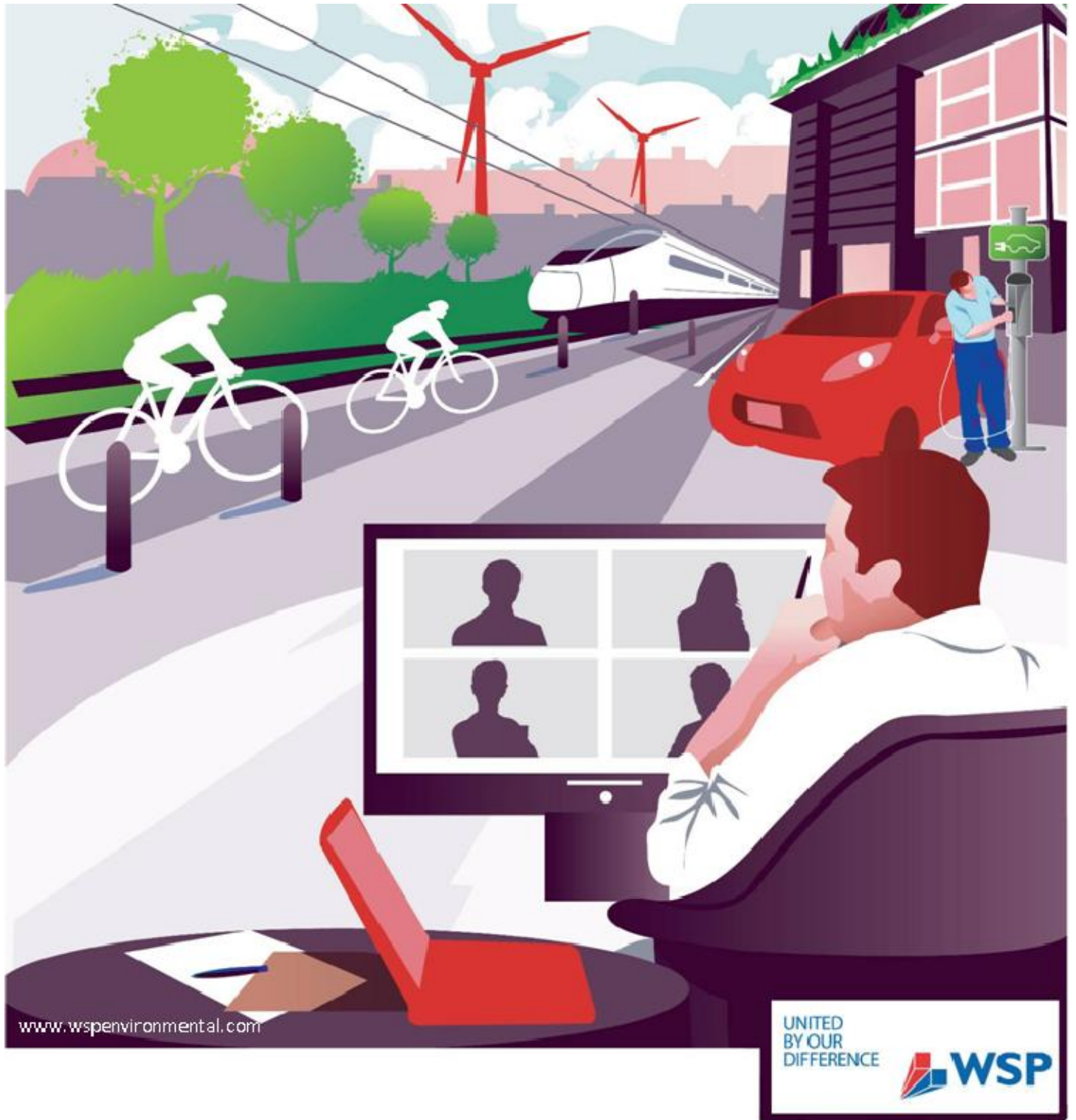




Phase II Assessment, South Site (Former
Engineering Works), Acrefair, Wrexham

Air Products Plc

July 2011

QUALITY MANAGEMENT

Issue/revision	Issue 2
Remarks	Final
Date	July 2011
Prepared by	P Gallagher
Signature	
Checked by	R Lawless
Signature	
Authorised by	A Moore
Signature	
Project number	21240/001
File reference	9460(2)

WSP Environmental UK
The Victoria
152-180 The Quays
Salford
Manchester
M50 3SP

Tel: +44 (0)161 886 2400
Fax: +44 (0)16 1886 2402
<http://www.wspgroup.com>

Reg. No: 1152332

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Executive Summary

On the instruction of Air Products Ltd (AP), WSP Environmental Ltd (WSPE) has completed a combined Phase 1 and Phase 2 Assessment of part of the AP premises in Arefair, near Wrexham (the site). The site, which comprises the former engineering works site, located to the south of Llangollen Road, has been assessed against a potential future residential end use. It is understood that AP is intending sell the site for redevelopment.

