, hydrocarbons, asbestos etc.)	Via underground service pipes	B - Future Site Occupiers. F - Building structures	Low / Unlikely	Mild	**Low**	AR - It is anticipated that services will be placed in trenches of "clean" material and appropriate pipe material used.
6	Possible waste materials (metals, hydrocarbons, asbestos etc.)	Migration through the ground	D - Groundwater / Surface Water	Medium	Medium	**Medium**	SIR - A ground investigation to include groundwater monitoring boreholes will be required to quantify the risk to receptors.
7	Possible waste materials (metals, hydrocarbons, asbestos etc.)	Uptake through roots; ingestion of soil/dust	E - Flora and fauna	Low / Unlikely	Mild	**Low**	NAR - Plants present on-site appear to be healthy.

Hazard Identification				Hazard Assessment			
Link	**Contaminant**	**Pathway**	**Receptor**	**Probability**	**Consequence**	**Risk**	**Hazard Assessment**
8	Ground gas	Inhalation; explosion	A - Neighbouring residents B - Future Site Occupiers; C - Construction Workers; F - Building structures	Medium	Severe	**High**	SIR - A ground investigation to include installation of boreholes and subsequent gas monitoring will be required to determine the risks to receptors. The proposed development may include gas control measures in its design. Foundation design may be required to incorporate additional measures to prevent the risk of contamination by creating new pathways. Thus consideration of the method will be required to minimise the risk of groundwater pollution and gas migration.

From Table 6 a range of risk ranking from low to high was established. Potentially moderate and high risks require quantification and consideration prior to development. The site investigation objectives described above should represent part of a detailed main stage investigation that should include overall characterisation of the ground in association with obtaining and analysing the information described above. A high risk to neighbouring residents, future site occupiers, construction workers and buildings has been identified due to the potential presence of ground gas and a medium risk also to construction workers and controlled waters has been identified due to the potential presence of contaminants within waste materials in the ground.

The proposed development is to include gas control measures in its design, the precise nature of the measures will be dependent upon the results of the intrusive investigation and the subsequent gas monitoring programme. In addition, depending upon the foundation design, it may also be necessary to introduce further controls to prevent creation of new pathways to minimise the risk of groundwater pollution and ground gas migration.

5. CONCLUSIONS

5.1 Environmental Risk Assessment

A preliminary risk assessment has been made based on the contaminant - pathway - receptor model, as defined in Part IIA of the Environmental Protection Act 1990 and in accordance with BS 10175:2011+A1:2013 “Investigation of potentially contaminated sites - code of practice”. A preliminary conceptual site model has been produced to set out the characteristic ground conditions and elements of the surrounding environment and has assisted with identifying potential sources of contamination, potential receptors of the contamination and potential pathways between them.

From the site history and information obtained from the Envirocheck® Report, the identified sources of contaminants are:

- Potential contaminants associated with the presence of a landfill site that operated between 1962 and 1992 and accepted inert, industrial, commercial, household, special waste and liquid sludge. Contaminants could include metals, hydrocarbons, asbestos, together with the potential for the generation of ground gas.

Given the history of the site, it is considered likely that these activities have the potential to cause ground contamination. The principal receptors have been identified as future site occupiers, neighbouring residents, controlled waters and buildings.

In order to fully establish the sources and pathways for these significant pollutant linkages, it would be necessary to undertake an intrusive investigation. The site investigation should provide information to enable revision of the conceptual model and risk assessment. In particular, the investigation should aim to:

- determine types and concentration of contamination;
- determine the ground conditions, including the presence of ground gas and groundwater;
- determine the lateral and vertical extent of contamination; and
- provide sufficient data points to plan remedial measures if necessary.

Potential risks to site workers can be mitigated provided that appropriate health and safety precautions are taken by all site workers in accordance with guidance from the Health & Safety Executive. However, site workers should be made aware of the nature of the hazards present, the importance of personal hygiene and washing and changing procedures and should undergo induction training before commencing groundworks. The site investigation will further quantify the risk.

5.2 Recommendations

It is recommended that an intrusive investigation is undertaken to quantify the potential risk to identified receptors, including future site occupiers, neighbouring residents, controlled waters and buildings. In order to make a quantitative assessment of the potential risks and allow for any required remedial measures to be designed; a ground investigation is recommended in accordance with BS 10175: 2011+A1 2013 with a suitably qualified geologist or engineer supervising all works. This could be combined with a geotechnical investigation carried out in accordance with BS 5930:2015.

It is recommended that the investigation comprises:

- Trial pits using a wheeled/tracked hydraulic excavator to ascertain the nature of the upper profile of the ground;
- Cable percussive boreholes to a depth of 15m using 150mm diameter casing and tools with SPTs;
- Installation of 4 No. gas and groundwater monitoring wells (51mm internal diameter HDPE with slotted sections having a 250µm geotextile filter wrap);
- Sampling and chemical testing of soils and groundwater;
- Description of the ground encountered in accordance with BS5930:2015;
- Gas and groundwater monitoring – 6 visits over three months;
- Interpretative geoenvironmental report.

If required, the following geotechnical laboratory testing can also be carried out:

- natural moisture contents;
- liquid and plastic (Atterberg) limits;
- analyses for sulphate and aggressive chemical environment classification for buried concrete (the full BRE SD1 suite, Building Research Establishment 2005);
- particle size distribution wet sieve analyses, with pipette analyses;
- quick undrained triaxial shear strength tests; and
- remoulded CBR tests.

Proposed Locations of Exploratory Holes

The scope of the investigation should include exploratory holes across the entire site to provide suitable coverage with boreholes near to the site boundary and/or in the footprint of the proposed buildings.

Gas Monitoring Strategy

Ground gas monitoring should be carried out on six separate occasions over a period of three months. This monitoring period is in accordance with Table 5.5 of CIRIA C665 (2007) based on a Moderate Generation Potential of Source and a Low Sensitivity of Development.

Analytical Chemical Testing

Chemical testing should be carried out by a laboratory which is UKAS accredited in accordance with ISO17025 and are also MCERTS accredited for soil analysis in accordance with the Environment Agency's scheme. The laboratory should also carry out Quality Assurance and Quality Control in accordance with BS ISO 17025 and participate in external laboratory comparison and quality control schemes.

The selection of samples for laboratory testing and proposed scope of testing suites is based on the Phase 1 assessment, although during the intrusive investigation, this can be amended as required based on the exploratory hole records and other observations during the investigations. The sample selection rationale should include:

- gaining a good coverage across the site and of the various material types and strata encountered;
- to characterise samples which had visual or olfactory evidence of contamination;
- to characterise samples from the interface of permeable and less permeable horizons within the ground;
- to characterise soil samples located at groundwater level;
- to characterise the groundwater.

The recommended suites of analysis for soil, leachate and water are as follows:

- Metals and non-metals: arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium and zinc
- Organic substances: phenols, polycyclic aromatic hydrocarbons (PAHs), petroleum hydrocarbons (aliphatic and aromatic), soil organic matter, organic carbon

- Inorganic substances: water soluble sulphate, cyanide, pH, asbestos.

It is possible that additional analyses will be required, such as VOCs/SVOCs and/or leachate testing and these analyses can be dependent upon the ground conditions encountered.

5.3 Health & Safety

As outlined within the HSE publication "Successful Health and Safety Management – HSG65" this report should inform your development of safe systems of work and the information used as an input to the safety management system. The contents of this report may be used to supplement the contents of the Health and Safety File as required under the Construction Design and Management (CDM) Regulations 2015.

In accordance with the Construction Design and Management (CDM) Regulations 2015, TerraConsult has acted in the role of Principal Contractor and as Principal Designer for the works as described in this report. With issue of this report, TerraConsult has discharged and completed all contractual and legal requirements for these positions and has no further involvement with the project. It is the developer's duty, as required by the CDM Regulations, to appoint others to fill these roles for the further development of the site.

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APPENDICES







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APPENDIX SCR4

Phase 2 Ground Investigation Report (2015)

TerraConsult

October 2015
Report No 10122/R02 Issue 2

LAND AT MERIDEN QUARRY

PHASE 2 GROUND INVESTIGATION REPORT

Prepared for

Midlands Planning Services

TerraConsult

LAND AT MERIDEN QUARRY

PHASE 2 GROUND INVESTIGATION REPORT

October 2015

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DOCUMENT INFORMATION AND CONTROL SHEET

Document Status and Approval Schedule

Report No 10122/R02 Issue 2	Title LAND AT MERIDEN QUARRY PHASE 2 GROUND INVESTIGATION REPORT

Issue History

Issue	Status	Date		Signature	Date
1	Draft for client comment	23 September 2015	**Prepared By:** Sue Slaven MIEnvSc CEnv SiLC		23/9/15
2	Final	15 October 2015	**Prepared By:** Sue Slaven MIEnvSc CEnv SiLC		15/10/15
			Checked By: Tim Slaven MRICS FIQ MCIWM CEnv		16/10/15
			Authorised By: Sue Slaven MIEnvSc CEnv SiLC		16/10/15

DISCLAIMER

This report should be read with the Service Constraints Report Limitations & Planning Requirements set out in Appendix A.

FS573193 EMS573194

EXECUTIVE SUMMARY

Item	Description
Client	Midlands Planning Services
The Site	Land at Meriden Quarry, Cornets End Lane, Meriden, Coventry, CV7 7LG
Report Objective	This report presents the findings of the ground investigation, the environmental risk assessment and geotechnical assessment relating to the proposed development.
Land Use History	The site was in agricultural use until circa. 1937 when a Sand Pit occupied the western sector. By 1954 the Sand Pit had extended to cover the entire site. By 1962, the Sand Pit was no longer present and the site was occupied by buildings, a tank and a hopper in the western sector and a pond in the eastern sector. The site was a landfill between 1962 and 1992 and by 2006, it was occupied by a field.
Development	It is proposed to develop the site to an industrial end-use comprising an In-Vessel Composting Facility, a Biomass Facility and a Waste Water Treatment Plant.
Geoenvironmental Setting	**Geology:** The site has been mined by opencast working to extract the mineral sand and gravel deposits. The bedrock geology comprises the Mercia Mudstone Group. **Hydrogeology:** The bedrock geology is classified as a Secondary B aquifer. The site is not situated within a groundwater Source Protection Zone and the nearest groundwater abstraction point is 200m to the north of the site, which is used for mineral washing. **Hydrology:** Horn Brook is located approximately 85m to the north west. **Flood Risk:** The site is located in an area with a low risk of flooding (Flood Zone 1). **Unexploded Ordnance:** A high risk of UXO has been identified in the area. However, mining activities will have effectively cleared the land within the footprint of the site and immediate vicinity.
Phase 1 Preliminary Risk Assessment	Based on the former land uses at the site, i.e. landfilling, the potential for ground contamination to be present is considered to be likely, together with the potential for the generation of landfill gas. The principal receptors of concern are neighbouring residents, future site occupiers, construction workers, controlled waters and buildings. Due to the potential presence of ground gas and in the absence of mitigation measures, the possible consequences on receptors (i.e. future site occupiers) are estimated to be SEVERE and the probability of the identified risks occurring is considered to be HIGH. A site investigation is therefore recommended to determine ground conditions and thus, the presence of landfill gas. Dependent upon the findings and if necessary, it is proposed that gas control measures will be incorporated into the design of the development. Thus reducing the potential consequences to LOW.
Scope of Phase 2 Ground Investigation	The scope of ground investigation works carried out at the site by TerraConsult comprised: • 8 No. trial pits • 4 No. cable percussive boreholes • Installation of gas/groundwater monitoring standpipes within the boreholes • Sampling and testing of soils and groundwater for contamination and geotechnical analyses; • Gas and groundwater monitoring; • Provision of a geo-environmental report.

Findings of the Phase 2 Ground Investigation	• Ground conditions comprise Made Ground to a maximum depth of 5.4m below ground level, overlying sands and gravels, with Mercia Mudstone at a depth of at least 14.2m. It is anticipated that Made Ground is present to a greater depth as a result of the site's history as a landfill. • Solid samples were collected from all exploratory holes for chemical testing. None of the contaminants, except asbestos, was present at concentrations exceeding the relevant generic assessment criteria for an industrial end use. Asbestos fibres (Chrysotile) have been identified at five locations with a maximum of 0.003% asbestos within the overall mass. • A potential risk to groundwater quality has been identified. However, at this stage, the risk cannot be quantified. • Ground gas comprising carbon dioxide was recorded within the boreholes on at least one occasion.
Phase 2 Conclusions - Geo-environmental	• It is recommended that further ground gas monitoring be continued in accordance with guidance. • It is recommended that groundwater sampling be carried out in order to assess the risk to groundwater from contaminants in the ground.
Phase 2 Conclusions - Geotechnical	• Ground conditions are very variable. The full depth of the landfilled material may not have been determined as it is possible that the boreholes were drilled at locations that may mark the edge of the landfill. • Where clay was encountered, i.e. within BH2, this was assessed to be soft to firm. Very loose to dense sandy Made Ground was encountered and the sands and gravels were also assessed to loose to dense. • Moisture content ranges from 4% (clayey sand within BH2) and 25% (very sandy very clayey gravel in TP3). Sulphate and pH for the determination of design of concrete is also very variable.
This summary forms part of a Tier 2 Risk Assessment (Ground Condition) report prepared by TerraConsult and contains an overview of the key findings and conclusions. The summary should not be treated as an independent document.	

LAND AT MERIDEN QUARRY

PHASE 2 GROUND INVESTIGATION REPORT

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LAND AT MERIDEN QUARRY

PHASE 2 GROUND INVESTIGATION REPORT

1. INTRODUCTION

1.1 Background Information

TerraConsult (South) Limited (TerraConsult) was commissioned by Midlands Planning Services to carry out an intrusive ground investigation for the site known as Land at Meriden Quarry, near Coventry. The purpose of the report is to provide a preliminary assessment of the site using published information and information obtained during the intrusive investigation with regards to the potential redevelopment of the site. It is understood that this report is to support an outline planning application to redevelop the site to an industrial end-use and to assist in the design of the development. A Phase 1 Desk Study and Preliminary Risk Assessment Report (Report No. 10122-R02-Issue 1, August 2015) has been carried out for this site and thus, should be read in conjunction with this report.

This report has been devised to comply with the relevant principles and requirements of a range of guidance with regards to potentially contaminated land, including (but not limited to):

- BS 10175:2011+A1:2013: "Investigation of potentially contaminated sites - Code of practice";
- BS 5930:2015: "Code of practice for ground investigations";
- Contaminated Land (England) (Amendment) Regulations 2012 and Contaminated Land Statutory Guidance (Defra, April 2012);
- Defra/Environment Agency (2004) Report CLR11 "Model Procedures for the Management of Land Contamination";
- Environment Agency (2011) Report GPLC1 "Guiding Principles for Land Contamination";
- Environment Agency (2012) Report GP3 "Groundwater protection: Principles and Practice";
- National Planning Policy Framework (HCA, March 2012); and
- Part IIA of the Environmental Protection Act, 1990.

TerraConsult's service constraints and report limitations are presented in Appendix A and a description of environmental risk assessment methodology and terminology is presented in Appendix B.

In preparation of this report, it is assumed that any information provided to TerraConsult by the client in connection with the commission is accurate, complete and not misleading. TerraConsult cannot guarantee the accuracy or validity of this information.

1.2 Previous Investigations

It is understood that the site has not been subject to any previous intrusive investigations.

2. SITE LOCATION AND DESCRIPTION

2.1 Site Location

The location of the site is indicated in Figure 1 below and a summary and a brief description is presented in Table 1.

Figure 1 Site Location (Not to Scale)

Table 1 Summary of Description of the Site and its Environs

Location	The site is located approximately 1.6km to the south west of the village of Meriden, 5.3km west of the outskirts of Coventry, 7,8km to the east of Solihull and 1km south east of the junction with the A452. The site is situated within an area subject to sand and gravel extraction, together with agricultural land and a Golf Course in the vicinity.
Grid Reference	423070, 281110
Post Code	CV7 7LG
Site Area	3.11ha
Topography	The site is relatively flat in a gently undulating landscape.

2.2 Development Proposals

It is understood that the site is to be redeveloped to an industrial end-use comprising an In-Vessel Composting Facility, a Biomass Energy Facility and Waste Water Treatment Plant. The proposed facility will be designed to process up to 45,000 tonnes per annum of co-mingled green and food waste and wood waste. The green and food waste will be

composted via an In-Vessel Composting system to produce 0-12mm grade compost which can be mixed with sand to manufacture topsoil to BS 3883 certification. Oversized compost (10mm+) will be mixed with wood waste and treated in the Biomass Facility to produce renewable energy.

It is understood that the majority of the site will be covered with building and hardstanding with small areas of landscaping on the boundaries. This is indicated in Figure 2 below.

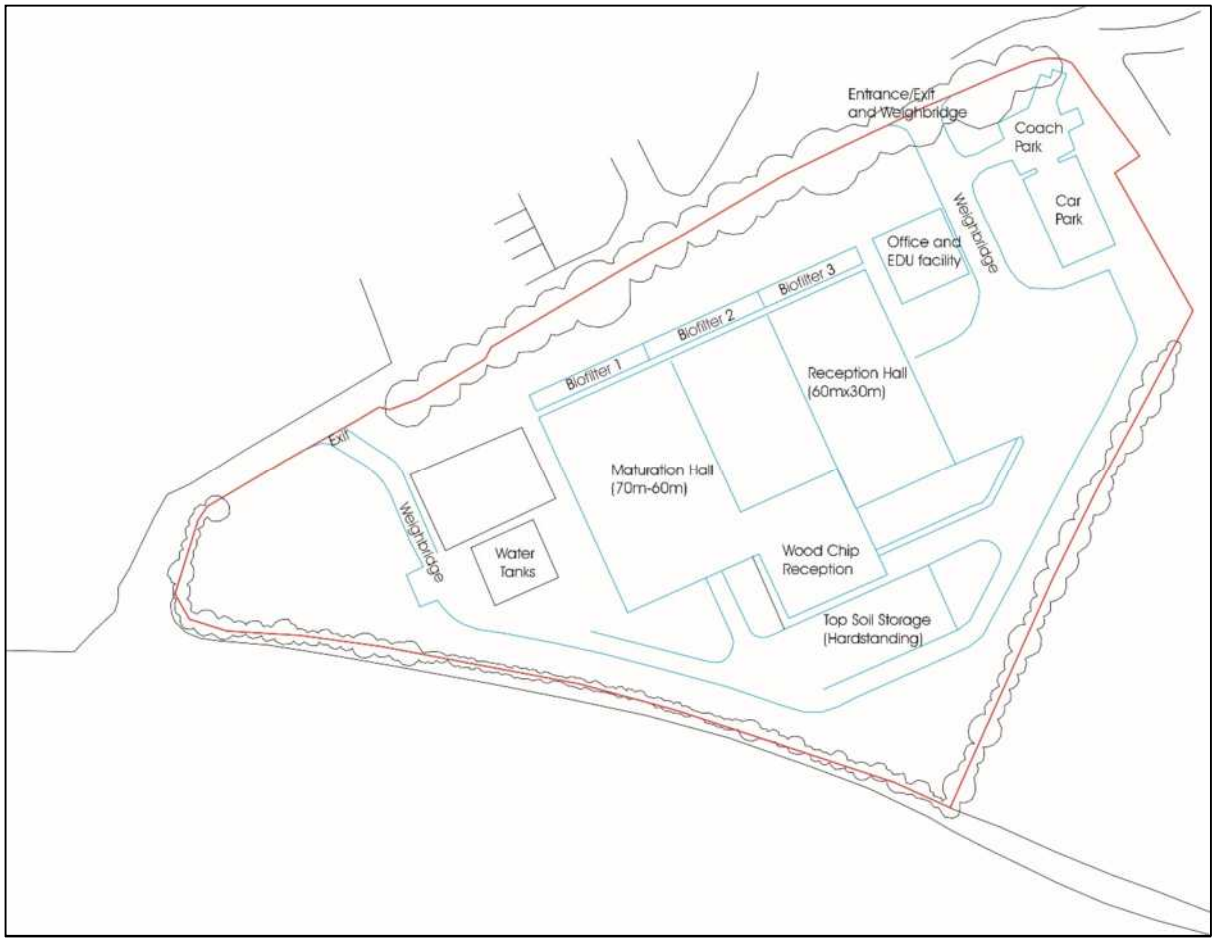

Figure 2 Proposed Site Plan (not to scale)
(Adapted from the original drawing by Vagdia & Holmes; No. 16364-SK-003EC - dated June 2015)

The foundation design of the development has not, at this stage, been determined as it will depend upon ground conditions as determined by the intrusive investigation. However, if required, ground gas control remediation measures can be incorporated into the foundation design of new buildings, such as the installation of a gas protection membrane and a monolithic concrete plinth, if required.

3. ENVIRONMENTAL SETTING

3.1 Data Summary

A full description of the environmental background information (geology, hydrology, hydrogeology *etc*.) is provided in TerraConsult's Phase 1 Desk Study and Preliminary Risk

Assessment Report[1]. Therefore, a brief overview of the main details of the site environmental setting is presented as follows:

- Geological maps show that the site is not underlain by superficial deposits, although the site has been quarried for its sand and gravel deposits. The bedrock geology is the Mercia Mudstone Group. The bedrock geology is classified as a Secondary B aquifer and the site does not lie within a Source Protection Zone (SPZ) for groundwater. The nearest abstraction for groundwater is a lagoon in Cornets End Quarry, located approximately 200m to the north east and is used for mineral washing. Groundwater for the purpose of general farming and domestic is abstracted by Mr Barber at Berryfields Farm, located approximately 1.4km to the east.
- The nearest surface water feature is located approximately 50m to the south of the site. Horn Brook at a location approximately 85m to the north west is classified as "Good" quality, as a result of water sampling.
- The site is currently occupied by vacant land situated within a predominantly agricultural area, although quarrying for sand and gravel is being carried out to the north and south west of the site.
- Historically, the site was subject to the extraction of sand and gravel by opencast mining, which extended a further 140m to the east and at least 260m to the north. The site is named Cornet's End Sand Pit and the operator is unknown. The site then became part of a former landfill site, named Meriden Quarry and operated by Tilling Construction Services Limited (Tilcon). The site received inert, industrial, commercial, household, special waste and liquid sludge in the period between 1 January 1962 and 31 July 1992.
- Another sand and gravel pit, named Berkswell A, was located approximately 215m to the south, which was operated by RMC Aggregates (Western) Limited. There are two licensed waste management facilities within 250m, both at Meriden Quarry. One located approximately 40m to the north is operated by NRS Waste Care Limited for use of waste for reclamation. The other is held by Coleman & Co Ltd at a location approximately 200m to the east for physical treatment facilities. Approximately 60m to the north east of the site is a registered landfill site operated by Ready Mixed Concrete (UK) Limited at Berkswell Quarry. There is no known restriction on the source of waste.
- The site is located in an area that may be affected by coal mining. However, a Coal Mining Report indicates that the site is not within the zone of likely physical influence on the surface from past underground workings, nor in the likely zone of influence of any present underground coal workings.

4. FIELDWORK

4.1 Investigation Strategy

The fieldwork was carried out between 26 August and 4 September 2015. An engineer from TerraConsult was present to supervise the fieldwork, which was carried out under subcontract by DANBAR Drilling Services Limited, and describe the ground encountered. Underground services were previously confirmed to not underlie the site.

[1] Land at Meriden Quarry. Phase 1 Desk Study and Preliminary Risk Assessment Report. Date August 2015. Prepared for Midlands Planning Services by TerraConsult. Report No. 10122/R01/Issue 2.

In order to achieve the objectives, the specific site investigation carried out was as follows:

- 1 day of trial pitting involving eight exploratory holes excavated across the site to a minimum depth of 3.4m below ground level (bgl);
- 7 days of cable percussive drilling involving four boreholes situated at the approximate corners of the proposed building. Gas/groundwater monitoring standpipes were installed within the boreholes;
- Description of the ground encountered in accordance with BS 5930:2015 "Code of practice for ground investigations"; and
- Collection of solid samples for contamination and geotechnical testing;
- A programme of ground gas and groundwater monitoring;
- Assess the general nature of contamination at the site and carry out a contaminated land risk assessment to determine if the site poses a risk to potential receptors.

4.2 General Observations

A total of eight trial pits were carried out using a CAT 428 excavator provided by the client and four boreholes were also undertaken by Danbar Drilling Services using a Dando cable percussive rig. All fieldwork was supervised by an engineer from TerraConsult. The site investigation locations are shown on Figure 3.

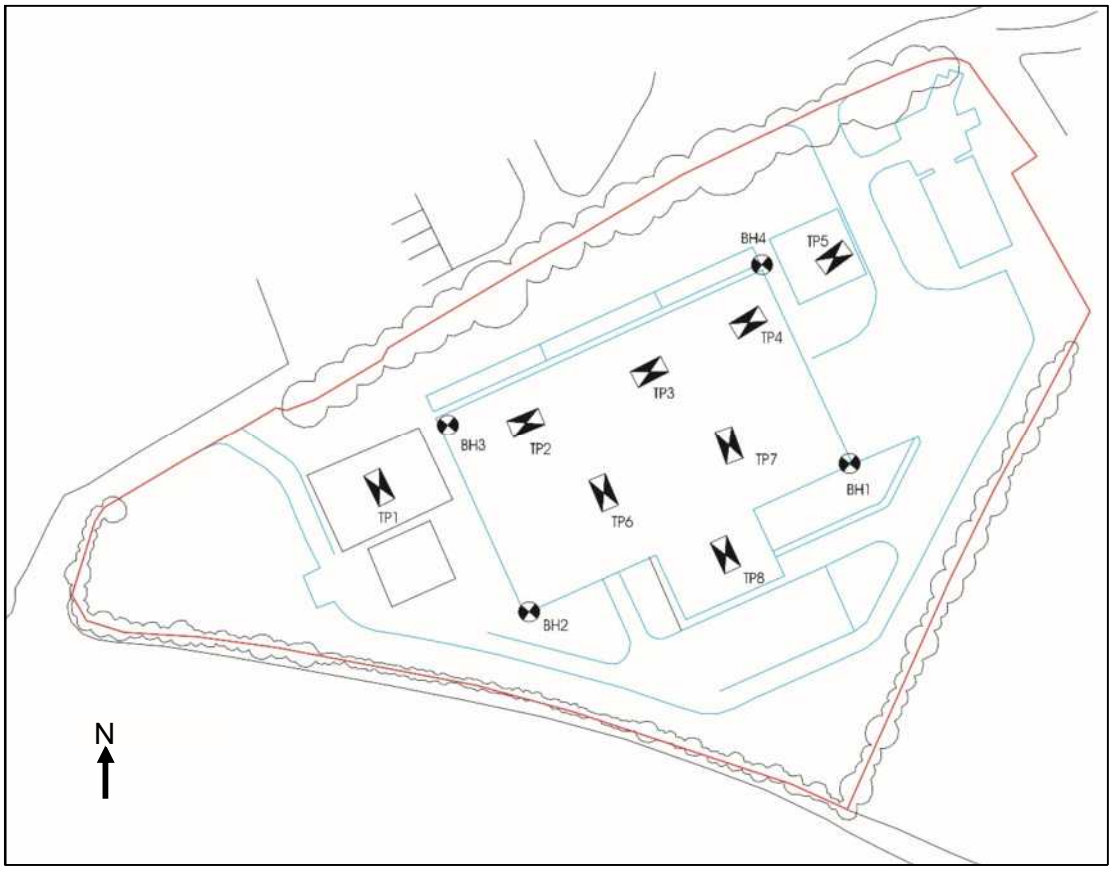

Figure 3 Trial Pit and Borehole Location Plan (Not to Scale)
(Adapted from the original drawing REF: 1636-SK-003E by Vagdia and Holmes dated June 2015.)

4.3 Trial Pits

A total of eight trial pits were excavated using the CAT 248 excavator. These were positioned within the proposed building's footprint, as shown on Figure 3, in a general pattern to ensure that the ground beneath the building's footprint was investigated. The trial pits were excavated to depths ranging from 3.4m bgl (TP3) in the north and 3.9m bgl (TP8) in the south of the proposed footprint.

As part of the investigation, a number of soil samples were taken to aid the characterisation of the material. From each trial pit, this included:

- A sample from various depths within the trial pits for collection in a 250g amber glass jar, a 60g amber glass jar as environmental samples for chemical analysis and asbestos screening.
- A bulk sample of approximately 25kg for geotechnical testing from two trial pits (TP3 and TP8) located in the centre of the site to characterise the materials.

A record of the strata encountered in the trial pits, samples collected and other observations are presented in Appendix C, together with a selection of photographs. All trial pits were backfilled with arisings on completion of inspection and sampling.

4.4 Boreholes

Four boreholes were drilled at locations that had been previously marked out on site by the client to represent the corners of the proposed building, as shown in Figure 3. The purpose of the locations was to obtain information with regards to the ground conditions and also information with regards to the ground gas regime. The boreholes were drilled to depths of 15m in BH1 and BH2, 14.8m in BH3 and 14.5m in BH4. At each location, the arisings were logged by an engineer from TerraConsult.

A number of soil samples were obtained and *in-situ* tests carried out to characterise the ground conditions, including:

- Collection of material from a depth of 0.9m - 1.0m as bulk samples for geotechnical testing;
- Collection of material from a depth of 0.5m - 0.6m bgl for contamination testing; and
- Standard penetration tests (SPTs) were undertaken at approximately 1.5m intervals throughout each borehole.

A standard 50mm diameter gas/groundwater standpipe was installed within each borehole, which comprised approximately 13m of slotted pipe and then a 2m plain pipe to the surface. The standpipes were surrounded by pea-gravel and completed with a bentonite seal and concrete at ground level.

Two of the four boreholes, BH3 and BH4, were terminated before reaching the intended depth of 15.0m bgl. This was due to encountering a cobble in BH4 at a depth of 14.5m, which caused bouncing and thus preventing further penetration into the ground. Borehole BH5 was terminated at a depth of 14.8m bgl as the Mercia Mudstone was encountered and further penetration was considered unnecessary.

A record of the strata encountered in the boreholes, samples collected, installation details and other observations are presented in Appendix C.

4.5 Ground Gas Monitoring

In order to assess the ground gas regime, an initial programme of gas monitoring took place. It is noted that in order to carry out a comprehensive ground gas risk assessment in accordance with CIRIA C665, ground gas monitoring should be carried out on six separate occasions over a period of three months. Monitoring for ground gas should also be carried out in a range of weather conditions is achieved, such as falling atmospheric pressure, wet and dry weather and frost.

Ground gas monitoring was carried out on two separate occasions in September 2015 using a GFM435 Series Gas Analyser (GFM 435-1). This instrument has been calibrated in accordance with the manufacturer's instructions prior to use. On each occasion, concentrations of landfill gases (*i.e.* carbon dioxide and methane) and other associated gases (oxygen, carbon monoxide and hydrogen sulphide) were recorded, together with atmospheric pressure and the depth to groundwater.

4.6 Chemical and Geotechnical Testing Strategy

4.6.1 Chemical Testing Strategy

Soil samples for chemical analysis of the Anthropogenic Ground were collected from between 0.5m (TP1, TP2, TP4 and TP5) to 2m (TP8) in the trial pits and at 0.5m in the boreholes. Each sample comprised two separate containers: a 250g amber glass jar for metals and inorganics and a 60g amber glass jar for organic analysis. Soil samples were labelled and stored in a cool box with ice packs for transportation to the analytical laboratory. The rationale for the selection of samples is detailed in Table 2.

Table 2 Sample Strategy for Chemical Analysis

Location	Depth	Strata	Rationale
BH1	0.5m	Gravelly sandy Made Ground with brick fragments, metal and concrete.	Targeting the near surface contamination.
BH2	0.5m	Silty gravelly sandy Made Ground with brick fragments.	Targeting the near surface contamination.
BH3	0.5m	Clayey gravelly sandy Made Ground with brick fragments and metal.	Targeting the near surface contamination.
BH4	0.5m	Clayey gravelly sandy Made Ground with brick fragments and metal.	Targeting the near surface contamination.
TP1	0.5m	Clayey gravelly sandy Made Ground with brick fragments.	Targeting the near surface contamination.
TP2	0.5m	Sandy gravelly clayey Made Ground with brick, plastic and wood.	Targeting the odorous black clay.
TP3	1.5m	Clayey gravelly sandy Made Ground with brick fragments, wood fragments, plastic, glass, concrete and metal.	Targeting the Made Ground overlying odorous blackish brown sand (at 1.8m).
TP4	0.5m	Silty gravelly sandy Made Ground with brick fragments, wood and concrete.	Targeting the near surface contamination.
TP5	0.5m	Silty gravelly sandy Made Ground with brick fragments and concrete.	Targeting the near surface contamination.

Location	Depth	Strata	Rationale
TP6	1.10m	Boundary between orangey brown silty gravelly sandy Made Ground and reddish brown clayey gravelly sandy Made Ground.	Targeting the boundary between the two types of Made Ground.
TP7	0.9m	Boundary between orangey brown silty gravelly sandy Made Ground and the blackish brown odorous clayey gravelly sandy Made Ground.	Targeting the strata overlying odorous blackish brown Made Ground.
TP8	2.0m	Blackish brown silty gravelly sandy Made Ground with bricks, concrete and plastic.	Targeting the odorous blackish brown sand.

4.6.2 Geotechnical Testing Strategy

Bulk samples of approximately 25kg were collected from two trial pits (TP3 and TP8) excavated in the centre of the site and each borehole for geotechnical testing to characterise the ground conditions across the site. All samples were prepared in accordance with BS 1377 Pt 1:1990 for transportation to the laboratory. The sample selection rationale is detailed in Table 3.

Table 3 Sample Strategy Taken For Geotechnical Sampling

Location	Depth	Strata	Rationale
BH1	0.9m	Clayey gravelly sandy Made Ground with brick fragments, metal, plastic and concrete.	Obtain information on the properties of the Made Ground within the south eastern corner of the proposed footprint.
BH2	0.9m	Silty gravelly sandy Made Ground with brick fragments.	Obtain information on the properties of the Made Ground within the south western corner of the proposed footprint.
BH3	0.9m	Silty gravelly sandy Made Ground with brick fragments and metal.	Obtain information on the properties of the Made Ground within the north western corner of the proposed footprint.
BH4	0.9m	Clayey sandy Made Ground.	Obtain information on the Made Ground within the north eastern corner of the proposed footprint.
TP3	1.5m	Clayey gravelly sandy Made Ground with brick fragments, wood fragments, plastic, glass, concrete and metal.	Obtain information on the Made Ground within the central northern sector of the proposed footprint.
TP8	2.0m	Clayey gravelly sandy Made Ground with brick fragments and concrete.	Obtain information on the Made Ground within the central southern sector of the proposed footprint.

4.7 Topographical Survey

No topographical surveys were completed during the fieldwork.

5. LABORATORY TESTING

5.1 Chemical Laboratory Testing

Samples selected for laboratory testing and the analyses to be undertaken were made following observations noted during the intrusive investigation. The sample selection rationale was to gain general coverage across the site.

The chemical testing strategy was based on the following:

- a range of contaminants that may be associated with the site's history as a former landfill site, and their potential to cause harm to human health or the environment, and
- to characterise shallow samples for a range of determinands where exposure to contaminants will be most likely.

Soil samples were submitted to Scientific Analytical Laboratories Limited (SAL) in Braintree, which is UKAS accredited in accordance with BS EN ISO/IEC 17025:2005[2] and also MCERTS accredited for soil analysis in accordance with the Environment Agency's scheme. Details of the accreditation and methods of analysis are provided on SAL's test reports included within Appendix D and the testing suites for soil analyses were as follows:

- Metals: arsenic, cadmium, chromium, copper, mercury, nickel, selenium, zinc.
- Inorganics: total cyanide, water soluble sulphate, sulphide and pH.
- Organics: soil organic matter, total organic carbon, total phenols, speciated TPH, speciated PAHs.
- Asbestos screen

5.2 Geotechnical Laboratory Testing

Bulk samples were collected from each borehole and two trial pits (TP3 and TP8) for geotechnical testing as follows:

- Particle size distribution;
- Moisture content; and
- pH, water soluble sulphate, magnesium, chloride and nitrate (known as BRE SD1 short suite).

All samples were prepared in accordance with BS1377 Part I:1990 for transportation to the laboratory. All samples were transported to Professional Soils Laboratory (PSL), Doncaster, South Yorkshire. Details of the accreditation and methods of analysis are provided on PSL's test reports included within Appendix E.

6. GROUND CONDITIONS

6.1 General

Ground conditions were relatively consistent across the site comprising Made Ground overlying sands and gravels, which, in turn, overlies the bedrock geology of the Mercia Mudstone.

[2] BS EN ISO/IEC:2005. "General requirements for the competence of testing and calibration laboratories.

It was known that the site was occupied by a former landfill site with the accepted waste assumed to be inert. The boreholes were positioned at each corner of the proposed building footprint in order to assess the ground conditions for foundation design and also the ground gas regime. These all encountered the landfilled material to a relatively shallow depth, which was assumed to be edge of the former landfill.

6.2 Ground Surface

Ground cover across the majority of the site consisted of grass, with discrete areas of shrubs and brambles. Beneath the ground cover was a thin layer (of between 0.1m-0.3m in thickness) of soil.

6.3 Made Ground

Beneath the soil, Made Ground was encountered to various depths within the trial pits (maximum depth of 3.9m in TP8) and in all four boreholes to a maximum depth of 5.4m bgl (BH1). The minimum depth at which Made Ground was encountered within the boreholes was 4.2m bgl at BH4.

Composition of the Made Ground varied at each trial pit location, from dark orangey brown/reddish brown slightly silty/clayey gravelly/very gravelly sand with rubble and concrete blocks to black stained, odorous, slightly sandy, slightly gravelly clay. Reworked brown clays were identified in TP5. The material typically included whole and fragmented bricks, concrete rubble, paving slabs, plastic and glass bottles, rubber tubes, various metal and asphalt. Individual locations also included reworked clay, ash, electrical cables and black bag waste.

The only exception was TP1, excavated in the western sector of the site, which encountered light orangey brown mottled yellowish brown slightly silty gravelly sand from 0.7m to the base of the trial pit at 3.6m bgl. This was interpreted to be Made Ground as the nearest borehole, BH3, encountered Made Ground to a greater depth than the base of the trial pit (at a depth of 4.8m).

The Made Ground encountered in the boreholes also varied from light to dark orangey brown or greyish mottled blackish brown silty/clayey, gravelly/very gravelly sands to dark orangey brown mottled light orangey brown slightly sandy/sandy, slightly gravelly/gravelly clay. Anthropogenically derived materials typically included brick, concrete, plastic, metal, ash and asphalt.

6.4 Superficial Deposits

Sands and gravels, interpreted as Glaciofluvial deposits, were encountered underlying the Made Ground. These were generally described as typically dark orangey brown slightly silty/clayey sand with varying proportions of gravels, with several fining upwards sequences observed. The colour of the sands and gravels darkened to a reddish/greyish brown towards the base of the boreholes, which was interpreted as the base of the superficial deposits overlying the Mercia Mudstone.

6.5 Bedrock Geology

Bedrock geology of the Mercia Mudstone was encountered at one location, BH3 in the western sector of the site, at a depth of 14.2m bgl (the base of the borehole). It is described

as a dark orangey brown/reddish brown slightly clayey sandy gravel of red mudstone and marl.

6.6 Groundwater

Groundwater was encountered in BH1 at 7.2m and three trial pits: TP1 at 3.6m, TP6 at 3.4m and TP8 at 3.9m.

Groundwater was encountered in BH1 at 7.2m and subsequently rose to 6.2m. It was not possible to ascertain whether groundwater was encountered within the other three boreholes due to the addition of water to aid drilling.

Groundwater was encountered within three trial pits: TP1 noted as very slow ingress with a slight sheen at the base of the trial pit, at a depth of 3.6m bgl; TP6 noted as medium ingress from the sidewalls upon encountering grey gravels at a depth of 3.4m bgl; and TP8 noted as medium ingress at the base of the trial pit at 3.9m, which then rose to 3.8m.

6.7 Live root depth

Live root depth of the vegetation over the area typically reached between 0.2m and 0.3m bgl.

7. GENERIC QUANTITATIVE RISK ASSESSMENT

7.1 Introduction

The assessment of contamination of this stage of the site investigation has been carried out in accordance with the overall guidance presented in CLR11 Model Procedures for the Management of Land Contamination, together with the procedures as indicated in the following sections in accordance with current relevant guidance and legislation.

Generic risk assessment is a two stage process. Firstly, in the Risk Estimation stage, the measured contaminant concentrations are compared with the relevant GACs or C4SLs/S4ULs, if published. Where there is a suitable dataset, this is undertaken after carrying out statistical analysis to determine the upper confidence limit on the true mean. Otherwise, maximum or specific data points are compared directly. The second stage, Risk Evaluation, comprises an authoritative review of the findings with other pertinent information, in cases where C4SLs or GACs are exceeded, in order to consider if exceedances may be acceptable in the particular circumstances.

The aspects of risk from substances in the ground considered below are as follows:

- Human health;
- Plant life;
- Pollution of controlled waters;
- Water supply pipes;
- Below ground concrete; and
- Ground gases.

7.2 Assessment for the Protection of Human Health

The Generic Qualitative Risk Assessment (GQRA), based on a soil with a Soil Organic Matter of 1%, was carried out in accordance with the methodology set out in Appendix B for

assessing soil samples based on a residential end-use. A summary of the chemical testing results is presented in Appendix D and discussed below.

Metals

A total of 12 soil samples were tested for a range of metals within the analysis suite. Arsenic cadmium, copper, lead, nickel and zinc were present at concentrations in excess of one or more of the assessment criteria for land use as residential and/or allotments, as follows:

- Arsenic was identified at concentrations in excess of the SGV/GAC and the pC4SL/S4UL for a residential end-use with and without private gardens in one sample - TP3 at 0.5m.
- Cadmium was identified at a concentration in excess of the pC4SL/S4UL for allotments in one sample - TP3 at 0.5m.
- Copper was identified at concentrations in excess of the pC4SL/S4UL for allotments in four samples - TP2 at 0.5m, TP3 at 0.5m, TP5 at 0.5m, TP8 at 0.5m.
- Lead was identified at concentrations in excess of the pC4SL/S4UL for residential with private garden in one sample - TP3 at 0.5m; and for allotments in eight samples - TP1 at 0.5m, TP2 at 0.5m, TP3 at 0.5m, TP4 at 0.5m, TP5 at 0.5m, TP7 at 0.5m, TP8 at 0.5m, BH1 at 0.5m.
- Nickel was identified at concentrations in excess of the pC4SL/S4UL for residential with/without home grown produce and allotments and public open space in a residential setting in one sample - TP3 at 0.5m.
- Zinc was identified at concentrations in excess of the >pC4SL/S4UL for allotments in four samples - TP3 at 0.5m, TP4 at 0.5m, TP8 at 2m, BH1 at 0.5m.

None of the 12 samples contained metals at concentrations in excess of the guideline values for an industrial end-use.

PAHs

Polycyclic aromatic hydrocarbons (PAHs) are a wide range of over 200 different compounds normally associated with combustion or processing of hydrocarbons and coal. Elevated levels of PAHs can also be found in tarmac. Sixteen PAHs (usually known as the USEPA 16) comprise the more common individual carcinogenic PAH compounds with a 17th (Coronene) included in the assessment of soil for waste disposal at landfill sites. Each of the PAH compounds have different toxicity.

Of the 12 soil samples tested, three PAHs were identified at concentrations in excess of the relevant GAC / screening value at three locations:

- Benzo(b)fluoranthene was identified at a concentration in excess of the pC4L/S4UL for allotments in one sample - BH3 at 0.5m.
- Benzo(a)pyrene was identified at concentrations in excess of the SGV/GAC for a residential end-use with and without private garden in one sample - TP3 at 0.5m.
- Dibenzo(a,h)anthracene was identified at concentrations in excess of the PC4L/S4UL for allotments in two samples - TP3 at 0.5m and BH4 at 05m.

None of the PAHs were present in the 12 samples at concentrations in excess of the guideline values for an industrial end-use.

Hydrocarbons

The toxicity of the various compounds which form petroleum hydrocarbons varies decreasing from petrol range C_6 to C_{10} (often referred to as Gasoline Range Organics, GRO) to the diesel range (C_{10} to C_{25}), with the lower toxicity again for the longer chain, heavier oils and greases (C_{25} to C_{40}). Additionally the toxicity of hydrocarbons varies depending on the relative proportion of aliphatic (straight chain hydrocarbons) and aromatic (hydrocarbons formed from carbon rings).

A total of 16 soil samples were tested to determine total and speciated petroleum hydrocarbons (TPH) levels. However, all were identified at concentrations significantly lower than the relevant GAC / screening values, with the majority being below the laboratory detection limit. It should be noted, however, that the limit of detection for benzene is 1mg/kg whereas a number of assessment criteria are set at <1mg/kg. No other hydrocarbons, including in the lightest fractions, are present at concentrations that could present significant harm, therefore, it is expected benzene is also not present at elevated concentrations.

Asbestos

Asbestos can be found in soil as fragments of bulk Asbestos Containing Materials (ACMs), e.g. asbestos cement sheeting and also as discrete asbestos fibres within the soil matrix. This investigation has carried out assessments to determine whether both bulk fragments of asbestos and/or asbestos fibres are present in the soil at the site. The asbestos assessment commenced on-site with an inspection of the Made Ground by TerraConsult's engineer for the presence of bulk ACMs. During the fieldwork, no ACMs were identified.

Two different laboratory assessments were carried out in order to confirm the site assessment that ACMs were absent:

- All 12 samples were assessed by the laboratory to determine whether asbestos fibres or ACMs were present. Asbestos fibres, as Chrysotile, were found to be present in five samples: TP3 at 0.5m, TP5 at 0.5m, TP7 at 0.9m, TP8 at 2.0m, BH1 at 0.5m.
- Where asbestos was found to be present in a sample, a second stage of assessment was then carried out to determine full asbestos quantification and composition analysis. The results of the second stage are as follows:

  TP3 - 0.002% of asbestos within the overall mass

  TP5 - 0.003% of asbestos within the overall mass

  TP7 - <0.001% (detection limit)

  TP8 - 0.003% of asbestos within the overall mass

  BH1 - 0.001% of asbestos within the overall mass

Risks to Human Health (Construction Phase)

During the development works, there will be a risk from dust (that may include asbestos fibres) to on-site workers and people occupying adjacent properties. Appropriate risk assessments should be carried out by the contractor to allow appropriate controls for the mitigation of risk to the health of construction workers to be in place. This risk can be controlled to within acceptable limits by:

- Control of dust generation;
- Workers wear suitable Personal Protective Equipment (PPE);
- Having adequate site hygiene facilities allowing staff to keep a good level of

personal hygiene;

- All groundworkers should have been trained in asbestos awareness and should be aware for this being encountered during excavations. The earthworks contractor should have a contingency plan in place before any works commence in case the presence of asbestos is suspected in groundworks;
- Only permitting smoking or eating on-site in appropriate pre-designated areas.

7.3 Risk to Plant Life

Concentrations of the phytotoxic metals copper, chromium, nickel and zinc have been detected in the Made Ground in excess of the guideline values for the protection of plants as presented in the MAFF document "*Code of good agricultural practice for the protection of soil*". The results of the phytotoxic screening are presented in Table 4. It is, however, acknowledged that MAFF guidelines are based on the averaging area pH value, and that pH at the site ranged between 6.6 and 8.2.

Table 4 Phytotoxic Risk

Determinand	No. of Samples	Trigger Value* (mg/kg)	Results exceeding Trigger Value (mg/kg)	Exceeds Tier 1 Screening (Y/N)
Copper	12	200	5 samples: TP2 - 540 TP3 - 1500 TP5 - 940 TP7 - 290 TP8 - 720	Y
Chromium	12	400	None	N
Nickel	12	110	1 sample: TP3 - 260	Y
Zinc	12	300	7 samples: TP2 - 490 TP3 - 980 TP4 - 900 TP5 - 540 TP7 - 530 TP8 - 730 BH1 - 2300	Y
* Trigger value from MAFF "Code of good agricultural practice for the protection of soil" October 1998 at average pH 7.0.				

This would indicate that there are contaminants in the ground that could potentially present a risk to plant health. However, the vegetation present on-site during the fieldwork appeared healthy, with no signs of stress or die-back.

7.4 Assessment for the Protection of Controlled Waters

The risk posed to controlled waters from total soil concentrations cannot be directly assessed. The risk is assessed either by comparison of results of leachability tests carried out on soil samples, or from the direct testing of samples of groundwater to screening criteria. However, no leachability tests were carried out.

The site overlies a Secondary A aquifer and Horn Brook is located approximately 85m to the north. Thus, as the ground conditions comprise sand which would allow for the migration of contaminants through the strata, controlled waters can be considered as potential receptors to the presence of potential on-site contamination. Groundwater monitoring carried out indicates that groundwater levels are between 5.5m bgl (BH4) and 7.0m (BH2).

7.5 Water Supply Pipe Material

Plastic pipe materials are potentially vulnerable to attack from elevated levels of hydrocarbons, which can potentially lead to contamination of potable water supplies and water supply companies also require the risk to their workers from other contaminants in the ground to be assessed. The assessment has been completed in accordance with the current UK Guidance for the Specification of Water Supply Pipes to be used in Brownfield Sites (UK Water Industry Research Limited - UKWIR - 2014). This guidance provides threshold concentrations for different pipe material for various chemical groups.

The pipeline materials considered by the guidance are PE, PVC, wrapped steel, wrapped ductile iron or copper pipe and barrier pipe. PE is assessed using threshold concentrations for various chemical groups including volatile organic compounds (VOCs) with tentatively identified compounds (TICs), semi-volatile organic compounds (SVOCs) with TICs, and mineral oils. Wrapped steel, wrapped ductile iron and copper pipe ae assessed using corrosive properties. The default recommendation for water supply pipes is to use PE with other types of pipework only used if the limits for PE pipes are exceeded.

The available data indicate no exceedances for the PE water supply pipe are present with regards to hydrocarbons. However, metals are present at elevated concentrations with regards to a residential end-use and it is recommended that discussions are held with the relevant water utility company relating to pipeline materials.

7.6 Chemical Attack on Below Ground Concrete

Below ground concrete structures are potentially at risk in areas of elevated sulphates and low pH. An assessment of the soil (following the guidance published in BRE Special Digest 1, 2005) indicates that the Design Sulphate Class (DS) 1 - 3 could be applicable as sulphate (2:1) ranged between 10mg/l (TP1 and BH2) to 1900mg/1 (TP3) with pH ranging between 6.6 (BH2) and 8.2 TP5). Therefore, special precautions will be required at the site for the design of concrete in terms of the durability and structural performance.

Gross hydrocarbon contamination can also have an adverse impact on the setting of concrete, which may affect foundation construction and piling. Based on the measured concentrations of hydrocarbons at the site, there is no risk of these affecting the setting of concrete.

7.7 Ground Gas Assessment

Two rounds of ground gas monitoring were carried out by TerraConsult in September 2015 and the results are presented in Table 5. Methane was recorded only in BH1 with a maximum concentration of 2%v/v. Carbon dioxide was present in all boreholes on the first monitoring occasion with a maximum concentration of 10%v/v in BH3. However, carbon dioxide was absent in two of the boreholes (BH3 and BH4) on the second occasion and at a low concentration in another borehole (BH2). In BH1, carbon dioxide was present at a much higher concentration than on the first monitoring occasion.

Table 5 Results of Ground Gas Monitoring

Location	Date	Atmos Pressure (mb)	CH_4 (% v/v)	CO_2 (% v/v)	O_2 (% v/v)	Flow (l/hr)	Depth to Water (m bgl)	Weather Conditions
BH1	11/09/15	1003	1.0	8.6	7.7	0	6.51	Sunny
	18/09/15	998	2.0	13.1	2.0	0	6.60	Overcast, sunny spells
BH2	11/09/15	1002	0.0	6.6	12.8	0	7.00	Sunny
	18/09/15	999	0.0	0.6	19.1	0	7.03	Overcast, sunny spells
BH3	11/09/15	1004	0.0	10.0	6.7	0	6.30	Sunny
	18/09/15	1000	0.0	0.0	20.4	0	6.02	Overcast, sunny spells
BH4	11/09/15	1003	0.0	6.8	9.8	0	5.54	Sunny
	18/09/15	999	0.0	0.0	20.4	0	6.02	Overcast, sunny spells

Background information relating to the origin and production of ground gases are presented in Appendix B, together with current guidance on the assessment of ground gases. In accordance with this approach and the above measured ground gas levels, it is considered that the worst case temporal conditions may not have been measured during the monitoring period. The gas flow rates measured across the whole of the site at all of the monitoring visits was less than the instrument detection limit of 0.1 l/hr. From Table 8.5 of CIRIA C665, the worst case Characteristic Situation for the site is presented in Table 6.

Table 6 Characteristic Gas Situations

Borehole Number	Flow Rate l/h	CH_4		CO_2		Characteristic Situation
		% v/v	GSV (l/hr)	% v/v	GSV (l/hr)	
BH1	0	2.0	0	13.1	0	1 - Consider CS2
BH2	0	0	0	6.6	0	1 - Consider CS2
BH3	0	0	0	10.0	0	1 - Consider CS2
BH4	0	0	0	7.1	0	1 - Consider CS2

Based on the Ground Gas Assessment, the carbon dioxide conditions at the site are the main risk driver regarding the ground gas conditions. It is therefore recommended that Characteristic Situation 2 gas protection measures are adopted for the development in line with BS 8485:2015:

- well-constructed suspended ground floor slab;
- gas membrane (recommend 2000g DPM) sealed along joints and around service penetrations, membrane to extend across wall cavities;
- passively cross vented under floor sub-space and wall cavities.

The gas protection measures should be designed and installed in accordance with BRE 414 (2001). In addition to the above standard protection measures, it is recommended the sub-floor void and air vents of each building be inspected prior to laying the membrane to ensure no building debris is left within the sub-floor void to allowing un-restricted circulation and ventilation of air in the cavity. The Principal Contractor must ensure that the gas membrane is suitably protected from damage by follow on trades.

Due to the measured concentrations of carbon dioxide, the continuation of ground gas monitoring is recommended to provide data for input to a more detailed risk assessment as described in Section 9 of this report.

8. GEOTECHNICAL ASSESSMENT

8.1 Fieldwork Data Review

Standard penetration tests (SPTs) were carried out within the four boreholes, and the results are summarised in Table 7.

Table 7 Summary of SPTs

Borehole No.	Stratum	Depth (m)	SEATING DRIVE	TEST DRIVE	SPT N Value	Cohesive Undrained Shear Strength (kPa)	Density
			Blows for each 75mm penetration of stated penetration	Blows for each 75mm penetration of stated penetration			
BH1	AG - sand	1.5	2 1	2 8 8 8	26		Medium Dense
BH1	AG - sand	3	2 1	1 1 1 1	4		Loose
BH1	AG - sand	4.5	8 12	14 12 12 8	46		Dense
BH1	AG - sand	6	2 4	4 4 4 5	17		Medium Dense
BH1	Sand	7.5	4 3	5 6 7 9	27		Medium Dense
BH1	Sand	9	3 5	7 7 6 8	28		Medium Dense
BH1	Sand	10.5	4 5	5 6 7 8	26		Medium Dense
BH1	Sand	12	3 5	6 7 7 9	29		Medium Dense

Borehole No	Stratum	Depth (m)	SEATING DRIVE		TEST DRIVE				SPT N Value	Cohesive Undrained Shear Strength (kPa)	Density
			Blows for each 75mm penetration of stated penetration		Blows for each 75mm penetration of stated penetration						
BH1	Sand	13.5	5	6	7	7	9	11	34		Dense
BH2	AG - clay	1.5	4	3	3	3	2	1	9	50	Firm
BH2	AG - clay	3	2	1	2	1	1	1	5	28	Soft
BH2	AG - clay	4.5	2	1	2	3	2	3	10	55	Firm
BH2	Sand	6	4	5	5	5	9	12	31		Dense
BH2	Sand	7.5	2	4	5	6	7	9	27		Medium Dense
BH2	Sand	9	1	1	1	1	2	2	6		Loose
BH2	Sand	10.5	3	3	3	5	7	11	26		Medium Dense
BH2	Sand	12	3	4	50/210				>50		***Very Dense****
BH2	Sand	13.5	3	5	7	7	7	7	28		Medium Dense
BH3	AG - sand	1.5	1	1	1	1	-	1	3		Very Loose
BH3	AG – sand	3	1	1	1	1	1	1	4		Loose
BH3	AG - sand	4.5	3	2	3	3	7	9	22		Medium Dense
BH3	Sand	6	1	2	2	4	5	4	15		Medium Dense
BH3	Sand	7.5	1	3	5	5	6	7	23		Medium Dense
BH3	Sand	9	1	1	2	3	4	5	14		Medium Dense
BH3	Sand	10.5	2	4	5	4	5	7	21		Medium Dense
BH3	Sand	12	2	4	6	7	8	7	28		Medium Dense
BH3	Sand	13.5	4	5	5	6	7	8	26		Medium Dense
BH3	Gravel	14.5	8	12	50/129				>50		Very Dense
BH4	AG – sand	1.5	3	2	2	2	1	2	7		Loose
BH4	AG – sand	3	1	-	1	2	4	6	13		Medium Dense
BH4	AG – sand	4.5	5	4	4	4	4	4	16		Medium Dense

Borehole No.	Stratum	Depth (m)	SEATING DRIVE	TEST DRIVE	SPT N Value	Cohesive Undrained Shear Strength (kPa)	Density
			Blows for each 75mm penetration of stated penetration	Blows for each 75mm penetration of stated penetration			
BH4	Sand	6	3 4	4 5 6 8	23		Medium Dense
BH4	Sand	7.5	1 1	2 4 5 6	17		Medium Dense
BH4	Sand	9	1 2	2 3 5 7	17		Medium Dense
BH4	Sand	10.5	1 2	3 5 7 9	24		Medium Dense
BH4	Sand	12	2 4	6 9 10 12	37		Dense
BH4	Sand	13.5	4 6	8 10 12 15	45		Dense

*It was presumed that the cone became sand locked during the test and is therefore considered to be non-representative.

The N values for the reworked clay encountered in BH2 ranged from 28 to 55, indicating that the clay is soft to firm. Undrained shear strengths have been assessed from the SPT N-values using a correlation factor of 5.5.

The N values of the sandy Made Ground ranged from 3 in BH3 to 46 in BH1 and indicated that they varied in density from very loose to dense.

The N value for the sands and gravels underlying the Made Ground in all boreholes ranged from 6 to >50. This indicated that the sands and gravels are loose (at a depth of 9.0m in BH2) to very dense (BH2 and BH3).

It should be noted that due to the difficulty in removing the test equipment, and the medium density of the test above and below it, the 'very dense' reading in BH2 at 12m is presumed to have been caused by the cone becoming sand locked during the test. It is therefore considered to be non-representative.

8.2 Laboratory Data Review

Six bulk samples were collected from depths between 0.9m and 1.0m within the boreholes (BH1 - BH4), between 1.5m - 1.6m in TP3 and 2.0m - 2.1m in TP8 and submitted for testing. The tests commissioned included:

- Determination of moisture content (BS 1377 1990 Part 2 Clause 3.2)
- Determination of particle size distribution by wet/dry sieve (BS 1377 1990 Part 2 Clause 9.2)
- BRE SD1 "Short Suite" (pH, water soluble sulphate, magnesium, chloride, nitrate)

The results are included within Appendix E. The particle size distribution and moisture content results are summarised as follows:

- BH1: MADE GROUND - Very clayey sand and gravel - Moisture content of 21%

- BH2: Clayey SAND and GRAVEL - Moisture content of 4%
- BH3: MADE GROUND - Very gravelly very clayey sand with cobbles - Moisture content of 11%.
- BH4: Very sand very clayey GRAVEL - Moisture content of 10%.
- TP3: Very sandy very clayey GRAVEL - Moisture content of 25%
- TP8: Very sandy very clayey GRAVEL - Moisture content of 18%

An assessment of the soil (following the guidance published in BRE Special Digest 1, 2005) indicates that the Design Sulphate Class (DS) is in the range of DS1 to DS3 and the ACEC Class as AC-2 as sulphate (2:1 water soil extraction test) ranged between 10mg/l to 1200mg/1 (BH1) with pH ranging between 7.2 (BH2) and 9.4 (TP8). Therefore, special precautions will be required at the site for the design of concrete in terms of the durability and structural performance.

9. CONCLUSIONS

9.1 Environmental Risk Assessment

A generic qualitative risk assessment (GQRA) has been made based on the contaminant - pathway - receptor model as defined in Part IIA of the Environment Protection Act 1990 and in accordance with BS 10175:2011+A2:2013 “Investigation of potentially contaminated sites - code of practice”. TerraConsult carried out an intrusive investigation in August and September 2015 which involved the excavation of eight trial pits, and the installation of four boreholes within the footprint of the proposed building. Solid samples were collected from each exploratory hole at various depths and submitted for chemical testing.

Ground conditions comprised Made Ground which generally consisted of clayey gravelly sand with concrete, asphalt, brick, rubber, metal, wood and plastic. This is interpreted as the landfilled material and was present to maximum depths of 4.2m in BH4 and 6.8m in BH1. It is interpreted that the boreholes encountered the edge of the landfill site as Made Ground was encountered to a shallower depth than anticipated. It is possible that the full extent of the depth of the waste has not been determined.

Beneath the Made Ground was very gravelly sand. The Mercia Mudstone was encountered at a depth of 14.2m within one borehole in the western sector (BH3). Groundwater was encountered between depths of 5.5m in BH4 and 7.0m in BH2 on subsequent occasions.

Solid samples were analysed for a range of determinands including metals, inorganic and organic substances. Metals were present at elevated concentrations when compared with assessment criteria for a residential end-use. However, no determinands were present at elevated concentrations with regards to assessment criteria for an industrial end-use. Asbestos fibres were identified as Chrysotile within five samples. Thus, a potential risk to construction workers has been identified from the presence of asbestos fibres.

A potential risk from ground gases has been identified particularly with regards to carbon dioxide. Gas protection measures are thus recommended to be installed within new buildings.

A potential risk to groundwater has been identified from the presence of contaminants in the ground. However, the risk cannot be quantified at this stage.

9.2 Geotechnical Assessment

Ground conditions were relatively consistent across the site and were generally described to be Made Ground, overlying sands and gravels (Alluvium), which in turn overlies the Mercia Mudstone. The Made Ground was encountered to the base of the trial pits to a maximum depth of 3.9m (TP8) and was proven to depths in boreholes ranging between 1.7m (BH4) to 5.4m (BH1). The boreholes were drilled to a depth of 15.0m and due to the shallower depth of landfilled material than anticipated, it was assumed the boreholes were drilled at the edge of the former landfill.

Tests carried out in the field and in the laboratory would indicate that the material is very variable. Where clay was encountered, i.e. within BH2, this was assessed to be soft to firm. Very loose to dense sandy Made Ground and soft to firm clayey Made Ground was encountered and the sands and gravels were also assessed as loose to dense. Any foundation design based on the information gathered during the ground investigation would need to reflect the worst case bearing capacity of the ground encountered and to allow for very localised significant differences in load bearing capacity over short distances.

Moisture content ranges from 4% (clayey sand within BH2) and 25% (very sandy very clayey gravel in TP3). Sulphate and pH for the determination of design of concrete is also very variable.

9.3 Recommendations for Further Works

In order for an economic foundation design to be prepared, further geotechnical assessment will be required. This could involve further boreholes to assess the depth of the landfilled material and to assess the characteristics of the underlying Mercia Mudstone should piled foundations be proposed.

Carbon dioxide was recorded within all four boreholes on at least one occasion and methane in one borehole and thus in order to fully characterise the ground gas regime, it is recommended that ground gas monitoring be continued in accordance with guidance. It is noted that in order to carry out a comprehensive ground gas risk assessment in accordance with CIRIA C665, ground gas monitoring should be carried out on six separate occasions over a period of three months. Monitoring for ground gas should also be carried out in a range of weather conditions, such as falling atmospheric pressure, wet and dry weather and frost.

Contaminants have been identified in the Made Ground, albeit when assessed for the most sensitive use of the site, i.e. residential, and a potential risk to groundwater has been identified. Thus, in order to assess the risk to groundwater from contaminants in the ground, it is recommended that groundwater samples be collected from each of the four boreholes on-site on at least two occasions.

9.4 Health and Safety

As outlined within the HSE publication “Successful Health and Safety Management – HSG65” this report should inform the development of safe systems of work and information as an input into the safety management system. The contents of this report may be used to supplement the contents of the Health and Safety File as required under the Construction Design and Management (CDM) Regulations 2015.

When developing risk control systems, it is recommended that reference be made to the CIRIA report 132 “A guide for safe working on contaminated sites” and the HSE document “Protection of workers and the general public during the development of contaminated land – HSG66”. All risk control measures should be in accordance with the guidelines laid down within the Management of Health and Safety at Work Regulations 1999.

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APPENDICES

Appendix A

Service Constraints, Report Limitations

and Planning Requirements

Service Constraints, Report Limitations and Planning Requirements

This report (the "Services") was compiled and carried out by TerraConsult (South) Limited (TCSL) for the client named on the front of the report (the "client") in accordance with the terms of a contract between TCSL and the "client". The Services were performed by TCSL with the skill and care ordinarily exercised by a reasonable environmental consultant at the time the Services were performed. Further, and in particular, the Services were performed by TCSL taking into account the limits of the scope of works required by the client, the time scale involved and the resources, including financial and manpower resources, agreed between TCSL and the client.

Other than that expressly contained in the above paragraph, TCSL provides no other representation or warranty whether express or implied, is made in relation to the Services. Unless otherwise agreed, this report has been prepared exclusively for the use and reliance of the client in accordance with generally accepted consulting practices and for the intended purposes as stated in the agreement under which this work was completed. This report may not be relied upon, or transferred to, by any other party without the written agreement of a Director of TCSL. If a third party relies on this report, it does so wholly at its own and sole risk and TCSL disclaims any liability to such parties.

It is TCSL's understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was a significant factor in determining the scope and level of the Services. Should the purpose for which the report is used, or the proposed use of the site change, this report may no longer be valid and any further use of, or reliance upon, the report in those circumstances by the client without TCSL 's review and advice shall be at the client's sole and own risk.

The information contained in this report is protected by disclosure under Part 3 of the Environmental Information Regulations 2004 pursuant to the provisions of Regulation 12(5) without the consent in writing of a Director of TerraConsult (South) Limited.

The report has been prepared at the date shown on the front page and should be read in light of any subsequent changes in legislation, statutory requirements and industry practices. Ground conditions can also change over time and further investigations or assessment should be made if there is any significant delay in acting on the findings of this report. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of TCSL. In the absence of such written advice of TCSL, reliance on the report in the future shall be at the client's own and sole risk. Should TCSL be requested to review the report in the future, TCSL shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between TCSL and the client.

The observations and conclusions described in this report are based solely upon the Services that were provided pursuant to the agreement between the client and TCSL. TCSL has not performed any observations, investigations, studies or testing not specifically set out or mentioned within this report. TCSL is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the Services. For the avoidance of doubt, unless otherwise expressly referred to in the introduction to this report, TCSL did not seek to evaluate the presence on or off the site of asbestos, electromagnetic fields, lead paint, radon gas or other radioactive or hazardous materials.

The Services are based upon TCSL's observations of existing physical conditions at the site gained from existing documents, together with TCSL's interpretation of information including documentation, obtained from third parties and from the client on the history and usage of the site. The findings and recommendations contained in this report are based in part upon information provided by third parties, and whilst TerraConsult (South) Limited has no reason to doubt the accuracy and that it has been provided in full from those it was requested from, the items relied on have not been verified. No responsibility can be accepted for errors within third party items presented in this report. Further, TCSL was not authorised and did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the Services. TCSL is not liable for any inaccurate information or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to TCSL and

including the doing of any independent investigation of the information provided to TCSL save as otherwise provided in the terms of the contract between the client and TCSL.

Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work. Ground conditions can also be variable and as investigation excavations only allow examination of the ground at discrete locations. The potential exists for ground conditions to be encountered which are different to those considered in this report. The extent of the limited area depends on the soil and groundwater conditions, together with the position of any current structures and underground facilities and natural and other activities on site. In addition, chemical analysis was carried out for a limited number of parameters [as stipulated in the contract between the client and TCSL] based on an understanding of the available operational and historical information, and it should not be inferred that other chemical species are not present.

The groundwater conditions entered on the exploratory hole records are those observed at the time of investigation. The normal speed of investigation usually does not permit the recording of an equilibrium water level for any one water strike. Moreover, groundwater levels are subject to seasonal variation or changes in local drainage conditions and higher groundwater levels may occur at other times of the year than were recorded during this investigation.

Any site drawing(s) provided in this report is (are) not meant to be an accurate base plan, but is (are) used to present the general relative locations of features on, and surrounding, the site.

Throughout the report the term 'geotechnical' is used to describe aspects relating to the physical nature of the site (such as foundation requirements) and the term 'geoenvironmental' is used to describe aspects relating to ground-related environmental issues (such as potential contamination). However, it should be appreciated that this is an integrated investigation and these two main aspects are inter-related. The geoenvironmental sections are written in broad agreement with BS 10175:2011+A1 2013. For the geotechnical aspects of the report, the general requirements of Eurocode 7 (BS EN 1997-2:2007) providing a desk study assessment. This report shall not be considered as being a Ground Investigation Report (GIR).

Planning Requirements

The National Planning Policy Framework (NPPF, 2012) has twelve core land-use planning principles, two of which directly relate to the potential for pollution and contaminated land:

- Requirement to *"contribute to conserving and enhancing the natural environment and reducing pollution"* and setting out of a preference for developments to be on land of "*lesser environmental value*"; and
- *"encourage the effective use of land by re-using land that has been previously developed (brownfield land), providing that it is not of high environmental value.".*

In accordance with the core principles of NPPF, Paragraph 109 clarifies that enhancing the natural environment includes:

- *"preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability; and*
- *remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.".*

Paragraph 121 of NPPF states that planning policies and decisions for developments should also ensure that:

- *"the site is suitable for its new use taking account of ground conditions and land instability, including from natural hazards or former activities such as mining, pollution arising from previous uses and any proposals for mitigation including land remediation or impacts on the natural environment arising from that remediation;*
- *after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990; and*
- *adequate site investigation information, prepared by a competent person, is*

presented.".

This report has been prepared and authorised by staff that are competent as defined in the NPPF.

Unexploded Ordnance

Clients have a legal duty under the CDM 2015 Regulations to provide designers and contractors with project-specific health and safety information needed to identify hazards and risks. This includes the possibility of unexploded ordnance (UXO) being encountered on the site. Further details are given in CIRIA Report C681 (Stone et al 2009). A non-UXO specialist screening exercise has been carried out for the site by considering any evidence of UK defence activities on or near the site evident from the gathered desk study information and the unexploded aerial delivered bomb (UXB) regional risk maps produced by Zetica. Other data sources are available, but as a first stage screening exercise the freely available Zetica maps have been used. The level of risk stated is that determined by Zetica, a company experienced in the desk study, field investigation and clearance of UXO/UXB.

Appendix B

Environmental Risk Assessment

Methodology & Terminology

ENVIRONMENTAL RISK ASSESSMENT METHODOLOGY & TERMINOLOGY

LEGISLATION OVERVIEW

This report includes hazard identification and environmental risk assessment in line with the risk-based methods referred to in relevant UK legislation and guidance. Government environmental policy is based upon a "suitable for use approach," which is relevant to both the current use of land and also to any proposed future use. The contaminated land regime is the statutory regime for remediation of contaminated land that causes an unacceptable level of risk and is set out in Part 2A of the Environmental Protection Act 1990 ("EPA 1990"). The main objective of introducing the Part IIA regime is to provide an improved system for the identification and remediation of land where contamination is causing unacceptable risks to human health or the wider environment given the current use and circumstances of the land. Part IIA provides a statutory definition of contaminated land under Section 78A(2) as:

> *"any land which appears to the Local Authority in whose area it is situated to be in such a condition, by reason of substances in, on, or under the land, that:*
>
> *(a) Significant harm is being caused or there is a significant possibility of such harm being caused;*
> *or*
> *(b) Pollution of controlled waters is being, or is likely to be, caused."*

In order to assist in establishing if there is a "*significant possibility of significant harm*" there must be a "*contaminant linkage"* for potential harm to exist. That means there must be a source(s) of contamination, sensitive receptors present and a connection or pathway between the two. This combination of contaminant-pathway-receptor is termed a "contaminant linkage or CPR linkage."

Part IIA of The Environmental Protection Act 1990 is supported by a substantial quantity of guidance and other Regulations. Key implementing legislation of the Part 2A regime includes the Contaminated Land (England) Regulations 2006 (SI 2006/1380) as amended by the overarching legislation for the contaminated land regime, which implements the provisions of Part IIA of the Environmental Protection Act 1990 (as inserted by section 57 of the Environment Act 1995), came into force on 14th July 2000 together with recent amended regulations: Contaminated Land (England) (Amendment) Regulations 2012 (SI 2012/263). Revised Contaminated Land Statutory Guidance was published by DEFRA in April 2012. Part IIA defines the duties of Local Authorities in dealing with it. Part IIA places contaminated land responsibility as a part of planning and redevelopment process rather than Local Authority direct action except in situations of very high pollution risk.

In the planning process guidance is provided by National Planning Policy Framework (NPPF) of March 2012 which requires that a site which has been developed shall not be capable of being determined "contaminated land" under Part IIA. In practice, Planning Authorities require sites being developed to have a lower level of risk post development than the higher level of risk that is required in order to determine a site as being contaminated in accordance with Part IIA. This is to ensure that there is a suitable zone of safety below the level for Part IIA determination and prevent recently developed sites becoming reclassified as contaminated land if there are future legislative or technical changes (e.g. a substance is subsequently found to be more toxic than previously assessed this increases its hazard).

The criteria for assessing concentrations of contaminants and hence determining whether a site represents a hazard are based on a range of techniques, models and guidance. Within this context it is relevant to note that Government objectives are:

(a) to identify and remove unacceptable risks to human health and the environment;
(b) to seek to bring damaged land back into beneficial use;

(c) to seek to ensure that the cost burdens faced by individuals, companies and society as a whole are proportionate, manageable and economically sustainable.

These three objectives underlie the "suitable for use" approach to risk management and remediation of contaminated land. The "suitable for use" approach focuses on the risks caused by land contamination. The approach recognises that the risks presented by any given level of contamination will vary greatly according to the use of the land and a wide range of other factors, such as the underlying geology of the site. Risks therefore should be assessed on a site-by-site basis.

The "suitable for use" approach then consists of three elements:

(a) *ensuring that land is suitable for its current use* - in other words, identifying any land where contamination is causing unacceptable risks to human health and the environment, assessed on the basis of the current use and circumstances of the land, and returning such land to a condition where such risks no longer arise ("remediating" the land); the contaminated land regime provides the regulatory mechanisms to achieve this;

(b) *ensuring that land is made suitable for any new use, as planning permission is given for that new use* - in other words, assessing the potential risks from contamination, on the basis of the proposed future use and circumstances, before official permission is given for the development and, where necessary to avoid unacceptable risks to human health and the environment, remediating the land before the new use commences; this is the role of the town and country planning and building control regimes; and

(c) *limiting requirements for remediation to the work necessary to prevent unacceptable risks to human health or the environment in relation to the current use or future use of the land for which planning permission is being sought* - in other words, recognising that the risks from contaminated land can be satisfactory assessed only in the context of specific uses of the land (whether current or proposed), and that any attempt to guess what might be needed at some time in the future for other uses is likely to result either in premature work (thereby running the risk of distorting social, economic and environmental priorities) or in unnecessary work (thereby wasting resources).

The mere presence of contaminants does not therefore necessarily warrant action, and consideration must be given to the scale of risk involved for the use that the site has, and will have in the future.

OVERALL METHODOLOGY

The work presented in this report has been carried out in general accordance with recognised best practice as detailed in guidance documents such as in the CLR 11 Model Procedures for the Management of Land Contamination (Environment Agency, 2004), and BS10175:2011+A1 2013. Important aspects of the risk assessment process are transparency and justification. The particular rationale behind the risk assessments presented is given in this appendix.

The first stage of a two-staged investigation and assessment of a site is the Preliminary Investigation (BS 10175:2011), often referred to as the Phase 1 Study, comprising desk study and walk-over survey, which culminates in the Preliminary Risk Assessment. A preliminary conceptual site model (CSM) is developed which identifies potential geotechnical and geo-environmental hazards and the qualitative degree of risk associated with them. From the geo-environmental perspective, the Hazard Identification process uses professional judgement to evaluate all the hazards in terms of potential contaminant linkages (of contaminant source-pathway-receptor). Potential contaminant linkages are potentially unacceptable risks in terms of the current contaminated land regime legal framework and require either remediation or further assessment. These are normally addressed via intrusive ground investigation and generic risk assessment.

The second stage is the Ground Investigation, Generic Risk Assessment and Geotechnical Interpretation. This represents the further assessment mentioned above. The scope of the Ground Investigation is based on the findings of the Preliminary Risk Assessment and is designed to reduce uncertainty in the geotechnical and geoenvironmental hazard identification. The Ground Investigation comprises fieldwork, laboratory testing and usually also on-site monitoring. The Ground Investigation may include the Exploratory, Main and Supplementary Investigations described in BS 10175:2011+A1 2013. The results of the Ground Investigation reduce uncertainty in the geotechnical and geoenvironmental risks. Depending on the findings more detailed investigations or assessments may be required.

PRELIMINARY RISK ASSESSMENT

Current practice recommends that the determination of potential liabilities that could arise from land contamination be carried out using the process of risk assessment, whereby "risk" is defined as:

"(a) The probability, or frequency, or occurrence of a defined hazard; and
(b) The magnitude (including the seriousness) of the consequences."

The UK's approach to the assessment of environmental risk is set out in by the Department of the Environment Transport and the Regions (2000) publication "A Guide to Risk Assessment and Risk Management for Environmental Protection" (also called Greenleaves II). This established an iterative, systematic staged process which comprises:

(a) Hazard identification;
(b) Hazard assessment;
(c) Risk estimation;
(d) Risk evaluation;
(e) Risk assessment;

At each stage during the development process, the above steps are repeated as more detailed information becomes available for the site.

For an environmental risk to be present, all three of the following elements must be present:

- Source/Contaminant: hazardous substance that has the potential to cause adverse impacts;
- Receptor: target that may be affected by contamination: examples include human occupants/users of site, water resources (rivers or groundwater), or structures;
- Pathway: a viable route whereby a hazardous substance may come into contact with the receptor.

The absence of one or more of each component (contaminant, pathway, receptor) would prevent a contaminant linkage being established and there would be no significant environmental risk.

The identification of potential contaminant linkages is based on a Conceptual Model of the site, which is subject to continual refinement as additional data becomes available. As part of a Preliminary Risk Assessment (Desk Study and site walk over) a Preliminary Conceptual Site Model (PCSM) is formed. Based on the PCSM, potential contaminant linkages can be assessed. If the PCSM and hazard assessment indicate that a contaminant linkage is not of significance then no further assessment or action is required for this linkage. For each significant and potential linkage a risk assessment is carried out. The linkages which potentially pose significant risks may require a variety of responses ranging from immediate remedial action or risk management or, more commonly, further investigation and risk assessment. This next stage is termed a Phase II Main Site Investigation and should provide additional data to allow refinement of the Conceptual Site Model and assess the level of risk from each contaminant linkage.

Definition of Risk Assessment Terminology

The criteria used for risk assessment are broadly based on those presented in DETR's "A Guide to Risk Assessment and Risk Management for Environmental Protection" (2000). The Severity of the risk is classified according to the criteria in Table B.1 below:

Table B.1 Severity/Consequence of Risk	
Severe	Acute risks to human health. Catastrophic damage to buildings/property (e.g. by explosion). Direct pollution of sensitive water receptors or serious pollution of other controlled water (watercourses or groundwater) bodies.
Medium	Harm to human health from long-term exposure. Slight pollution of sensitive controlled waters (surface waters or aquifers) or pollution of other water bodies. Significant effects on sensitive ecosystems or species.
Mild	No significant harm to human health in either short or long term. No pollution of sensitive controlled waters, no more than slight pollution of non-sensitive waters. Significant damage to buildings or structures. Requirement for protective equipment during site works to mitigate health effects.
Negligible	Damage to non-sensitive ecosystems or species. Minor damage to buildings or structures. No harm or pollution of water.

The probability of the risk occurring is classified according to criteria given in Table B.2 below:

Table B.2: Probability of Risk Occurring	
High likelihood	Contaminant linkage may be present, and risk is almost certain to occur in the long term, or there is evidence of harm to the receptor.
Medium/Reasonably Foreseeable	Contaminant linkage may be present, and it is probable that the risk will occur over the long term.
Low/Unlikely	Contaminant linkage may be present and there is a possibility of the risk occurring, although there is no certainty that it will do so.
Negligible/ Not credible	Contaminant linkage may be present but the circumstances under which harm would occur are improbable.