In the late Nineteenth Century, the site formed part of an iron works and was occupied by buildings and infrastructure including coke ovens and railway sidings. A reservoir or lagoon located half way along the northwestern site boundary formed part of the original iron works and was infilled between 1962 and 1968. By the end of the Nineteenth Century the iron works had been replaced by an engineering works, which remained on site until recent demolition. A spoil heap (likely to comprise coal mining and iron foundry waste) was present in the southwestern corner of the site from the time of the iron works, and although apparently regraded, remains in the same position at the time of the investigation (April 2011).

At the time of the investigation, the majority of the site surface was the concrete floor slabs and external hardstanding of the recently demolished AP engineering works. The eastern corner of the site was occupied by an overgrown area of scrub, which historically formed part of the coke oven area of the former iron works.

The investigation recorded Made Ground in all but one location (BH7) to depths of between 0.3m below ground level (bgl) and 6.5m bgl and was deepest in locations situated between the centre of the site and the central northwestern boundary. The Made Ground comprised various proportions of intermixed ash, clinker and gravel/cobble sized fragments of slag, burnt shale, ironstone, burnt ironstone, burnt shale, coal, sandstone, mudstone and brick. There was generally a greater slag content in fill materials in the central northwestern part of the site (the area of the infilled pond/lagoon). Natural soils were encountered in all nine boreholes and eight of the 17 trial pits and comprised weathered mudstone and laminated clay. Natural soils were encountered at ground level in the southeastern corner of the site.

Groundwater was not encountered during the investigation however subsequent groundwater monitoring recorded groundwater in two monitoring wells at depths of between 1.4m bgl and 3.6m bgl.

Regarding contamination observations, the Made Ground was observed to contain variable amounts of ash, which can be a source of heavy metals and PAHs and a slight hydrocarbon odour was noted in two locations.

Laboratory analysis of representative soil samples showed concentrations above the soil human health generic assessment criteria (GAC) for the following compounds in a small number of samples: arsenic (3 samples), chromium (all samples), benzo(a)pyrene (6 samples), naphthalene (1 sample) and trichloroethene (TCE) (1 sample). Three samples with the highest total chromium concentrations were re-analysed for the most toxic form of chromium, the concentration of which was below the GAC in all three samples. The majority of samples did not exceed GAC, therefore the potential risk is expected to be associated with localised elevated concentrations within the Made Ground rather than widespread contamination.

Laboratory analysis of two groundwater samples showed concentrations of dissolved copper and total petroleum hydrocarbons above the controlled waters GAC in one sample. All of the leachate sample results were below controlled waters GACs.

Ground gas monitoring has identified less than 0.1%v/v methane and a maximum carbon dioxide concentration of 2.1%v/v, recorded on one occasion.

For a future residential development, the following is recommended: additional investigation of the former coke ovens area if this area is proposed for residential development; provide for the likely requirement for cover soils in garden / soft landscaping areas; complete further investigation around TP12 and provide for impact removal/volatile vapour membranes in areas affected by TCE; complete additional gas monitoring to meet current guidance on number of visits required; assess requirement for use of specialist potable water pipes in affected areas; and complete a radon assessment to determine whether future buildings require radon protection.

WSP Environmental Ltd

1 Site Information

Site Address	Air Products, Engineering Works Acrefair, Llangollen Road, Acrefair, Wrexham, LL14 3HW
NGR	328077, 343090
Size	8.3 Ha (approximately, from online maps)
Tenure	Assumed Freehold
Background	WSP Environmental Ltd (WSPE) was instructed by Air Products Plc ('the Client') to undertake a review of a Phase I Environmental Site Assessment and to complete a Phase 2 Environmental Assessment of part of the Air Products engineering works site at Acrefair. The study area covered by this report ('the site') is situated to the south of Llangollen Road and is currently occupied by the now demolished and cleared former AP engineering works. It is understood that the land use is to change to residential housing with some retail at the northeastern end of the site. The site is also referred to in this report as the 'South' site. The former AP sports and social club site, located to the north of Llangollen Road has also been subject to intrusive investigation, which has been reported separately. The site is also referred to in this report as the 'North' site WSPE's Assessment Methodologies and Limitations are presented in Appendix E and Appendix F respectively.
Previous Reports	WSPE has been provided with the following report for the site: Phase 1 Environmental Site Assessment – Air Products Plc, Acrefair Works, (Southern Area), reference FSE 97292A, issued by Parsons Brinkerhoff dated May 2010 (hereafter generally referred to as the 'previous Phase I report'). The report is a desk based study of the site and includes a review of an Envirocheck Report (dated 10 November 2009) and historical Ordnance Survey maps dating back to 1874. The report also includes anecdotal information from a site visit and interview with site staff as well as information taken from a report prepared by CC Geotechnical of Bootle for Hughes and Crawford to ascertain ground conditions for a proposed extension alongside Shop 4. Notable information from the previous Phase I report has been included in the relevant sections of this report.
Site Location	The site is situated within the village of Acrefair, in rural North Wales, approximately 8km southwest of Wrexham. A Site Location Plan is presented as Figure 1.

Site Description	At the time of the investigation (April 2011) the majority of the site area was occupied by the concrete floor slabs and external hardstanding of the former AP engineering works (all buildings having been demolished to slab level). The eastern corner of the site was occupied by an overgrown area of scrub, which used to form part of a coke oven area to the former iron works. The south-eastern corner of the site was grassed land, which appears never to have been developed. The current layout of the site is shown in the Exploratory Hole Location Plan, presented as Figure 2. The main site area is at an elevation of approximately 136m AOD and is generally flat. The ground level rises (by approximately 9m) to the east along the northeastern site boundary and between the main site area and the former coke oven area at the southeastern corner of the site. The elevation is approximately 10m higher than Llangollen Road/King Street at the south-western corner of the site. The north-western and western site boundaries are formed by steep wooded slopes.
Pre-Demolition Site Layout	Based on a site plan provided by Air Products and online satellite images of the former site, the layout prior to demolition is described below. It is also illustrated in Figure 3. The main production areas were located within five large interlinked buildings in the centre-south of the site (Shop 1 to Shop 5). The maintenance and machine shop buildings were located to the north of the main production area; an underground interceptor is present in this vicinity. A degreasing facility was located on the western end of Shop 5. A 12,000 gallon above ground storage tank (AST) was located at the southern end of the production area, adjacent to Shop 1. Other AST's were present to the east of Shop 4. A waste storage area was located in the southeastern corner of the production area. A car park and office buildings occupied the northern part of the site.

Site History	The site history has been summarised below from a review of the following information: • Phase I report (Parsons Brinkerhoff Phase 1 Environmental Site Assessment, dated May 2010) • Ordnance Survey historical maps included within the Phase I report. A selection of historical maps are presented in Appendix A. The earliest historical map (1874) shows that the site formed part of the New British Iron Works. The central and northern portions of the site were occupied by iron works buildings and infrastructure including railway sidings. The eastern corner of the site was occupied by the southern part of a battery of coke ovens, which extended northwards beyond the current boundary. A reservoir or lagoon was present half way along the north-western Site boundary. The south-eastern corner remained undeveloped and the southwestern portion of the site was occupied by spoil heaps. A railway line ran just within the south-western boundary and Acrefair railway station was present in the centre of the south-western boundary. The line was within a cutting in the south-eastern corner of the site. By 1899 the majority of the iron works buildings and infrastructure, including most of the railway sidings and all of the coke ovens, had been removed. Two new buildings are shown in the centre of the site, named Acrefair Engineering Works. The spoil heaps remained in the south-western corner and the reservoir/lagoon was still present along the northwestern boundary. By 1962 the existing works buildings had been extended to the north and south to cover most of the central part of the site, with additional structures shown to the southeast of the main buildings. The reservoir was still present. By 1968 the spoil heap over much of the western corner of the site had been removed and possibly used to level the site and backfill the reservoir, which is no longer shown. By 1974 the engineering works building had been extended to the west with additional structures shown in the northern portion of the site. The railway line along the south of the site has been removed, though the cutting is still shown in the southeastern corner. There appears to be very little change until 1994, by which time the spoil heap in the southwestern corner of the site appears to have been levelled out. It appears that the site did not change significantly from 1994 until recent demolition.
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Surrounding Land History	The earliest map of the site shows significant areas to the north and south of the site occupied by spoil heaps, assumed to be from the extensive coal and iron ore mining that occurred in the area. The battery of coke ovens belonging to the New British Iron Works that occupied the site was present to the northeast of the site. The town of Cefn-Mawr was located approximately 500m south of the site. The coke ovens to the northeast of the site as well as the buildings and infrastructure of the iron works were no longer shown by 1900. Old coal shafts and old quarries are indicated in all directions around the site by this time. By 1914 more old shafts were indicated to the north. There are no significant changes to the surrounding land use until 1986, by which time a street of residential properties had been constructed adjacent to the north-eastern site boundary.
Surrounding Land Use	At the time of the investigation the surrounding land uses were as follows: To the north: Llangollen Road forms the northwestern boundary of the site, with the North Site beyond to the northwest and residential properties beyond to the north. To the east: Residential properties on Lancaster Terrace to the east of the northern part of the site and open ground and woodland to the east of the southern part of the site. To the south: Open ground and woodland with residential properties beyond. To the west: Residential and commercial properties near the centre of Acrefair.