An overall evaluation of the level of risk is gained from a comparison of the severity and probability, as shown in Table B.3 below:

Table B.3: Comparison of Severity and Probability					
		Severity			
		Severe	**Medium**	**Mild**	**Negligible**
Probability	**High likelihood**	Very High Risk	High Risk	Medium/Low Risk	Low Risk
	Medium/Reasonably Foreseeable	High Risk	Medium Risk	Low Risk	Near Zero
	Low/Unlikely	High/Medium Risk	Medium/Low Risk	Low Risk	Near Zero
	Negligible/ Not credible	Medium/Low Risk	Low Risk	Low Risk	Near Zero

The various risk rankings provide guidance for recommended actions, whether this is:

AR - Action Required, Remediation or mitigation or site investigation works required
SIR - Site Investigation Required, further assessment is required.
NAR - No Action Required.

A description of the evaluated risk is as follows:

Table B.4 – Description of the Classified Risks and Likely Action Required	
Evaluated Risk	**Recommended Actions**
Very High Risk	AR: There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR, there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation are likely to be required.
High Risk	AR: Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short term and are likely over the long term.
Moderate Risk	SI: It is possible that harm could arise to a designated receptor from an identified hazard. However, it is relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild. Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer term.
Low Risk	NAR: It is possible that harm could arise to a designated receptor from an identified hazard, but there is a low likelihood of this hazard occurring and if realised, harm would at worst normally be mild.
Near Zero	NAR: There is a negligible possibility that harm could arise to a receptor. In the event of such harm being realised, it is not likely to be severe.

GENERIC QUANTITATIVE RISK ASSESSMENT

In the following sections the current UK guidance on risks to the following receptors are discussed: human health, plant life and controlled waters

Human Health
The overall methodology for assessing the risk to human health from potential contaminants in soil is set out in the Environment Agency's guidance "Using Soil Guideline Values" SC050021/SGV Introduction, March 2009 and using the CLEA 1.06 model software. The generic assessment criteria are in accordance with the following:

- Science Report SC050021/SR2: Human health toxicological assessment of contaminants in soil;
- Science Report SC050021/SR3: Updated technical background to the CLEA model;
- Science Report SC050021/SR4: CLEA Software (Version) Handbook;
- Toxicological reports and SGV technical notes;
- Toxicological data published by LQM/CIEH (2009) and CL:AIRE/EIC/AGS (2009)
- DEFRA Development of Category 4 Screening Levels for assessment of land affected by contamination - SP1010 (December 2013).
- LQM/CIEH Suitable 4 Use Levels (S4ULs) for Human Health Risk Assessment

In March 2014 six 'proposed' Category 4 Screening Levels (pC4SL) were issued by Defra. These screening values are considered to be within Category 4 as defined in the Contaminated Land

Statutory Guidance and indicate safe levels for new developments passing through the planning system. The SGV for lead has been withdrawn, and the pC4SL for lead has been derived using current best practice. In January 2015 LQM/CIEH published S4ULs for 89 contaminants in accordance with the C4SL methodology.

Note that groundwater contamination may pose a risk to human health but that there are no relevant generic assessment criteria available for comparison. TerraConsult has derived our own assessment criteria for this.

Phytotoxic Risks
Generic assessment of phytotoxicity is by comparison with guideline values presented in the British Standard for Topsoil and the MAFF document "Code of Good agricultural practice for the protection of soil", October 1998. This is in accordance with CLR's reference to DEFRA notice CLAN 4/04.

Controlled Waters
Risks to controlled waters (groundwater and surface waters) from contaminants are assessed in accordance with the EA documents Groundwater Protection: Policy and Practice GP3 (2012) and Remedial Targets Methodology (RTM, 2006). Pollutant inputs from contaminated land sites are considered as passive inputs under the European Water Framework Directive (2000/60/EC) (WFD) and its daughter Directives, and as such are regulated under the Environment Agency's 'limit' pollution objective. Acceptable water quality targets (WQT) are defined for protection of human health (based on Drinking Water Standards (DWS)) and for protection of aquatic ecosystems (Environmental Quality Standards (EQS)). The risk posed to controlled waters from total soil concentrations cannot be directly assessed. The risk is assessed either by comparison of results of leachate tests carried out on soil samples, or from the direct testing of samples of groundwater to screening criteria. Leachate testing generally forms a conservative assessment and is not appropriate for organic contaminants.

CURRENT GUIDANCE ON INTERPRETATION OF CHEMICAL ANALYSIS OF SOILS

Contaminated land is defined under law through Part IIA of the Environmental Protection Act 1990, implemented through Section 57 of the Environment Act 1995. This supports a 'suitable for use' based approach to the risk assessment of potentially contaminated land. The site specific risk assessment is based upon assessment of plausible contaminant linkages, referred to as the contaminant-pathway- receptor model, based upon the current or proposed use of the site.

Before undertaking a risk assessment a conceptual site model is devised in order to identify the potential contaminants, pathways and receptors. The individual contaminants, pathways and receptors then need to be further investigated in order to refine the initial assessment and risk assessment undertaken.

In March 2002, the Department for Environment, Food and Rural Affairs (DEFRA) and the Environment Agency published the Contaminated Land Exposure Assessment (CLEA) Model and a series of related reports. These were designed to provide a scientifically based framework for the assessment of chronic risks to human health from contaminated land. These reports (CLR7-10) together with associated "SGV" documents were withdrawn and the following documents have been published as revised guidance to the CLEA assessment:

- Environment Agency : 2008: Using Soil Guideline Values SC050021/SGV Introduction, March 2008.
- Environment Agency : 2008: Science Report SC050021/SR2: Human health toxicological assessment of contaminants in soil.
- Environment Agency : 2008: Science Report SC050021/SR3: Updated technical background to the CLEA model.
- Environment Agency : 2008 :Compilation of Data for Priority Organic Contaminants for Derivation of Soil Guideline Values Science report SC050021/SR7

- Science Report SC050021/SR4: CLEA Software (Version) Handbook.
- DEFRA Development of Category 4 Screening Levels for assessment of land affected by contamination - SP1010 (December 2013).
- LQM/CIEH Suitable 4 Use Levels for Human Health Risk Assessment

Additional guidance on statistical assessment replacing CLR 7 is partly provided in:

- CL:AIRE: 2009: Guidance on Comparing Data With a Critical Concentration

A different approach to the statistical appraisal of data is required depending on whether the assessment of risk is to assess whether land is Contaminated Land in accordance with regulations, or whether the assessment is to assess whether the site is suitable for new development in according with Planning guidance. This is discussed further in CL:AIRE: 2009 "Guidance on Comparing Data With a Critical Concentration".

The introduction of the Contaminated Land (England) (Amendment) Regulations 2012 and Contaminated Land Statutory Guidance (DEFRA, 2012) reassessed the CLEA Model and the derived SGVs (and associated GACs calculated using the model). This re-assessment concluded that the SGVs/GACs were conservative screening criteria for determining the suitability of soil with regard to the risk to human health under the planning regime and defined a new upper limit for planning purposes which is the boundary between the new Category 3 and 4. In March and September 2014 DEFRA issued guidance on these new Category 4 Screening Levels (C4SL) and these are discussed further below.

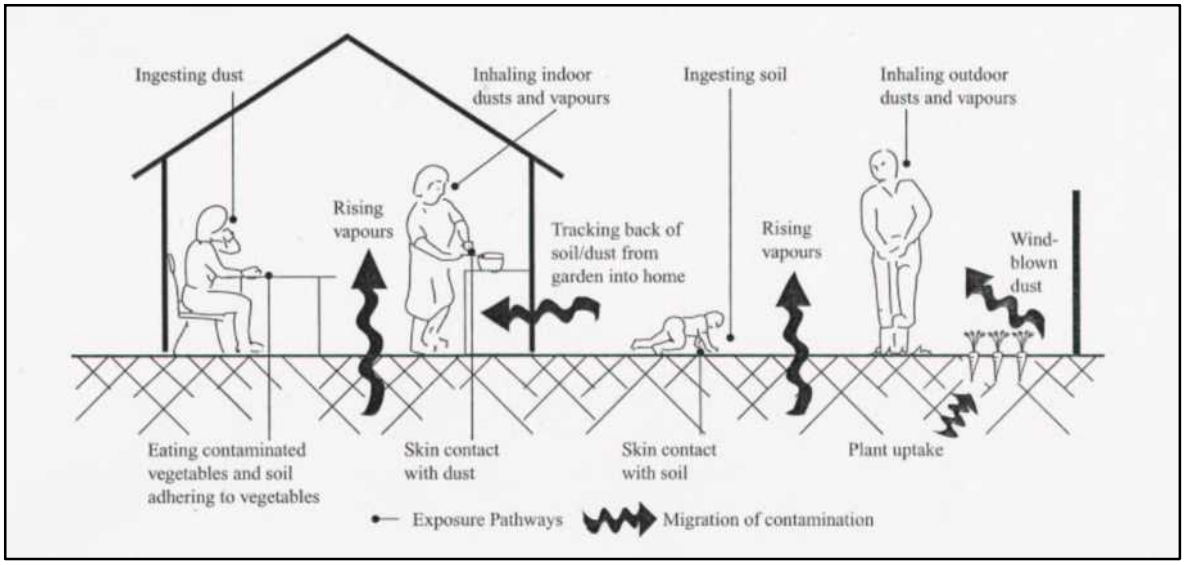
Soil Guideline Values

A program for the derivation of SGVs based on the above guidance is provided by the Environment Agency and is entitled "CLEA Software Version 1.06". These reports, together with supporting toxicology reviews ("Tox" or Supplementary Information Reports) for individual substances (which will be gradually updated), Soil Guideline Value Reports and other guidance referred to in the above documents, provide guidance and the scientific basis for assessing the risk to human health from potential contaminants. Soil Guideline Value Reports (SGV Reports) have been published for a number of contaminants and these are published on the Environment Agency website. Eventually the reports will include SGVs for:

- heavy metals and other inorganic compounds: arsenic, cadmium, chromium, cyanide, lead (now withdrawn), mercury nickel, and selenium;
- benzene, ethylbenzene, toluene and xylenes;
- phenol;
- dioxins and dioxin-like polychlorinated biphenyls (PCBs);
- polycyclic aromatic hydrocarbons (PAHs) – 11 substances.

In addition CIEH through LQM and the EIC have published generic assessment criteria (GACs) for a wide variety of other parameters including metals, hydrocarbons, chlorinated aliphatic compounds, PAHs and explosive substances for three standard land uses. These have been produced to supplement the Environment Agency guidance. These GACs will be replaced by SGVs when or if the Environment Agency publishes any more SGVs.

The CLEA model has been developed to calculate an estimated tolerable daily soil intake (TDSI) for site users given a set 'default' exposure pathways. Ten human exposure pathways are covered in the CLEA model as presented below:



- **Ingestion**
- ingestion of outdoor soil;
- ingestion of indoor dust;
- ingestion of home grown vegetables;
- ingestion of soil attached to home grown vegetables.

- **Dermal Contact**
- dermal contact with outdoor soil;
- dermal contact with indoor dust.

- **Inhalation**
- inhalation of outdoor dust;
- inhalation of indoor dust;
- inhalation of outdoor soil vapour;
- inhalation of indoor soil vapour.

It should be noted that there are other potential exposure pathways on some sites not included in the CLEA model e.g. certain organic compounds can pass through plastic water pipes into drinking water supply.

The presence and/or significance of each of the above exposure pathways are dependent on the type of land use being considered and the nature of the contaminant under scrutiny. Accordingly, the CLEA model considers for principle 'default' land use types and makes a series of 'default' assumptions with regard to human exposure frequency, duration and critical human target groups for each land use considered:

- residential land use;
- allotments;
- commercial and industrial land use.

The land use categories defined in the CLEA are detailed below.

Residential: This land use category assumes that people live in a variety of dwellings including terraced, detached and semi-detached houses up to two storeys high. The structure of buildings varies. Default parameters for building materials and building design are included in CLEA documents to calculate the relevant multi-layer diffusion coefficients for vapour intrusion and to model indoor vapour intrusion. The CLEA model assumes that regardless of

the style of housing the residents will have access to either a private garden or community open space nearby, and that soil tracked into the home will form indoor dust. It allows for the ingestion pathways from home grown vegetables.

Allotments: The CLEA model incorporates an assessment of land provided by local authorities specifically for people to grow fruit and vegetables for their own consumption. Consumption of such fruit and vegetables present several exposure pathways; plants absorb contaminants mainly via water uptake through roots, the contaminants move to edible portions of plants via translocation and contaminated soil particles become trapped in the skin and between leaves. At present the model fails to account for exposure through the consumption of animals, and their products (e.g. eggs), which have been reared on contaminated land.

Commercial/Industrial:Although there are a wide variety of workplaces and work-related activities, the CLEA assessment of this land-use assumes that work occurs in a permanent, three-storey structure, where employees spend most time indoors, conducting office-based or light physical work. The model assumes employees sit outside during breaks for most of the year. Limitations in applying this land-use to different industries is detailed in EA publication "Updated technical background to the CLEA model" (2011). The generic model assumes that the site would not be covered by hard standing. Risk of exposure to contaminants would be clearly less where commercial land is essentially all buildings and hard standing.

Based on the assumptions of each land use and the associated applicable exposure pathways, a 'Soil Guideline Value' (SGV) may be calculated for each contaminant under consideration for a particular land use in order to determine whether certain contaminant soil concentrations pose a significant risk to human health. The primary purpose of the CLEA SGVs are as 'trigger values' – indicators to a risk assessor that soil concentrations below this level require no further assessment as it can be assumed that the soil is suitable for the proposed use. Where soil concentrations occur above the SGV then further assessment of the results is required. The Contaminated Land (England) (Amendment) Regulations 2012 and Contaminated Land Statutory Guidance (DEFRA, 2012) which came into force in early April 2012 provides new clarity on the assessment of risk where soil concentrations exceed the SGV. The guidance introduces a four stage classification system relating to concentration of contaminants and the assessed risk which indicates appropriate actions. Category 1 and 2 sites are classified as "Contaminated Land" as defined in Part IIA of The Environmental Protection Act (1990). Category 3 and 4 sites are not considered as "Contaminated Land" in accordance with the Act. This can be explained using the figure on the following page.

There are also difficulties in establishing soil concentrations of contaminants beyond which risks from exposure to these contaminants would be 'unacceptable' and that they would lead to "significant possibility of significant harm" as defined in Part IIA of The Environmental Protection Act (1990) and determine that the land is "contaminated." This ultimately requires detailed 'toxicological' information of the health effects of individual contaminants and also a scientific judgement on what constitutes an 'unacceptable' risk. It is for local authorities or the Environment Agency to determine whether a particular site is contaminated land and it is for local Planning Authorities to determine whether land affected by contamination can be redeveloped.

Given the SGVs have been derived only for a limited number of contaminants and there was little prospect of further SGVs being published, two professional groupings have produced Generic Assessment Criteria (GACs) in accordance with the CLEA model for a large number of additional contaminants. These GACs were recognised in the new Contaminated Land Statutory Guidance (DEFRA, 2012) and have been produced as follows:

LQM/CIEH : 2009 Nathaniel CP, McCaffrey C, Ashmore MH, Cheng NPS GROUP, Gillett A, Ogden R & Scott D : 2009 . The LQM/CIEH Generic Assessment Criteria for Human Health Risk Assessment (2nd edition). Land Quality Press, Nottingham.

CL:AIRE/EIC/AGS: 2009 : Soil Generic Assessment Criteria (GAC) for Human Health Risk Assessment. Contaminated Land: Applications in Real Environments, Environment Industries Commission & Association of Geotechnical and Environmental Specialists. December 2009.

Category 4 Screening Levels and LQM/CIEH Suitable 4 Use Levels

For new developments progressing through the planning regime, it is desirable that the soil concentrations are within Category 4 where there is a valid contaminant linkage. The upper boundary between Category 4 and 3 is not defined in the guidance. This boundary can also be better defined by carrying out a Detailed Quantified Risk Assessment (DQRA) and this is discussed later in this appendix.

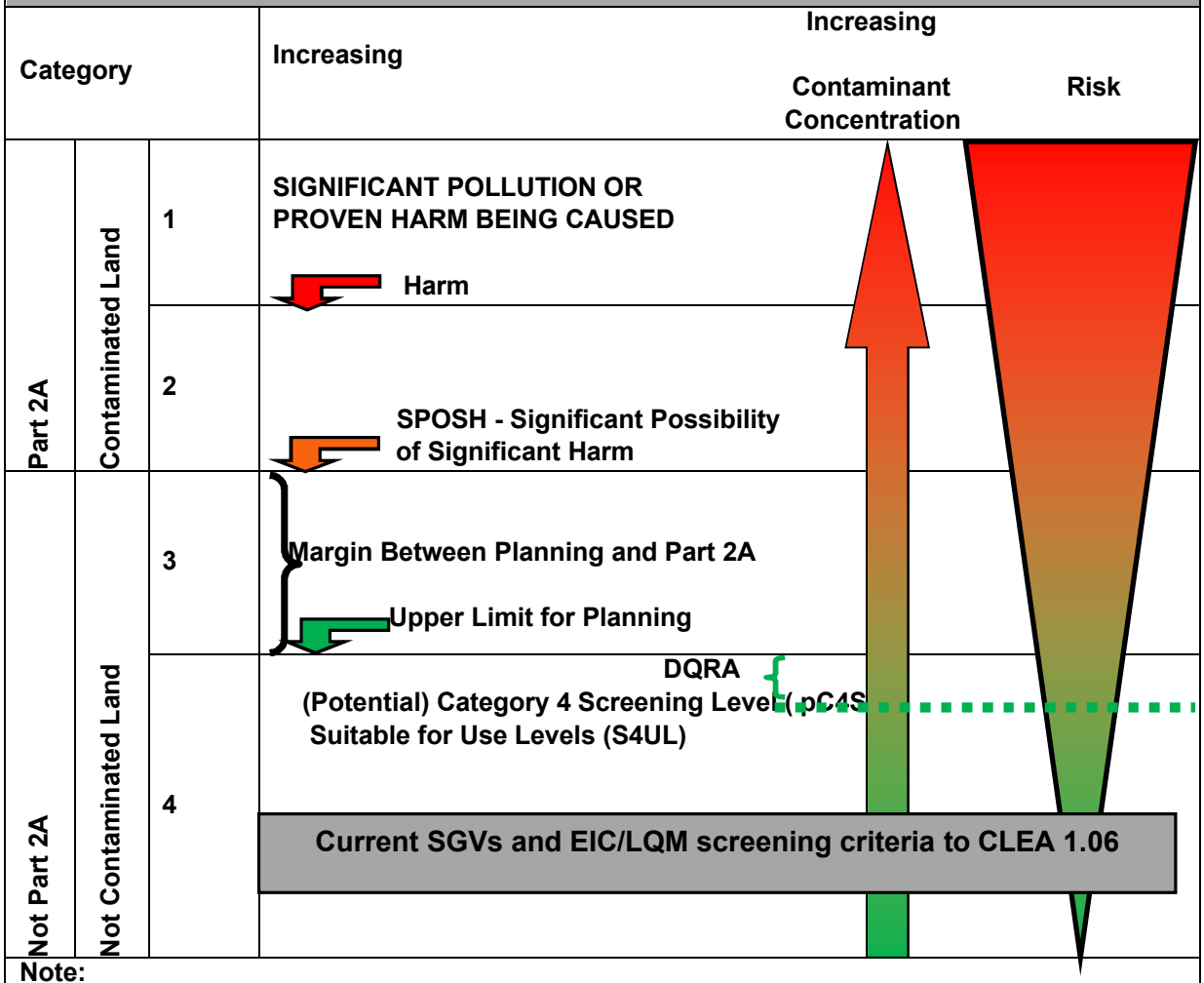
In December 2013 Defra issued the findings of a research project undertaken by CL:AIRE to set out the framework by which potential Category 4 Screening Levels (pC4SL) may be derived. The report was not designed to produce 'final' C4SL as the steering group producing the report believes that final C4SL should be set by a 'relevant authority' (e.g. Defra), the toxicological framework proposed has not been reviewed by the Committee on Toxicity and the document has yet to be subject to peer review.

In March 2014, appendices to the main Defra report were published detailing the derivation of pC4SL for 6 contaminants and other appendices regarding a review of the CIEH/CL:AIRE statistics guidance and sensitivity analysis. For each contaminant, a range of pC4SL have been produced relating to modifying toxicological parameters only, modifying exposure parameters only or by modifying both. It should be noted that the pC4SL produced for lead (the SGV was withdrawn in 2011) has undertaken a relatively large toxicological review in relation to modelling blood lead concentrations. pC4SL have been produced for:

- Arsenic;
- Benzene;
- Benzo(a)pyrene (as a surrogate marker for PAHs);
- Cadmium;
- Chromium (VI); and
- Lead

As previously discussed the values were initially published as 'potential' C4SL but have become 'final' following DEFRA having issued a policy decision letter indicating that they are to be used in the planning regime (letter of 3rd September 2014). It is considered that the pC4SL provide a simple test for deciding whether land is suitable for use without any remediation. The pC4SL represent a new set of screening levels that are more pragmatic (but strongly precautionary) compared to the existing soil guideline values (SGVs and the other GACs calculate in accordance with the existing CLEA methodology). The pC4SL provide cautious estimates of contaminant concentrations in soil that are still considered to present an acceptable level of risk, within the context of Part 2A, by combining information on toxicology, exposure assessment and normal levels of exposure to these contaminants. pC4SL values should not be seen as 'SPOH values.' Exceeding a pC4SL means that further investigation is required, not that the land is necessarily contaminated. In January 2015, LQM published Suitable 4 Use Levels (S4ULs) for a further 89 contaminants using the Defra C4SL methodology. In a similar manner to the pC4SLs, no authoritative review has been undertaken although the approach and quality of the work undertaken is widely accepted as being of high quality.

Relationship Between Contaminant Concentration, Risk and Screening Values



Note:
The vertical scale should not be considered as being linear and will be site and contaminant specific.

- SPOSH concentrations could be 10 to 100 times the SGV/EIC/LQM screening concentration.
- C4SL were issued as 'potential' but have become 'final' following DEFRA having issued a policy decision letter indicating that they are to be used in the planning regime (letter of 3rd September 2014).

Lead

The SGV for lead was withdrawn in 2011 and is not used in this report. The pC4SL for lead provides a technically robust and conservative assessment tool using significantly updated toxicological modelling in line with current scientific understanding of lead toxicology.

Public Open Space

The Defra report (December 2013) has also introduced exposure scenarios for two other commonly occurring land uses which require assessment (under the planning and Part 2A regimes) on a relatively frequent basis. These exposure scenarios are:

- Public Open Space – Space Near Residential Housing (POS_{resi}); and
- Public Open Space – Public Park (POS_{park}).

Potential use of pC4SL relating to Public Open Space (POS) require care due to the significant variability in exposure characteristics. For example, POS may include:

- Children's play areas, public parks where children practise sport several times a week and teenagers only once a week;
- Grassed areas adjacent to residential properties which are rarely used;
- Dedicated sports grounds where exposure is only to players and groundworkers; and
- Nature reserves or open ground with low level activity (for example, dog walking).

Within the Defra report (December 2013) the following exposure scenarios have been modelled as these are considered the most important for potential exposure for the critical receptor i.e. young children:

- Green open space close to housing, including tracking back of soil (POS_{resi}); and
- Park-type scenario where distance is considered sufficient to discount tracking back of soil (POS_{park}).

Detailed Quantified Risk Assessment (DQRA)

SGVs, GACs, pC4SL and S4ULs are based on a number of basic assumptions. There are two main options for developing Site Specific Assessment Criteria (SSAC) by adjusting the CLEA model so that they have greater relevance to the site:

- **Simple adjustment of the generic SGV / C4SL model**. Such adjustment is restricted to the choice of exposure routes selected for the generic land use, building type, soil type and soil organic matter content within the CLEA software.

- **Detailed adjustment.** It may be relevant to make greater modifications to the model due to the specific use of the land in question. This can include modification to any parameter value, including exposure assumptions, building parameters, and the choice and application of fate and transport models. This is equally relevant to site-specific modifications of existing generic land uses, the development of new land uses, and the inclusion of additional exposure pathways. Much of this can be undertaken using the CLEA software. Depending on the complexity of the detailed adjustments required, it may be necessary to use other tools either alone or in conjunction with the CLEA software. Both options should follow established protocols for DQRA and require sufficient justification and supporting information for the adjustments made. Detailed adjustments are likely to require substantially greater technical justification and supporting documentation, especially if modifications are based on information not contained within the SGV framework documents.

The two choices present the risk assessor with three options/decisions:

(1) Use a published SGV/GAC/pC4SL/S4UL if it can be demonstrated that the assumptions inherent in the value are appropriate to the site in question. If they are not, proceed to either option 2 or 3 below.

(2) Make simple site-specific adjustments to the generic exposure model used to derive the SSAC. Three examples of when this could be appropriate are:

a. High density residential development with no exposed contaminated soil at surface. It is appropriate in this case to consider the relevance of direct contact pathways and consumption of homegrown produce.

b. Soil type is significantly different (specifically when soil type is likely to be less protective e.g. made ground) to that assumed in the SGV/GAC/pC4SL/S4UL.

c. Soil organic matter content is significantly different to that assumed in the derivation of the SGV/GAC/pC4SL/S4UL.

(3) If simple adjustments are not sufficient to reflect site conditions, undertake a DQRA. This may be undertaken using the CLEA software or by using an alternative risk assessment methodology that is relevant, appropriate, authoritative and scientifically based. Changes to toxicological end points may also be considered, although this should only be undertaken by an toxicology expert. In the context of this guidance, simple adjustments of a generic land use scenario for soil type or SOM content for example are not considered sufficient to be classed as a DQRA.

DQRAs should be conducted with the agreement of the local authority (or the Environment Agency) since it is the authority that determines whether land is Contaminated Land or whether Planning Permission for a new development may be granted.

Representative Data

The type, quantity and quality of the available soil data influence the method chosen to obtain a site representative soil concentration that is compared with a SGV/GAC/pC4SL/S4UL in the screening process. The soil data should be representative of the exposure scenario being considered. This can include factors such as:

- averaging area over which exposure occurs;
- sample depth;
- heterogeneity of soil

where the 'averaging area' is defined as:

That area (together with a consideration of depth) of soil to which a receptor is exposed or which otherwise contributes to the creation of hazardous conditions'.

Site investigations take discrete samples from a given area (and to a certain depth). It has to be assumed that these samples are to some degree representative of the contaminant concentration throughout that volume of soil. The critical soil volume (taking into account area and depth) which might be usefully compared with a SGV/GAC/pC4SL/S4UL is a site-specific decision, but a starting point is the generic land use scenarios used in the derivation of the SGV/GAC/pC4SL/S4UL. The critical soil volume depends on two factors:

- Contaminant distribution and vertical profile (bands of highly contaminated material or lateral hot spots should not necessarily be averaged out with more extensive cleaner areas of soil without justification)
- Contribution to average exposure underpinning the SGV. Direct contact exposure pathways depend on the adult or child coming into contact with near-surface soils and the area over which that exposure occurs is usually important (i.e. the averaging area). Vapour pathways are less dependent on surface area, for example vapour intrusion may result from a highly concentrated hot spot beneath a building leading to elevated average indoor air concentrations. For the three standard land uses for which SGVs are derived, relevant considerations are:
- For the standard **residential or allotment land use**, the critical soil volume is the area of an individual garden, communal play area or working plot from the surface to a depth of between 0.5m and 1.0m. This is the ground over which children are most

likely to come into contact with soil or from which vegetable and fruit produce will be harvested. In the case of volatile contaminants, it may also be appropriate to consider the volume of soil underneath the footprint of the building although vapour intrusion may be driven by a soil volume much smaller than this if the contaminant source is highly concentrated.

- For the standard **commercial land use**, the critical soil volume has to be decided on a case-by- case basis due to the wide range of possible site layouts. However, for non-volatile contaminants, landscaped and recreational areas around the perimeter of office buildings are likely to be most important. For volatile contaminants, the footprint occupied by the building itself should also be considered.
- For **most exposure pathways**, the contamination is assumed to be at or within one metre of the surface.

The use of averaging areas must be justified on the basis of relevance to the exposure scenario. SGVs are relevant only when the exposure assumptions inherent in them are appropriate for the identified exposure averaging area. Further guidance on critical soil volumes and the consideration of averaging exposure areas can be found in:

- *Secondary model procedure for the development of appropriate soil sampling strategies for land contamination (Environment Agency, 2000);*
- *Guidance on comparing soil contamination data with a critical concentration (CIEH/CL:AIRE, 2009); and*
- *Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Appendix I (Defra December 2013, March 2014)*

It is the mean soil concentration for the individual contaminant within an individual averaging area, which is compared to the SGV. However, as contaminant concentrations vary across a site, and sampling and analysis will introduce measurement errors, the comparison between measured mean concentration and the SGV must take this uncertainty into account.

There are two principal options available to obtain site representative soil concentrations from a site investigation dataset; statistical and non-statistical methods. Data objectives, quality and quantity are likely to determine which approach is most appropriate. If statistical methods such as those presented in CIEH/CL:AIRE (2011) are to be used, sufficient data need to be available or obtained. No one single statistical approach is applicable to all sites and circumstances. The wider range of robust statistical techniques developed by organisations including the US Environmental Protection Agency (USEPA) is also important tools. Risk assessors should choose an appropriate statistical approach on the basis of the specific site and the decision that is being made. For further guidance on the appropriate use of statistical approaches, refer to USEPA 2006 or good environmental monitoring statistics textbooks.

When statistical approaches are inappropriate (this will depend on the objectives of the site investigation), individual or composite samples should be compared directly to the SGV. Guidance on use of alternative data handling approaches such as the use of composite sampling can be found in documents such as:

- *Verification of remediation of land contamination* (Environment Agency, 2010);
- *Sampling and testing of wastes to meet landfill Waste Acceptance Criteria* (Environment Agency, 2005);
- *Guidance on choosing a sampling design for environmental data collection* (USEPA, 2002);
- *Soil Quality – Sampling, ISO 10381 series* (ISO, 2002–2007).

The statistical tests should not be used as arbiters for decisions under Part 2A. They are an additional, useful line of evidence to assist in decision-making. The implications of the basis for the

derivation of the site representative soil concentration must be taken into account in any decision-making process and clearly documented.

Where the statistical tests are conducted in accordance with the method described in CL:AIRE 2009:

- For the Planning situation, it has to be demonstrated that the concentration of contaminants is low compared to the pC4SL/S4UL or SSAC. All of the test data should be below the screening criteria and no statistical analysis is required or if there are exceedances of the criteria then a statistical assessment is required. For the statistical assessment this decision is based on whether there is at least a 95% confidence level that the true mean of the dataset is lower than the screening criteria.
- For the Part 2A scenario the regulator needs to determine whether the concentration of contaminants is greater than the SGV/GAC/pC4SL/S4UL or SSAC. This decision is based on whether there is at least a 95% confidence level that the true mean of the dataset is higher than the SSAC. However, the regulator may proceed with determination if there is just a 51% probability, "on the balance of probabilities."

If the screening levels are exceeded then more sophisticated quantitative risk assessment can be undertaken or remedial action may be taken to break the contaminant linkages. The benefits of undertaking a quantitative risk assessment must be weighed against the likelihood that it will bring about cost savings in the proposed remediation. Further information about the use of soil guideline values is provided in Environment Agency : 2008: Using Soil Guideline Values SC050021/SGV Introduction, March 2008.

GENERIC RISK ASSESSMENT CRITERIA FOR RISK TO PLANTS

Soil contaminants, if present at sufficient concentrations, can have an adverse effect on the plant population. Phytotoxic effects can be manifested by a variety of responses, such as growth inhibition, interference with plant processes, contaminant-induced nutrient deficiencies and chlorosis (yellowing of leaves). All chemicals are probably capable of causing phytotoxic effects. Thus the phytotoxic potential of substances is dependent on the concentrations capable of having adverse effects on plants and the concentrations likely to be found at contaminated sites. Phytotoxicity is a difficult parameter to quantify given that experimental techniques vary widely and variations exist in plant tolerances, soil effects and synergistic/antagonistic reactions between chemicals. Contaminants may be taken up and accumulated by plants through a range of mechanisms. The principal pathways are active and/or passive uptake through the plant root, adsorption to root surfaces and volatilisation from the soil surface followed by foliar uptake. After plant uptake, contaminants may be metabolised or excreted, or they may be bioaccumulated and this is highly species dependant. Many of the substances capable of adversely affecting vegetation exert this effect because of their water solubility, a characteristic that could result in their transport from contaminated sites into adjacent locations where the chemical may generate a phytotoxic response. This could be important if, for example, the adjacent site has important conservation status.

The concentration in soil at which substances become phytotoxic depend on a range of factors including plant type, soil type, pH, the form and availability of the contaminant and other vegetation stress factors that may be present (such as drought). Some plants (including some rare plants will only grow in soils where there are relatively high concentrations which would be phytotoxic to other species. Whilst many contaminants may be phytotoxic, data are limited. Some heavy metals are essential as trace elements for plant growth but may become toxic at higher concentrations.

TerraConsult has carried out a review of a number of current and former guidance documents and other texts on phytotoxicity. It is not possible to produce a definitive list of phytotoxic substances on account of the variables mentioned above. However, a number of metals are repeatedly cited as commonly occurring priority pollutants. As a result, the following list is adopted by TerraConsult as

indicators of the potential for phytotoxicity: As, Cr, Cu, Ni and Zn (note that Boron has been excluded from this list because the more modern studies do not assess this).

As the CLEA framework is a risk based approach, applied to humans, an alternative strategy is required to assess the risk to plants from substances that are phytotoxic. Reference to published criteria and background concentrations can help put site data into context. Published assessment criteria for the protection of plant life from a number of countries are given in the following Table. The most authoritative source is the British Standard for topsoil, but this only lists three elements. CLR 11 states that the ICRCL Guidance Note 70/90 can be used for initial screening criteria. This approach has been adopted by TerraConsult where BS3882 is lacking, but where an ICRCL 70/90 criterion is lacking, the lowest criterion in Table below from, firstly UK, and, secondly, European and then other worldwide criteria. The adopted criteria are highlighted in the table 3.8. The MAFF value of 250 mg/kg has been chosen for As over the ICRCL value of 50 mg/kg as MAFF explains the 50 is applicable to vegetables and human health, whereas 250 is applicable to the plants themselves.

Table B.5: Published Assessment Criteria for Phytotoxic Elements (mg/kg)

Reference	As	CR (Total)	Cr (III)	Cr (VI)	Cu	Ni	Zn
British Standard for topsoil (BS3882:2007)	-	-	-	-	200 (pH >7) 135 (pH 6-7) 100 (pH 5.5-6.0)	110 (pH >7) 75 (pH 6-7) 60 (pH 5.5-6.0)	300 (pH >7) 200 (pH 6-7) 200 (pH 5.5-6.0)
MAFF Code of Good Agricultural Practice for the Protection of Soil (1998)	250	-	400 for sites containing sewage and sludge	-	500 (grass) but may fall to 250 for clover and sensitive species (at pH>6)	110 (pH>7) 75 (pH 6-7) 60 (pH 5.5-6.0)	1000 (clover & grass at pH 6), may fall to 300 for sensitive species (at pH 6-7)
ICRCL 59/83 (1987) now withdrawn for human health assessment	-	-	-	-	130	70	300
ICRCL 70/90 (1990) threshold trigger value	50	-	-	25 *	250	-	1000
Dutch ecotoxicological intervention value (Swartjes 1993 & 1994)	40	230	-	7	190	-	-
Australian Guideline B(1) (1999), Interim Urban Ecological Investigation Level (EIL). Soils not generally considered phytotoxic below these EILs.	20	-	400	1	100	60	200
New Zealand guidelines for timber treatment sites (1977), estimated based	-	-	-	-	500 - 1000 clay soils	-	-

on Cu bioavailability *							
New Zealand guidelines for timber treatment sites (1977), soil criteria for protection of plant life (residential/ agricultural setting)	10-20	-	600	25	130	-	-
Note * Cr (VI) is only likely to be present in as a significant proportion of total Cr where pH >12 so this does not routinely need to be tested for regarding plant health.							

CURRENT GUIDANCE FOR CONTROLLED WATERS RISK ASSESSMENT

Summary of Regulatory Content

Government policy is based upon a "suitable for use approach," which is relevant to both the current use of land and also to any proposed future use. When considering the current use of land, Part IIA of the Environment Protection Act 1990 [4] (EPA 1990) provides the regulatory regime, which was introduced by Section 57 of the Environment Act 1995 [5], which came into force in England on 1 April 2000. The main objective of introducing the Part IIA regime is to provide an improved system for the identification and remediation of land where contamination is causing unacceptable risks to human health, controlled waters or the wider environment given the current use and circumstances of the land. Part IIA provides a statutory definition of contaminated land under Section 78A(2) as:

> *"any land which appears to the Local Authority in whose area it is situated to be in such a condition, by reason of substances in, on, or under the land, that:*
>
> *(a) Significant harm is being caused or there is a significant possibility of such harm being caused; or*
>
> *(b) Pollution of controlled waters is being, or is likely to be, caused."*

Part IIA provides a statutory definition of the pollution of controlled waters under Section 78A(9) as:

> *"the entry into controlled waters of **any** poisonous, noxious or polluting matter or **any** solid waste matter"*

Part IIA is supported by a substantial quantity of guidance and other Regulations, especially for England, The Contaminated Land (England) (Amendment) Regulations 2012 and Contaminated Land Statutory Guidance (DEFRA, 2012) which came into force in early April 2012. The document re-confirms the duties of Enforcing Authorities in dealing with contamination including the role of the Environment Agency which has powers under Part 7 of The Water Resources Act (1991) to take action to prevent or remedy the pollution of controlled waters, including circumstances where the pollution arises from contamination in the land.

Part IIA introduces the concept of a contaminant linkage; where for potential harm to exist there must be a connection between the source of the hazard and the receptor via a pathway. Risk assessment in contaminated land is therefore directed towards identifying the contaminants, pathways and receptors that can provide contaminant linkages. This is known as the contaminant-pathway-receptor link (CPR or contaminant linkage).

Part IIA places contaminated land responsibility as a part of the planning and redevelopment process rather than Local Authority or Environment Agency taking direct action except in situations of very high pollution risk or where harm is occurring. In the planning process guidance is provided by National Planning Policy Framework (NPPF) of March 2012. This requires that a site which has been

developed shall not be capable of being determined "contaminated land" under Part IIA. Therefore, appropriate risk-based investigation is required to identify the contaminant linkages that can then be assessed, and then mitigated using methods that can be readily agreed with the planners.

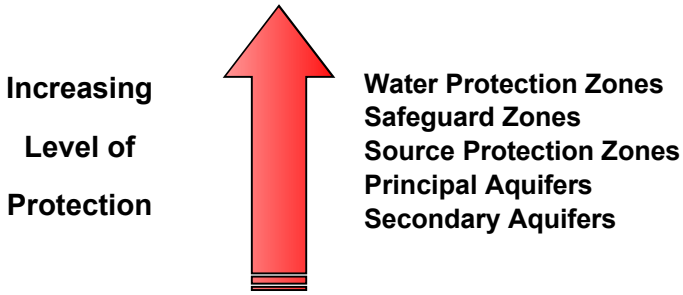
Environment Agency Guidance

Legislation and guidance surrounding the protection of controlled waters in the UK is numerous and can be complex. The Environment Agency's overall position on groundwater is *"To protect and manage groundwater resources for present and future generation in ways that are appropriate for the risks that we identify"* (Groundwater Protection : Policy and Practice GP3, 2012). In brief, the core objectives of the existing legislation serve to enforce this position.