Environmental Data Search	This information has been taken from an Envirocheck Report (dated November 2009) that was included within the previous Phase I Report (<i>Parsons Brinkerhoff Phase 1 Environmental Site Assessment</i>, dated May 2010), which centred the search on a point on Llangollen Road, located between the North and South Air Products sites. The following relevant entries were recorded within 1km of this central point: ▪ Three Integrated Pollution Prevention and Control authorisations; all listed 480m southwest of the site, at Flexsys Rubber Chemicals, Solutia UK Ltd and DuPont Air Products Nanomaterials Limited. ▪ Local Authority Pollution Prevention and Controls; One on-site for Air Products (site not now operational) and one located 900m southeast of the site. ▪ Pollution Incidents to Controlled Waters; 26 Category 3 Minor Incidents, the closest to the site occurred in 1994, 180m south of the central point (possibly within the former engineering works site to the south) for the release of crude sewage due to vandalism. Four Category 2 Significant Incidents, the closest to the Site occurred in 1992, 530m north of the central point for a release of mud/clay/soil relating to mining activities. ▪ Seven Historical Landfill Sites; One recorded on the North Site (1950 to 1960) and one on the South Site (1977 to 1991), both for inert and industrial wastes. ▪ Other historical landfills off-site entries are located 250m north (Northern Strip Mining); 360m east (Woodwards Rock, for special wastes and liquid sludge); 590m south (Rhosmedre Quarry for industrial and household waste); 800m southwest (Edwards Brickyard); and 890m south (Druids United FC). ▪ Two Local Authority Recorded Landfill Sites; The Historical Landfill located on the North site and the Woodward's Rock site, located 360m east of the site. ▪ Five Registered Landfill Sites; One recorded at the central point, dated 1992, and one recorded 130m north of the central point, dated 1977, both licensed to Air Products (also listed as Historical Landfill Sites). Off-site entries are located 430m north (open-cast site at The Delph – likely to be the Northern Strip Mining Site); 540m south, licensed to Monsanto; and 580m south (Druids United FC). ▪ Five BGS Recorded Mineral Sites: The closest to the site is located 430m north (Delph Brick and Tile Works – later a landfill) for common clay and shale extraction; one located 460m southeast (sandstone); one located 620m northwest (fireclay); two located 630m and 740m south (both sandstone). ▪ No surface water abstractions. The closest surface water abstraction was located 1.2km north of the site for industrial use. ▪ No groundwater abstractions. The closest groundwater abstraction was located 1.6km north of the site, for farming and domestic use. ▪ The site is not located within a flood risk zone as currently defined by the Environment Agency. ▪ The site is located within an area of elevated risk from radon; 3-5% of homes are above the action level.
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Geology/Hydrogeology	Published online geological maps indicate the site is in an area underlain by Glacial Till (Devensian) underlain by Pennine Lower Coal Measures Formation and Pennine Middle Coal Measures Formation (undifferentiated). Site levels in the south-western corner had been raised significantly by the time of the earliest historical map (1874), likely to have been achieved with coal mining and iron foundry waste materials. Therefore significant thicknesses of Made Ground would be expected at this part of the site. The borehole logs/ground condition details from the intrusive investigation completed in 2005 adjacent to Shop 4 were available for review by WSP. The Envirocheck report states that site is within an area likely to be affected by coal mining; however a Coal Mining report for the South site has not been reviewed. Reference to the Environment Agency Website (www.environment-agency.gov.uk) indicates that the Glacial Till is classed as Unproductive Strata and the Coal Measures are classed as a Secondary A Aquifer (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).
Hydrology	Reference to online maps indicates that the closest surface water feature to the site is a pond, which is located approximately 400m northeast of the site (up-gradient of the site). Down-gradient surface water features in the general area include an unnamed stream, located approximately 500m west of the site; the River Dee, located approximately 1.5km to the southwest and southeast of the site and the Shropshire Union Canal, located approximately 1.5km southwest of the site.
Environmental Sensitivity	The site setting is considered to be of moderate sensitivity. This is primarily due to the nearby residential end uses and the underlying Secondary A Aquifer. The underlying aquifer may be afforded some protection by the Glacial Till, depending on thickness and lateral continuity.

2 Preliminary Conceptual Model

The methods used within this preliminary risk assessment follow a risk-based approach, with the potential environmental risk assessed qualitatively using the 'source-pathway-target pollutant linkage' concept introduced in the Environmental Protection Act 1990. For a site to be designated as Contaminated Land a plausible linkage between the identified Sources, Pathways and Receptors must be demonstrated. The technical basis for this assessment is further discussed within Appendix E.

Potential Contaminant Sources	On-Site Contaminant Sources	The following potential sources of contamination have been identified based on the site history: - Former coke making ovens in the eastern corner of the site. - Former railway lines and sidings in the northern part of the site. - Materials within the infilled reservoir in the centre west of the site and possible infilled railway cutting in the southeast of the site. - Materials within the Registered Landfill/Historical Landfill site in the southwestern corner (likely to be colliery waste and iron foundry waste). - Other unknown tipped materials. - Former positions of various AST's located around the site including a 12,000 gallon tank in the southern part of the site and a number of tanks in the east. - Former position of maintenance shed, to the north of former Shop 5. - Interceptor and site drainage. - Areas used for liquid raw materials or waste product storage. Given the potential sources of contamination listed above the potential substances of concern include the following; heavy metals, coal tars, semi and non-metals, sulphates, fuels/oils, inorganic compounds, solvents, soil/mine gas, slag, asbestos.
	Off-Site Contaminant Sources	Off-site sources or substances of concern are as follows: Former coke making ovens to the northeast of the site (now within a heavily wooded area)
Potential Receptors	Controlled Waters	- Groundwater in the underlying Secondary Aquifer. Not likely to be used for drinking water but possibly important for base flow to rivers. - Surface waters are not considered to be viable receptors due to their distance from the site.
	Human Health Risks	- Future site construction workers. These risks should be managed by good on site health and safety practice and use of personal protective equipment. - Future site users, e.g., residents. - Users of adjacent sites, e.g., residents.
	Other	Future buildings and underground services.