In 1992, the National Rivers Authority published their Policy and Practice for the Protection of Groundwater (PPPG), this document was influential as it provided a focus for key developments such as Source Protection Zones (SPZs) and Groundwater Vulnerability Maps. The Policy was then revised in 1998, since which there have been substantial changes in legislation, driven by Europe. Key European Directives relating to groundwater include the Groundwater Directive (80/68/EEC) and the Water Framework Directive (2000/60/EC). Aspects of these directives are controlled by primary UK legislation such as the Water Resources Act 1991 as amended by the Water Act 2003. Further to legislative changes, gaps identified in the 1998 PPPG required addressing. These changes are reflected in the Environment Agency Policy document *Groundwater Protection: Policy and Practice (GP3), Version 1* of November 2012. The following diagram indicates the three main parts of GP3:

Structure of GP3

The Environment Agency follows a tiered, risk based approach to drinking water protection and this should be taken into account when carrying out controlled waters risk assessment:



Tools available for Risk Assessment of Controlled Waters

In order for a developer of a potentially contaminated site to fulfil their obligations under the legislation, a site assessment would be required to be undertaken in order to identify any potential risks to controlled waters and to derive suitable clean-up criteria if necessary to ensure the protection of controlled waters. A number of tools are available for this purpose and the general approach is detailed further in Part 3 of GP3.

Three main stages apply to any risk assessment of controlled waters, these are:

(1) Risk Screening (devise Conceptual Site Model, making reference to groundwater vulnerability maps, site setting etc)
(2) Generic Risk Assessment (using the EA Remedial Targets Methodology – Tier 1 - Comparison of groundwater data with relevant standards)
(3) Detailed Quantitative Risk Assessment (Consideration of aquifer properties and site specific parameters, using the EA Remedial Targets Methodology - Tiers 2 & 3)

The process is summarised below (Taken from the Environment Agency GP3 draft consultation document, 2006):

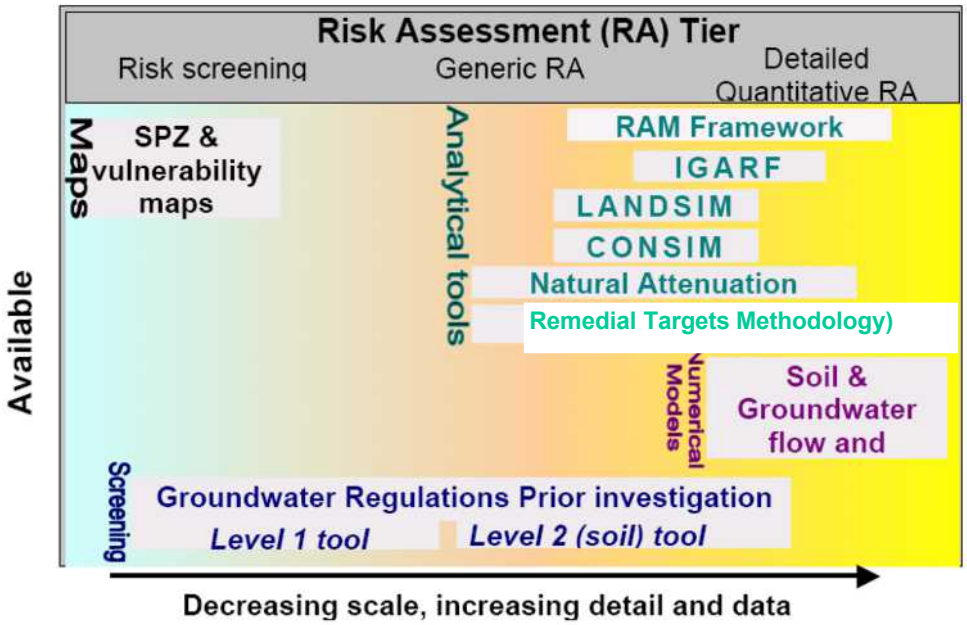


Figure 1-1 Environment Agency groundwater assessment tools, mapped against the different levels of risk assessment.

When assessing groundwater impact the Environment Agency advocate the application of their framework methodology "Remedial Targets Methodology – Hydrogeological Risk Assessment for Land Contamination" Environment Agency (2006). The methodology has four tiers of assessment:

Tier 1 utilises either a soil concentration (calculation of pore water concentrations based on partitioning calculations), leaching test or pore-water concentration of perched water as a source concentration input and these are contrasted directly to water quality standards. No dilution or attenuation is considered at Level 1.
Tier 2 (groundwater) considers dilution of the contaminant within the underlying receiving groundwater or surface water body. To determine a dilution factor the infiltration rate of pore water and the discharge of groundwater beneath the source must be determined. Level 2

Assessment is comprises a comparison between measured groundwater concentrations with to water quality standards.

Tier considers natural attenuation in the form of dispersion, retardation and degradation of the contaminant. As the levels are progressed, the assessment becomes increasingly more detailed and less conservative as the data requirements are increased with each successive tier. The Environment Agency has released Excel Worksheets to carry out basic calculations using a conservative approach up to Tier 3. However, in this case the conceptual model is a simple one and assumes there is a simple migration of contaminants from the source zone into the aquifer receptor. Using these worksheets requires a sensitivity analysis showing how by varying each parameter, what effect it might have on the outcome of the assessment. Groundwater conceptual models are not always this simple.

Tier 4 is for more complex conceptual models where multiple sources, multiple pathways, multiple receptors and complex water balances can be assessed.

The Environment Agency developed a spreadsheet based code to support the Remedial Target Methodology, and the code is capable of undertaking assessments for Tiers 1 to 3. Tier 4 assessment is not supported by the spreadsheet based code.

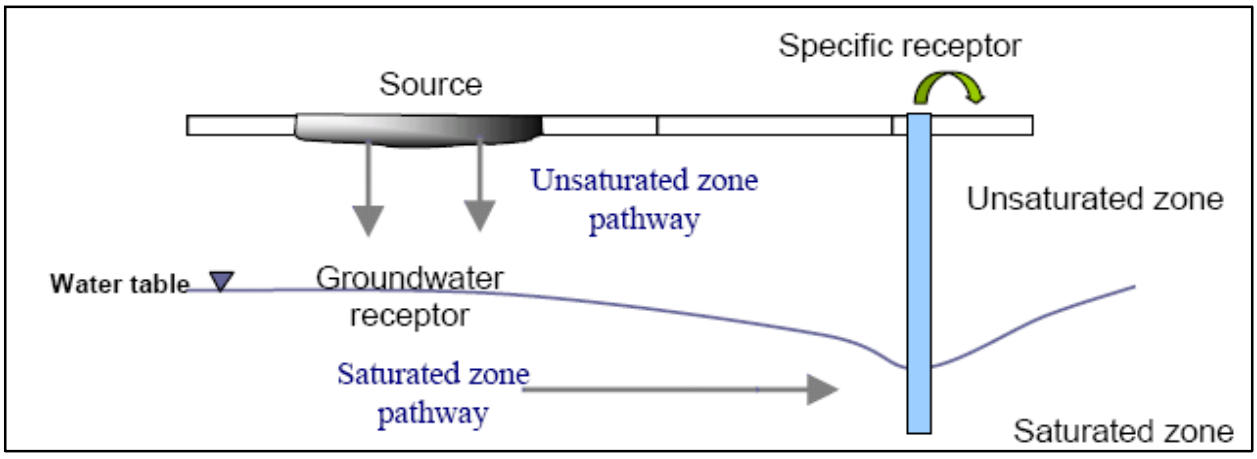
A more advanced code, ConSim 2, developed on behalf of the Environment Agency to support the Remedial Targets Methodology, allows for the introduction of additional geological horizons and is used mainly to determine the concentrations reaching a receptor and the timescales over which this may happen.

The codes assess only the dissolved phase contaminants. There are many further codes commercially available for use in controlled waters risk assessment, particularly for more complex situations, however, these should be used with caution and only once agreement has been obtained from the Environment Agency. All have the overall aim of the estimation of risk from contaminant linkages and the protection of controlled waters.

General notes on each stage of the controlled aters risk assessment process

Risk Screening

The understanding of the Conceptual Site Model (CSM) is the key to assessing any site. Using a robust CSM, potential pathways or receptors may be screened out from any further assessment at an early stage. For example if the pathway through the unsaturated zone is blocked by the presence of a significant thickness of low permeability clay. A greater understanding of the CSM is achieved with each tier of risk assessment. An example of a basic Source-Pathway-Receptor concept is given below (taken from the Environment Agency GP3, 2012):



Generic Risk Assessment

When undertaking the Generic Hydrogeological Risk Assessment (EA Remedial Targets Methodology Tier 1), comparison of chemical analytical results is made with screening criteria. Published values of screening criteria with which chemical test results can be compared are published in the following guidance:

There is a hierarchy of screening criteria which is as follows:

- Updated Recommendations on Environmental Technical Standards, River Basin Management (2015-21), April 2012 by the UK Technical Advisory Group on the Water Framework Directive;
- Environmental Quality Standards (EQS) for freshwaters based on The EC Dangerous Substances Directive (76/464/EEC and Daughter Directives);
- Surface Waters (Abstraction for Drinking Water)(Classification) Regulations (1996)
- Surface Waters (Fishlife) (Classification) Regulations (1997)
- UK Drinking Water Standards (DWS) (Water Supply (Water Quality) Regulations 2000);
- Dutch Ministry of Housing, Spatial Planning and Environment (2001) Intervention Values and Target Values – soil quality standards;
- World Health Organisation Guidelines for Drinking Water (2004)

Should the Level 1 or 2 assessments indicate threshold levels to be exceeded, then there are three alternative ways in which to proceed:

- To devise suitable remedial solutions;
- To carry out more investigation, sampling and analysis;
- To conduct a site-specific Detailed Quantitative Risk Assessment (DQRA) to whether or not the soil materials are suitable for their site-specific intended use or to devise a site-specific clean-up level.

Detailed Quantitative Risk Assessment (DQRA)

The decision to carry out a DQRA will be dependent on the extent and implications of the initial qualitative and generic assessment. The scope of any such assessment will be accurately defined by the outcomes of the former two stages. The CSM will be sufficiently refined by this stage that only certain contaminants of concern, certain pathways and certain receptors will require further assessment, the remainder having been screened out.

Additional site specific data is normally required for this stage of assessment, as explained above, more processes that are capable of affecting contaminant concentrations are considered (such as dilution and attenuation).

Remediation criteria derived will therefore be specific to each site and will be based on a detailed assessment of the potential impact at the identified receptor or *compliance point*. A greater level of confidence can be placed on the predicted impact on the compliance point following a DQRA.

Definition of Controlled Waters

The term ‘controlled waters’ is defined in Section 104 of the Water Resources Act 1991 as:

> *“Territorial Waters…which extend seawards for three miles…, coastal waters…, inland freshwaters, waters in any relevant lake or pond or of so much of any relevant river or*

watercourse as is above the freshwater limit, and ground waters, that is to say, any waters contained in underground strata."

Note that the definition of groundwater under the Water Resources Act 1991 includes all water within underground strata (including soil / pore water in the unsaturated zone). The definition of groundwater under the Groundwater Directive however is limited to water in the saturated zone. For the purposes of Part IIA of the Environmental Protection Act 1990, the Environment Agency recommends that the groundwater within the saturated zone only is considered as the receptor (rather than soil / pore water).

Environment Agency's Aquifer Designations

The Environment Agency have classified different types of aquifer from which groundwater can be extracted. The aquifer designations reflect the importance of aquifers in terms of groundwater as a resource (drinking water supply) but also their role in supporting surface water flows and wetland ecosystems. The aquifer designation data is based on geological mapping provided by the British Geological Survey.

The maps are split into two different types of aquifer designation:

- ***Superficial (Drift)*** – permeable unconsolidated (loose) deposits.
- □***edrock (Solid)*** – solid permeable formations e.g. sandstone, chalk, limestone.

The aquifer designations displayed on the Environment Agency maps are as follows:

- ***Principal Aquifers (formerly termed Ma□or Aquifers) '*** These are layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as a major aquifer.
- ***Secondary Aquifers (formerly termed Minor Aquifers) '*** These include a wide range of rock layers or drift deposits with an equally wide range of water permeability and storage. Secondary aquifers are subdivided into two types:
  - ***Secondary A*** - permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers;
  - ***Secondary*** □ - predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers.
  - ***Secondary Undifferentiated*** - has been assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.
- ***Unproductive Strata (formerly termed Non□Aquifer) '*** These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

Hazardous and Non Hazardous Substances

The Groundwater (England and Wales) Regulations 2009 control the disposal to the hydrogeological environment of potentially polluting substances which are divided into Hazardous Substances and Non-hazardous Contaminants (this roughly approximates to the former List 1 and List 2 substances).

Hazardous Substances are the most damaging and toxic and must be prevented from directly or indirectly entering the groundwater environment. Hazardous Substances include mineral oils and hydrocarbons, pesticides, biocides, herbicides, solvents and some metals. Discharge of Hazardous Substances to Controlled Waters must be prevented.

Non-hazardous Pollutants are any contaminants other than Hazardous Substances. Non-hazardous Pollutants are potentially toxic but are less harmful than Hazardous Substances, but their direct discharge to groundwater is generally not permitted and any indirect discharge to groundwater must be limited and be controlled by technical precautions in order to prevent pollution. Non-hazardous Pollutants include ammonia and nitrites, many metals and fluorides.

MANAGEMENT OF CONTAMINATED LAND

When risk assessment of the site has been completed and this indicates that remedial works are required, the main guidance in managing this process is set out in the DEFRA/EA publication CLR11 (2004) "Model Procedures for the Management of Land Contamination." The stages of managing remediation are as follows:

(a) Options Appraisal and develop Remediation Strategy;
(b) Develop Implementation Plan and Verification Plan;
(c) Remediation, Verification and Monitoring.

The Remediation Strategy sets out the remediation targets, identifies technically feasible remedial solutions and presents an evaluation of the options so that these can be assessed enabling that the most suitable solution is adopted. An outline of the proposed remedial method should be presented. Agreement should be sought of the appropriate statutory bodies for the Remediation Strategy before proceeding to the next stage.

The Implementation Plan is a detailed method statement setting out how the remediation is to be carried out including stating how the site will be managed, welfare procedures, health and safety considerations together with practical measures such as details of temporary works, programme of works, waste management licences and regulatory consents required. Agreement should again be sought of the appropriate statutory bodies for this Plan.

The Verification Plan sets out the requirements for gathering data to demonstrate that the remediation has met the required remediation objectives and criteria. The Verification Plan presents the requirements for a wide range of issues including the level of supervision, sampling and testing regimes for treated materials, waste and imported materials, required monitoring works during and post remediation, how compliance with all licenses and consents will be checked etc. Agreement should again be sought of the appropriate statutory bodies for the Verification Plan. On completion of the remediation a Verification Report should be produced to provide a complete record of all remediation activities on site and the data collected as required in the Verification Plan. The Verification Report should demonstrate that the remediation has met the remedial targets to show that the site is suitable for the proposed use.

GLOSSARY

Terms

AST	Above Ground Storage Tank
BGS	British Geological Survey
BSI	British Standards Institute
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CIEH	Chartered Institute of Environmental Health
CIRIA	Construction Industry Research Association

CLEA	Contaminated Land Exposure Assessment
CSM	Conceptual Site Model
DNAPL	Dense Non-Aqueous Phase Liquid (chlorinated solvents, PCB)
DWS	Drinking Water Standard
EA	Environment Agency
EQS	Environmental Quality Standard
GAC	General Assessment Criteria
GL	Ground Level
GSV	Gas Screening Value
HCV	Health Criteria Value
LNAPL	Light Non-Aqueous Phase Liquid (petrol, diesel)
ND	Not Detected
LMRL	Lower Method Reporting Limit
NR	Not Recorded
OD	Ordnance Datum
PAH	Poly Aromatic Hydrocarbon
PCB	Poly-Chlorinated Biphenyl
PID	Photo Ionisation Detector
PCSM	Preliminary Conceptual Site Model
SGV	Soil Guideline Value
TPH (CWG)	Total Petroleum Hydrocarbon (Criteria Working Group)
SPT	Standard Penetration Test
SVOC	Semi Volatile Organic Compound
UST	Underground Storage Tank
VCCs	Vibro Concrete Columns
VSCs	Vibro Stone Columns
VOC	Volatile Organic Compound

Units

m	Metres
km	Kilometres
%	Percent
%v/v	Percent volume in air
mb	Milli Bars (atmospheric pressure)
l/hr	Litres per hour
ha	Hectare (10,000 m^2)
µg/l	Micrograms per Litre (parts per billion)
ppb	Parts Per Billion
mg/kg	Milligrams per kilogram (parts per million)
ppm	Parts Per Million
mg/m^3	Milligram per metre cubed
Mg/m^3	Megagram per metre cubed
$µg/m^3$	Microgram per metre cubed
m bgl	Metres Below Ground Level
m bcl	Metre Below Cover Level
mOD	Metres Above Ordnance Datum (sea level)
kN/m^2	Kilo Newtons per metre squared
kPa	Kilo Pascal – same as kN/m^2
µm	Micro metre

Appendix C

Exploratory Hole Records

Trial Pit Log

TerraConsult

Personnel:		Equipment & methods:		Dimensions:	Coordinates & level:		Dates:	
Logged by:	VSS	Method:	Mechanically excavated	Width:	mE:		Start:	27/08/2015
Checked by:	DD			Length:	mN:		End:	27/08/2015
		Plant:	CAT 428	**Orientation:**	mAOD:		Logged:	27/08/2015
		Shoring:	None	Bearing =	Grid:	OSGB		

Backfill/ Instal'n	Water-strike	Legend	Level & Depth (Thickness)	Stratum Description	Samples & In Situ Testing		
					Depth	Type & No	Results
			0.20	MADE GROUND: Dark greyish brown slightly silty gravelly SAND. Gravel is of subrounded to rounded fine to medium quartz and quartzite. Occasional coarse gravel sized brick fragments. Abundant roots.			
			(0.50)	MADE GROUND: Dark orangish brown mottled light orangish brown clayey gravelly fine to medium SAND. Gravel is of angular to subrounded fine to coarse mudstone, quartz and abundant red brick fragments.	0.50 - 0.60	ES	
			0.70	Light orangish brown mottled yellowish brown slightly silty gravelly predominantly fine to medium with some coarse SAND. Gravel is of subangular to rounded fine to coarse quartz, quartzite and occasional mudstone. Pockets (300mm thick and of varying widths) of dark grey mottled light grey clayey slightly gravelly SAND.			
			(2.90)				
			3.60	Trial pit terminated at 3.60m			
					Depth	Type & No	Results

Groundwater entries:			Depth related remarks:			General remarks:	
Depth:	Rose to:	Remarks:	From	to:	Remarks:	Weather:	
3.60	3.60					Stability:	Unstable
						Remarks:	unstable in silty sand material
						Termination:	Target depth

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in meters.

Log issue: DRAFT
Scale: 1:25

Project: Meriden Quarry
Project No: 10122
Client: Earthworm

Exploratory position reference:

TP1

Sheet 1 of 1

Trial Pit Log

TerraConsult

Personnel:		Equipment & methods:		Dimensions:	Coordinates & level:		Dates:	
Logged by:	VSS	Method:	Mechanically excavated	Width:	mE:		Start:	27/08/2015
Checked by:	DD			Length:	mN:		End:	27/08/2015
		Plant:	CAT 428	**Orientation:**	mAOD:		Logged:	27/08/2015
		Shoring:	None	Bearing =	Grid:	OSGB		

Backfill/ Instal'n	Water-strike	Legend	Level & Depth (Thickness)	Stratum Description	Samples & In Situ Testing		
					Depth	Type & No	Results
			0.20 (0.20)	MADE GROUND: Dark greyish brown slightly silty gravelly SAND. Gravel is of subrounded to rounded fine to medium quartz, quartzite and occasional brick fragments. Abundant roots.			
			0.40 (0.20)	MADE GROUND: Dark orangish brown clayey very gravelly SAND. Gravel is of subangular to rounded fine to coarse quartz and quartzite with some mudstone. Frequent broken concrete of 200mm to 500mm wide, medium to coarse gravel sized brick fragments, plastic bottles and 300mm long wood fragments are present.	0.50 - 0.60	ES	
			(3.30)	MADE GROUND: Dark brown mottled blackish brown and dark greyish brown slightly sandy very gravelly CLAY. Gravel and cobble sized material predominantly concrete, rubber tubes, bricks, metal, glass bottles, 300mm long wood fragments, 5mm-10mm wide plastic and plastic black bags . Blackish brown material has a hydrocarbon odour. *0.40m: Abundant shattered plastic of 5mm to 10mm diameter in a layer 30mm thick*			
			3.70 (3.30)	Dark orangish brown slightly silty slightly gravelly clayey fine to medium SAND. Gravel is of subangular to rounded quartz and mudstone.			
			3.80	Trial pit terminated at 3.80m			
					Depth	Type & No	Results

Groundwater entries:
Depth: Rose to: Remarks:

Depth related remarks:
From to: Remarks:

General remarks:
Weather:
Stability: Stable
Remarks:

Termination: Target depth

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in meters.

Log issue: DRAFT
Scale: 1:25

Project: Meriden Quarry
Project No: 10122
Client: Earthworm

Exploratory position reference:
TP2

Trial Pit Log

TerraConsult

Personnel:		Equipment & methods:		Dimensions:	Coordinates & level:		Dates:	
Logged by:	VSS	Method:	Mechanically excavated	Width:	mE:		Start:	27/08/2015
Checked by:	DD			Length:	mN:		End:	27/08/2015
		Plant:	CAT 428	**Orientation:**	mAOD:		Logged:	27/08/2015
		Shoring:	None	Bearing =	Grid:	OSGB		

Backfill/ Instal'n	Water-strike	Legend	Level & Depth (Thickness)	Stratum Description	Samples & In Situ Testing		
					Depth	Type & No	Results
			0.20	MADE GROUND: Dark greyish brown slightly clayey gravelly SAND. Gravel is of rounded quartz, quartzite and subangular fine gravel sized brick fragments. Abundant roots.			
				MADE GROUND: Dark greyish brown occasionally mottled orangish brown slightly clayey gravelly SAND. Gravel is of subangular to rounded fine to medium quartz and mudstone. Abundant broken concrete paving of 250mm to 300mm wide, red brick, black plastic bags, glass bottles, wood fragments of 420mm length and various metal with occasional old bike tyres and telephones.	1.50 - 1.60 1.50 - 1.60	B ES	
			(3.20)	*1.80 - 3.40m: Sand darkens to mottled blackish brown with a hydrocarbon odour*			
			3.40	Trial pit terminated at 3.40m			
					Depth	Type & No	Results

Groundwater entries:
Depth: Rose to: Remarks:

Depth related remarks:
From to: Remarks:

General remarks:
Weather:
Stability: Stable
Remarks:

Termination: Target depth

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in meters.

Log issue: DRAFT
Scale: 1:25

Project: Meriden Quarry
Project No: 10122
Client: Earthworm

Exploratory position reference:
TP3

Trial Pit Log

TerraConsult

Personnel:		Equipment & methods:		Dimensions:	Coordinates & level:		Dates:	
Logged by:	VSS	Method:	Mechanically excavated	Width:	mE:		Start:	27/08/2015
Checked by:	DD			Length:	mN:		End:	27/08/2015
		Plant:	CAT 428	**Orientation:**	mAOD:		Logged:	27/08/2015
		Shoring:	None	Bearing =	Grid:	OSGB		

Backfill/ Instal'n	Water-strike	Legend	Level & Depth (Thickness)	Stratum Description	Samples & In Situ Testing		
					Depth	Type & No	Results
			0.20	Dark greyish brown slightly clayey gravelly SAND. Gravel is of rounded quartz, quartzite and subangular fine gravel sized brick fragments. Abundant roots.			
			(1.00)	MADE GROUND: Dark orangish brown slightly silty very gravelly SAND with low cobble content. Gravel is of subangular to rounded fine to coarse mudstone, quartz, broken red and yellow brick, broken plastic sheets and bags and wood fragments. Cobbles are of concrete paving slabs and various metal.	0.50 - 0.60	ES	
			1.20	MADE GROUND: Blackish brown mottled dark greyish brown slightly clayey gravelly fine to medium ashy SAND. Gravel is of subangular to rounded quartz and quartzite with frequent broken bricks, wood fragments (200mm-500mm long), metal wires and cables and glass bottles. Occasional large concrete paving slabs (500mm x 600mm) .			
			(2.50)				
			3.70	Trial pit terminated at 3.70m			
					Depth	Type & No	Results

Groundwater entries:
Depth: Rose to: Remarks:

Depth related remarks:
From to: Remarks:

General remarks:
Weather:
Stability: Unstable
Remarks: unstable at approx. 1.2m at change of strata
Termination: Target depth

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in meters.

Log issue: DRAFT
Scale: 1:25

Project: Meriden Quarry
Project No: 10122
Client: Earthworm

Exploratory position reference:
TP4

Trial Pit Log

TerraConsult

Personnel:		Equipment & methods:		Dimensions:	Coordinates & level:		Dates:	
Logged by:	VSS	Method:	Mechanically excavated	Width:	mE:		Start:	27/08/2015
Checked by:	DD			Length:	mN:		End:	27/08/2015
		Plant:	CAT 428	**Orientation:**	mAOD:		Logged:	27/08/2015
		Shoring:	None	Bearing =	Grid:	OSGB		

Backfill/ Instal'n	Water-strike	Legend	Level & Depth (Thickness)	Stratum Description	Samples & In Situ Testing		
					Depth	Type & No	Results
			0.20	MADE GROUND: Dark greyish brown slightly clayey gravelly SAND. Gravel is of rounded quartz, quartzite and subangular fine gravel sized brick fragments. Abundant roots.			
			(0.90)	MADE GROUND: Dark orangish brown slightly silty very gravelly SAND. Gravel is of subangular to rounded fine to coarse quartz, quartzite and some grey mudstone. Occasional red bricks, concrete and fragments of paving slabs (300mm x 500mm).	0.50 - 0.60	ES	
			1.10				
			(0.80)	MADE GROUND: Dark greyish brown slightly silty gravelly SAND. Gravel is of subrounded to rounded fine to medium quartz and quartzite with glass, bricks, wires, cables, plastic and concrete.			
			1.90				
			(1.40)	MADE GROUND: Firm to stiff dark orangish brown mottled dark greyish brown sandy slightly gravelly CLAY. Gravel is of subangular to rounded fine to medium quartz and quartzite with some concrete and brick. Inner tyre tubes were encountered at 3.10m with some concrete rubble, rope and metal.			
			3.30				
			(0.40)	Light orangish brown mottled yellowish brown slightly clayey gravelly SAND. Gravel is of subangular to rounded fine to coarse quartz and quartzite with some mudstone.			
			3.70	Trial pit terminated at 3.70m			
					Depth	Type & No	Results

Groundwater entries:

Depth: Rose to: Remarks:

Depth related remarks:

From to: Remarks:

General remarks:

Weather:

Stability: Unstable

Remarks: unstable in dk grey sandy strata

Termination: Target depth

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in meters.

Log issue: DRAFT

Scale: 1:25

Project: Meriden Quarry

Project No: 10122

Client: Earthworm

Exploratory position reference:

TP5

Sheet 1 of 1

Trial Pit Log

TerraConsult

Personnel:		Equipment & methods:		Dimensions:	Coordinates & level:		Dates:	
Logged by:	VSS	Method:	Mechanically excavated	Width:	mE:		Start:	27/08/2015
Checked by:	DD			Length:	mN:		End:	27/08/2015
		Plant:	CAT 428	**Orientation:**	mAOD:		Logged:	27/08/2015
		Shoring:	None	Bearing =	Grid:	OSGB		

Backfill/ Instal'n	Water-strike	Legend	Level & Depth (Thickness)	Stratum Description	Samples & In Situ Testing		
					Depth	Type & No	Results
				Dark greyish brown slightly clayey gravelly SAND. Gravel is of rounded quartz/ quartzite and subangular fine gravel sized brick fragments. Abundant roots.			
			0.20	MADE GROUND: Dark orangish brown mottled dark grey slightly silty very gravelly SAND. Gravel is of subangular to rounded fine to coarse quartz, quartzite and some grey mudstone, red brick and concrete.			
			(0.90)				
			1.10	MADE GROUND: Dark reddish brown slighlty clayey gravelly SAND. Gravel is of subrounded to rounded fine to coarse quartz and quartzite. Occasional cobble sized pockets of firm to stiff dark orangish brown mottled greyish brown sandy slightly gravelly CLAY.	1.10 - 1.20	ES	
			(2.30)				
				2.70m: 50mm diameter rubber tube on side wall at 2.7m			
	▼		3.40				
			3.50	Dark grey slightly clayey slightly sandy fine to medium GRAVEL. Gravel is of angular to subrounded fine to medium grey mudstone.			
				Trial pit terminated at 3.50m			
					Depth	Type & No	Results

Groundwater entries:

Depth:	Rose to:	Remarks:
3.40	3.40	

Depth related remarks:

From to: Remarks:

General remarks:

Weather:

Stability: Stable

Remarks:

Termination: Target depth

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in meters.

Log issue: DRAFT

Scale: 1:25

Project: Meriden Quarry

Project No: 10122

Client: Earthworm

Exploratory position reference:

TP6

Trial Pit Log

TerraConsult

Personnel:		Equipment & methods:		Dimensions:	Coordinates & level:		Dates:	
Logged by:	VSS	Method:	Mechanically excavated	Width:	mE:		Start:	27/08/2015
Checked by:	DD			Length:	mN:		End:	27/08/2015
		Plant:	CAT 428	**Orientation:**	mAOD:		Logged:	27/08/2015
		Shoring:	None	Bearing =	Grid:	OSGB		

Backfill/ Instal'n	Water-strike	Legend	Level & Depth (Thickness)	Stratum Description	Samples & In Situ Testing		
					Depth	Type & No	Results
			0.10	MADE GROUND: Dark grey brown slightly clayey gravelly SAND. Gravel is of rounded quartz and quartzite and subangular fine gravel sized brick fragments. Abundant roots.			
			(0.80)	MADE GROUND: Dark orangish brown slightly silty very gravelly SAND. Gravel is of subangular to rounded fine to coarse quartz, quartzite and some grey mudstone with subangular red bricks and concrete rubble. Occasional plastic bags, metal wire and fabric strips of 20mm thick and 600mm long.			
			0.90	MADE GROUND: Blackish brown clayey gravelly fine to coarse SAND. Gravel is fine to coarse subangular to rounded quartz and grey mudstone. Occasional coarse gravel to cobble sized pockets of soft greyish brown mottled orangish brown CLAY. Loose electrical cables of varying lengths, 300mm long wood fragments, two concrete cable piles 1500mm long and three large concrete slabs measuing between 500mm and 800mm in length. Bricks at the base of the pit.	0.90 - 1.00	ES	
			(2.60)				
			3.50	Trial pit terminated at 3.50m			
					Depth	Type & No	Results

Groundwater entries:			Depth related remarks:			General remarks:	
Depth:	Rose to:	Remarks:	From	to:	Remarks:	Weather:	
						Stability:	Unstable
						Remarks:	unstable rubble at 2m
						Termination:	Target depth

AGS Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in meters.

Log issue: DRAFT

Scale: 1:25

Project: Meriden Quarry

Project No: 10122

Client: Earthworm

Exploratory position reference:

TP7

Sheet 1 of 1

Trial Pit Log

TerraConsult

Personnel:		Equipment & methods:		Dimensions:	Coordinates & level:		Dates:	
Logged by:	VSS	Method:	Mechanically excavated	Width:	mE:		Start:	27/08/2015
Checked by:	DD			Length:	mN:		End:	27/08/2015
		Plant:	CAT 428	**Orientation:**	mAOD:		Logged:	27/08/2015
		Shoring:	None	Bearing =	Grid:	OSGB		

Backfill/ Instal'n	Water-strike	Legend	Level & Depth (Thickness)	Stratum Description	Samples & In Situ Testing		
					Depth	Type & No	Results
			0.20 (0.20)	MADE GROUND: Dark grey brown slightly clayey gravelly SAND. Gravel is of rounded quartz and quartzite and subangular fine gravel brick. Abundant roots.			
			1.90 (1.70)	MADE GROUND: Dark orangish brown slightly silty very gravelly SAND. Gravel is of subangular to rounded fine to coarse quartz and quartzite and subangular fine to coarse brick and concrete. Occasional plastic and glass bottles.			
			3.90 (2.00)	MADE GROUND: Dark blackish brown mottled greyish brown slightly clayey gravelly SAND. Gravel is of subangular to rounded fine to medium quartz, quartzite and occasional mudstone. Occasional cobble sized pockets of firm light grey mottled dark orangish brown slightly sandy slightly gravelly CLAY. Occasional bike wheels, concrete, bricks and plastic were encountered, with small pockets of ash. Blackish sand had a hydrocarbon odour.	2.00 - 2.10 2.00 - 22.10	ES B	
				Trial pit terminated at 3.90m			
					Depth	Type & No	Results

Groundwater entries:			Depth related remarks:			General remarks:	
Depth:	Rose to:	Remarks:	From	to:	Remarks:	Weather:	
3.90	3.80					Stability:	Stable
						Remarks:	
						Termination:	Target depth

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in meters.

Log issue: DRAFT
Scale: 1:25

Project: Meriden Quarry
Project No: 10122
Client: Earthworm

Exploratory position reference:

TP8

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill bit:	Logger:	Logged:	Remarks:
CP	0.00	15.00	26-08-15	27-08-15		Dando Rig	n/a	n/a	VSS	27-08-15	

Location details:

mE:
mN:
mAOD:
Grid: OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Thickness	Depth	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results
				(0.30)	0.30	TOPSOIL: Dark greyish brown sandy gravelly CLAY. Gravel is subangular to rounded fine and medium of quartz and quartzite. Abundant roots.					
				(0.40)	0.70	MADE GROUND: Light orangish brown mottled greyish brown gravelly fine and medium SAND. Gravel is subangular to rounded fine and medium of quartz and quartzite with occasional red, green or grey mudstone. Occasional fine to coarse gravel sized fragments of brick and concrete. Occasional metal wire, metal containers, plastic and fabric fragments.			0.50 - 0.60	ES	
									0.90 - 1.00	B	
				(4.10)		MADE GROUND: Blackish brown clayey gravelly fine to coarse SAND. Gravel is subangular to rounded fine to coarse of concrete, asphalt and brick. Occasional fragments of rubber, metal, wood and plastic. Hydrocarbon odour present towards base.	Dry	1.50	1.50	C	N=26 (3 for 75mm/26 for 225mm)
							Dry	3.50	3.00	C	N=4 (3 for 75mm/4 for 225mm)
							Dry	4.50	4.50	C	N=46 (20 for 75mm/46 for 225mm)
					4.80						
				(0.60)		MADE GROUND: Dark greyish brown mottled blackish brown very gravelly clayey fine to coarse SAND. Gravel is subangular to rounded fine to coarse of brick, quartz and mudstone. Hydrocarbon odour.					
					5.40	Light orangish brown mottled greyish brown clayey gravelly fine to coarse SAND. Gravel is subagular to rounded fine to coarse of quartz and mudstone.					
				(1.40)			Dry	6.00	6.00	C	N=17 (6 for 75mm/17 for 225mm)
					6.80						
				(0.40)		Dark orangish brown slightly gravelly slightly silty fine and medium SAND. Gravel is subangular to rounded fine and medium of predominately quartz and quartzite with occasional mudstone and igneous material.					
					7.20	Medium dense dark orangish brown slightly gravelly fine and medium SAND. Gravel is subrounded to rounded fine of quartzite and mudstone.	Dry	7.50	7.50	S	N=27 (7 for 75mm/27 for 225mm)
				(1.50)							
					8.70						
				(1.10)		Medium dense dark orangish brown gravelly fine and medium SAND. Gravel is subangular to rounded fine of quartzite, mudstone and occasional sandstone.	Dry	9.00	9.00	S	N=28 (8 for 75mm/28 for 225mm)
					9.80						

Stratum continues next page

Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:
7.20	6.50	7.20	

Diameter & casing:

Dia (mm):	Depth:	Casing:
		15.00

Depth related remarks:

From	to:	Remarks

Chiselling details:

From	to:	Duration:	Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in meters.

Log issue: DRAFT
Scale: 1:50

Project: Meriden Quarry
Project No: 10122
Client: Earthworm

Exploratory position reference:

BH1

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill bit:	Logger:	Logged:	Remarks:
CP	0.00	15.00	26-08-15	27-08-15		Dando Rig	n/a	n/a	VSS	27-08-15	

Location details:

mE:
mN:
mAOD:
Grid: OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Thickness	Depth	Stratum Description	Water	Casing	Depth	Type & No	Results
				(3.10)		Medium dense dark orangish brown slightly gravelly fine and medium SAND. Gravel is subangular to rounded fine of quartz and quartzite.	Dry	10.50	10.50	S	N=26 (9 for 75mm/26 for 225mm)
							Dry	12.00	12.00	S	N=29 (8 for 75mm/29 for 225mm)
					12.90						
				(2.10)		Medium dense dark orangish brown gravelly fine and medium SAND. Gravel is subangular to rounded fine to coarse of mixed lithologies.	Dry	13.50	13.50	S	N=34 (11 for 75mm/34 for 225mm)
	SP				15.00	Borehole terminated at 15.00m					

Groundwater entries:

Struck: Rose to: Casing: Sealed:

Diameter & casing:

Dia (mm): Depth: Casing:
15.00

Depth related remarks:

From to: Remarks

Chiselling details:

From to: Duration: Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in meters.

Log issue: DRAFT
Scale: 1:50

Project: Meriden Quarry
Project No: 10122
Client: Earthworm

Exploratory position reference:

BH1

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill bit:	Logger:	Logged:	Remarks:
CP	0.00	15.00	27-08-15	01-09-15		Dando Rig	n/a	n/a	VSS	01-09-15	

Location details:

mE:
mN:
mAOD:
Grid: OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Thickness	Depth	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results
					0.10	TOPSOIL: Dark greyish brown slightly clayey gravelly SAND. Gravel is rounded fine to coarse quartz and quartzite. Occasional medium and corse subangular gravel size fragments of brick. Abundant roots.					
				(1.20)		MADE GROUND: Light orangish brown slightly silty gravelly SAND. Gravel is subangular to rounded fine to medium of mixed lithologies.			0.50 - 0.60	ES	
									0.90 - 1.00	B	
					1.30	MADE GROUND: Firm orangish brown mottled light grey slightly gravelly sandy CLAY. Gravel is subangular to rounded fine to coarse of mixed lithologies. Occasional angular medium gravel sized fragments of brick and concrete.	Dry	1.50	1.50	C	N=9 (7 for 75mm/9 for 225mm)
				(3.90)			Dry	3.00	3.00	C	N=5 (3 for 75mm/5 for 225mm)
							Dry	4.50	4.50	C	N=10 (3 for 75mm/10 for 225mm)
					5.20	Medium dense dark orangish brown mottled yellowish brown very gravelly slightly silty fine to coarse SAND. Gravel is subangular to rounded fine to coarse of mixed lithologies.					
				(2.20)			Dry	6.00	6.00	C	N=31 (9 for 75mm/31 for 225mm)
					7.40	Medium dense dark orangish brown mottled yellowish brown slightly silty fine to coarse SAND. Rare gravel of subrounded to rounded fine and medium quartz and quartzite.	Dry	7.50	7.50	C	N=27 (6 for 75mm/27 for 225mm)
				(2.90)							
							Dry	9.00	9.00	C	N=6 (2 for 75mm/6 for 225mm)

Stratum continues next page

Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
		15.00

Depth related remarks:

From	to:	Remarks

Chiselling details:

From	to:	Duration:	Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in meters.

Log issue: DRAFT
Scale: 1:50

Project: Meriden Quarry
Project No: 10122
Client: Earthworm

Exploratory position reference:

BH2

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill bit:	Logger:	Logged:	Remarks:
CP	0.00	15.00	27-08-15	01-09-15		Dando Rig	n/a	n/a	VSS	01-09-15	

Location details:

mE:
mN:
mAOD:
Grid: OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Thickness	Depth	Stratum Description	Samples & In Situ Testing				
							Water	Casing	Depth	Type & No	Results
					10.30	Medium dense dark orangish brown mottled yellowish brown gravelly slightly silty fine to coarse SAND. Gravel is subangular to rounded fine to coarse of mixed lithologies.	Dry	10.50	10.50	C	N=26 (6 for 75mm/26 for 225mm)
				(3.20)			Dry	12.00	12.00	C	55 (7 for 75mm/55 for 135mm)
					13.50	Medium dense dark orangish brown slightly silty slightly gravelly SAND. Gravel is subangular to rounded fine and medium of mixed lithologies.	Dry	13.50	13.50	C	N=28 (8 for 75mm/28 for 225mm)
	SP			(1.50)							
					15.00	Borehole terminated at 15.00m					
							Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck: Rose to: Casing: Sealed:

Diameter & casing:

Dia (mm): Depth: Casing:
15.00

Depth related remarks:

From to: Remarks

Chiselling details:

From to: Duration: Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in meters.