Potential Contaminant Pathways & Pollutant Linkages	Assuming the site is to be redeveloped with residential housing and private gardens the potentially complete pollutant linkages are given below. • Direct contact between future residents and pollutants within shallow soils • Ingestion of contaminated shallow soils and soil dust by future residents and adjacent site users. • Inhalation of soil vapours by future residents and adjacent site users. • Inhalation of ground gas (i.e. carbon dioxide and methane) by future residents and adjacent site users. • Direct contact between contaminated soils and drinking water supply pipes followed by ingestion of drinking water from compromised pipes. • Direct contact between aggressive ground conditions and future below ground construction materials. • Migration of ground gas/mine gas into confined spaces and generation of an explosive atmosphere. • Migration of leachable soil-bound contaminants or contaminants within shallow groundwater to the underlying Secondary Aquifer.
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3 Site Investigation

Scope of Investigation	The WSPE site investigation was completed on 18 and 19 April 2011, comprising the following: ▪ Nine mechanical percussive boreholes (BH01, BH02, BH03, BH04, BH05, BH05A, BH06, BH07 and BH11) to depths of between 5m below ground level (m bgl) and 13m bgl. Exploratory hole logs are presented in Appendix B. ▪ Seventeen mechanically excavated trial pits (TP01 to TP17 inclusive) to depths of between 0.5m bgl (TP16) and 4.5m bgl (TP6). ▪ Two hand excavated pits (HP1 and HP2) in the former coke ovens area. ▪ The installation of combined gas and groundwater monitoring wells in six of the boreholes (BH1, BH2, BH3, BH6, BH7 and BH11) to depths of between 1.8m bgl and 8.0m bgl. ▪ Representative soil sampling from each exploratory hole. ▪ Chemical testing of selected soil samples and soil leachates (presented in Appendix C). ▪ Asbestos screens on selected soil samples (presented in Appendix C). ▪ Completion of three groundwater gauging and ground gas monitoring visits (presented in Appendix D). ▪ Collection of one set of groundwater samples from installations containing water followed by chemical testing (results presented in Appendix C). The exploratory hole location plan is presented as Figure 2.
Investigation limitations	Access to the area in the northeastern corner (former coke ovens area) was severely restricted due to the presence of dense woodland. It was only possible to investigate this area using hand tools. General limitations are presented in Appendix F.
Ground Conditions	Exploratory hole logs are presented in Appendix B and geological cross sections of the site are provided in Figure 3 (A and B). Made Ground was encountered in all but one location (BH7) to depths of between 0.3m bgl (BH1, TP1, TP16) and 6.5m bgl (BH2, BH11). The full depth of the Made Ground was not proven in several trial pits in the central northern part of the site due to slag obstructions or trial pit collapse. The Made Ground was deepest in locations situated between the centre of the site and the central northwestern boundary. The Made Ground comprised various proportions of intermixed ash, clinker and gravel/cobble sized fragments of slag, burnt shale, ironstone, burnt ironstone, burnt shale, coal, sandstone, mudstone and brick. There was generally a greater slag content in fill materials in the central northwestern part of the site, which was difficult to penetrate with the excavator in a number of locations (TP2, TP4, TP5 and TP6). Natural soils were encountered in all nine boreholes and eight of the 17 trial pits comprising weathered mudstone and laminated clay. Natural soils were

	encountered at ground level in BH7.
Groundwater Conditions	Groundwater was not encountered during the site works however subsequent groundwater gauging encountered groundwater in BH1 and BH2 at depths of between 1.4m bgl and 3.6m bgl. The other four boreholes remained dry.
Obstructions / Structures	The following obstructions were encountered during the investigation: ▪ HP1 - brick obstruction at 0.6m bgl. ▪ HP2 - clinker cobble obstruction at 0.7m bgl. ▪ TP3 - boulder on eastern side of pit from 1.9m bgl. ▪ TP2 - cobbles of slag 3.2m bgl. ▪ TP4 - cobbles of slag 1.3m bgl.
Contamination Observations	The Made Ground was observed to contain variable amounts of ash, which can be a source of heavy metals and PAHs. A slight hydrocarbon odour was noted in two locations (TP8 0.6m bgl to 0.7m bgl and BH6 4.8m bgl to 5.2m bgl). The PID did not record VOCs in samples from any location.

4 Environmental Assessment

Given the proposed use as a residential development, the soil results have been assessed against Soil Guideline Values (SGVs) and CLEA compliant Risk Based Generic Assessment Criteria (GACs) for 'Residential use with plant uptake', assuming 3% soil organic matter. Assessment Methodologies and Standards are presented in Appendix E.

The groundwater and soil leachate results have been compared against the most relevant GACs for the environmental setting, in this case considered to be the UK Drinking Water Standards (DWS) followed by Environmental Quality Standards (EQS) if DWS are not available. Due to the targeted approach of the investigation statistical analysis was not performed on the data.

The results of the assessment are given below.

Soil Contamination	The majority of soil concentrations were either below detection limits or GACs, with the exception of the following: • Arsenic (TP4, 0.5m bgl, 45mg/kg, HP1 0.5m bgl, 61mg/kg, HP2 0.5m bgl, 65mg/kg) – GAC 32mg/kg. • Chromium concentrations measured between 11.5mg/kg and 882mg/kg – (chromium VI GAC 4.3mg/kg, chromium III GAC 3000mg/kg). The three samples with the highest chromium concentrations were re-analysed for Chromium VI; all three results were <0.6mg/kg (i.e. less than GAC). • Naphthalene (TP14, 1.2m bgl, 5.53mg/kg) – GAC 4.4mg/kg. • Benzo-a-pyrene concentrations above GAC in 6 samples (1.42mg/kg to 3.79mg/kg) – GAC 0.96mg/kg. • Trichloroethene (TP12, 1.5 m bgl, 0.78mg/kg) – GAC 0.26mg/kg.
Asbestos	Thirteen soil samples were analysed for the presence of asbestos. No asbestos was potentially identified in any of the samples.
Groundwater and Leachate Contamination	Two groundwater samples were analysed. The majority of groundwater concentrations were either below detection limits or GACs, with the exception of the following: • Dissolved copper in BH1, 2.82ug/l – In the absence of DWS, surface water GAC ranges between 1ug/l (receiving water hardness <50ug/l) and 6ug/l (receiving water hardness >50ug/l). • Aromatic TPH C21 to C35 in BH1, 573ug/l - Drinking water GAC 90ug/l. All of the leachate sample results were below the detection limits or GACs.

Ground Gas	Gas monitoring of the six installed monitoring boreholes was undertaken on three occasions on 4, 11 and 17 May 2011. Methane was not detected (concentration <0.1%v/v) in any of the six locations on any of the monitoring visits. Carbon dioxide was detected in all six monitoring wells at a maximum concentration of 2.1%v/v, recorded in BH02 on the third monitoring visit. Oxygen was measured at concentrations of between 20.9%v/v (BH07) and 17.1%v/v (BH02). The maximum recorded gas flow rate was 0.2l/hr (BH1). Atmospheric pressure ranged from 1002mb to 1006mb during the monitoring visits. The monitoring data is provided as Appendix D.
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5 Pollutant Linkage Assessment

Based on the site investigation data and the future use of the site as a residential development, the following potentially significant pollutant linkages have been identified:

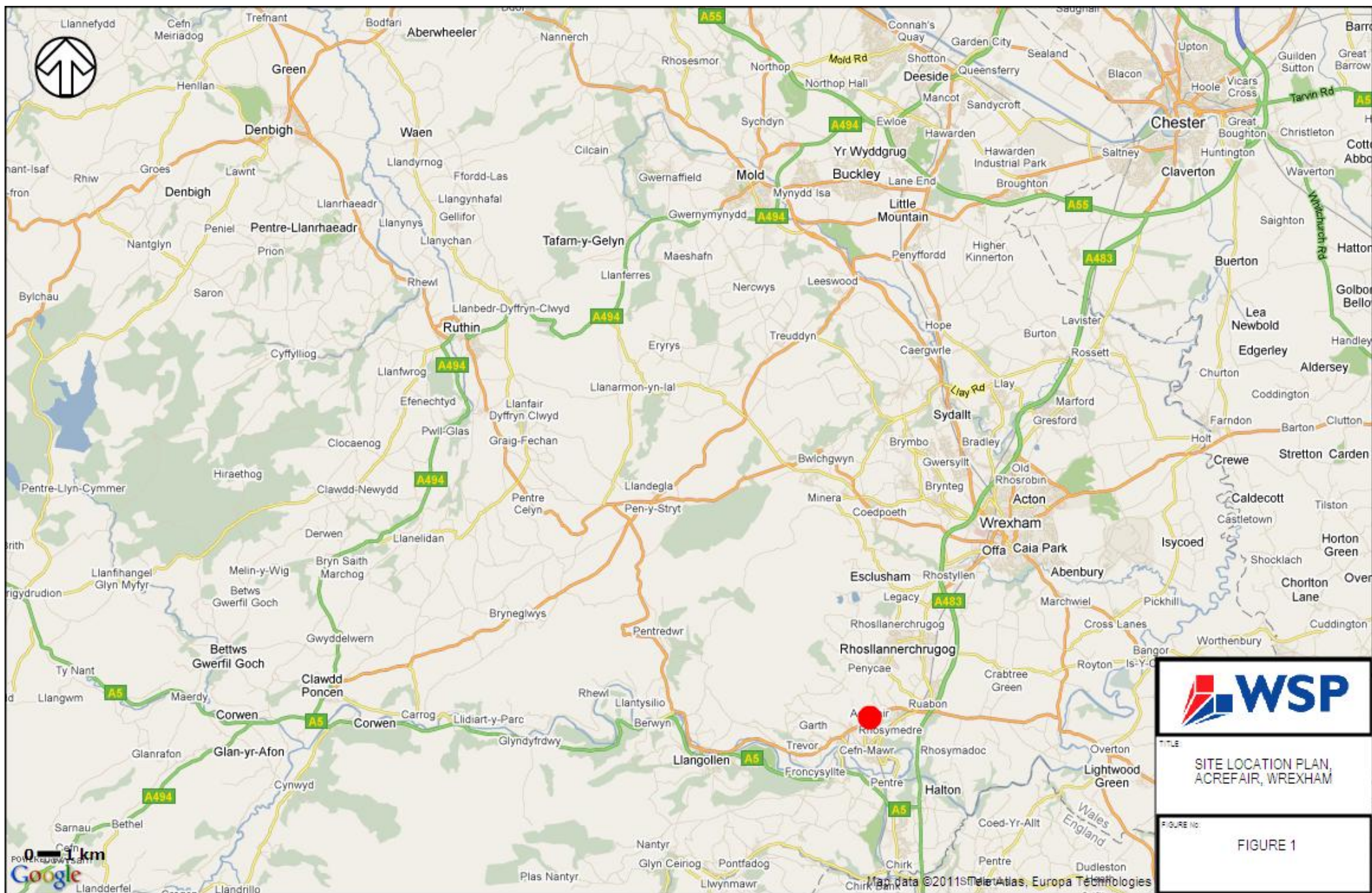
Human Health	The site investigation generally recorded limited evidence of contamination. Laboratory analysis identified limited elevations of contaminants including: • Localised arsenic, benzo(a)pyrene and naphthalene, likely to be associated with the presence of ash/coal in the Made Ground. These contaminants may pose a risk to future residents via direct contact; and, • TCE in TP12 which, if representative of an area of TCE impact, may pose a risk to future residents due to its volatile nature and potential for indoor inhalation. The provision of a suitable thickness of clean soil in garden and landscaped areas would break the direct contact and ingestion pathways to on and off-site residents and would therefore reduce the potential risk to human health from soil bound contaminants. If further intrusive investigation in the vicinity of TP12 reveals the presence of TCE impact an appropriate strategy of source or pathway removal will be required for the new development (i.e. either removing contaminated soil and groundwater or providing a membrane to prevent vapour migration into houses).
Controlled Waters	Groundwater: Concentrations of copper (toxic to fish) and TPH were measured above the available groundwater GACs (EQS and DWS respectively). It is considered that these concentrations do not represent a potential risk to controlled waters for the following reasons: ▪ The absence of an aquifer likely to be used for drinking water; ▪ The absence of a nearby surface water receptor; and, ▪ The very slight nature of the exceedences.
Ground Gas	Assessment of the available ground gas data against current UK guidance (CIRIA C665) indicates that the site falls within characteristic situation 1 and 'green' categories (NHBC (2008) Guidance for the safe development of housing on land affected by contamination), indicating there is very low risk from ground gas based on a residential end use.
Built Environment	Given the presence of significant thicknesses of Made Ground over some parts of the site there is potential for aggressive ground conditions to exist, which will influence the concrete class that is required in these areas for buried foundations or piles.

6 Conclusions and Recommendations

Environmental Liability	Based on the available information, it is considered that the site represents a Low risk in relation to statutory environmental liability (i.e. Regulatory or Third Party Intervention). No significant risks to human health or the wider environment have been identified associated with the current land use.
Recommendations for Future Development	For a future residential development, the following is recommended: ▪ In the event that the former coke ovens area is to be used for residential development then additional site investigation will be required. For continued use, no significant risks to human health or the wider environment have been identified. ▪ Provide for the likely requirement for cover soils in garden / soft landscaping areas, the specification to be agreed with the local authority. ▪ Complete a trial pit investigation in the vicinity of TP12 to determine if the TCE concentration identified in the sample of gravel taken from between two concrete slabs is associated with an area of TCE impact. The investigation will establish if the recorded TCE concentration was an isolated occurrence; is related to a localised hot-spot of impact; or is associated with a widespread area of TCE contamination in this part of the site. ▪ Make an allowance for removal and disposal of soils impacted with TCE or other hydrocarbons, or an allowance for fitting volatile vapour membranes to properties located where it is deemed appropriate for TCE or other hydrocarbons impact to remain in-situ. ▪ Extend the current gas monitoring (3 visits) to 6 visits in accordance with current guidance and to satisfy future requirements for detailed planning applications. ▪ Assess requirement for use of specialist potable water supply pipes in areas affected by hydrocarbon contamination during redevelopment. ▪ Testing to assess the potential for chemical attack on buried concrete within Made Ground materials. ▪ Construction health and safety plan to ensure risks to workers and third parties are managed / mitigated. ▪ Complete a detailed assessment of the presence of radon to determine if radon ingress prevention measures would be required in new buildings.