Log issue: DRAFT
Scale: 1:50

Project: Meriden Quarry
Project No: 10122
Client: Earthworm

Exploratory position reference:

BH2

Sheet 2 of 2

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill bit:	Logger:	Logged:	Remarks:
CP	0.00	14.80	01-09-15	02-09-15		Dando Rig	n/a	n/a	VSS	02-09-15	

Location details:

mE:
mN:
mAOD:
Grid: OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Thickness	Depth	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results
					0.10	TOPSOIL: Dark greyish brown slightly clayey gravelly SAND. Gravel is rounded fine to coarse quartz and quartzite and subangular fine brick. Abundant roots.					
				(1.20)		MADE GROUND: Dark greyish brown mottled blackish brown gravelly slightly clayey SAND. Gravel is subangular to rounded fine to coarse of mixed lithologies. Rare pockets (up to 200mm diameter) of dark brown slightly sandy CLAY. Rare whole bricks. Rare 2mm diameter wire.			0.50 - 0.60	ES	
									0.90 - 1.00	B	
					1.30	MADE GROUND: Dark orangish brown gravelly clayey fine and medium SAND. Gravel is subangular to rounded of mudstone, quartz and igneous material. Occasional fragments of medium and coarse gravel sized angular brick fragments.	Dry	1.50	1.50	C	3 (2 for 75mm/3 for 225mm)
				(2.90)			Dry	3.00	3.00	C	N=4 (2 for 75mm/4 for 225mm)
					4.20						
					4.30	MADE GROUND: Dark grey slightly gravelly clayey SAND. Gravel is subrounded to rounded fine of quartz and mudstone.					
				(0.50)		MADE GROUND: Dark orangish brown slightly gravelly clayey SAND. Gravel is subrounded to rounded of quartz, mudstone and brick. Rare clods (up to 100mm diameter) of dark orangish brown slightly gravelly sandy CLAY.	Dry	4.50	4.50	C	N=22 (5 for 75mm/22 for 225mm)
					4.80	Medium dense dark orangish brown slightly gravelly clayey fine and medium SAND. Gravel is subangular to rounded of quartz, quartzite and mudstone.					
				(2.70)			Dry	6.00	6.00	C	N=15 (3 for 75mm/15 for 225mm)
					7.50						
						Medium dense dark orangish brown slightly silty fine and medium SAND. Rare gravel of subangular to rounded fine and medium quartz and quartzite.	Dry	7.50	7.50	C	N=23 (4 for 75mm/23 for 225mm)
				(3.30)							
							Dry	9.00	9.00	C	N=14 (2 for 75mm/14 for 225mm)

Stratum continues next page

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
		14.50

Depth related remarks:

From	to:	Remarks

Chiselling details:

From	to:	Duration:	Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in meters.

Log issue: DRAFT
Scale: 1:50

Project: Meriden Quarry
Project No: 10122
Client: Earthworm

Exploratory position reference:

BH3

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill bit:	Logger:	Logged:	Remarks:
CP	0.00	14.80	01-09-15	02-09-15		Dando Rig	n/a	n/a	VSS	02-09-15	

Location details:

mE:
mN:
mAOD:
Grid: OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Thickness	Depth	Stratum Description
					10.80	
				(1.60)		Medium dense dark orangish brown slightly silty gravelly fine and medium SAND. Gravel is subangular to rounded of quartz, quartzite and mudstone.
					12.40	
				(1.80)		Medium dense dark greyish brown slightly silty gravelly SAND. Gravel is subangular to rounded fine to coarse of quartz, quartzite and mudstone. Occasional pockets (up to 200mm) of firm to stiff dark orangish brown slightly gravelly sandy CLAY. Gravel is subangular to rounded fine and medium of green and red mudstones and marl.
					14.20	
				(0.60)		Very dense dark orangish brown clayey sandy subangular to rounded fine and medium GRAVEL of red mudstone and marl.
	SP				14.80	Borehole terminated at 14.80m

Samples & In Situ Testing

Water	Casing	Depth	Type & No	Results
Dry	10.50	10.50	C	N=21 (6 for 75mm/21 for 225mm)
Dry	12.00	12.00	C	N=28 (6 for 75mm/28 for 225mm)
Dry	13.50	13.50	C	N=26 (9 for 75mm/26 for 225mm)
Dry	14.50	14.50	C	58 (20 for 75mm/58 for 129mm)

Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
		14.50

Depth related remarks:

From	to:	Remarks

Chiselling details:

From	to:	Duration:	Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in meters.

Log issue: DRAFT
Scale: 1:50

Project: Meriden Quarry
Project No: 10122
Client: Earthworm

Exploratory position reference:

BH3

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill bit:	Logger:	Logged:	Remarks:
CP	0.00	14.50	03-09-15	04-09-15		Dando Rig	n/a	n/a	VSS	04-09-15	

Location details:

mE:
mN:
mAOD:
Grid: OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Thickness	Depth	Stratum Description	Water	Casing	Depth	Type & No	Results
					0.10	TOPSOIL: Dark greyish brown slightly clayey gravelly SAND. Gravel is rounded fine and medium of quartz, quartzite and brick. Abundant roots.					
					0.30	MADE GROUND: Firm dark reddish brown occasionally mottled light grey slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse of mixed lithologies. Occasional cobble size fragments of tarmac (hydrocarbon odour). Occasional red bricks. Occasional wood fragments (up to 10mm).			0.50 - 0.60	ES	
				(1.40)					0.90 - 1.00	B	
						MADE GROUND: Dark reddish brown clayey gravelly SAND. Gravel is subangular to rounded fine to coarse of mixed lithologies. Occasional coarse gravel size brick fragments. *0.50m: Sandstone cobble and metal fragments.*	Dry	1.50	1.50	C	N=7 (5 for 75mm/7 for 225mm)
					1.70	Soft to firm dark reddish brown slightly gravelly sandy CLAY with pockets (up to 20mm) of yellowish brown fine and medium SAND. Gravel is subangular to rounded fin eto coarse of mixed lithologies.					
				(2.50)			Dry	3.00	3.00	C	N=13 (1 for 75mm/13 for 225mm)
					4.20	Medium dense dark orangish brown slightly silty very gravelly SAND with occasional medium and coarse gravel sized pockets of dark orangish brown sandy CLAY. Gravel is subrounded to rounded fine and medium of quartz, quartzite and mudstone.	Dry	4.50	4.50	C	N=16 (9 for 75mm/16 for 225mm)
				(1.90)							
					6.10	Medium dense dark orangish brown slightly silty slightly gravelly subangular to subrounded predominately fine with occasional medium of quartz and mudstone.	Dry	6.00	6.00	C	N=23 (7 for 75mm/23 for 225mm)
							Dry	7.50	7.50	C	N=17 (2 for 75mm/17 for 225mm)
				(5.10)							
							Dry	9.00	9.00	C	N=17 (3 for 75mm/17 for 225mm)

Samples & In Situ Testing

Stratum continues next page

Groundwater entries:

Struck: Rose to: Casing: Sealed:

Diameter & casing:

Dia (mm): Depth: Casing:
14.20

Depth related remarks:

From to: Remarks

Chiselling details:

From to: Duration: Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in meters.

Log issue: DRAFT

Scale: 1:50

Project: Meriden Quarry

Project No: 10122

Client: Earthworm

Exploratory position reference:

BH4

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill bit:	Logger:	Logged:	Remarks:
CP	0.00	14.50	03-09-15	04-09-15		Dando Rig	n/a	n/a	VSS	04-09-15	

Location details:

mE:
mN:
mAOD:
Grid: OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Thickness	Depth	Stratum Description
					11.20	
				(3.00)		Medium dense to dense dark orangish brown slightly silty gravelly SAND. Gravel is subrounded to rounded fine to medium of quartz, quartzite and mudstone.
					14.20	
	SP			(0.30)		Firm to stiff dark reddish brown slightly sandy slightly gravelly CLAY. Gravel is of subrounded to rounded fine to medium mudstone, quartzite and greenish marls. Rare cobbles.
					14.50	Borehole terminated at 14.50m

Samples & In Situ Testing

Water	Casing	Depth	Type & No	Results
Dry	10.50	10.50	C	N=24 (3 for 75mm/24 for 225mm)
Dry	12.00	12.00	C	N=37 (6 for 75mm/37 for 225mm)
Dry	13.50	13.50	C	N=45 (10 for 75mm/45 for 225mm)

Water | Casing | Depth | Type & No | Results

Groundwater entries:

Struck: Rose to: Casing: Sealed:

Diameter & casing:

Dia (mm): Depth: Casing:
14.20

Depth related remarks:

From to: Remarks

Chiselling details:

From to: Duration: Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in meters.

Log issue: DRAFT
Scale: 1:50

Project: Meriden Quarry
Project No: 10122
Client: Earthworm

Exploratory position reference:

BH4

Exploratory Hole Key Sheet

TerraConsult

SAMPLES:

Undisturbed:	
U	Driven tube sample
UT	Thin wall driven tube sample
TW	Pushed thin wall tube sample
P	Pushed piston sample
L	Liner sample (from windowless or similar sampler), full recovery unless otherwise stated
CBR	CBR mould sample
BLK	Block sample
CS	Core sample (from rotary core) taken for laboratory testing
Disturbed:	
D	Small sample
B	Bulk sample
AMAL	Amalgamated sample
Environmental:	
ES	Environmental soil sample
EW	Environmental water sample

Comments:

Sample reference numbers are assigned to every sample taken. A sample reference of 'NR' indicates that an attempt was made to take a tube sample; however, there was no recovery. Sample recovery is given as a percentage.

TESTS:

SPT S or SPT C	Standard Penetration Test, open shoe (S) or solid cone (C)

The Standard Penetration Test is defined in BS EN ISO 22476-3 (2005). The incremental blow counts are given in the Field Records column; each increment is 75mm unless stated otherwise and any penetration under self weight in mm (SW) is noted. Where the full 300mm test drive is achieved the total number of blows for the test drive is presented as N = ** in the Test column. Where the test drive blows reach 50 (either in total or for a single increment) the total blow count beyond the seating drive is given (without the N = prefix).

ICBR	In situ CBR
IV	In situ vane shear strength, peak (p) and remoulded (r), kPa
HV	Hand vane shear strength, peak (p) and remoulded (r), kPa
PP	Pocket penetrometer test, converted to shear strength, kPa
KFH, KRH, KPI	Variable head permeability tests (KFH = falling head test, KRH = rising head test, KPI = packer test), permeability value

Test results provided in Field Records column

DRILLING RECORDS:

The mechanical indices (TCR/SCR/RQD & If) are defined in BS 5930: 2015 and BS EN ISO 22575-1 (2006)

TCR	Total Core Recovery, %
SCR	Solid Core Recovery, %
RQD	Rock Quality Designation, %
If	Fracture spacing, mm. Minimum, typical and maximum spacings are presented.
NI	Non intact is used where the core is fragmented.
CRF	Core recovered (length in m) in the following run
AZCL	Assessed zone of core loss
NR	Not recovered

GROUNDWATER:

Groundwater strike

Groundwater level after standing period

INSTRUMENTATION:

Details of installations are given on the Record. Legend column shows installed instrument depths including slotted pipe section or tip depth, response zone filter material type and layers of backfill. The type of instrument installed is indicated by a code adjacent to the Legend column at the base of the instrument.

SP	Standpipe
SPIE	Standpipe piezometer
PPIE	Pneumatic piezometer
EPIE	Electronic piezometer
HPIE	Hydraulic piezometer
GMP	Gas monitoring standpipe
ICE	Biaxial inclinometer
ICM	Inclinometer tubing for use with probe
SLIP	Slip indicator
ESET	Electronic settlement cell/gauge
ETM	Magnetic extensometer settlement point
ETR	Rod extensometer

EXPLORATORY HOLE TYPE:

CP	Cable percussion
DP	Dynamic probe
DCP	Dynamic cone penetrometer
HA	Hand auger
IP	Inspection pit
OP	Observation pit/trench
RC	Rotary core
RO	Rotary open hole
SH	Shaft
SNC	Sonic (resonance)
TP	Trial pit/trench
TRAV	Traverse
WLS	Windowless (dynamic) sample
WS	Window (dynamic) sample

AGS

Project: **Meriden Quarry**

Project No: **10122**

Client: **Earthworm**

Reference

KEY SHEET

Photograph 1: TP1 - The upper 0.7m of Made Ground.

Photograph 2: TP1 - Light orangey brown silty sand arisings from between 0.7m and 3.6m

Photograph 3: TP1 - Collapse of the silty sand at 2.4m

Photograph 4: TP2 - Shattered plastic layer at 0.4m at the change between the orangey brown sand and the organic blackish clay containing concrete, rubber, bricks and other material. The black clay had a hydrocarbon odour.

Photograph 5: TP2 - Close up of rubble, plastic and wood in the clay arisings.

Photograph 6: TP2 - Damp black organic material within the clay and had a hydrocarbon odour.

Photograph 7: TP2 - Orangey brown silty sand from 3.7m, smeared black from the above black clays.

Photograph 8: TP3

Photograph 9: TP3 - Blackish brown sand arisings containing concrete, plastic, metal, bricks and fabric. Black sand had a hydrocarbon odour.

Photograph 10: TP4 - Orangey brown sand of the upper 1.2m material with rubble of quartz and quartzite gravel, brick and concrete.

Photograph 11: TP4 - Base of trial pit and small collapse from the rubble in the blackish sand at 1.2m. Plastic bag at 0.5m.

Photograph 12: TP4 - Odorous blackish sand from 1.2m with gravel, concrete, bricks, metal, wood and plastic.

Photograph 13: TP4 - Piece of metal from within the blackish sand between 1.2m and 3.7m.

Photograph 14: TP4 - rope, wood and rubble within the sidewalls. Slightly unstable in the sand at 1.1m,.

Photograph 15: TP4 - Close up of the sandy clay arisings from 1.9m

Photograph 16: TP4 - One of two inner tyre tubes recovered from 3.1m within the sandy clay.

Photograph 17: TP4 - Yellow brown sand from 3.3m with gravel of quartz and quartzite.

Photograph 18: TP6 - Material from the upper 1.1m gravelly sand.

Photograph 19 TP6.

Photograph 20: TP6 - Reddish brown sand and clay from between 1.1m and 3.4m with the wet grey gravels from 3.4m on top.

Photograph 21: TP6 - Wet grey mudstone gravels from 3.4m.

Photograph 22: TP6 - Arisings from between 0.9m and 3.5m together with electrical cables.

Photograph 23: TP6 - One of two 1.5m concrete cable piles found within the trial pit between 1.0m and 3.0m.

Photograph 24: TP6 - One of three large concrete slabs measuring between 500mm and 800mm in length.

Photograph 25: TP6 after collapse of the blackish sand and rubble between 0.9m and 3.5m.

Photograph 26: TP8.

Photograph 27: TP8 - Blackish sand arisings from between 1.9m and 3.9m with quartz and quartzite gravel, brick and concrete together with glass bottles, a bike wheel and plastic.

Photograph 28: BH1 - Light orangey brown gravelly sand of the upper 0.7m excavated from the 1m hand pit.

Photograph 29: BH1 - Asphalt in the Made Ground encountered between 0.7m and 4.8m

Photograph 30: BH1 - Orangey brown clayey sand encountered between 5.4m and 6.8m.

Photograph 31: BH1 - Silty slightly gravelly sand of the natural ground, at 6.8m.

Photograph 32: BH2 - Light orangey brown gravelly sand from the 1m hand pit. Bricks and concrete fragments also present.

Photograph 33: BH2 - Made Ground as grey mottled orange brown clay between 1.3m and 5.2m

Photograph 34: BH2 - Sands and gravels encountered between 10.3m to 13.5m.

Photograph 35: BH3 - Brick and metal at 0.5m within the hand pit.

Photograph 36: BH3 - Orangey brown sand with brick fragments from between 1.3m and 4.2m.

Photograph 37: BH3 - Natural silty sands from between 7.5m and 10.8m.

Photograph 38: BH3 - Gravelly sand from between 12.4m and 14.2m.

Photograph 39: BH3 - Clayey sandy gravels at the base of the borehole, interpreted as Mercia Mudstone

Photograph 40: BH4 - Dark orangey brown clay from 1m hand pit.

Photograph 41: BH4 - Silty gravelly sands between 11.2m and 14.2m

Photograph 42: Reddish brown clay at the base of the borehole, overlying a cobble at 14.5m.

Appendix D

Chemical Testing Laboratory Certificates

TerraConsult

Site: Land at Meriden Quarry

CHEMICAL STATISTICAL ANALYSIS - based on CLEA v1.06 (Sandy Loam 1% SOM)

Job No: 10122

Analyte	Limit of Detection														Statistical Analysis					SGV / GAC Statistical Results			SGV / GAC Statistical Results			SGV / GAC Statistical Results			SGV / GAC Criteria Source	pC4SL/S4UL Screening Criteria		pC4SL/S4UL Screening Criteria		pC4SL/S4UL Screening Criteria		pC4SL/S4UL Screening Criteria		pC4SL/S4UL Screening Criteria		pC4SL/S4UL Criteria Source	
		Terraconsult	Terraconsult	Terraconsult	Terraconsult	Terraconsult	Terraconsult	Terraconsult	Terraconsult	Terraconsult	Terraconsult	Terraconsult	Terraconsult	Terraconsult																											
		Sandy soil	Fill	Fill	Fill	Fill	Fill	Clay	Fill	Fill	Sandy Soil	Fill	Sandy Soil																											
		27/08/15	27/08/15	27/08/15	27/08/15	27/08/15	27/08/15	27/08/15	27/08/15	26/08/15	27/08/15	01/09/15	03/09/15																											
		TP1	TP2	TP3	TP4	TP5	TP6	TP7	TP8	BH1	BH2	BH3	BH4																											
		0.5M	0.5M	0.5M	0.5M	0.5M	1.1m	0.9m	2m	0.5m	0.5m	0.5m	0.5m																											
Stone Content	0.10%	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Asbestos Screen	Positive / Negative	Neg	Neg	Chrysotile	Neg	Chrysotile	Neg	Chrysotile	Chrysotile	Chrysotile	Neg	Neg	Neg		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																																								
Arsenic (total)	2 mg/kg	7.0	17	42	14	9	5.4	13	16	16	4	2.9	8	12	10.42	2.9	12.9	42.0	42.0	32	Fail	42.00	35	Fail	42.00	635	Pass	SC050021*	640	Pass	37	Fail	40	Fail	49	Pass	79	Pass	170	Pass	CLEA v1.06	pC4SL DEFRA 2014
Cadmium (total)	0.1 mg/kg	0.6	2.4	4.4	2.5	0.9	0.2	1.7	0.5	1.4	0.1	0.1	0.2	12	1.31	0.1	1.3	4.4	4.4	10	Pass	4.40	17.7	Pass	4.40	230	Pass	SC050021*	420	Pass	22	Pass	150	Pass	3.9	Fail	220	Pass	560	Pass	CLEA v1.06	pC4SL DEFRA 2014
Chromium (total) (III for S4ULs)	0.5 mg/kg	17	48	230	41	26	24	49	42	45	9.1	4.4	20	12	59.85	4.4	46.3	230.0	230.0	3010	Pass	230.00	3010	Pass	230.00	30400	Pass	CLEA v1.06	8600	Pass	910	Pass	910	Pass	18000	Pass	1500	Pass	33000	Pass	CLEA v1.06	LQM/CIEH 2014
Cooper (total)	2 mg/kg	77	340	1200	190	240	92	290	720	170	12	9	37	12	463.48	9.0	381.4	1500.0	1500.0	2330	Pass	1500.00	6200	Pass	1500.00	71700	Pass	CLEA v1.06	68000	Pass	2400	Pass	7100	Pass	520	Fail	12000	Pass	44000	Pass	CLEA v1.06	LQM/CIEH 2014
Lead (total)	2 mg/kg	61.0	210	320	160	160	31	210	110	180	17	9	59	12	95.59	9.0	127.3	320.0	320.0	N/A	-	320.00	N/A	-	320.00	N/A	-		6000	Pass	210	Fail	330	Pass	84	Fail	760	Pass	1400	Pass	CLEA v1.06	pC4SL DEFRA 2014
Mercury (total inorganic)	1 mg/kg	1	1.8	1	1	1	1	1	1	1	1	1	1	12	0.23	1.0	1.1	1.8	1.8	170	Pass	1.80	238	Pass	1.80	3640	Pass	SC050021*	1100	Pass	40	Pass	56	Pass	19	Pass	120	Pass	240	Pass	CLEA v1.06	LQM/CIEH 2014
Nickel (total)	0.5 mg/kg	21.0	82	260	55	21	26	85	98	65	8.1	4.6	18	12	70.25	4.6	62.0	260.0	260.0	N/A	-	260.00	N/A	-	260.00	N/A	-	SC050021*	980	Pass	180	Fail	180	Fail	230	Fail	230	Fail	3400	Pass	CLEA v1.06	LQM/CIEH 2014
Selenium (total)	3 mg/kg	3	3	3	3	3	3	3	3	3	3	3	3	12	0.00	3.0	3.0	3.0	3.0	350	Pass	3.00	595	Pass	3.00	13000	Pass	SC050021*	120000	Pass	250	Pass	430	Pass	88	Pass	1100	Pass	1800	Pass	CLEA v1.06	LQM/CIEH 2014
Zinc (total)	2 mg/kg	160	490	960	300	540	88	530	730	2300	54	25	100	12	638.80	25.0	574.8	2300.0	2300.0	3740	Pass	2300.00	40300	Pass	2300.00	662000	Pass	CLEA v1.06	730000	Pass	3700	Pass	40000	Pass	620	Fail	81000	Pass	170000	Pass	CLEA v1.06	LQM/CIEH 2014
Inorganic																			0.0																						
pH Value	pH Units	7.0	8	7.4	7.3	8.2	7.6	7.7	8.1	8	6.6	7.6	8.1	12	0.49	6.6	7.6	8.2	8.2	-	-	8.20	-	-	8.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide (total)	1 mg/kg	2	5	31	2	6	1	6	1	1	1	1	1	12	8.58	1.0	4.0	31.0	31.0	-	-	31.00	-	-	31.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulphate (2:1)	0.01 g/l	0.01	0.04	1.9	0.87	0.03	0.02	0.66	0.26	0.1	0.01	0.02	0.02	12	0.58	0.0	0.3	1.9	1.9	-	-	1.90	-	-	1.90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic																			0.0																						
Soil Organic Matter	0.10%	0.9	15	29	4.5	1.2	1.2	11.9	15	2.8	0.1	1	1.2	12	8.95	0.1	7.0	29.0	29.0	-	-	29.00	-	-	29.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOC	0.10%	0.5	8.5	17	2.6	0.7	0.7	1.1	8.7	1.6	0.1	0.6	0.7	12	5.20	0.1	3.6	17.0	17.00	-	-	17.00	-	-	17.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cresol	0.1 mg/kg																		0.0	-	-	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenol (Total Monohydric)	1 mg/kg	1		1	1	1	1	1	1	1	1	1	1	11	0.00	1.0	1.0	1.0	1.0	210	Pass	1.00	310	Pass	1.00	24200	Pass	CLEA v1.06	760	Pass	280	Pass	750	Pass	66	Pass	760	Pass	760	Pass	CLEA v1.06	LQM/CIEH 2014
PAH																			0.0																						
Naphthalene	0.1 mg/kg	0.1	0.2	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	12	0.09	0.1	0.1	0.4	0.4	1.54	Pass	0.40	1.64	Pass	0.40	200	Pass	CLEA v1.06	190	Pass	2.3	Pass	2.3	Pass	4.1	Pass	4900	Pass	1200	Pass	CLEA v1.06	LQM/CIEH 2014
Acenaphthylene	0.1 mg/kg	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.3	0.1	0.6	11	0.16	0.1	0.2	0.6	0.6	168	Pass	0.60	1950	Pass	0.60	84000	Pass	CLEA v1.06	83000	Pass	170	Pass	2900	Pass	28	Pass	15000	Pass	29000	Pass	CLEA v1.06	LQM/CIEH 2014
Acenaphthene	0.1 mg/kg	0.1	0.1	0.5	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	12	0.12	0.1	0.1	0.5	0.5	205	Pass	0.50	2020	Pass	0.50	8500	Pass	CLEA v1.06	84000	Pass	210	Pass	3000	Pass	34	Pass	15000	Pass	29000	Pass	CLEA v1.06	LQM/CIEH 2014
Fluorene	0.1 mg/kg	0.1	0.1	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	12	0.12	0.1	0.1	0.5	0.5	163	Pass	0.50	1850	Pass	0.50	64000	Pass	CLEA v1.06	63000	Pass	170	Pass	2800	Pass	27	Pass	9900	Pass	20000	Pass	CLEA v1.06	LQM/CIEH 2014
Phenanthrene	0.1 mg/kg	0.2	0.7	3	0.8	0.4	0.4	0.3	0.4	0.9	0.1	0.2	0.8	12	0.79	0.1	0.7	3.0	3.0	92	Pass	3.00	837	Pass	3.00	22000	Pass	CLEA v1.06	22000	Pass	95	Pass	1300	Pass	15	Pass	3100	Pass	6200	Pass	CLEA v1.06	LQM/CIEH 2014
Anthracene	0.1 mg/kg	0.1	0.1	1.2	0.1	0.1	0.1	0.1	0.1	0.3	0.1	0.1	0.3	12	0.32	0.1	0.2	1.2	1.2	2260	Pass	1.20	19800	Pass	1.20	530000	Pass	CLEA v1.06	520000	Pass	2400	Pass	31000	Pass	380	Pass	74000	Pass	150000	Pass	CLEA v1.06	LQM/CIEH 2014
Fluoranthene	0.1 mg/kg	0.6	0.9	5.9	1.5	0.8	0.4	0.6	0.6	1.4	0.1	0.9	2.0	12	1.56	0.1	1.3	5.9	5.9	257	Pass	5.90	972	Pass	5.90	23000	Pass	CLEA v1.06	23000	Pass	280	Pass	1500	Pass	52	Pass	3100	Pass	6300	Pass	CLEA v1.06	LQM/CIEH 2014
Pyrene	0.1 mg/kg	0.6	0.8	4.9	1.3	0.7	0.1	0.7	0.6	1.3	0.1	1	1.8	12	1.28	0.1	1.2	4.9	4.9	563	Pass	4.90	2330	Pass	4.90	54400	Pass	CLEA v1.06	54000	Pass	620	Pass	3700	Pass	110	Pass	7400	Pass	15000	Pass	CLEA v1.06	LQM/CIEH 2014
Benz(a)anthracene	0.1 mg/kg	0.4	0.3	1.9	0.4	0.4	0.1	0.3	0.4	0.6	0.1	0.8	1	12	0.50	0.1	0.6	1.9	1.9	3.1	Pass	1.90	3.71	Pass	1.90	92	Pass	CLEA v1.06	170	Pass	7.2	Pass	11	Pass	2.9	Pass	29	Pass	49	Pass	CLEA v1.06	LQM/CIEH 2014
Chrysene	0.1 mg/kg	0.4	0.6	2	0.7	0.5	0.1	0.4	0.4	0.7	0.1	1	1	12	0.51	0.1	0.7	2.0	2.0	6	Pass	2.00	8.84	Pass	2.00	138	Pass	CLEA v1.06	350	Pass	15	Pass	30	Pass	4.1	Pass	57	Pass	93	Pass	CLEA v1.06	LQM/CIEH 2014
Benzo(b)fluoranthene	0.1 mg/kg	0.4	0.4	0.8	0.3	0.3	0.1	0.3	0.3	0.5	0.1	1.1	0.9	12	0.31	0.1	0.5	1.1	1.1	5.6	Pass	1.10	7	Pass	1.10	100	Pass	CLEA v1.06	44	Pass	2.6	Pass	3.9	Pass	0.99	Fail	7.1	Pass	13	Pass	CLEA v1.06	LQM/CIEH 2014
Benzo(k)fluoranthene	0.1 mg/kg	0.4	0.4	1.1	0.2	0.4	0.1	0.3	0.2	0.4	0.1	0.5	0.7	12	0.28	0.1	0.4	1.1	1.1	8.5	Pass	1.10	10	Pass	1.10	140	Pass	CLEA v1.06	1200	Pass	77	Pass	110	Pass	37	Pass	190	Pass	370	Pass	CLEA v1.06	LQM/CIEH 2014
Benzo(a)pyrene	0.1 mg/kg	0.4	0.3	1.0	0.2	0.3	0.1	0.3	0.3	0.4	0.1	0.8	0.8	12	0.30	0.1	0.4	1.0	1.0	0.83	Fail	1.00	1	Fail	1.00	14	Pass	CLEA v1.06	77	Pass	5.0	Pass	5.3	Pass	5.7	Pass	10	Pass	21	Pass	CLEA v1.06	pC4SL DEFRA 2014
Indeno(123cd)pyrene	0.1 mg/kg	0.3	0.3	0.6	0.2	0.3	0.1	0.2	0.2	0.3	0.1	0.5	0.6	12	0.17	0.1	0.3	0.6	0.6	3.2	Pass	0.60	4.17	Pass	0.60	60	Pass	CLEA v1.06	500	Pass	27	Pass	45	Pass	9.5	Pass	82	Pass	150	Pass	CLEA v1.06	LQM/CIEH 2014
Dibenz(ah)anthracene	0.1 mg/kg	0.1	0.1	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	12	0.04	0.1	0.1	0.2	0.2	0.76	Pass	0.20	0.87	Pass	0.20	13	Pass	CLEA v1.06	3.5	Pass	0.24	Pass	0.31	Pass	0.14	Fail	0.57	Pass	1.1	Pass	CLEA v1.06	LQM/CIEH 2014
Benzo(ghi)perylene	0.1 mg/kg	0.5	0.4	0.7	0.2	0.4	0.1	0.2	0.2	0.3	0.1	0.7	0.6	12	0.22	0.1	0.4	0.7	0.7	44	Pass	0.70	46.8	Pass	0.70	650	Pass	CLEA v1.06	3900	Pass	320	Pass	360	Pass	290	Pass	640	Pass	1400	Pass	CLEA v1.06	LQM/CIEH 2014
Total EPA-16 PAHs	0.1 mg/kg	4.3	5.5	25	6.1	4.6	0.1	3.8	4	7.2	0.3	7.5	11	12	6.51	0.1	6.6	25.0	25.0	-	-	25.00	-	-	25.00	-	-	CLEA v1.06	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BTEX																																								
Benzene	1 mg/kg	1	1	1	1	1	1	1	1	1	1	1	1	12	0.00	1.0	1.0	1.0	1.0	0.078	Fail	1.00	0.266	Fail	1.00	43.6	Pass	CLEA v1.06	100	Pass	0.87	Fail	3.3	Pass	0.18	Fail	140	Pass	110	Pass	CLEA v1.06	pC4SL DEFRA 2014
Toluene	1 mg/kg	1	1	1	1	1	1	1	1	1	1	1	1	12	0.00	1.0	1.0	1.0	1.0	119	Pass	1.00	607	Pass	1.00	86200	Pass	CLEA v1.06	56000	Pass	130	Pass	880	Pass	22	Pass	56000	Pass	87000	Pass	CLEA v1.06	LQM/CIEH 2014
Ethyl Benzene	1 mg/kg	1	1	3	1	1	1	1	1	1	1	1	1	12	0.58	1.0	1.2	3.0	3.0	65.2	Pass	3.00	167	Pass	3.00	25000	Pass	CLEA v1.06	5700	Pass	47	Pass	83	Pass	16	Pass	24000	Pass	17000	Pass	CLEA v1.06	LQM/CIEH 2014
Xylene (o)	1 mg/kg	1	1	2	1	1	1	1	1	1	1	1	1	12	0.29	1.0	1.1	2.0	2.0	45.2	Pass	2.00	59.5	Pass	2.00	10,700	Pass	CLEA v1.06	6600	Pass	60	Pass	88	Pass	28	Pass	41000	Pass	17000	Pass	CLEA v1.06	LQM/CIEH 2014
Xylene (m/p)	1 mg/kg	1	1	5	1	1	1	1	1	1	1	1	1	12	1.15	1.0	1.3	5.0	5.0	43.6	Pass	5.00	55.4	Pass	5.00	9,990	Pass	CLEA v1.06	6200	Pass	59	Pass	82	Pass	31	Pass	41000	Pass	17000	Pass	CLEA v1.06	LQM/CIEH 2014
MTBE	1 mg/kg	1	1	1	1	1	1	1	1	1	1	1	1	12	0.00	1.0	1.0	1.0	1.0	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons																																								
Aliphatic >C_5 - C_6	0.01 mg/kg	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	12	0.00	0.01	0.01	0.01	0.01	30	Pass	0.01	30	Pass	0.01	3400	Pass	CLEA v1.06	3200	Pass	42	Pass	42	Pass	730	Pass	570000	Pass	95000	Pass	CLEA v1.06	LQM/CIEH 2014
Aliphatic >C_6 - C_8	0.01 mg/kg	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	12	0.00	0.01	0.01	0.01	0.01	73	Pass	0.01	73	Pass	0.01	8300	Pass	CLEA v1.06	7800	Pass	100	Pass	100	Pass	2300	Pass	600000	Pass	150000	Pass	CLEA v1.06	LQM/CIEH 2014
Aliphatic >C_8 - C_{10}	0.01 mg/kg	0.01	0.01	0.3	0.01	0.01	0.01	0.012	0.01	0.01	0.01	0.01	0.01	12	0.08	0.01	0.03	0.30	0.3	19	Pass	0.30	19	Pass	0.30	2100	Pass	CLEA v1.06	2000	Pass	27	Pass	27	Pass	320	Pass	13000	Pass	14000	Pass	CLEA v1.06	LQM/CIEH 2014
Aliphatic >C_{10} - C_{12}	1 mg/kg	1	7	5	1	1	1	1	1	1	1	1	1	12	1.99	1.0	1.8	7.0	7.0	93	Pass	7.00	93	Pass	7.00	10000	Pass	CLEA v1.06	9700	Pass	130	Pass	130	Pass	26	Pass	6200	Pass	13000	Pass	CLEA v1.06	LQM/CIEH 2014
Aliphatic >C_{12} - C_{16}	1 mg/kg	1	3	4	16	1	1	4	2	21	1	1	1	12	6.65	1.0	4.7	21.0	21.0	740	Pass	21.00	745	Pass	21.00	61000	Pass	CLEA v1.06	59000	Pass	1100	Pass	1100	Pass	11000	Pass	13000	Pass	25000	Pass	CLEA v1.06	LQM/CIEH 2014
Aliphatic >C_{16} - C_{21}	1 mg/kg	1	3	35	73	1	1	41	13	160	1	1	3	12	47.47	1.0	27.8	160.0	160.0	45000	Pass	160.00	45000	Pass	160.00	1600000	Pass	CLEA v1.06	160000	Pass	65000	Pass	65000	Pass	65000	Pass	260000	Pass	450000	Pass	CLEA v1.06	LQM/CIEH 2014
Aliphatic >C_{21} - C_{35}	1 mg/kg	24	480	150	290	38	14	200	75	460	11	22	36	12	172.77	11.0	150.0	480.0	480.0	45000	Pass	480.00	45000	Pass	480.00	1600000	Pass	CLEA v1.06	160000	Pass	65000	Pass	65000	Pass	260000	Pass	250000	Pass	450000	Pass	CLEA v1.06	LQM/CIEH 2014
Aliphatic >C_{35} - C_{44}	2 mg/kg	2	2	2	2	2	2	2	2	2	2	2	2	12	0.00	2.0	2.0	2.0	2.0	45000	Pass	2.00	45000	Pass	2.00	1600000	Pass	CLEA v1.06	160000	Pass	65000	Pass	65000	Pass	260000	Pass	250000	Pass	450000	Pass	CLEA v1.06	LQM/CIEH 2014
Aromatic C_5 - C_7	0.01 mg/kg	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	12	0.00	0.0	0.0	0.0	0.0	65	Pass	0.01	263	Pass	0.01	28000	Pass	CLEA v1.06	26000	Pass	70	Pass	370	Pass	13	Pass	56000	Pass	76000	Pass	CLEA v1.06	LQM/CIEH 2014
Aromatic C_7 - C_8	0.01 mg/kg	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	12	0.00	0.0	0.0	0.0	0.0	120	Pass	0.01	607	Pass	0.01	59000	Pass	CLEA v1.06	56000	Pass	130	Pass	860	Pass	22	Pass	56000	Pass	87000	Pass	CLEA v1.06	LQM/CIEH 2014
Aromatic >C_8 - C_{10}	0.01 mg/kg	0.01	0.015	0.064	0.011	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	12	0.02	0.0	0.0	0.1	0.1	27	Pass	0.06	33	Pass	0.06	3700	Pass	CLEA v1.06	3500	Pass	34	Pass	47	Pass	8.6	Pass	5000	Pass	7200	Pass	CLEA v1.06	LQM/CIEH 2014
Aromatic >C_{10} - C_{12}	1 mg/kg	1	3	4	1	1	1	1	1	1	1	1	1	12	1.00	1.0	1.4	4.0	4.0	69	Pass	4.00	177	Pass	4.00	7400	Pass	CLEA v1.06	16000	Pass	74	Pass	250	Pass	13	Pass	5000	Pass	9200	Pass	CLEA v1.06	LQM/CIEH 2014
Aromatic >C_{12} - C_{16}	1 mg/kg	1	8	8	5	1	1	4	4	4	1	1	1	12	2.70	1.0	3.3	8.0	8.0	140	Pass	8.00	1780	Pass	8.00	36000	Pass	CLEA v1.06	35000	Pass	140	Pass	1800	Pass	23	Pass	5100	Pass	10000	Pass	CLEA v1.06	LQM/CIEH 2014
Aromatic >C_{16} - C_{21}	1 mg/kg	4.0	16	14	22	4	1	24	13	20	1	5	10	12	8.22	1.0	11.2	24.0	24.0	250	Pass	24.00	1290	Pass	24.00	28000	Pass	CLEA v1.06	28000	Pass	260	Pass	1900	Pass	46	Pass	3800	Pass	7600	Pass	CLEA v1.06	LQM/CIEH 2014
Aromatic >C_{21} - C_{35}	1 mg/kg	15.0	76	17	29	17	5	34	23	28	2	63	35	12	21.85	2.0	28.7	76.0	76.0	890	Pass	76.00	1330	Pass	76.00	28000	Pass	CLEA v1.06	28000	Pass	1100	Pass	1900	Pass	370	Pass	3800	Pass	7800	Pass	CLEA v1.06	LQM/CIEH 2014
Aromatic >C_{35} - C_{44}	2 mg/kg	2.0	2	2	2	2	2	2	2	2	2	2	2	12	0.00	2.0	2.0	2.0	2.0	890	Pass	2.00	1330	Pass	2.00	28000	Pass	CLEA v1.06	28000	Pass	1100	Pass	1900	Pass	370	Pass	3800	Pass	7800	Pass	CLEA v1.06	LQM/CIEH 2014

Below Detection Limits.
Exceeded GAC/SGV
Exceeded pC4SL / S4ULs
Assessment criteria for pH, Sulphide and Sulphate are not based on human health. Sulphate criteria assumes DS-1 ACEC classification for concrete.

Notes

1. Generic Qualitative Assessment Criteria have been used where appropriate based on the current CLEA 1.06 Model (default values, sandy loam 1%SOM). Where no CLEA generic guideline value has been calculated no assessment has been made. The results presented show maximum and mean concentrations. This is to provide a reasonable prediction of the range of data rather than to provide any detailed statistical appraisal.
2. Results lower than detection limit are shaded in grey.
3. When the test result is recorded as being less than the detection limit, the result used for the analysis is the detection limit.
4. Cyanide (total)*, in the absence of a GQAC based on current CLEA 1.06 Model, the Atrisk Soil Value for Cyanide (free) has been used.
5. For metals, where an SGV has been published, this value has been used. Note that the published SGVs do not include the residential without plant uptake scenario. CLEA v1.06 has therefore been used to derive GACs for this scenario. For organics, CLEA v1.06 has been used (as the SGV assumes 6% SOM)
6. pC4SL for benzene and benzo(a)pyrene assumes 6% SOM

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Scientific Analysis Laboratories Ltd

Certificate of Analysis

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Report Number: 507763-1

Date of Report: 21-Sep-2015

Customer: TerraConsult (South) Limited
Suite F17 Dugard House
Peartree Road
Colchester
Essex
CO3 0UL

Customer Contact: Ms Sue Slaven

Customer Job Reference: 10122
Customer Purchase Order: PO-00018
Customer Site Reference: MERIDEN QUARRY
Date Job Received at SAL: 09-Sep-2015
Date Analysis Started: 10-Sep-2015
Date Analysis Completed: 21-Sep-2015

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.
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
All results have been reviewed in accordance with Section 25 of the SAL Quality Manual

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1549

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

Report checked and authorised by :
Simi Okanlami
Project Manager

Issued by :
Simi Okanlami
Project Manager

SAL Reference: 507763
Project Site: MERIDEN QUARRY
Customer Reference: 10122

Soil Analysed as Soil
Soil Suite 1

					SAL Reference	**507763 001**	**507763 002**	**507763 003**	**507763 004**	**507763 005**	**507763 006**
					Customer Sample Reference	**TP1 @ 0.5m**	**TP2 @ 0.5m**	**TP3 @ 1.5m**	**TP4 @ 0.5m**	**TP5 @ 0.5m**	**TP6 @ 1.1m**
					Date Sampled	**27-AUG-2015**	**27-AUG-2015**	**27-AUG-2015**	**27-AUG-2015**	**27-AUG-2015**	**27-AUG-2015**
					Type	**Sandy Soil**	**Fill**	**Fill**	**Fill**	**Fill**	**Fill**
Determinand	**Method**	**Test Sample**	**LOD**	**Units**							
Arsenic	T257	A40	2	mg/kg	**7**	**17**	**42**	**14**	**9.0**	**5.4**
Cadmium	T257	A40	0.1	mg/kg	**0.6**	**2.4**	**4.4**	**2.4**	**0.9**	**0.2**
Chromium	T257	A40	0.5	mg/kg	**17**	**48**	**230**	**41**	**26**	**24**
Copper	T257	A40	2	mg/kg	**77**	**540**	**1500**	**190**	**940**	**92**
Lead	T257	A40	2	mg/kg	**61**	**210**	**320**	**160**	**160**	**31**
Mercury	T245	A40	1.0	mg/kg	<1.0	**1.8**	<1.0	<1.0	<1.0	<1.0
Nickel	T257	A40	0.5	mg/kg	**21**	**82**	**260**	**55**	**21**	**26**
Selenium	T257	A40	3	mg/kg	<3	<3	**3**	<3	<3	<3
Zinc	T257	A40	2	mg/kg	**160**	**490**	**980**	**900**	**540**	**88**
Asbestos ID	T27	A40			Asbestos not detected	Asbestos not detected	Chrysotile Detected	Asbestos not detected	Chrysotile Detected	Asbestos not detected
pH	T7	A40			**7.0**	**8.0**	**7.4**	**7.3**	**8.2**	**7.6**
Soil Organic Matter	T287	A40	0.1	%	**0.9**	**15**	**29**	**4.5**	**1.2**	**1.2**
(Water Soluble) SO4 expressed as SO4	T242	A40	0.01	g/l	<0.01	**0.04**	**1.9**	**0.87**	**0.03**	**0.02**
Sulphide	T4	A40	10	mg/kg	<10	<10	**43**	**82**	<10	<10
Total Organic Carbon	T21	A40	0.1	%	**0.5**	**8.5**	**17**	**2.6**	**0.7**	**0.7**
Cyanide(Total)	T4	AR	1	mg/kg	(64) **2**	**5**	**31**	**2**	<1	<1
Phenols(Mono)	T221	AR	1.0	mg/kg	(64) <1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Moisture @ 105 C	T162	AR	0.1	%	**12**	**11**	**23**	**11**	**7.8**	**15**
Retained on 2mm	T2	A40	0.1	%	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

SAL Reference: 507763
Project Site: MERIDEN QUARRY
Customer Reference: 10122

Soil Analysed as Soil
Soil Suite 1

					SAL Reference	**507763 007**	**507763 008**	**507763 009**	**507763 010**	**507763 011**	**507763 012**
					Customer Sample Reference	**TP7@ 0.9m**	**TP8 @ 2.0m**	**BH1 @ 0.5m**	**BH2 @ 0.5m**	**BH3 @ 0.5m**	**BH4 @ 0.5m**
					Date Sampled	**27-AUG-2015**	**27-AUG-2015**	**26-AUG-2015**	**27-AUG-2015**	**01-SEP-2015**	**03-SEP-2015**
					Type	**Clay**	**Fill**	**Fill**	**Sandy Soil**	**Fill**	**Sandy Soil**
Determinand	**Method**	**Test Sample**	**LOD**	**Units**							
Arsenic	T257	A40	2	mg/kg	**13**	**16**	**16**	**4**	**2.9**	**8**
Cadmium	T257	A40	0.1	mg/kg	**1.7**	**0.5**	**1.4**	<0.1	<0.1	**0.2**
Chromium	T257	A40	0.5	mg/kg	**49**	**42**	**45**	**9.1**	**4.4**	**20**
Copper	T257	A40	2	mg/kg	**290**	**720**	**170**	**12**	**9**	**37**
Lead	T257	A40	2	mg/kg	**210**	**110**	**180**	**17**	**9**	**59**
Mercury	T245	A40	1.0	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Nickel	T257	A40	0.5	mg/kg	**85**	**98**	**65**	**8.1**	**4.6**	**18**
Selenium	T257	A40	3	mg/kg	<3	<3	<3	<3	<3	<3
Zinc	T257	A40	2	mg/kg	**530**	**730**	**2300**	**54**	**25**	**100**
Asbestos ID	T27	A40			Chrysotile Detected	Chrysotile Detected	Chrysotile Detected	Asbestos not detected	Asbestos not detected	Asbestos not detected
pH	T7	A40			**7.7**	**8.1**	**8.0**	**6.6**	**7.6**	**8.1**
Soil Organic Matter	T287	A40	0.1	%	**1.9**	**15**	**2.8**	<0.1	**1.0**	**1.2**
(Water Soluble) SO4 expressed as SO4	T242	A40	0.01	g/l	**0.66**	**0.26**	**0.10**	**0.01**	**0.02**	**0.02**
Sulphide	T4	A40	10	mg/kg	<10	**16**	**12**	**12**	<10	<10
Total Organic Carbon	T21	A40	0.1	%	**1.1**	**8.7**	**1.6**	<0.1	**0.6**	**0.7**
Cyanide(Total)	T4	AR	1	mg/kg	(64) <1	**1**	<1	(64) <1	<1	(64) <1
Phenols(Mono)	T221	AR	1.0	mg/kg	(64) <1.0	<1.0	<1.0	(64) <1.0	<1.0	(64) <1.0
Moisture @ 105 C	T162	AR	0.1	%	**16**	**13**	**9.9**	**4.6**	**8.5**	**7.2**
Retained on 2mm	T2	A40	0.1	%	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

SAL Reference: 507763
Project Site: MERIDEN QUARRY
Customer Reference: 10122

Soil Analysed as Soil
Total and Speciated USEPA16 PAH (SE) (MCERTS)

				SAL Reference	**507763 001**	**507763 002**	**507763 003**	**507763 004**	**507763 005**	**507763 006**
				Customer Sample Reference	**TP1 @ 0.5m**	**TP2 @ 0.5m**	**TP3 @ 1.5m**	**TP4 @ 0.5m**	**TP5 @ 0.5m**	**TP6 @ 1.1m**
				Date Sampled	**27-AUG-2015**	**27-AUG-2015**	**27-AUG-2015**	**27-AUG-2015**	**27-AUG-2015**	**27-AUG-2015**
				Type	**Sandy Soil**	**Fill**	**Fill**	**Fill**	**Fill**	**Fill**
Determinand	**Method**	**Test Sample**	**LOD**	**Units**						
Naphthalene	T16	AR	0.1	mg/kg	<0.1	**0.2**	**0.4**	**0.1**	<0.1	<0.1
Acenaphthylene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	T16	AR	0.1	mg/kg	<0.1	<0.1	**0.5**	<0.1	<0.1	<0.1
Fluorene	T16	AR	0.1	mg/kg	<0.1	<0.1	**0.5**	**0.1**	<0.1	<0.1
Phenanthrene	T16	AR	0.1	mg/kg	**0.2**	**0.7**	**3.0**	**0.8**	**0.4**	<0.1
Anthracene	T16	AR	0.1	mg/kg	<0.1	**0.1**	**1.2**	**0.1**	**0.1**	<0.1
Fluoranthene	T16	AR	0.1	mg/kg	**0.6**	**0.9**	**5.9**	**1.5**	**0.8**	<0.1
Pyrene	T16	AR	0.1	mg/kg	**0.6**	**0.8**	**4.9**	**1.3**	**0.7**	<0.1
Benzo(a)Anthracene	T16	AR	0.1	mg/kg	**0.4**	**0.3**	**1.9**	**0.4**	**0.4**	<0.1
Chrysene	T16	AR	0.1	mg/kg	**0.4**	**0.6**	**2.0**	**0.7**	**0.5**	<0.1
Benzo(b)fluoranthene	T16	AR	0.1	mg/kg	**0.4**	**0.4**	**0.8**	**0.3**	**0.3**	<0.1
Benzo(k)fluoranthene	T16	AR	0.1	mg/kg	**0.4**	**0.4**	**1.1**	**0.2**	**0.4**	<0.1
Benzo(a)Pyrene	T16	AR	0.1	mg/kg	**0.4**	**0.3**	**1.0**	**0.2**	**0.3**	<0.1
Indeno(123-cd)Pyrene	T16	AR	0.1	mg/kg	**0.3**	**0.3**	**0.6**	**0.2**	**0.3**	<0.1
Dibenzo(ah)Anthracene	T16	AR	0.1	mg/kg	**0.1**	<0.1	**0.2**	<0.1	**0.1**	<0.1
Benzo(ghi)Perylene	T16	AR	0.1	mg/kg	**0.5**	**0.4**	**0.7**	**0.2**	**0.4**	<0.1
PAH(total)	T16	AR	0.1	mg/kg	**4.3**	**5.5**	**25**	**6.1**	**4.6**	<0.1

SAL Reference: 507763
Project Site: MERIDEN QUARRY
Customer Reference: 10122

Soil Analysed as Soil
Total and Speciated USEPA16 PAH (SE) (MCERTS)

				SAL Reference	**507763 007**	**507763 008**	**507763 009**	**507763 010**	**507763 011**	**507763 012**
				Customer Sample Reference	**TP7@ 0.9m**	**TP8 @ 2.0m**	**BH1 @ 0.5m**	**BH2 @ 0.5m**	**BH3 @ 0.5m**	**BH4 @ 0.5m**
				Date Sampled	**27-AUG-2015**	**27-AUG-2015**	**26-AUG-2015**	**27-AUG-2015**	**01-SEP-2015**	**03-SEP-2015**
				Type	**Clay**	**Fill**	**Fill**	**Sandy Soil**	**Fill**	**Sandy Soil**
Determinand	**Method**	**Test Sample**	**LOD**	**Units**						
Naphthalene	T16	AR	0.1	mg/kg	<0.1	**0.1**	**0.1**	<0.1	<0.1	**0.1**
Acenaphthylene	T16	AR	0.1	mg/kg	<0.1	**0.2**	**0.1**	**0.3**	<0.1	**0.6**
Acenaphthene	T16	AR	0.1	mg/kg	**0.2**	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	T16	AR	0.1	mg/kg	**0.3**	**0.4**	**0.9**	<0.1	**0.2**	**0.8**
Anthracene	T16	AR	0.1	mg/kg	<0.1	**0.1**	**0.3**	<0.1	<0.1	**0.3**
Fluoranthene	T16	AR	0.1	mg/kg	**0.6**	**0.6**	**1.4**	<0.1	**0.9**	**2.0**
Pyrene	T16	AR	0.1	mg/kg	**0.7**	**0.6**	**1.3**	<0.1	**1.0**	**1.8**
Benzo(a)Anthracene	T16	AR	0.1	mg/kg	**0.3**	**0.4**	**0.6**	<0.1	**0.8**	**1.0**
Chrysene	T16	AR	0.1	mg/kg	**0.4**	**0.4**	**0.7**	<0.1	**1.0**	**1.0**
Benzo(b)fluoranthene	T16	AR	0.1	mg/kg	**0.3**	**0.3**	**0.5**	<0.1	**1.1**	**0.9**
Benzo(k)fluoranthene	T16	AR	0.1	mg/kg	**0.3**	**0.2**	**0.4**	<0.1	**0.5**	**0.7**
Benzo(a)Pyrene	T16	AR	0.1	mg/kg	**0.3**	**0.3**	**0.4**	<0.1	**0.8**	**0.9**
Indeno(123-cd)Pyrene	T16	AR	0.1	mg/kg	**0.2**	**0.2**	**0.3**	<0.1	**0.5**	**0.6**
Dibenzo(ah)Anthracene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	**0.2**
Benzo(ghi)Perylene	T16	AR	0.1	mg/kg	**0.2**	**0.2**	**0.3**	<0.1	**0.7**	**0.6**
PAH(total)	T16	AR	0.1	mg/kg	**3.8**	**4.0**	**7.2**	**0.3**	**7.5**	**11**

SAL Reference: 507763
Project Site: MERIDEN QUARRY
Customer Reference: 10122

Soil Analysed as Soil
TPH (CWG)

				SAL Reference	**507763 001**	**507763 002**	**507763 003**	**507763 004**	**507763 005**	**507763 006**
				Customer Sample Reference	**TP1 @ 0.5m**	**TP2 @ 0.5m**	**TP3 @ 1.5m**	**TP4 @ 0.5m**	**TP5 @ 0.5m**	**TP6 @ 1.1m**
				Date Sampled	**27-AUG-2015**	**27-AUG-2015**	**27-AUG-2015**	**27-AUG-2015**	**27-AUG-2015**	**27-AUG-2015**
				Type	**Sandy Soil**	**Fill**	**Fill**	**Fill**	**Fill**	**Fill**
Determinand	**Method**	**Test Sample**	**LOD**	**Units**						
Benzene	T54	AR	1	µg/kg	<1	<1	<1	<1	<1	<1
EthylBenzene	T54	AR	1	µg/kg	<1	<1	**3**	<1	<1	<1
M/P Xylene	T54	AR	1	µg/kg	<1	<1	**5**	<1	<1	<1
O Xylene	T54	AR	1	µg/kg	<1	<1	**2**	<1	<1	<1
Toluene	T54	AR	1	µg/kg	<1	<1	<1	<1	<1	<1
Methyl tert-Butyl Ether	T54	AR	1	µg/kg	<1	<1	<1	<1	<1	<1
TPH (C5-C6 aliphatic)	T54	AR	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
TPH (C6-C7 aromatic)	T54	AR	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
TPH (C6-C8 aliphatic)	T54	AR	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
TPH (C7-C8 aromatic)	T54	AR	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
TPH (C8-C10 aliphatic)	T54	AR	0.010	mg/kg	<0.010	<0.010	**0.30**	<0.010	<0.010	<0.010
TPH (C8-C10 aromatic)	T54	AR	0.010	mg/kg	<0.010	**0.015**	**0.064**	**0.011**	<0.010	<0.010
TPH (C10-C12 aliphatic)	T8	AR	1	mg/kg	<1	**7**	**5**	<1	<1	<1
TPH (C10-C12 aromatic)	T8	AR	1	mg/kg	<1	**3**	**4**	<1	<1	<1
TPH (C12-C16 aliphatic)	T8	AR	1	mg/kg	<1	**3**	**4**	**16**	<1	<1
TPH (C12-C16 aromatic)	T8	AR	1	mg/kg	<1	**8**	**8**	**5**	<1	<1
TPH (C16-C21 aliphatic)	T8	AR	1	mg/kg	<1	**3**	**35**	**73**	<1	<1
TPH (C16-C21 aromatic)	T8	AR	1	mg/kg	**4**	**16**	**14**	**22**	**4**	<1
TPH (C21-C35 aliphatic)	T8	AR	1	mg/kg	**24**	**480**	**150**	**290**	**38**	**14**
TPH (C21-C35 aromatic)	T8	AR	1	mg/kg	**15**	**76**	**17**	**29**	**17**	**5**
TPH (C35-C44 aliphatic)	T219	AR	2	mg/kg	<2	<2	<2	<2	<2	<2
TPH (C35-C44 aromatic)	T219	AR	2	mg/kg	<2	<2	<2	<2	<2	<2

SAL Reference: 507763
Project Site: MERIDEN QUARRY
Customer Reference: 10122

Soil Analysed as Soil
TPH (CWG)

					SAL Reference	**507763 007**	**507763 008**	**507763 009**	**507763 010**	**507763 011**	**507763 012**
					Customer Sample Reference	**TP7@ 0.9m**	**TP8 @ 2.0m**	**BH1 @ 0.5m**	**BH2 @ 0.5m**	**BH3 @ 0.5m**	**BH4 @ 0.5m**
					Date Sampled	**27-AUG-2015**	**27-AUG-2015**	**26-AUG-2015**	**27-AUG-2015**	**01-SEP-2015**	**03-SEP-2015**
					Type	**Clay**	**Fill**	**Fill**	**Sandy Soil**	**Fill**	**Sandy Soil**
Determinand	**Method**	**Test Sample**	**LOD**	**Units**							
Benzene	T54	AR	1	µg/kg		<1	<1	<1	<1	<1	<1
EthylBenzene	T54	AR	1	µg/kg		<1	<1	<1	<1	<1	<1
M/P Xylene	T54	AR	1	µg/kg		<1	<1	<1	<1	<1	<1
O Xylene	T54	AR	1	µg/kg		<1	<1	<1	<1	<1	<1
Toluene	T54	AR	1	µg/kg		<1	<1	<1	<1	<1	<1
Methyl tert-Butyl Ether	T54	AR	1	µg/kg		<1	<1	<1	<1	<1	<1
TPH (C5-C6 aliphatic)	T54	AR	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
TPH (C6-C7 aromatic)	T54	AR	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
TPH (C6-C8 aliphatic)	T54	AR	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
TPH (C7-C8 aromatic)	T54	AR	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
TPH (C8-C10 aliphatic)	T54	AR	0.010	mg/kg		**0.012**	<0.010	<0.010	<0.010	<0.010	<0.010
TPH (C8-C10 aromatic)	T54	AR	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
TPH (C10-C12 aliphatic)	T8	AR	1	mg/kg		<1	<1	<1	<1	<1	<1
TPH (C10-C12 aromatic)	T8	AR	1	mg/kg		<1	<1	<1	<1	<1	<1
TPH (C12-C16 aliphatic)	T8	AR	1	mg/kg		**4**	**2**	**21**	<1	<1	<1
TPH (C12-C16 aromatic)	T8	AR	1	mg/kg		**4**	**4**	**4**	<1	<1	<1
TPH (C16-C21 aliphatic)	T8	AR	1	mg/kg		**41**	**13**	**160**	<1	<1	**3**
TPH (C16-C21 aromatic)	T8	AR	1	mg/kg		**24**	**13**	**20**	<1	**5**	**10**
TPH (C21-C35 aliphatic)	T8	AR	1	mg/kg		**200**	**75**	**460**	**11**	**22**	**36**
TPH (C21-C35 aromatic)	T8	AR	1	mg/kg		**34**	**23**	**28**	**2**	**63**	**35**
TPH (C35-C44 aliphatic)	T219	AR	2	mg/kg		<2	<2	<2	<2	<2	<2
TPH (C35-C44 aromatic)	T219	AR	2	mg/kg		<2	<2	<2	<2	<2	<2

Index to symbols used in 507763-1

Value	Description
A40	Assisted dried < 40C
AR	As Received
64	Analysis was performed by an alternative technique
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

Cyanide & Phenol - Analysis transferred to SAL Manchester
Asbestos subcontracted to REC Limited
Retained on 2mm is removed before analysis
PAH (009) - These samples have been analysed exceeding recommended holding times. It is possible therefore that the results provided may be compromised.
Reported results on as received samples are corrected to a 105 degree centigrade dry weight basis except TPH c5-c44 aro/ali split

Method Index

Value	Description
T242	2:1 Extraction/ICP/OES (TRL 447 T1)
T2	Grav
T8	GC/FID
T54	GC/MS (Headspace)
T257	ICP/OES (SIM) (Aqua Regia Extraction)
T16	GC/MS
T21	OX/IR
T162	Grav (1 Dec) (105 C)
T221	Colorimetry (CE)
T287	Calc TOC/0.58

T245	ICP/OES(Aqua Regia Extraction)
T4	Colorimetry
T219	GC/FID (SE)
T27	PLM
T7	Probe

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
Arsenic	T257	A40	2	mg/kg	M	001,007,010,012
Arsenic	T257	A40	2.0	mg/kg	U	002-006,008-009,011
Cadmium	T257	A40	0.1	mg/kg	M	001,007,010,012
Cadmium	T257	A40	0.1	mg/kg	U	002-006,008-009,011
Chromium	T257	A40	0.5	mg/kg	M	001,007,010,012
Chromium	T257	A40	0.5	mg/kg	U	002-006,008-009,011
Copper	T257	A40	2	mg/kg	M	001,007,010,012
Copper	T257	A40	2	mg/kg	U	002-006,008-009,011
Lead	T257	A40	2	mg/kg	M	001,007,010,012
Lead	T257	A40	2	mg/kg	U	002-006,008-009,011
Mercury	T245	A40	1.0	mg/kg	U	001-012
Nickel	T257	A40	0.5	mg/kg	M	001,007,010,012
Nickel	T257	A40	0.5	mg/kg	U	002-006,008-009,011
Selenium	T257	A40	3	mg/kg	U	001-012
Zinc	T257	A40	2	mg/kg	M	001,007,010,012
Zinc	T257	A40	2	mg/kg	U	002-006,008-009,011
Asbestos ID	T27	A40			SU	001-012
pH	T7	A40			M	001,007,010,012
pH	T7	A40			U	002-006,008-009,011
Soil Organic Matter	T287	A40	0.1	%	N	001-012
(Water Soluble) SO4 expressed as SO4	T242	A40	0.01	g/l	M	001,007,010,012
(Water Soluble) SO4 expressed as SO4	T242	A40	0.01	g/l	U	002-006,008-009,011
Sulphide	T4	A40	10	mg/kg	N	001-012
Total Organic Carbon	T21	A40	0.1	%	N	001-012
Cyanide(Total)	T4	AR	1	mg/kg	M	001,007,010,012
Cyanide(Total)	T4	AR	1	mg/kg	U	002-006,008-009,011
Phenols(Mono)	T221	AR	1.0	mg/kg	M	001,007,010,012
Phenols(Mono)	T221	AR	1.0	mg/kg	U	002-006,008-009,011
Moisture @ 105 C	T162	AR	0.1	%	N	001-012
Retained on 2mm	T2	A40	0.1	%	N	001-012
Naphthalene	T16	AR	0.1	mg/kg	U	001-012
Acenaphthylene	T16	AR	0.1	mg/kg	U	001-012
Acenaphthene	T16	AR	0.1	mg/kg	M	001,007,010,012
Acenaphthene	T16	AR	0.1	mg/kg	U	002-006,008-009,011
Fluorene	T16	AR	0.1	mg/kg	M	001,007,010,012
Fluorene	T16	AR	0.1	mg/kg	U	002-006,008-009,011
Phenanthrene	T16	AR	0.1	mg/kg	U	001-012
Anthracene	T16	AR	0.1	mg/kg	M	001,007,010,012
Anthracene	T16	AR	0.1	mg/kg	U	002-006,008-009,011
Fluoranthene	T16	AR	0.1	mg/kg	N	001-012
Pyrene	T16	AR	0.1	mg/kg	N	001-012
Benzo(a)Anthracene	T16	AR	0.1	mg/kg	M	001,007,010,012
Benzo(a)Anthracene	T16	AR	0.1	mg/kg	U	002-006,008-009,011
Chrysene	T16	AR	0.1	mg/kg	M	001,007,010,012
Chrysene	T16	AR	0.1	mg/kg	U	002-006,008-009,011
Benzo(b)fluoranthene	T16	AR	0.1	mg/kg	U	001-012
Benzo(k)fluoranthene	T16	AR	0.1	mg/kg	N	001-012
Benzo(a)Pyrene	T16	AR	0.1	mg/kg	M	001,007,010,012
Benzo(a)Pyrene	T16	AR	0.1	mg/kg	U	002-006,008-009,011
Indeno(123-cd)Pyrene	T16	AR	0.1	mg/kg	M	001,007,010,012
Indeno(123-cd)Pyrene	T16	AR	0.1	mg/kg	U	002-006,008-009,011
Dibenzo(ah)Anthracene	T16	AR	0.1	mg/kg	M	001,007,010,012
Dibenzo(ah)Anthracene	T16	AR	0.1	mg/kg	U	002-006,008-009,011
Benzo(ghi)Perylene	T16	AR	0.1	mg/kg	M	001,007,010,012
Benzo(ghi)Perylene	T16	AR	0.1	mg/kg	U	002-006,008-009,011
PAH(total)	T16	AR	0.1	mg/kg	U	001-012
Benzene	T54	AR	1	µg/kg	U	001-012
EthylBenzene	T54	AR	1	µg/kg	U	001-012
M/P Xylene	T54	AR	1	µg/kg	U	001-012
O Xylene	T54	AR	1	µg/kg	U	001-012
Toluene	T54	AR	1	µg/kg	U	001-012

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
Methyl tert-Butyl Ether	T54	AR	1	µg/kg	U	001-012
TPH (C5-C6 aliphatic)	T54	AR	0.010	mg/kg	N	001-012
TPH (C6-C7 aromatic)	T54	AR	0.010	mg/kg	N	001-012
TPH (C6-C8 aliphatic)	T54	AR	0.010	mg/kg	N	001-012
TPH (C7-C8 aromatic)	T54	AR	0.010	mg/kg	N	001-012
TPH (C8-C10 aliphatic)	T54	AR	0.010	mg/kg	N	001-012
TPH (C8-C10 aromatic)	T54	AR	0.010	mg/kg	N	001-012
TPH (C10-C12 aliphatic)	T8	AR	1	mg/kg	N	001-012
TPH (C10-C12 aromatic)	T8	AR	1	mg/kg	N	001-012
TPH (C12-C16 aliphatic)	T8	AR	1	mg/kg	N	001-012
TPH (C12-C16 aromatic)	T8	AR	1	mg/kg	N	001-012
TPH (C16-C21 aliphatic)	T8	AR	1	mg/kg	N	001-012
TPH (C16-C21 aromatic)	T8	AR	1	mg/kg	N	001-012
TPH (C21-C35 aliphatic)	T8	AR	1	mg/kg	N	001-012
TPH (C21-C35 aromatic)	T8	AR	1	mg/kg	N	001-012
TPH (C35-C44 aliphatic)	T219	AR	2	mg/kg	N	001-012
TPH (C35-C44 aromatic)	T219	AR	2	mg/kg	N	001-012

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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 Ltd

Certificate of Analysis

3 Crittall Drive
Springwood Industrial Estate
Braintree
Essex
CM7 2RT
Tel : 01376 560120
Fax : 01376 552923

Report Number: 508960-1

Date of Report: 21-Sep-2015

Customer: TerraConsult (South) Limited
Suite F17 Dugard House
Peartree Road
Colchester
Essex
CO3 0UL

Customer Contact: Ms Sue Slaven

Customer Job Reference: 10122
Customer Purchase Order: PO-00018
Customer Site Reference: Meridian Quarry
Date Job Received at SAL: 15-Sep-2015
Date Analysis Started: 16-Sep-2015
Date Analysis Completed: 21-Sep-2015

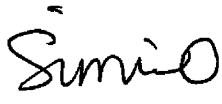
The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Tests covered by this certificate were conducted in accordance with SAL SOPs

All results have been reviewed in accordance with Section 25 of the SAL Quality Manual

Report checked and authorised by :
Simi Okanlami
Project Manager

Issued by :
Simi Okanlami
Project Manager



SAL Reference: 508960
Project Site: Meridian Quarry
Customer Reference: 10122

Soil Analysed as Soil
Miscellaneous

SAL Reference	**508960 001**	**508960 002**	**508960 003**	**508960 004**	**508960 005**
Customer Sample Reference	**TP3 @ 1.5m**	**TP5 @ 0.5m**	**TP7 @ 0.9m**	**TP8 @ 2.0m**	**BH1 @ 0.5m**
Date Sampled	**27-AUG-2015**	**27-AUG-2015**	**27-AUG-2015**	**27-AUG-2015**	**27-AUG-2015**

Determinand	Method	Test Sample	LOD	Units					
Asbestos Quantification	T27	A40	0.001	%	Chrysotile Detected **0.002**	Chrysotile Detected **0.003**	Chrysotile Detected <0.001	Chrysotile Detected **0.003**	Chrysotile Detected **0.001**

Index to symbols used in 508960-1

Value	Description
A40	Assisted dried < 40C
S	Analysis was subcontracted
U	Analysis is UKAS accredited

Notes

Asbestos subcontracted to REC Limited

Method Index

Value	Description
T27	PLM

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
Asbestos Quantification	T27	A40	0.001	%	SU	001-005

Appendix E

Geotechnical Testing Laboratory Certificates

PSL
Professional Soils Laboratory

LABORATORY REPORT

UKAS TESTING
4043

Contract Number: PSL15/4435

Client's Reference: Report Date: 18 September 2015

Client Name: Terra consult
Bold Business Centre
Bold Lane, Sutton
St Helens
Merseyside
WA9 4TX

For the attention of: Victoria Smith

Contract Title: Meriden Quarry

Date Received: 10/9/2015
Date Commenced: 10/9/2015
Date Completed: 18/9/2015

Notes: **Opinions and Interpretations are outside the UKAS Accreditation**

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

R Gunson (Director)
A Watkins (Director)
M Beastall (Laboratory Manager)

D Lambe (Senior Technician)
S Royle (Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,
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awatkins@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Depth m	Description of Sample
BH1				MADE GROUND Dark brownvery clayey sand and gravel.
BH2				Brown clayey SAND and GRAVEL.
BH3				MADE GROUND Dark brown mottled brown very gravelly very clayey sand with cobbles.
BH4				Brown very sandy very clayey GRAVEL.
TP3				MADE GROUND Dark brown very sandy very clayey gravel.
TP8				Brown mottled dark brown very sandy very clayey GRAVEL.

PSL
Professional Soils Laboratory

Compiled by	Date	Checked by	Date	Approved by	Date
	18/09/15		18/09/15		18/09/15

MERIDEN QUARRY

Contract No: PSL15/4435

Client Ref:

SUMMARY OF SOIL CLASSIFICATION TESTS

(B.S. 1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Depth m	Moisture Content % Clause 3.2	Bulk Density Mg/m^3 Clause 7.2	Dry Density Mg/m^3 Clause 7.2	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4.4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	% Passing .425mm	Remarks
BH1				21								
BH2				4								
BH3				11								
BH4				10								
TP3				25								
TP8				18								

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

PSL
Professional Soils Laboratory

Compiled by	Date	Checked by	Date	Approved by	Date
	18/09/15		18/09/15		18/09/15
MERIDEN QUARRY				**Contract No:**	**PSL15/4435**
				Client Ref:	

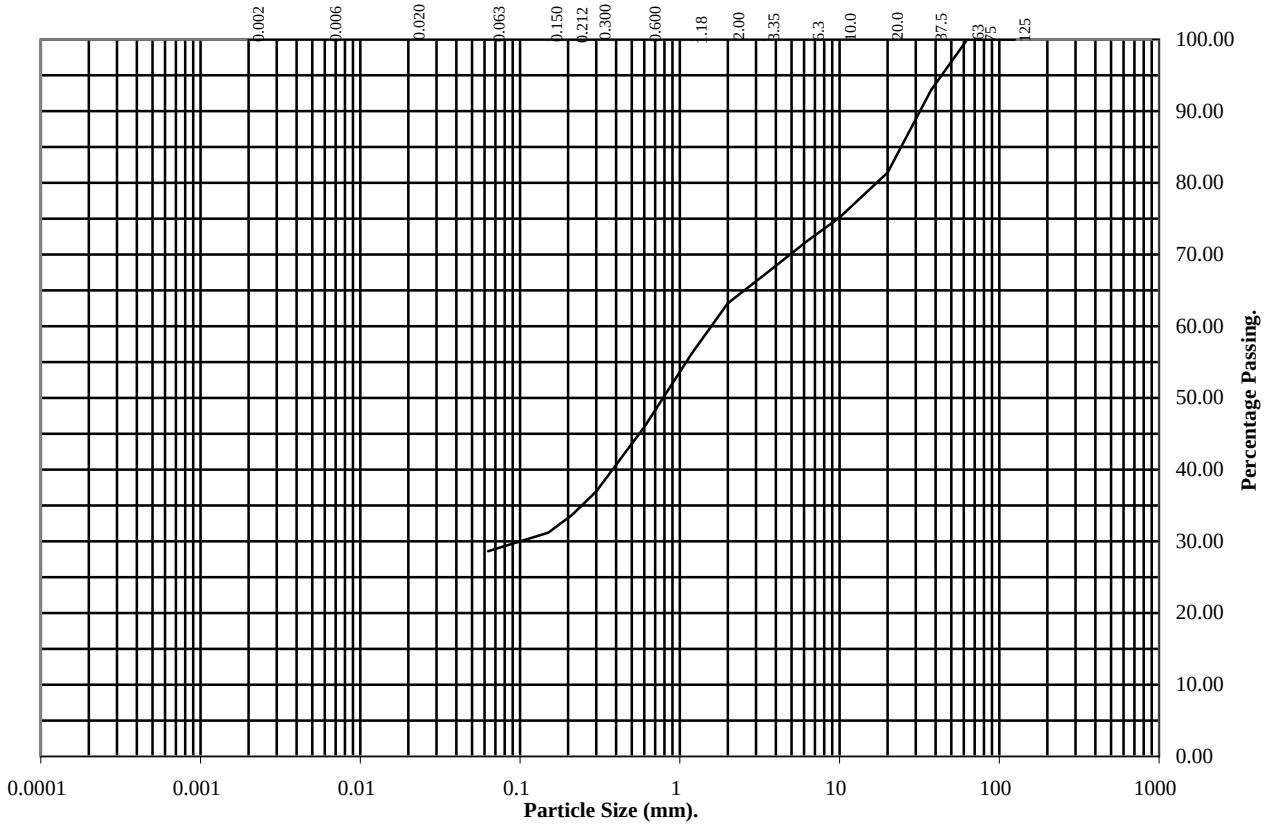
Particle Size Distribution Test

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH1** **Depth (m):**

Sample Number: **Sample Type:**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	93
20	81
10	75
6.3	72
3.35	67
2	63
1.18	56
0.6	46
0.3	37
0.212	34
0.15	31
0.063	29

Soil Fraction	Total Percentage
Cobbles	0
Gravel	37
Sand	34
Silt / Clay	29

Remarks:
See summary of soil descriptions.

Checked By	Date	Approved By	Date
	18/09/15		18/09/15

PSL Professional Soils Laboratory	**MERIDEN QUARRY**	**Contract No.: PSL15/4435**

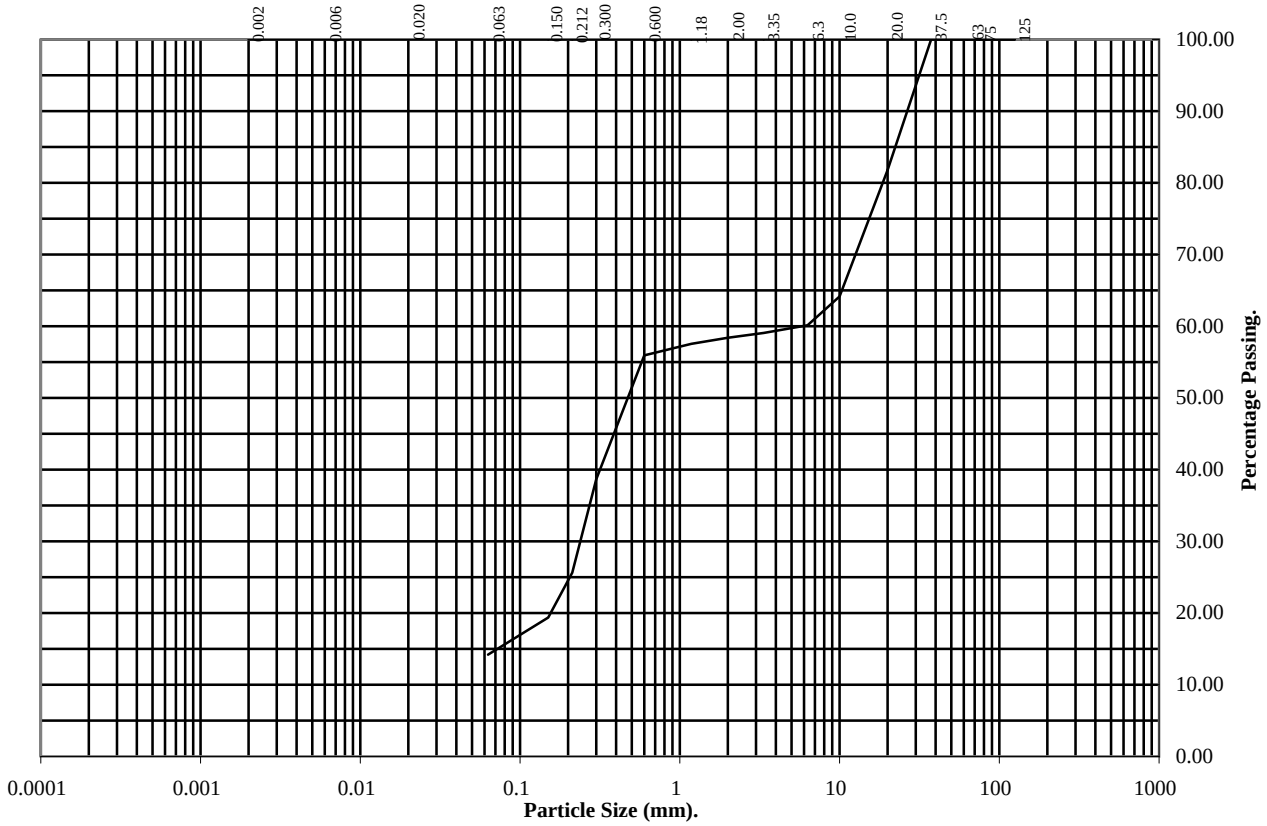
Particle Size Distribution Test

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH2** **Depth (m):**

Sample Number: **Sample Type:**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	100
20	82
10	64
6.3	60
3.35	59
2	58
1.18	58
0.6	56
0.3	39
0.212	26
0.15	19
0.063	14

Soil Fraction	Total Percentage
Cobbles	0
Gravel	42
Sand	44
Silt / Clay	14

Remarks:
See summary of soil descriptions.

Checked By	Date	Approved By	Date
	18/09/15		18/09/15

PSL Professional Soils Laboratory	**MERIDEN QUARRY**	**Contract No.: PSL15/4435**

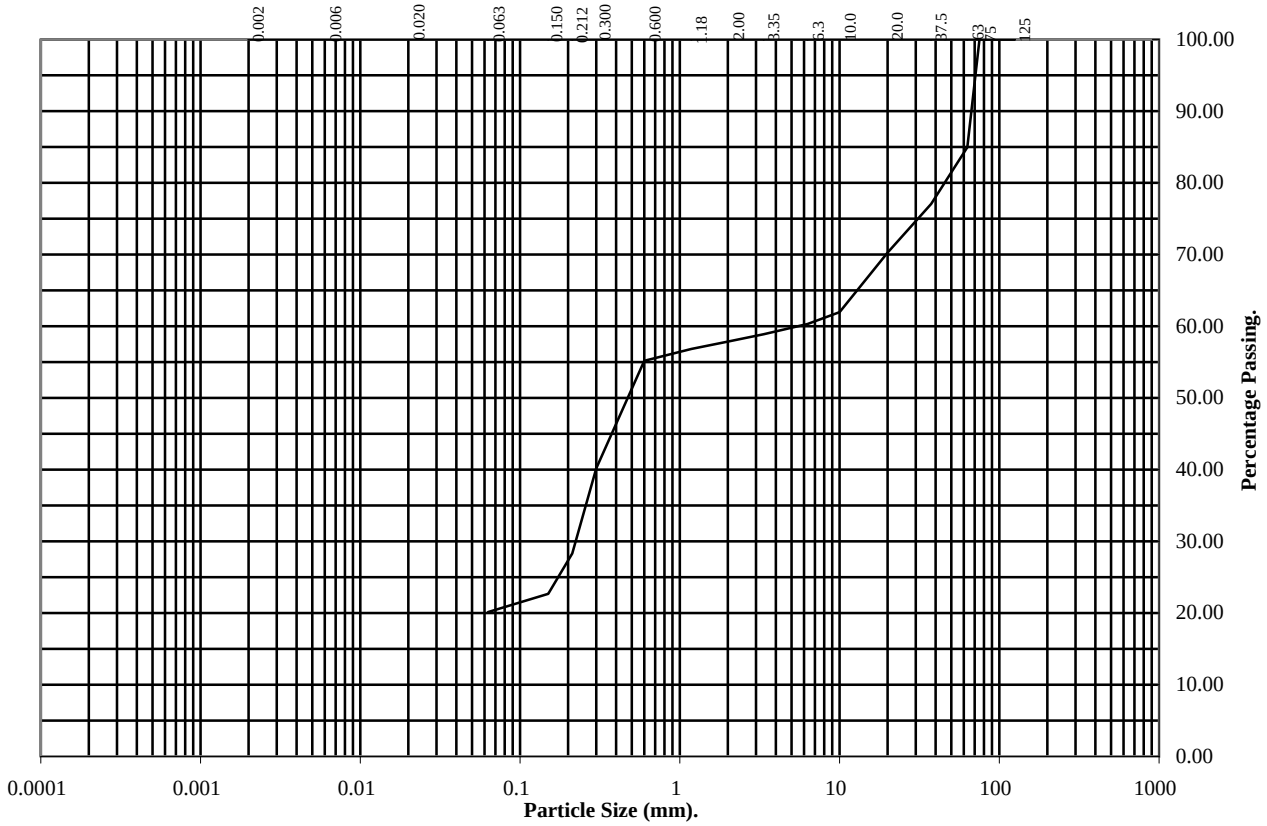
Particle Size Distribution Test

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH3** **Depth (m):**

Sample Number: **Sample Type:**



BS Test Sieve	Percentage Passing
125	100
75	100
63	85
37.5	77
20	70
10	62
6.3	60
3.35	59
2	58
1.18	57
0.6	55
0.3	40
0.212	28
0.15	23
0.063	20

Soil Fraction	Total Percentage
Cobbles	15
Gravel	27
Sand	38
Silt / Clay	20

Remarks:
See summary of soil descriptions.

Checked By	Date	Approved By	Date
	18/09/15		18/09/15

PSL Professional Soils Laboratory	**MERIDEN QUARRY**	**Contract No.: PSL15/4435**

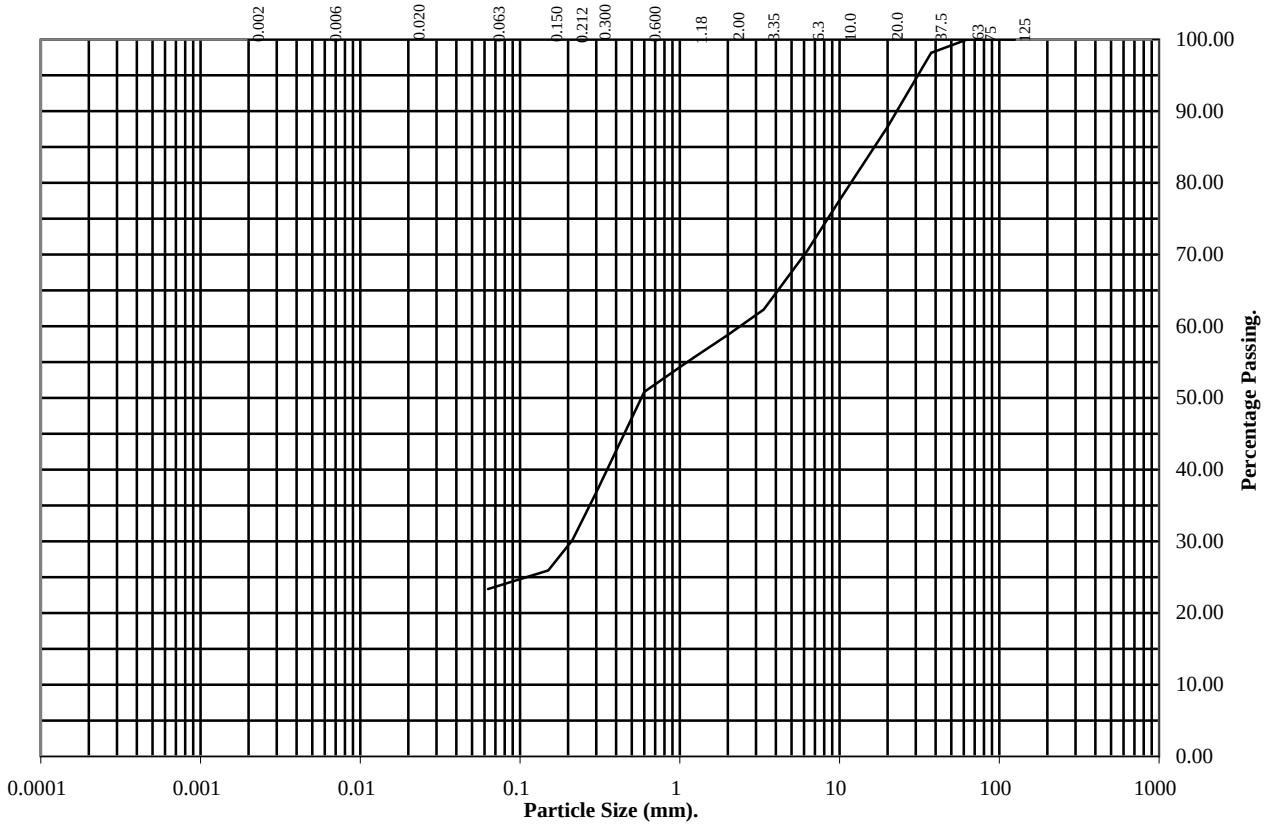
Particle Size Distribution Test

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH4** **Depth (m):**

Sample Number: **Sample Type:**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	98
20	88
10	78
6.3	71
3.35	62
2	59
1.18	55
0.6	51
0.3	37
0.212	30
0.15	26
0.063	23

Soil Fraction	Total Percentage
Cobbles	0
Gravel	41
Sand	36
Silt / Clay	23

Remarks:
See summary of soil descriptions.

Checked By	Date	Approved By	Date
	18/09/15		18/09/15

PSL Professional Soils Laboratory	**MERIDEN QUARRY**	**Contract No.: PSL15/4435**

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report Number:	15-21271 Issue-1
Initial Date of Issue:	17-Sep-2015
Client:	Professional Soils Laboratory
Client Address:	5/7 Hexthorpe Road Doncaster South Yorkshire DN4 0AR
Contact(s):	Anthony Watkins Mark Beastall Russell Gunson Sean Royle
Project:	PSL15/4435 - Meriden Quarry

Quotation No.:		**Date Received:**	14-Sep-2015
Order No.:		**Date Instructed:**	14-Sep-2015
No. of Samples:	6		
Turnaround: (Wkdays)	5	**Results Due Date:**	18-Sep-2015

Date Approved: 17-Sep-2015

Approved By:

Details: Phil Hellier, Project Director

Chemtest
The right chemistry to deliver results

Results Summary - Soil

Project: PSL15/4435 - Meriden Quarry

Client: Professional Soils Laboratory											
				Chemtest Job No.:	15-21271	15-21271	15-21271	15-21271	15-21271	15-21271
Quotation No.:				**Chemtest Sample ID.:**	191636	191637	191638	191639	191640	191641
Order No.:				Client Sample Ref.:						
				Client Sample ID.:	BH1	BH2	BH3	BH4	TP3	TP8
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):						
				Bottom Depth(m):						
				Date Sampled:	26-Aug-15	27-Aug-15	01-Sep-15	03-Sep-15	27-Aug-15	27-Aug-15
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Moisture	N	2030	%	0.02	17	3.0	9.0	8.1	23	13
pH (2.5:1)	N	2010			8.0	7.2	8.1	8.6	7.6	9.4
Magnesium (Water Soluble)	N	2120	g/l	0.01	0.048	< 0.010	< 0.010	< 0.010	0.031	< 0.010
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.01	1.2	< 0.010	< 0.010	< 0.010	1.0	0.30
Chloride (Extractable)	U	2220	g/l	0.01	0.095	0.016	< 0.010	0.010	0.027	0.026
Nitrate (Extractable)	N	2220	g/l	0.01	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010

Report Information

Key

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

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

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container

Sample Retention and Disposal

All soil samples will be retained for a period of 60 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

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







TerraConsult

Leaders in
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environmental &
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consultancy

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bsi. ISO 9001 Quality Management FS 573193

bsi. ISO 14001 Environmental Management EMS 573194

smas worksafe consultant www.smasltd.com

TerraConsult

APPENDIX SCR5

Factual Report (2016)

TerraConsult

8th January 2016

Report No 2646R001-1

LAND AT MERIDEN QUARRY

FACTUAL REPORT

Carried out for:

Beechwood Recycling Limited

LAND AT MERIDEN QUARRY

FACTUAL REPORT

Date: 8th January 2016
Report No 2646R001-1

Prepared for:

Beechwood Recycling Limited

Browns Road
Daventry
Northamptonshire
NN11 4NS

Engineer:

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DOCUMENT INFORMATION AND CONTROL SHEET

Document Status and Approval Schedule

Report No.	Title
2646R001-001	LAND AT MERIDEN QUARRY FACTUAL REPORT

Prepared by:	**C Lima** **BSc MSc MPhil FGS**		
Approved by:	**A Binns** **BSc CEng FICE**		
Date:	**08/01/2015**		

Issue:	Date:	Description:	Prepared by:

DISCLAIMER

This site investigation contract was completed by TerraConsult Ltd on the basis of a specification and scope of works and terms and conditions agreed with the client. This report was compiled with all reasonable skill and care, bearing in mind the project objectives, the agreed scope of works, the prevailing site conditions, the budget, the degree of manpower and resources allocated to the project as agreed.

TerraConsult Ltd cannot accept responsibility to any parties whatsoever, following the issue of this report, for any matters arising which may be considered outwith the agreed scope of works.

This report is issued solely to the client and TerraConsult cannot accept any responsibility to any third parties to whom this report will be circulated, in part or in full, and any such parties rely on the contents at their own risk.

LAND AT MERIDEN QUARRY

FACTUAL REPORT
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DRAWINGS

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LAND AT MERIDEN QUARRY

FACTUAL REPORT

1 INTRODUCTION

TerraConsult Limited (TCL) was commissioned by Beechwood Recycling Ltd to carry out a ground investigation for the proposed development at Meriden Quarry, near Coventry. The quarry has been backfilled with inert waste. The site is to be redeveloped to an industrial end-use comprising and In-Vessel Composting Facility, a Biomass Energy Facility and Waste Water Treatment Plant.

An earlier investigation was carried out by TCL in 2015 (Report No 10122/R02 Issue 2 dated October 2015): this report presents the factual records of the fieldwork and laboratory testing and monitoring of the present investigation. The data is also presented separately in digital format following AGS4 (2011).

The scope of the investigation, which was specified by TerraConsult comprised:

- 3 No. Boreholes formed by cable percussion techniques;
- In situ testing comprising of;
  - Standard penetration tests in boreholes;
- Geotechnical laboratory testing;
- Gas and water level monitoring
- Geoenvironmental laboratory testing;
- Factual report and AGS data.

The investigation was carried out in accordance with the contract specification and relevant standards (see References). The fieldwork was carried on 10th December and 11th December 2015.

Whilst every attempt is made to record full details of the strata encountered in the exploratory holes, techniques of exploratory hole formation and sampling will inevitably lead to disturbance, mixing or loss of material in some soils and rocks.

All information given in this report is based on the ground conditions encountered during the site work and on the results of laboratory and field tests performed during the investigation. However, there may be conditions at the site that have not been taken into account, such as unpredictable soil strata, contaminant concentrations and water conditions between or below exploratory holes. It should be noted that groundwater levels, gas concentrations and gas flows usually vary due to seasonal, atmospheric and/or other effects and may at times differ from those measured during the investigation.

This report refers to the second stage of site investigation which comprised boreholes NBH05, NBH06 and NBH07 only. The results of the last round of gas and groundwater monitoring are presented in conjunction with the results of the previous two rounds of monitoring. A detailed description of boreholes BH1 to BH4 and trial pits TP1 to TP8 is available in report 10122-SI report issued in October 2015.

2 SITE DESCRIPTION

2.1 Location and Topography

The site is located approximately 1.6km to the south west of the village of Meriden, 5.3km west of the outskirts of Coventry. The approximate centre of the site is located at Ordnance Survey National Grid Reference SP 23124 81243. The site is roughly trapezoidal in shape, covers an area of approximately 3.11 hectares and is relatively flat in a gently undulating landscape.

2.2 Published Geology

Geological maps show that the site is not underlain by superficial deposits, although the site has been quarried for its sand and gravel deposits. The bedrock geology is the Triassic Mercia Mudstone Group.

3 FIELDWORK

3.1 General

Fieldwork was undertaken on 10th December and 11th December 2015 with gas and water level monitoring continuing into 2016.

The objective of the works was to establish the depth and characteristics of the materials contained in the landfill.

The exploratory hole locations were selected by TerraConsult. The locations were set out from local features. A plan of all borehole locations is presented in in this report and also as Figure 1 below.

Figure 1. Exploratory Hole Location Plan

The exploratory holes were logged by an engineer in accordance with the recommendations of BS5930:2015, which incorporates the requirements of BS EN ISO 14688-1, 14688-2 and 14689-1. Detailed descriptions, together with sample records, in situ test results and observations made during formation of the exploratory hole, are given in the logs presented in Appendix A and should be read in conjunction with the Key included therein.

3.2 Exploratory Holes

A summary of the exploratory holes formed is listed in Table 1.

Table 1: Summary of Exploratory Positions				
Exploratory hole reference:	Type:	Final depth m bgl:	Base of landfill: M bgl	Waste material:
NBH05	Cable percussion	15.00m	5.20	Firm dark brown mottled reddish brown and light grey slightly sandy slightly gravelly clay
NBH06	Cable percussion	15.00m	5.40	Soft to firm dark brown mottled reddish brown and black slightly sandy gravelly clay
NBH07	Cable percussion	10.00m	6.10	Firm dark brown mottled reddish brown and light grey slightly sandy slightly gravelly clay

Prior to commencement, all exploratory positions were checked for services by reference to available plans, visual inspection and CAT/Genny survey. Inspection pits were excavated by hand and rechecked with a CAT at all borehole locations.

3.3 Boreholes

Three 150mm diameter cable percussive boreholes were drilled to maximum depth of 15.00 m bgl (NBH05 and NBH06). Borehole NBH 07 reached 10.00 m bgl. Their locations were surveyed in by the client.

Standard penetration tests (SPTs) were carried out, in accordance with BS EN ISO 22476-3:2005 (formerly BS 1377 Part 9:1990), within the granular strata and alternatively undisturbed samples within cohesive strata. Selected disturbed samples and bulk samples were also taken and together with the samples from the undisturbed samples and standard penetration tests returned to PSL's laboratory for inspection and testing as appropriate.

Detailed results of the strata encountered, depths and levels of changes, thickness of strata, samples taken, groundwater observations and SPTs are given on the exploratory hole records in Appendix A.

Soil samples for chemical analysis each comprised a pair of samples: a plastic tub for metals and inorganics, and an amber glass jar for organics. No installations were required by the client and all positions were backfilled with arisings upon completion.

3.4 Sampling

Samples for geotechnical testing and strata description were taken during the formation of the exploratory holes in general accordance with the specification and comprised: small and bulk disturbed samples and one U100 samples in a plastic liner. Soil samples for geochemical analysis were taken in accordance with the specification and stored in cool boxes for despatch directly to QTS Environmental of Lenham in Kent.

3.5 In Situ Testing

In situ testing was carried in accordance with BS 5930:2015 and BS 1377-9 (1990) unless otherwise stated. SPT results are presented on individual exploratory hole logs. Information relating to the identification and calibration of SPT hammers can also be found on the individual borehole logs.

4 LABORATORY TESTING

4.1 Geotechnical Testing

The testing was scheduled by TerraConsult and carried out by Professional Soils Laboratory (PSL), Doncaster, South Yorkshire in accordance with BS 1377 (1990) and BRE 365 unless otherwise stated. The testing is summarised in Table 2 below and the results are presented in Appendix B.

Table 2: Summary of Geotechnical Laboratory Testing

Number of tests	Test	Test Method
16	Moisture content.	BS1377: Part 2.
16	Liquid and plastic (Atterberg) limits.	BS1377: Part 2.
16	Particle size distribution by sieving.	BS1377: Part 2.
3	BRE SD1	-

4.2 Geoenvironmental Testing

The testing was scheduled by TerraConsult and carried out by QTS Environmental of Lenham Heath in Kent. The testing is summarised in Table 3 below and the results are presented in Appendix C.

Table 3: Summary of Geoenvironmental Laboratory Testing

Number of tests	Test
5	Soil Suite 3
3	Asbestos Screen

5 SUMMARY OF GROUND CONDITIONS

5.1 Topsoil

Topsoil varies between 0.20m and 0.30m thick and consists of soft dark brown slightly sandy gravelly clay.

5.2 Made Ground (Landfill)

Made Ground varies between 4.90m and 5.80m and is generally firm dark brown mottled reddish brown and light grey slightly sandy slightly gravelly clay with frequent fragments of brick, ceramic, timber, sandstone mudstone, coal, concrete, plastic and ash.

5.3 Drift Deposits

Loose locally medium dense light red to reddish brown slightly silty to silty gravelly to very gravelly fine to coarse sand ranging from 5.20m to6.10mbgl. SPT (N) values range from 0 to 19.

5.4 Groundwater

The observation of groundwater conditions are given in the following table.

Table 4: Groundwater Strikes

BH Number	Date	Depth of Strike (m)	Depth to Groundwater after 20mins (m)	Remarks
NBH05	10/12/2015	7.00	-	-
NBH06	10/12/2015	3.80	2.80	Borehole was cased at 2.90m and sealed at 4.80m
NBH07	10/12/2015	7.80	-	-

5.5 Ground gas monitoring

Three rounds of ground gas monitoring were scheduled in addition to the previous two rounds carried out in September 2015. Methane was again recorded in BH1 with a maximum concentration of 3.5% v/v in the first round and 3.4% v/v in the second round. Carbon monoxide was present in all boreholes with concentrations varying from 7.0% v/v to 13.2% v/v.

Table 5: Ground Gas Monitoring								
BH Number	**Date**	**Atmos Pressure (mb)**	**CH4 (% v/v)**	**CO2 (% v/v)**	**02 (% v/v)**	**Flow (l/hr)**	**Depth to Water (m bgl)**	**Weather conditions**
BH1	11/09/2015	1003	1.0	8.6	7.7	<0.1	6.51	Sunny
	18/09/2015	998	2.0	13.1	2.0	<0.1	6.60	Overcast, sunny spells
	21/12/2015	993	3.5	13.2	0.3	<0.1	6.37	Overcast, showers
	05/01/2016	976	3.4	12.8	0.1	<0.1	6.04	Overcast, dry
BH2	11/09/2015	1002	<0.1	6.6	12.8	<0.1	7.00	Sunny
	18/09/2015	999	<0.1	0.6	19.1	<0.1	7.03	Overcast, sunny spells
	21/12/2015	993	<0.1	7.0	11.9	<0.1	6.77	Overcast, showers
	05/01/2016	976	<0.1	7.6	12.7	<0.1	6.66	Overcast, dry
BH3	11/09/2015	1004	<0.1	10.0	6.7	<0.1	6.30	Sunny
	18/09/2015	1000	<0.1	0.0	20.4	<0.1	6.02	Overcast, sunny spells
	21/12/2015	993	<0.1	10.6	7.4	<0.1	5.76	Overcast, showers
	05/01/2015	976	<0.1	7.2	10.7	<0.1	5.65	Overcast, dry
BH4	11/09/2015	1004	<0.1	6.8	9.8	<0.1	5.54	Sunny
	18/09/2015	1000	<0.1	0.0	20.4	<0.1	6.02	Overcast, sunny spells
	21/12/2015	993	<0.1	9.8	12.8	<0.1	5.33	Overcast, showers
	05/01/2016	976	<0.1	11.6	5.6	<0.1	5.24	Overcast, dry

REFERENCES

AGS: 2010: Electronic transfer of geotechnical and geoenvironmental data (Edition 4 including addendum 3, 2011). Association of Geotechnical and Geoenvironmental Specialists.

BRE Special Digest 1: 2005 Concrete in aggressive ground.

BS 1377 : 1990 : Methods of test for soils for civil engineering purposes. Published in nine parts. British Standards Institution.

BS 5930 : 2015 : Code of practice for site investigation. British Standards Institution.

BS 10175 : 2011: Investigation of potentially contaminated sites – Code of Practice. British Standards Institution

BS EN 1997-1: 2004 : Eurocode 7 – Geotechnical Design – Part 1: General rules. Including UK National Appendix of November 2007. British Standards Institution.

BS EN ISO 14688-1 : 2002 : Geotechnical investigation and testing – Identification and classification of soil – Part 1: Identification and description. British Standards Institution.

BS EN ISO 14688-2 : 2004 : Geotechnical investigation and testing – Identification and classification of soil – Part 2: Principles for a classification. British Standards Institution.

BS EN ISO 14689-1 : 2003 : Geotechnical investigation and testing – Identification and classification of rock – Part 1: Identification and description. British Standards Institution.

BS EN ISO 22475-1 : 2006 : Geotechnical investigation and testing – Sampling methods and groundwater measurements – Part 1: Technical principals for execution (July 2011 reprint). British Standards Institution.

BS EN ISO 22476-3 : 2005 : Geotechnical investigation and testing – Field Testing – Part 3: Standard penetration test

ISRM: 1981: Rock Characterisation, Testing and Monitoring - ISRM Suggested Methods (Ed E T Brown). Commission on Testing Methods, International Society for Rock Mechanics, Pergamon Press.

ISRM: 1985: Suggested method for determining point load strength. Commission on Testing Methods, International Society for Rock Mechanics, International Journal of Rock Mechanics, Mining Sciences and Geomechanics Abstracts, Vol. 22

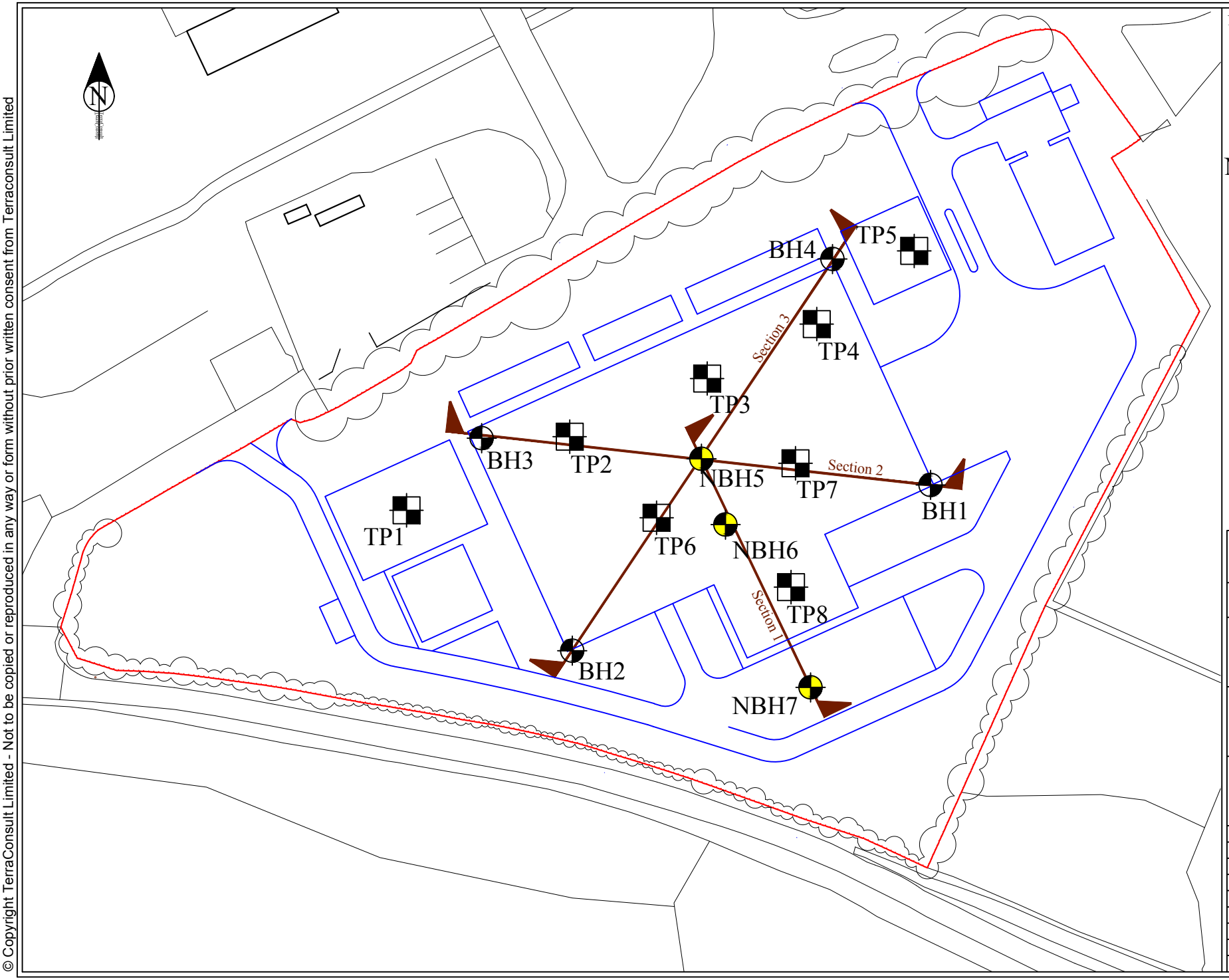
6 LICENCES

British Geological Survey Reproduction Licence Number: IPR/187-68CF CO8/053-CSL

Ordnance Survey Reproduction Licence Number. 100035365

DRAWINGS

2646 **Exploratory Hole Location Plan**
Cross Section 1 – NBH5-NBH7
Cross Section 2 – BH1 – BH3
Cross Section 3 – BH2 – BH4



Notes

TP3 — TCL Trial Pit (September 2015)

BH3 — TCL Borehole (September 2015)

NBH6 — TCL Borehole (December 2015)

TerraConsult
Bold Business Centre, Bold Lane, Sutton, St Helens WA9 4TX

Client
Beechwood Recycling Ltd

Site
Meriden Quarry

Title
Trial Pit & Bore Hole Location Plan

Scale	1:1,250	@ A4
Drawing No.	2646/1/001	
Rev	Date	Description
File	26461001.dwg	
Date	01/16	Engineer CL
Drawn	PP	Checked AB

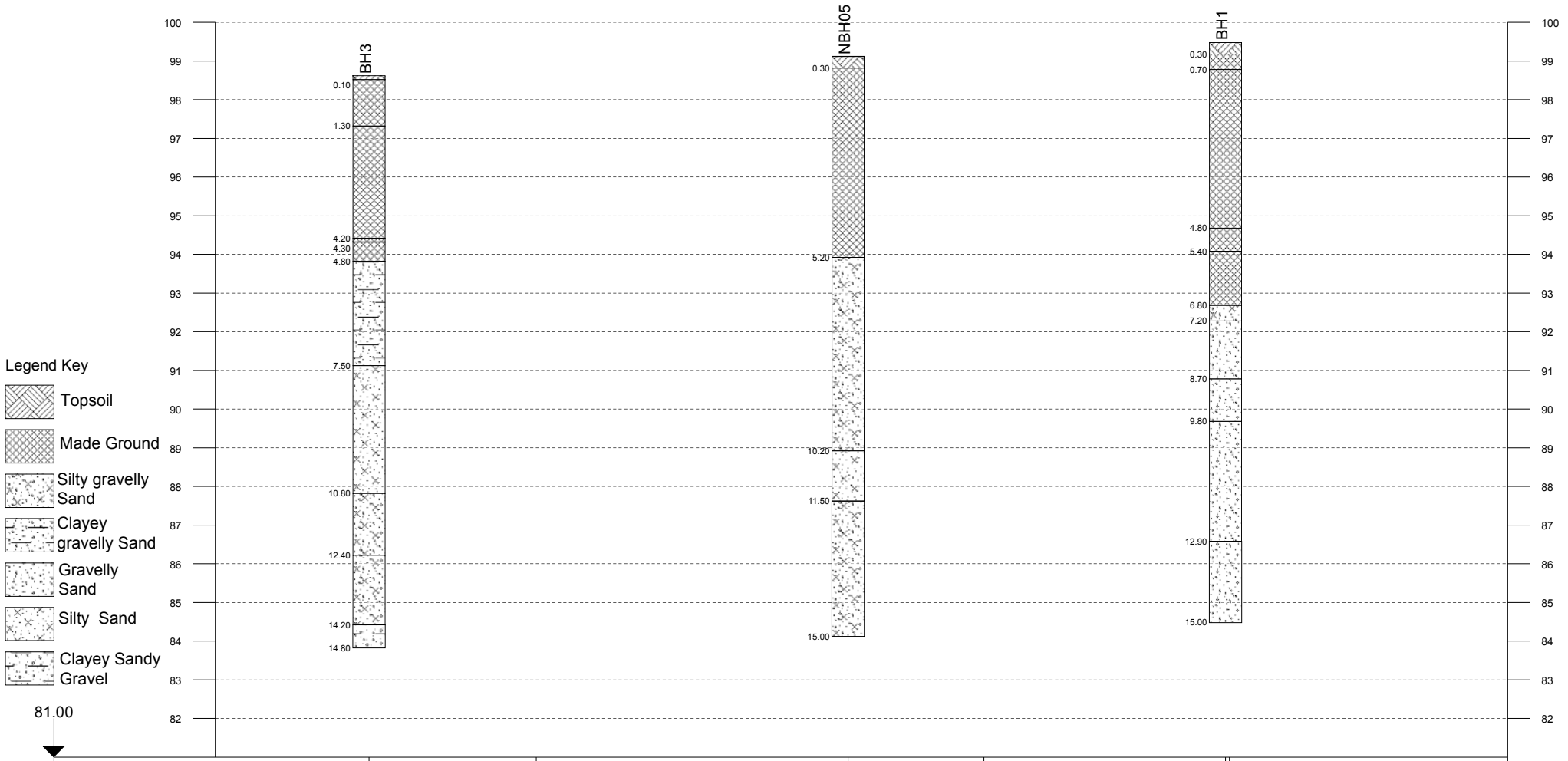
Project Id: 2646	Title: Section line 1
Project Title: Meriden Quarry	Vertical Scale: 1:150
Location: Meriden	Horizontal Scale: 1:500
Client: Beechwood Recycling Ltd	Engineer: JT

TerraConsult

Chainage (m)	0.00	11.02	30.93	38.26	65.05	72.67
Offset (m)	0.70		0.81		2.37	
Elevation (mAOD)	99.12		99.49		100.14	

Project Id: 2646	Title: Section line 2
Project Title: Meriden Quarry	Vertical Scale: 1:150
Location: Meriden	Horizontal Scale: 1:850
Client: Beechwood Recycling Ltd	Engineer: JT

TerraConsult



Chainage (m)	0.00 1.21	25.71	71.40	91.31	126.71 127.30
Offset (m)	0.92	0.26	2.45	1.34	0.21
Elevation (mAOD)	98.62	98.72	99.12	99.33	99.48

Project Id: 2646
Project Title: Meriden Quarry
Location: Meriden
Client: Beechwood Recycling Ltd

Title: Section line 3
Vertical Scale: 1:150
Horizontal Scale: 1:850
Engineer: JT

TerraConsult

Chainage (m)	0.00	12.79	34.74	73.95	75.29	93.82	132.10
Offset (m)		0.85	2.99	0.15		1.35	0.70
Elevation (mAOD)		98.29	98.85	99.12		99.31	99.67

APPENDICES

List of Appendices

APPENDIX A

Exploratory Hole Records

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill bit:	Logged:	Logger:	Remarks:
CP	0.00	15.00	26-08-15	27-08-15		Dando Rig	n/a	n/a	27-08-15	VSS	

Location details:

mE:	423138.70
mN:	281105.50
mAOD:	99.48
Grid:	OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results
				(0.30)	TOPSOIL: Dark greyish brown sandy gravelly CLAY. Gravel is subangular to rounded fine-medium of quartz, quartzite. Abundant roots.					
			99.18	0.30	MADE GROUND: Light orangish brown mottled greyish brown gravelly fine and medium SAND. Gravel is subangular to rounded fine and medium of quartz and quartzite with occasional red, green or grey mudstone. Occasional fine to coarse gravel sized fragments of brick and concrete. Occasional metal wire, metal containers, plastic and fabric fragments.			0.50 - 0.60	ES	
				(0.40)				0.90 - 1.00	B	
			98.78	0.70	MADE GROUND: Blackish brown clayey gravelly fine to coarse SAND. Gravel is subangular to rounded fine to coarse of concrete, asphalt and brick. Occasional fragments of rubber, metal, wood and plastic. Hydrocarbon odour present towards base.	Dry	1.50	1.50	C	N=26 (2,1/2,8,8,8)
				(4.10)		Dry	3.50	3.00	C	N=4 (2,1/1,1,1,1)
						Dry	4.50	4.50	C	N=46 (8,12/14,12,12,8)
			94.68	4.80	MADE GROUND: Dark greyish brown mottled blackish brown very gravelly clayey fine to coarse SAND. Gravel is subangular to rounded fine to coarse of brick, quartz and mudstone. Hydrocarbon odour.					
				(0.60)						
			94.08	5.40	Light orangish brown mottled greyish brown clayey gravelly fine to coarse SAND. Gravel is subangular to rounded fine to coarse of quartz and mudstone.					
				(1.40)		Dry	6.00	6.00	C	N=17 (2,4/4,4,4,5)
			92.68	6.80	Dark orangish brown slightly gravelly slightly silty fine and medium SAND. Gravel is subangular to rounded fine and medium of predominately quartz and quartzite with occasional mudstone and igneous material.					
				(0.40)						
			92.28	7.20	Medium dense dark orangish brown slightly gravelly fine and medium SAND. Gravel is subrounded to rounded fine of quartzite and mudstone.	Dry	7.50	7.50	S	N=27 (4,3/5,6,7,9)
				(1.50)						
			90.78	8.70	Medium dense dark orangish brown gravelly fine and medium SAND. Gravel is subangular to rounded fine of quartzite, mudstone and occasional sandstone.	Dry	9.00	9.00	S	N=28 (3,5/7,7,6,8)
				(1.10)						
			89.68	9.80	Medium dense dark orangish brown slightly gravelly fine and medium					
Inst					Stratum continues next page	Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:
7.20	6.50	7.20	

Diameter & casing:

Dia (mm):	Depth:	Casing:
		15.00

Depth related remarks:

From	to:	Remarks

Chiselling details:

From	to:	Duration:	Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in meters.

Log issue: DRAFT

Scale: 1:50

Project: Meriden Quarry

Project No: 2646

Client: Beechwood Recycling Ltd

Exploratory position reference:

BH1

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill bit:	Logged:	Logger:	Remarks:
CP	0.00	15.00	26-08-15	27-08-15		Dando Rig	n/a	n/a	27-08-15	VSS	

Location details:

mE:	423138.70
mN:	281105.50
mAOD:	99.48
Grid:	OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results
					SAND. Gravel is subangular to rounded fine of quartz and quartzite.	Dry	10.50	10.50	S	N=26 (4,5/5,6,7,8)
				(3.10)		Dry	12.00	12.00	S	N=29 (3,5/6,7,7,9)
			86.58	12.90	Medium dense dark orangish brown gravelly fine and medium SAND. Gravel is subangular to rounded fine to coarse of mixed lithologies.	Dry	13.50	13.50	S	N=34 (5,6/7,7,9,11)
				(2.10)						
	SP		84.48	15.00	Borehole terminated at 15.00m					
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck: Rose to: Casing: Sealed:

Diameter & casing:

Dia (mm): Depth: Casing:
15.00

Depth related remarks:

From to: Remarks

Chiselling details:

From to: Duration: Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in meters.

Log issue: DRAFT

Scale: 1:50

Project: Meriden Quarry

Project No: 2646

Client: Beechwood Recycling Ltd

Exploratory position reference:

BH1

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill bit:	Logged:	Logger:	Remarks:
CP	0.00	15.00	27-08-15	01-09-15		Dando Rig	n/a	n/a	01-09-15	VSS	

Location details:

mE:	423050.00
mN:	281055.40
mAOD:	99.67
Grid:	OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing				
						Water	Casing	Depth	Type & No	Results
			99.57	0.10	TOPSOIL: Dark greyish brown slightly clayey gravelly SAND. Gravel is rounded fine to coarse quartz and quartzite. Occasional medium and coarse subangular gravel size fragments of brick. Abundant roots.					
				(1.20)	MADE GROUND: Light orangish brown slightly silty gravelly SAND. Gravel is subangular to rounded fine to medium of mixed lithologies.			0.50 - 0.60	ES	
								0.90 - 1.00	B	
			98.37	1.30	MADE GROUND: Firm orangish brown mottled light grey slightly gravelly sandy CLAY. Gravel is subangular to rounded fine to coarse of mixed lithologies. Occasional angular medium gravel sized fragments of brick and concrete.	Dry	1.50	1.50	C	N=9 (4,3/3,3,2,1)
				(3.90)		Dry	3.00	3.00	C	N=5 (2,1/2,1,1,1)
						Dry	4.50	4.50	C	N=10 (2,1/2,3,2,3)
			94.47	5.20	Medium dense dark orangish brown mottled yellowish brown very gravelly slightly silty fine to coarse SAND. Gravel is subangular to rounded fine to coarse of mixed lithologies.					
				(2.20)		Dry	6.00	6.00	C	N=31 (4,5/5,5,9,12)
			92.27	7.40	Medium dense dark orangish brown mottled yellowish brown slightly silty fine to coarse SAND. Rare gravel of subrounded to rounded fine and medium quartz and quartzite.	Dry	7.50	7.50	C	N=27 (2,4/5,6,7,9)
				(2.90)		Dry	9.00	9.00	C	N=6 (1,1/1,1,2,2)
	Inst				Stratum continues next page	Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
		15.00

Depth related remarks:

From	to:	Remarks

Chiselling details:

From	to:	Duration:	Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in meters.

Log issue: DRAFT

Scale: 1:50

Project: Meriden Quarry

Project No: 2646

Client: Beechwood Recycling Ltd

Exploratory position reference:

BH2

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill bit:	Logged:	Logger:	Remarks:
CP	0.00	15.00	27-08-15	01-09-15		Dando Rig	n/a	n/a	01-09-15	VSS	

Location details:

mE:	423050.00
mN:	281055.40
mAOD:	99.67
Grid:	OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results
			89.37	10.30	Medium dense dark orangish brown mottled yellowish brown gravelly slightly silty fine to coarse SAND. Gravel is subangular to rounded fine to coarse of mixed lithologies.	Dry	10.50	10.50	C	N=26 (3,3/3,5,7,11)
				(3.20)		Dry	12.00	12.00	C	55 (3,4/55 for 210mm)
			86.17	13.50	Medium dense dark orangish brown slightly silty slightly gravelly SAND. Gravel is subangular to rounded fine and medium of mixed lithologies.	Dry	13.50	13.50	C	N=28 (3,5/7,7,7,7)
				(1.50)						
	SP		84.67	15.00	Borehole terminated at 15.00m					
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
		15.00

Depth related remarks:

From	to:	Remarks

Chiselling details:

From	to:	Duration:	Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in meters.

Log issue: DRAFT

Scale: 1:50

Project: Meriden Quarry

Project No: 2646

Client: Beechwood Recycling Ltd

Exploratory position reference:

BH2

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill bit:	Logged:	Logger:	Remarks:
CP	0.00	14.80	01-09-15	02-09-15		Dando Rig	n/a	n/a	02-09-15	VSS	

Location details:

mE:	423013.20
mN:	281104.20
mAOD:	98.62
Grid:	OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results
			98.52	0.10	TOPSOIL: Dark greyish brown slightly clayey gravelly SAND. Gravel is rounded fine to coarse quartz and quartzite and subangular fine brick. Abundant roots.					
				(1.20)	MADE GROUND: Dark greyish brown mottled blackish brown gravelly slightly clayey SAND. Gravel is subangular to rounded fine to coarse of mixed lithologies. Rare pockets (up to 200mm diameter) of dark brown slightly sandy CLAY. Rare whole bricks. Rare 2mm diameter wire.			0.50 - 0.60	ES	
								0.90 - 1.00	B	
			97.32	1.30	MADE GROUND: Dark orangish brown gravelly clayey fine and medium SAND. Gravel is subangular to rounded of mudstone, quartz and igneous material. Occasional fragments of medium and coarse gravel sized angular brick fragments.	Dry	1.50	1.50	C	3 (1,1/1,1,,1)
				(2.90)		Dry	3.00	3.00	C	N=4 (1,1/1,1,1,1)
			94.42	4.20						
			94.32	4.30	MADE GROUND: Dark grey slightly gravelly clayey SAND. Gravel is subrounded to rounded fine of quartz and mudstone.					
				(0.50)	MADE GROUND: Dark orangish brown slightly gravelly clayey SAND. Gravel is subrounded to rounded of quartz, mudstone and brick. Rare clods (up to 100mm diameter) of dark orangish brown slightly gravelly sandy CLAY.	Dry	4.50	4.50	C	N=22 (3,2/3,3,7,9)
			93.82	4.80	Medium dense dark orangish brown slightly gravelly clayey fine and medium SAND. Gravel is subangular to rounded of quartz, quartzite and mudstone.					
				(2.70)		Dry	6.00	6.00	C	N=15 (1,2/2,4,5,4)
			91.12	7.50	Medium dense dark orangish brown slightly silty fine and medium SAND. Rare gravel of subangular to rounded fine and medium quartz and quartzite.	Dry	7.50	7.50	C	N=23 (1,3/5,5,6,7)
				(3.30)		Dry	9.00	9.00	C	N=14 (1,1/2,3,4,5)
Inst					Stratum continues next page	Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
		14.50

Depth related remarks:

From	to:	Remarks

Chiselling details:

From	to:	Duration:	Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in meters.

Log issue: DRAFT

Scale: 1:50

Project: Meriden Quarry

Project No: 2646

Client: Beechwood Recycling Ltd

Exploratory position reference:

BH3

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill bit:	Logged:	Logger:	Remarks:
CP	0.00	14.80	01-09-15	02-09-15		Dando Rig	n/a	n/a	02-09-15	VSS	

Location details:

mE:	423013.20
mN:	281104.20
mAOD:	98.62
Grid:	OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results
						Dry	10.50	10.50	C	N=21 (2,4/5,4,5,7)
			87.82	10.80	Medium dense dark orangish brown slightly silty gravelly fine and medium SAND. Gravel is subangular to rounded of quartz, quartzite and mudstone.					
				(1.60)		Dry	12.00	12.00	C	N=28 (2,4/6,7,8,7)
			86.22	12.40	Medium dense dark greyish brown slightly silty gravelly SAND. Gravel is subangular to rounded fine to coarse of quartz, quartzite and mudstone. Occasional pockets (up to 200mm) of firm to stiff dark orangish brown slightly gravelly sandy CLAY. Gravel is subangular to rounded fine and medium of green and red mudstones and marl.					
				(1.80)		Dry	13.50	13.50	C	N=26 (4,5/5,6,7,8)
			84.42	14.20	Very dense dark orangish brown clayey sandy subangular to rounded fine and medium GRAVEL of red mudstone and marl.					
				(0.60)		Dry	14.50	14.50	C	58 (8,12/58 for 129mm)
	SP		83.82	14.80	Borehole terminated at 14.80m					
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck: Rose to: Casing: Sealed:

Diameter & casing:

Dia (mm): Depth: Casing:
14.50

Depth related remarks:

From to: Remarks

Chiselling details:

From to: Duration: Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in meters.

Log issue: DRAFT

Scale: 1:50

Project: Meriden Quarry

Project No: 2646

Client: Beechwood Recycling Ltd

Exploratory position reference:

BH3

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill bit:	Logged:	Logger:	Remarks:
CP	0.00	14.50	03-09-15	04-09-15		Dando Rig	n/a	n/a	04-09-15	VSS	

Location details:

mE:	423106.60
mN:	281159.60
mAOD:	98.29
Grid:	OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results
			98.19	0.10	TOPSOIL: Dark greyish brown slightly clayey gravelly SAND. Gravel is rounded fine-medium of quartz, quartzite, brick. Abundant roots.					
			97.99	0.30	MADE GROUND: Firm dark reddish brown occasionally mottled light grey slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse of mixed lithologies. Occasional cobble size fragments of tarmac (hydrocarbon odour). Occasional red bricks. Occasional wood fragments (up to 10mm).			0.50 - 0.60	ES	
								0.90 - 1.00	B	
				(1.40)	MADE GROUND: Dark reddish brown clayey gravelly SAND. Gravel is subangular to rounded fine to coarse of mixed lithologies. Occasional coarse gravel size brick fragments. *0.50m: Sandstone cobble and metal fragments.*	Dry	1.50	1.50	C	N=7 (3,2/2,2,1,2)
			96.59	1.70	Soft to firm dark reddish brown slightly gravelly sandy CLAY with pockets (up to 20mm) of yellowish brown fine and medium SAND. Gravel is subangular to rounded fine to coarse of mixed lithologies.					
				(2.50)		Dry	3.00	3.00	C	N=13 (1 for 75mm/1,2,4,6)
			94.09	4.20	Medium dense dark orangish brown slightly silty very gravelly SAND with occasional medium and coarse gravel sized pockets of dark orangish brown sandy CLAY. Gravel is subrounded to rounded fine and medium of quartz, quartzite and mudstone.	Dry	4.50	4.50	C	N=16 (5,4/4,4,4,4)
				(1.90)						
			92.19	6.10	Medium dense dark orangish brown slightly silty slightly gravelly subangular to subrounded predominately fine with occasional medium of quartz and mudstone.	Dry	6.00	6.00	C	N=23 (3,4/4,5,6,8)
						Dry	7.50	7.50	C	N=17 (1,1/2,4,5,6)
				(5.10)						
						Dry	9.00	9.00	C	N=17 (1,2/2,3,5,7)
	Inst				Stratum continues next page	Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
		14.20

Depth related remarks:

From	to:	Remarks

Chiselling details:

From	to:	Duration:	Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in meters.

Log issue: DRAFT

Scale: 1:50

Project: Meriden Quarry

Project No: 2646

Client: Beechwood Recycling Ltd

Exploratory position reference:

BH4

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill bit:	Logged:	Logger:	Remarks:
CP	0.00	14.50	03-09-15	04-09-15		Dando Rig	n/a	n/a	04-09-15	VSS	

Location details:

mE:	423106.60
mN:	281159.60
mAOD:	98.29
Grid:	OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results
						Dry	10.50	10.50	C	N=24 (1,2/3,5,7,9)
			87.09	11.20	Medium dense to dense dark orangish brown slightly silty gravelly SAND. Gravel is subrounded to rounded fine to medium of quartz, quartzite and mudstone.	Dry	12.00	12.00	C	N=37 (2,4/6,9,10,12)
				(3.00)		Dry	13.50	13.50	C	N=45 (4,6/8,10,12,15)
			84.09	14.20						
				(0.30)	Firm to stiff dark reddish brown slightly sandy slightly gravelly CLAY. Gravel is of subrounded to rounded fine to medium mudstone, quartzite and greenish marls. Rare cobbles.					
	SP		83.79	14.50	Borehole terminated at 14.50m					
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
		14.20

Depth related remarks:

From	to:	Remarks

Chiselling details:

From	to:	Duration:	Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in meters.

Log issue: DRAFT

Scale: 1:50

Project: Meriden Quarry

Project No: 2646

Client: Beechwood Recycling Ltd

Exploratory position reference:

BH4

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	10-12-15	10-12-15	DH	N/A	N/A	N/A	11-12-15	LM	
CP	0.00	15.00	10-12-15	11-12-15	DH	Dando 3000	N/A	N/A	11-12-15	LM	PB15 Er (%): 74

Location details:

mE:	423083.40
mN:	281103.00
mAOD:	99.12
Grid:	OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results
				(0.30)	TOPSOIL: Soft dark brown slightly sandy gravelly CLAY with frequent roots. Gravel is angular to subrounded fine to coarse of sandstone, mudstone and brick fragments.			0.20 - 1.20	B	
			98.82	0.30	MADE GROUND: Firm dark brown mottled reddish brown and light grey slightly sandy slightly gravelly CLAY with occasional cobbles. Gravel is angular to subangular fine to coarse of brick fragments, ceramic, timber, sandstone, mudstone and coal. Cobbles are angular to subangular of whole bricks and concrete.	Dry		1.20	S	N=7 (2,2/2,1,2,2)
								1.20 - 1.65	B	
								1.20 - 1.65	D	
						Dry		2.00	S	N=8 (2,3/3,2,1,2)
								2.00 - 2.45	B	
								2.00 - 2.45	D	
				(4.90)						
						Dry		3.00	S	N=10 (2,2/4,3,1,2)
								3.00 - 3.45	B	
								3.00 - 3.45	D	
						Dry		4.00	S	N=9 (2,3/2,3,3,1)
								4.00 - 4.45	B	
								4.00 - 4.45	D	
						Dry		5.00	S	N=39 (2,5/5,8,12,14)
			93.92	5.20	Loose locally medium dense reddish brown silty very gravelly fine to coarse SAND. Gravel is subangular to rounded fine to coarse of sandstone and mudstone.			5.00 - 5.45	B	
								5.00 - 5.45	D	
						Dry		6.00	C	N=5 (2,3/2,1,1,1)
								6.00 - 6.45	B	
								6.00 - 6.45	D	
	▼							7.00	D	
				(5.00)		Dry		7.50	C	N=15 (2,3/3,4,5,3)
								7.50 - 7.95	B	
								7.50 - 7.95	D	
								8.50	D	
						Dry		9.00	C	N=6 (2,5/3,1,1,1)
								9.00 - 9.45	B	
								9.00 - 9.45	D	
	Inst				Stratum continues next page			10.00	D	

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:
7.00	7.00		

Diameter & casing:

Dia (mm):	Depth:	Casing:
150	15.00	15.00

Depth related remarks:

From	to:	Remarks

Chiselling details:

From	to:	Duration:	Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in meters.

Log issue: DRAFT

Scale: 1:50

Project: Meriden Quarry

Project No: 2646

Client: Beechwood Recycling Ltd

Exploratory position reference:

NBH05

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	10-12-15	10-12-15	DH	N/A	N/A	N/A	11-12-15	LM	
CP	0.00	15.00	10-12-15	11-12-15	DH	Dando 3000	N/A	N/A	11-12-15	LM	PB15 Er (%): 74

Location details:

mE:	423083.40
mN:	281103.00
mAOD:	99.12
Grid:	OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results
			88.92	10.20	Very loose dark reddish brown very silty fine to medium SAND.			10.20	D	
						Dry		10.50	S	N=3 (1,2/1,0,1,1)
								10.50 - 10.95	B	
								10.50 - 10.95	D	
				(1.30)						
			87.62	11.50	Loose reddish brown silty very gravelly fine to coarse SAND with occasional cobble sized pockets of soft sandy CLAY. Gravel is subangular to rounded fine to coarse of sandstone and mudstone.			11.50	D	
						Dry		12.00	C	N=11 (2,3/3,2,3,3)
								12.00 - 12.45	B	
								12.00 - 12.45	D	
								13.00	D	
				(3.50)						
						Dry		13.50	C	N=6 (1,0/1,1,2,2)
								13.50 - 13.95	B	
								13.50 - 13.95	D	
								14.50	D	
			84.12	15.00	Borehole terminated at 15.00m			15.00	D	
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
150	15.00	15.00

Depth related remarks:

From	to:	Remarks
11.50	15.00	Blowing sand

Chiselling details:

From	to:	Duration:	Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in meters.

Log issue: DRAFT

Scale: 1:50

Project: Meriden Quarry

Project No: 2646

Client: Beechwood Recycling Ltd

Exploratory position reference:

NBH05

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	10-12-15	10-12-15	SS	N/A	N/A	N/A	11-12-15	LM	
CP	0.00	15.00	10-12-15	11-12-15	SS	Dando 150	N/A	N/A	11-12-15	LM	PB7 Er (%): 76

Location details:

mE:	423092.50
mN:	281085.30
mAOD:	99.49
Grid:	OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results
			99.29	0.20	TOPSOIL: Soft dark brown slightly sandy gravelly CLAY with frequent roots. Gravel is angular to subrounded fine to coarse of sandstone, mudstone and brick fragments.			0.20 - 1.20	B	
					MADE GROUND: Soft to firm dark brown mottled reddish brown and black slightly sandy gravelly CLAY. Gravel is angular to subrounded fine to coarse of brick fragments, timber fragments, coal, plastic, metal, sandstone and mudstone with rare ash.	Dry		1.20	S	N=6 (1,1/1,1,2,2)
								1.20 - 1.65	D	
								1.20 - 1.70	B	
						Dry		2.00	S	N=1 (1,0/0,1,0,0)
								2.00 - 2.45	D	
								2.00 - 2.50	B	
				(5.20)						
						Dry		3.00	S	N=1 (1,0/0,1,0,0)
								3.00 - 3.45	D	
								3.00 - 3.50	B	
						Dry		4.00	S	N=6 (1,1/1,1,2,2)
								4.00 - 4.45	D	
								4.00 - 4.50	B	
						Dry		5.00	S	N=25 (4,5/6,6,7,6)
								5.00 - 5.45	D	
								5.00 - 5.50	B	
			94.09	5.40	Reddish brown locally mottled black slightly silty very sandy subangular to rounded fine to coarse GRAVEL of sandstone and mudstone.			5.50 - 6.00	B	
				(0.60)						
			93.49	6.00	Reddish brown silty gravelly fine to coarse SAND. Gravel is subangular to rounded fine to coarse of sandstone and mudstone.			6.00	D	
						Dry		6.50	S	N=13 (2,2/3,3,3,4)
								6.50 - 6.95	D	
								6.50 - 7.00	B	
								7.50	D	
						Dry		8.00	S	N=7 (1,1/1,2,2,2)
								8.00 - 8.45	D	
								8.00 - 8.50	B	
								9.00	D	
						Dry		9.50	S	N=0 (1,0/0,0,0,0)
								9.50 - 10.00	B	
								9.50 - 9.95	D	
				(7.60)						
Inst					Stratum continues next page	Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:
3.80	2.80	2.90	4.80

Diameter & casing:

Dia (mm):	Depth:	Casing:
150	15.00	15.00

Depth related remarks:

From	to:	Remarks

Chiselling details:

From	to:	Duration:	Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in meters.

Log issue: DRAFT

Scale: 1:50

Project: Meriden Quarry

Project No: 2646

Client: Beechwood Recycling Ltd

Exploratory position reference:

NBH06

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	10-12-15	10-12-15	SS	N/A	N/A	N/A	11-12-15	LM	
CP	0.00	15.00	10-12-15	11-12-15	SS	Dando 150	N/A	N/A	11-12-15	LM	PB7 Er (%): 76

Location details:

mE:	423092.50
mN:	281085.30
mAOD:	99.49
Grid:	OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results
								10.50	D	
						Dry		11.00	S	N=9 (1,1/2,2,3,2)
								11.00 - 11.45	D	
								11.00 - 11.50	B	
								12.00	D	
								12.00 - 13.00	B	
						Dry		12.50	S	N=6 (1,1/1,1,2,2)
								12.50 - 12.95	D	
								13.50	D	
			85.89	13.60	Reddish brown slightly silty very sandy subangular to rounded fine to coarse GRAVEL of sandstone and mudstone.					
								14.00 - 14.45	B	
				(1.40)						
								14.50 - 15.00	B	
			84.49	15.00	Borehole terminated at 15.00m					
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
150	15.00	15.00

Depth related remarks:

From	to:	Remarks
12.00	15.00	Blowing sand and gravel

Chiselling details:

From	to:	Duration:	Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in meters.

Log issue: DRAFT

Scale: 1:50

Project: Meriden Quarry

Project No: 2646

Client: Beechwood Recycling Ltd

Exploratory position reference:

NBH06

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	10-12-15	10-12-15	MH	N/A	N/A	N/A	11-12-15	LM	
CP	0.00	10.00	10-12-15	10-12-15	MH	Dando 150	N/A	N/A	11-12-15	LM	PB8 Er (%): 81

Location details:

mE:	423101.20
mN:	281052.20
mAOD:	100.14
Grid:	OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing				
						Water	Casing	Depth	Type & No	Results
			99.84	(0.30) 0.30	TOPSOIL: Soft dark brown slightly sandy gravelly CLAY with frequent roots. Gravel is angular to subrounded fine to coarse of sandstone, mudstone and brick fragments.			0.00 - 1.00	B	
					MADE GROUND: Firm dark brown mottled reddish brown and light grey slightly sandy slightly gravelly CLAY with occasional cobbles. Gravel is angular to subangular fine to coarse of brick fragments, ceramic, timber, sandstone, mudstone and coal. Cobbles are angular to subangular of whole bricks.	Dry		1.00 1.00 - 1.45 1.00 - 1.45	S B D	N=9 (1,1/2,2,3,2)
						Dry		2.00 2.00 - 2.45 2.00 - 2.45	S B D	N=4 (1,1/2,0,1,1)
								3.00 - 3.45	U	17 (0%)
				(5.80)		Dry		3.50 3.50 - 3.95 3.50 - 3.95	S B D	N=3 (1,1/0,1,1,1)
						Dry		4.00 4.00 - 4.45 4.00 - 4.45	S B D	N=8 (1,2/2,1,2,3)
						Dry		5.00 5.00 - 5.45 5.00 - 5.45	S B D	N=2 (1,0/0,1,0,1)
			94.04	6.10				6.10	D	
					Loose becoming medium dense light reddish brown slightly silty gravelly fine to coarse SAND. Gravel is subrounded fine to coarse of sandstone with rare mudstone	Dry		6.50 6.50 - 6.95 6.50 - 6.95	S B D	N=9 (1,2/2,2,3,2)
				(3.90)		Dry		8.00 8.00 - 8.45 8.00 - 8.45	S B D	N=19 (3,4/4,5,5,5)
						Dry		9.50 9.50 - 9.95 9.50 - 9.95	S B D	N=19 (2,3/4,5,5,5)
	Inst		90.14	10.00	Borehole terminated at 10.00m	Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:
7.80	7.80		

Diameter & casing:

Dia (mm):	Depth:	Casing:
150	10.00	10.00

Depth related remarks:

From	to:	Remarks

Chiselling details:

From	to:	Duration:	Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in meters.

Log issue: DRAFT

Scale: 1:50

Project: Meriden Quarry

Project No: 2646

Client: Beechwood Recycling Ltd

Exploratory position reference:

NBH07

APPENDIX B

Geotechnical Laboratory Test Results

PSL
Professional Soils Laboratory

LABORATORY REPORT

UKAS TESTING
4043

Contract Number: PSL15/6113

Report Date: 22 December 2015

Client's Reference: 2646

Client Name: Terra Consult
Bold Business Centre
Bold Lane, Sutton
St Helens
Merseyside
WA9 4TX

For the attention of: Derek Daniels

Contract Title: Meriden Quarry

Date Received: 17/12/2015
Date Commenced: 17/12/2015
Date Completed: 22/12/2015

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

R Gunson (Director)
A Watkins (Director)
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SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
NBH05		D	1.20		Brown gravelly sandy CLAY.
NBH05		D	2.00		Brown gravelly sandy CLAY.
NBH05		D	3.00		Brown very sandy very clayey GRAVEL.
NBH05		D	4.00		Brown gravelly sandy CLAY.
NBH05		D	5.00		Brown very gravelly slightly clayey SAND.
NBH06		D	1.20		Brown slightly gravelly slightly sandy CLAY.
NBH06		D	2.00		Brown slightly gravelly sandy CLAY.
NBH06		D	3.00		Brown slightly gravelly sandy CLAY.
NBH06		D	4.00		Brown slightly gravelly sandy CLAY.
NBH06		D	5.00		Brown slightly gravelly slightly sandy CLAY.
NBH06		D	6.00		Brown slightly gravelly SAND.
NBH07		D	1.00		Brown slightly gravelly sandy CLAY.
NBH07		D	2.00		Brown slightly gravelly sandy CLAY.
NBH07		D	3.50		Brown gravelly sandy CLAY.
NBH07		D	4.00		Brown slightly gravelly sandy CLAY.
NBH07		D	5.00		Brown gravelly very sandy CLAY.

UKAS TESTING 4043	PSL Professional Soils Laboratory	Checked / Approved		Date	22/12/15
		Meriden Quarry			Contract No: PSL15/6113 Client Ref: 2646

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
NBH05		D	1.20		18			38	20	18	88	Intermediate plasticity CI.
NBH05		D	2.00		19			40	21	19	87	Intermediate plasticity CI.
NBH05		D	3.00		14			29	16	13	48	Low plasticity CL.
NBH05		D	4.00		22			39	21	18	86	Intermediate plasticity CI.
NBH05		D	5.00		15				NP			
NBH06		D	1.20		27			53	24	29	96	High plasticity CH.
NBH06		D	2.00		28			48	22	26	92	Intermediate plasticity CI.
NBH06		D	3.00		21			36	19	17	94	Intermediate plasticity CI.
NBH06		D	4.00		19			35	18	17	96	Intermediate plasticity CI.
NBH06		D	5.00		28			51	24	27	92	High plasticity CH.
NBH06		D	6.00		6.5				NP			
NBH07		D	1.00		18			41	21	20	89	Intermediate plasticity CI.
NBH07		D	2.00		19			43	22	21	91	Intermediate plasticity CI.
NBH07		D	3.50		20			44	22	22	82	Intermediate plasticity CI.
NBH07		D	4.00		17			39	20	19	94	Intermediate plasticity CI.
NBH07		D	5.00		15			28	16	12	80	Low plasticity CL.

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

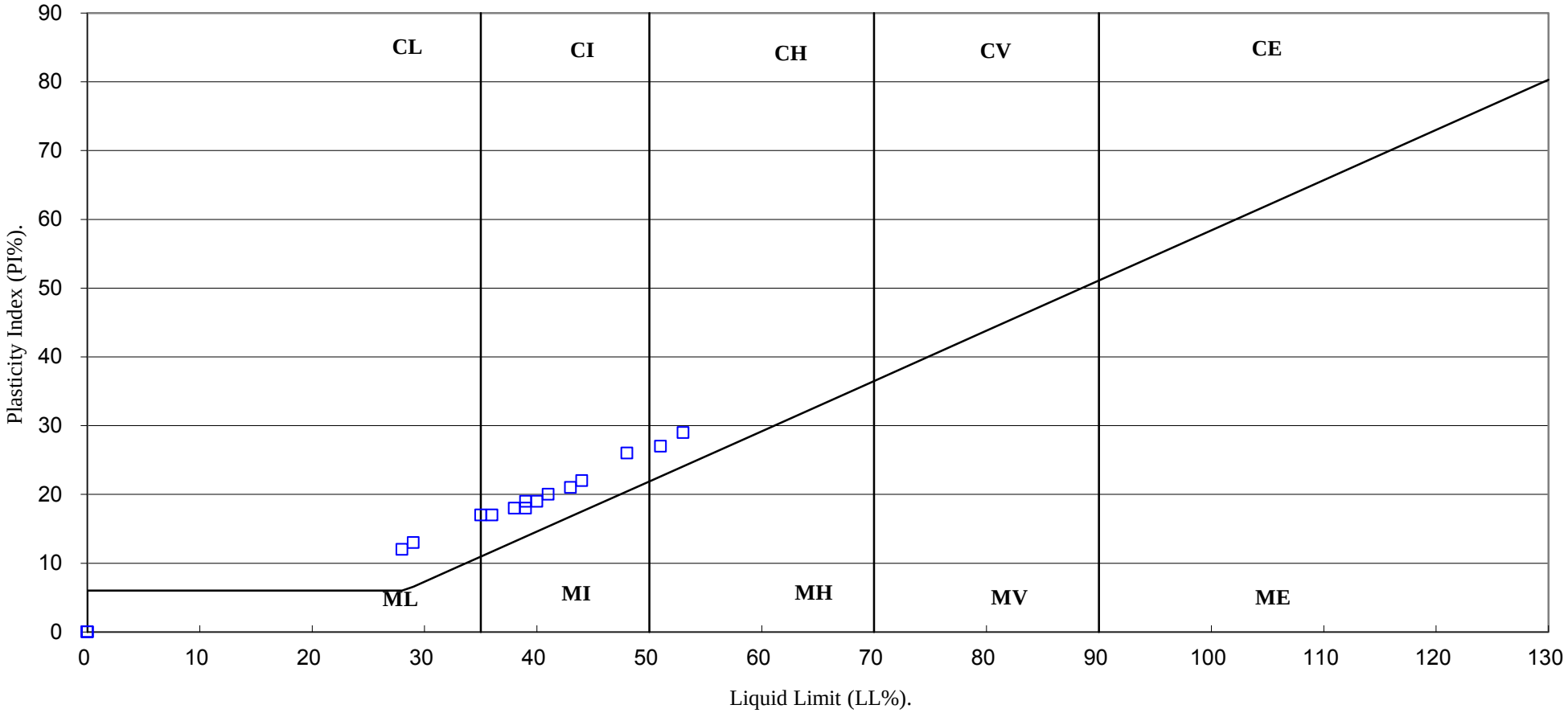
UKAS TESTING 4043

PSL Professional Soils Laboratory

Checked / Approved		Date	22/12/15	Contract No:
Meriden Quarry				PSL15/6113
				Client Ref:
				2646

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

(BS5930 :2015)



UKAS TESTING 4043	PSL Professional Soils Laboratory	**Checked /Approved**		**Date**	22/12/15	**Contract No:**
		Meriden Quarry				**PSL15/6113**
						Client Ref:
						2646

APPENDIX C

Geoenvironmental Laboratory Test Results

Site: Meriden Quarry

CHEMICAL STATISTICAL ANALYSIS - based on CLEA v1.06 (Sandy Loam 1% SOM)

Job No: 2646

Analyte	Limit of Detection	TerraConsult NBH05 10/12/15 Sample ref. 0.20	TerraConsult NBH05 10/12/15 Sample ref. 2.00	TerraConsult NBH06 10/12/15 Sample ref. 1.20	TerraConsult NBH06 10/12/15 Sample ref. 3.00	TerraConsult NBH07 10/12/15 Sample ref. 3.50	Statistical Analysis: n	Standard Deviation	Minimum	Average	Maximum	SGV / GAC Statistical Results: Maximum	Commercial & Industrial Tier 1 Screening Threshold	Pass/ Fail	SGV / GAC Criteria Source: Source of Screening Criteria	Source of Toxicological Data	pC4SL Screening Criteria: Commercial	Pass / Fail	pC4SL Criteria Source: Source of Screening Criteria	Source of Toxicological Data
Stone Content	<0.1 %							-	-	-	-	-	-	-	-	-	-	-	-	-
Asbestos Screen	Positive / Negative	-	Detected	Not detected	Detected	-		-	-	-	-	-	-	-	-	-	-	-	-	-
Asbestos Matrix	Material Type	-	Loose fibres	-	Loose fibres	-														
Asbestos Type	PLM results	-	Chrysotile	-	Chrysotile	-														
Quantification	<0.0001%		TBA		TBA															
Metals																				
Arsenic (total)	<2 mg/kg	22	30	4	4	8	5	11.78	4	14	30	30.00	635	Pass	SC050021*	SC050021	640	Pass	CLEA v1.06	Defra 2014
Cadmium (total)	<0.5 mg/kg	2.1	2.3	0.2	0.2	0.5	5	1.05	0	1	2	2.30	230	Pass	SC050021*	SC050021	420	Pass	CLEA v1.06	Defra 2014
Chromium (total) (III for S4ULs)	<2 mg/kg	81	124	33	30	31	5	41.85	30	60	124	124.00	30400	Pass	CLEA v1.06	LQM 2009	-	-	-	-
Copper (total)	<4 mg/kg	1000	1000	39	34	316	5	490.17	34	478	1000	1000.00	71700	Pass	CLEA v1.06	LQM 2009	-	-	-	-
Lead (total)	<3 mg/kg	756	434	14	13	69	5	329.49	13	257	756	756.00	N/A	-	-	-	6000	Pass	CLEA v1.06	Defra 2014
Mercury (total inorganic)	<1 mg/kg	1	1	1	1	1	5	0.00	1	1	1	1.00	3640	Pass	SC050021*	SC050021	-	-	-	-
Nickel (total)	<3 mg/kg	91	109	28	25	32	5	39.84	25	57	109	109.00	840	Pass	CLEA v1.071	EFSA	-	-	-	-
Selenium (total)	<3 mg/kg	3	3	3	3	3	5	0.00	3	3	3	3.00	13000	Pass	SC050021*	SC050021	-	-	-	-
Zinc (total)	<3 mg/kg	855	572	81	77	306	5	335.10	77	378	855	855.00	662000	Pass	CLEA v1.06	LQM 2009	-	-	-	-
Inorganic																	-	-	-	-
pH Value	pH Units	7.9	8.0	8.0	7.9	8.9	5	0.43	7.9	8	8.9	8.90	-	-	-	-	-	-	-	-
Cyanide (total)	<2 mg/kg	2.0	2.0	2.0	2.0	2.0	5	0.00	2	2	2.0	2.00	-	-	-	-	-	-	-	-
Ammonia expressed as NH4	<5 mg/kg	-	6.0	8.5	20.1	-	3	7.52	6.0	12	20.1									
Magnesium water soluble	<0.1 g/l	-	3.4	5.5	7.0	-	3	1.81	3.4	5	7.0									
Nitrate (2:1)	<3 mg/l	-	4.0	4.0	3.0	-	3	0.58	3.0	4	4.0									
Chloride (2:1)	<0.5 mg/l	41.0	24.0	8.0	9.0	38.0	5	15.54	8.0	24	41.0									
Sulphate (2:1)	<0.005 g/l	0.120	0.120	0	0	0.220	5	0.08	0.02	0	0	0.22	-	-	-	-	-	-	-	-
Sulphate (total)	<200 mg/kg	951	658	200	224	884	5	356.10	200.00	583	951	-	-	-	-	-	-	-	-	-
																	-	-		
Organic																	-	-	-	-
Soil Organic Matter	<0.1 %	2.8	1.4	0.4	0.2	0.9	5	1.04	0.2	1	2.80	2.80	-	-	-	-	-	-	-	-
TOC	<0.1 %	1.6	0.8	0.2	0.1	0.5	5	0.60	0.1	1	1.60	1.60	-	-	-	-	-	-	-	-
Phenol (Total Monohydric)	<2 mg/kg	2.0	2.0	2.0	2.0	2.0	5	0.00	2	2	2.0	2.00	24200	Pass	CLEA v1.06	SC050021	-	-	-	-
PAH																				
Naphthalene	<0.1 mg/kg	0.1	0.1	0.1	0.1	0.1	5	0.00	0.1	0	0.1	0.10	200	Pass	CLEA v1.06	LQM 2009	-	-	-	-
Acenaphthylene	<0.1 mg/kg	0.1	0.1	0.1	0.1	0.1	5	0.00	0.1	0	0.1	0.10	84000	Pass	CLEA v1.06	LQM 2009	-	-	-	-
Acenaphthene	<0.1 mg/kg	0.1	0.1	0.1	0.1	0.1	5	0.00	0.1	0	0.1	0.10	8500	Pass	CLEA v1.06	LQM 2009	-	-	-	-
Fluorene	<0.1 mg/kg	0.1	0.1	0.1	0.1	0.1	5	0.00	0.1	0	0.1	0.10	64000	Pass	CLEA v1.06	LQM 2009	-	-	-	-
Phenanthrene	<0.1 mg/kg	0.1	0.1	0.1	0.1	0.18	5	0.04	0.1	0	0.2	0.18	22000	Pass	CLEA v1.06	LQM 2009	-	-	-	-
Anthracene	<0.1 mg/kg	0.1	0.1	0.1	0.1	0.1	5	0.00	0.1	0	0.1	0.10	530000	Pass	CLEA v1.06	LQM 2009	-	-	-	-
Fluoranthene	<0.1 mg/kg	0.14	0.19	0.1	0.1	0.16	5	0.04	0.1	0	0.2	0.19	23000	Pass	CLEA v1.06	LQM 2009	-	-	-	-
Pyrene	<0.1 mg/kg	0.13	0.17	0.1	0.1	0.2	5	0.03	0.1	0	0.2	0.17	54400	Pass	CLEA v1.06	LQM 2009	-	-	-	-
Benz(a)anthracene	<0.1 mg/kg	0.1	0.1	0.1	0.1	0.1	5	0.00	0.1	0	0.1	0.10	92	Pass	CLEA v1.06	LQM 2009	-	-	-	-
Chrysene	<0.1 mg/kg	0.1	0.1	0.1	0.1	0.1	5	0.00	0.1	0	0.1	0.10	138	Pass	CLEA v1.06	LQM 2009	-	-	-	-
Benzo(b)fluoranthene	<0.1 mg/kg	0.1	0.17	0.1	0.1	0.1	5	0.03	0.1	0	0.2	0.17	100	Pass	CLEA v1.06	LQM 2009	-	-	-	-
Benzo(k)fluoranthene	<0.1 mg/kg	0.1	0.1	0.1	0.1	0.1	5	0.00	0.1	0	0.1	0.10	140	Pass	CLEA v1.06	LQM 2009	-	-	-	-
Benzo(a)pyrene	<0.1 mg/kg	0.1	0.1	0.1	0.1	0.1	5	0.00	0.1	0	0.1	0.10	14	Pass	CLEA v1.06	LQM 2009	77	Pass	CLEA v1.06	Defra 2014
Indeno(123cd)pyrene	<0.1 mg/kg	0.1	0.1	0.1	0.1	0.1	5	0.00	0.1	0	0.1	0.10	60	Pass	CLEA v1.06	LQM 2009	-	-	-	-
Dibenzo(ah)anthracene	<0.1 mg/kg	0.1	0.1	0.1	0.1	0.1	5	0.00	0.1	0	0.1	0.10	13	Pass	CLEA v1.06	LQM 2009	-	-	-	-
Benzo(ghi)perylene	<0.1 mg/kg	0.1	0.1	0.1	0.1	0.1	5	0.00	0.1	0	0.1	0.10	650	Pass	CLEA v1.06	LQM 2009	-	-	-	-
Coronene	<0.1 mg/kg	0.1	0.1	0.1	0.1	0.1	5	0.00	0.1	0	0.1	0.10	1900	Pass	CLEA v1.06	LQM 2009	-	-	-	-
BTEX Benzene	<0.002 mg/kg	0.002	0.002	0.002	0.002	0.002	5	0.00	0.002	0	0.002	0.00	43.6	Pass	CLEA v1.06	SC050021	100	Pass	CLEA v1.06	Defra 2014
Toluene	<0.005 mg/kg	0.005	0.005	0.005	0.005	0.005	5	0.00	0.005	0	0.005	0.01	86200	Pass	CLEA v1.06	SC050021	-	-	-	-
Ethyl Benzene	<0.01 mg/kg	0.002	0.002	0.002	0.002	0.002	5	0.00	0.002	0	0.002	0.00	25000	Pass	CLEA v1.06	SC050021	-	-	-	-
Xylene (o)	<0.01 mg/kg	0.002	0.002	0.002	0.002	0.002	5	0.00	0.002	0	0.002	0.00	10,700	Pass	CLEA v1.06	SC050021	-	-	-	-
Xylene (m)	<0.01 mg/kg	0.002	0.002	0.002	0.002	0.002	5	0.00	0.002	0	0.002	0.00	9,990	Pass	CLEA v1.06	SC050021	-	-	-	-
Xylene (p)	<0.01 mg/kg	0.002	0.002	0.002	0.002	0.002	5	0.00	0.002	0	0.002	0.00	9,630	Pass	CLEA v1.06	SC050021	-	-	-	-
MTBE	<0.001 mg/kg	0.005	0.005	0.005	0.005	0.005	5	0.00	0.005	0	0.005	-	-	-	-	-	-	-	-	-
Aliphatic $>C_5$ - C_6	<0.01 mg/kg	0.01	0.01	0.01	0.01	0.01	5	0.00	0.01	0	0.0	0.01	3400	Pass	CLEA v1.06	LQM 2009	-	-	-	-
Aliphatic $>C_6$ - C_8	<0.05 mg/kg	0.05	0.05	0.05	0.05	0.05	5	0.00	0.05	0	0.1	0.05	8300	Pass	CLEA v1.06	LQM 2009	-	-	-	-
Aliphatic $>C_8$ - C_{10}	<2 mg/kg	2.00	2.00	2.00	2.00	2.00	5	0.00	2	2	2.0	2.00	2100	Pass	CLEA v1.06	LQM 2009	-	-	-	-
Aliphatic $>C_{10}$ - C_{12}	<2 mg/kg	2.00	2.00	2.00	2.00	2.00	5	0.00	2	2	2.0	2.00	10000	Pass	CLEA v1.06	LQM 2009	-	-	-	-
Aliphatic $>C_{12}$ - C_{16}	<3 mg/kg	3.00	3.00	3.00	3.00	3.00	5	0.00	3	3	3.0	3.00	61000	Pass	CLEA v1.06	LQM 2009	-	-	-	-
Aliphatic $>C_{16}$ - C_{21}	<3 mg/kg	3.00	3.00	3.00	3.00	3.00	5	0.00	3	3	3.0	3.00	1600000	Pass	CLEA v1.06	LQM 2009	-	-	-	-
Aliphatic $>C_{21}$ - C_{35}	<10 mg/kg	10.00	10.00	10.00	10.00	10.00	5	0.00	10	10	10.0	10.00	1600000	Pass	CLEA v1.06	LQM 2009	-	-	-	-
																			-	-
Aromatic C_5 - C_7	<0.01 mg/kg	0.01	0.01	0.01	0.01	0.01	5	0.00	0	0	0.01	0.01	28000	Pass	CLEA v1.06	LQM 2009	-	-	-	-
Aromatic C_7 - C_8	<0.05 mg/kg	0.05	0.05	0.05	0.05	0.05	5	0.00	0	0	0.05	0.05	59000	Pass	CLEA v1.06	LQM 2009	-	-	-	-
Aromatic $>C_8$ - C_{10}	<2 mg/kg	2.00	2.00	2.00	2.00	2.00	5	0.00	2	2	2.0	2.00	3700	Pass	CLEA v1.06	LQM 2009	-	-	-	-
Aromatic $>C_{10}$ - C_{12}	<2 mg/kg	2.00	2.00	2.00	2.00	2.00	5	0.00	2	2	2.0	2.00	17000	Pass	CLEA v1.06	LQM 2009	-	-	-	-
Aromatic $>C_{12}$ - C_{16}	<3 mg/kg	3.00	3.00	3.00	3.00	3.00	5	0.00	3	3	3.0	3.00	36000	Pass	CLEA v1.06	LQM 2009	-	-	-	-
Aromatic $>C_{16}$ - C_{21}	<3 mg/kg	3.00	3.00	3.00	3.00	3.00	5	0.00	3	3	3.0	3.00	28000	Pass	CLEA v1.06	LQM 2009	-	-	-	-
Aromatic $>C_{21}$ - C_{35}	<10 mg/kg	10.00	10.00	10.00	10.00	10.00	5	0.00	10	10	10.0	10.00	28000	Pass	CLEA v1.06	LQM 2009	-	-	-	-

Below Detection Limits.
Exceeded GAC/SGV
Exceeded pC4SL / S4ULs
Assessment criteria for pH, Sulphide and Sulphate are not based on human health. Sulphate criteria assumes DS-1 ACEC classification for concrete.

Notes

1. Generic Qualitative Assessment Criteria have been used where appropriate based on the current CLEA 1.06 Model (default values, sandy loam 1%SOM). Where no CLEA generic guideline value has been calculated no assessment has been made. The results presented show maximum and mean concentrations. This is to provide a reasonable prediction of the range of data rather than to provide any detailed statistical appraisal.
2. Results lower than detection limit are shaded in grey.
3. When the test result is recorded as being less than the detection limit, the result used for the analysis is the detection limit.
4. Cyanide (total)*, in the absence of a GQAC based on current CLEA 1.06 Model, the Atrisk Soil Value for Cyanide (free) has been used.
5. For metals, where an SGV has been published, this value has been used. Note that the published SGVs do not include the residential without plant uptake scenario. CLEA v1.06 has therefore been used to derive GACs for this scenario. For organics, CLEA v1.06 has been used (as the SGV assumes 6% SOM)
6. pC4SL based on adjusted toxicology and expsoure assumptions
7. pC4SL for benzene assumes 6% SOM







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APPENDIX SCR6

Walkover Survey Photographs (2022)

BIFFA'S SITE WALKOVER SURVEY PHOTOGRAPHS FEBRUARY 2022

INTERNAL SITE AREAS:

EXTERNAL SITE AREAS (Prior to final concreting of some external areas)

EXTERNAL SITE AREAS (Following final concreting of some external areas)