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Figure 1 Site Location Plan



TITLE
SITE LOCATION PLAN,
ACREFAIR, WREXHAM

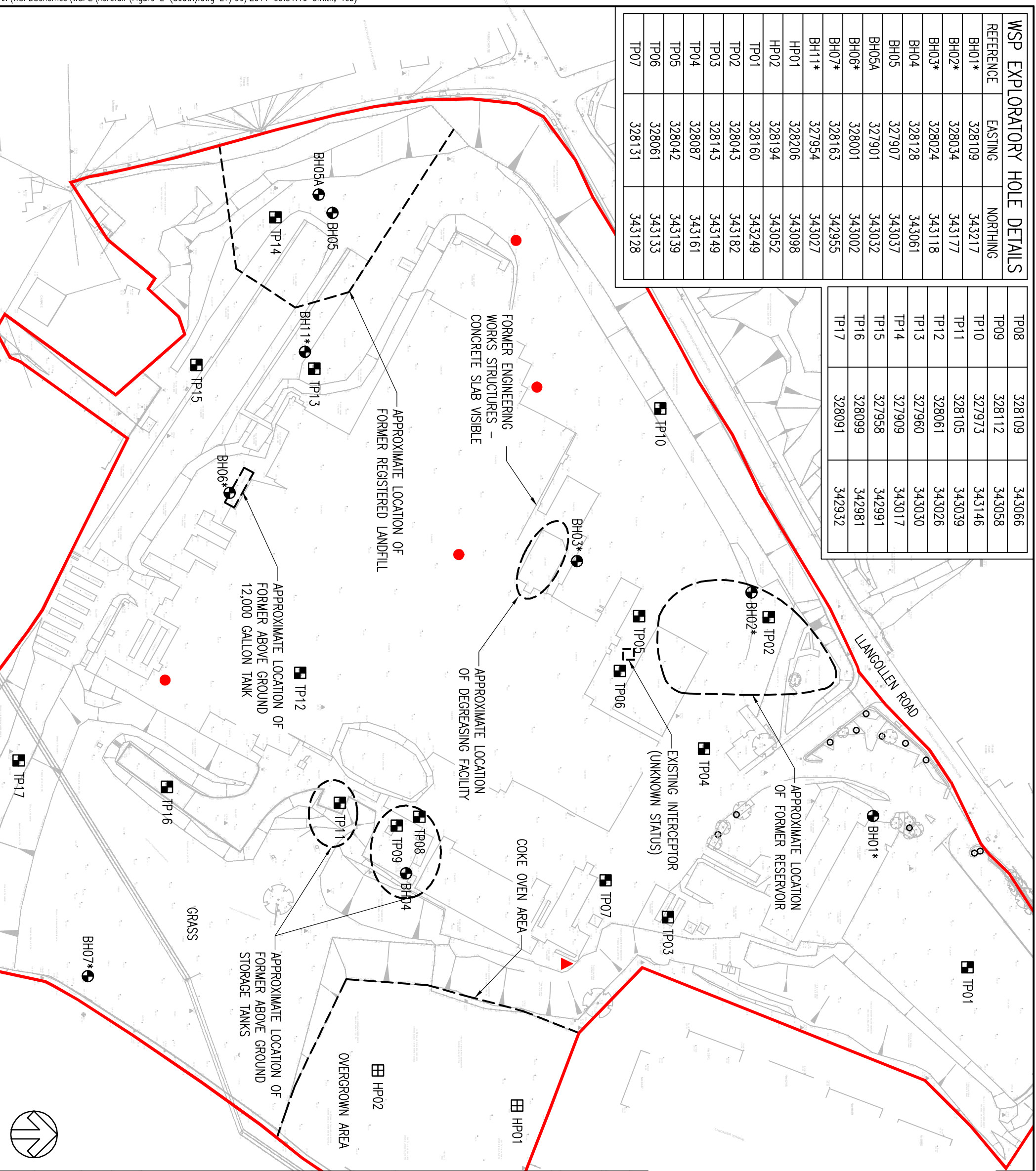
FIGURE NO.
FIGURE 1



Figure 2 Exploratory Hole Location Plan

WSP EXPLORATORY HOLE DETAILS			
REFERENCE	EASTING	NORTHING	
BH01*	328109	343217	
BH02*	328034	343177	
BH03*	328024	343118	
BH04	328128	343061	
BH05	327907	343037	
BH05A	327901	343032	
BH06*	328001	343002	
BH07*	328163	342955	
BH11*	327954	343027	
HP01	328206	343098	
HP02	328194	343052	
TP01	328160	343249	
TP02	328043	343182	
TP03	328143	343149	
TP04	328087	343161	
TP05	328042	343139	
TP06	328061	343133	
TP07	328131	343128	

TP08	328109	343066
TP09	328112	343058
TP10	327973	343146
TP11	328105	343039
TP12	328061	343026
TP13	327960	343030
TP14	327909	343017
TP15	327958	342991
TP16	328099	342981
TP17	328091	342932



DO NOT SCALE

KEY

APPROXIMATE SITE BOUNDARY

WSP INVESTIGATION 2011

- | | |
|--------|---|
| ● BH01 | WSPE BOREHOLE AND REFERENCE (APRIL 2011) |
| ■ TP01 | WSPE TRIAL PIT AND REFERENCE (APRIL 2011) |

* DENOTES BOREHOLES ARE INSTALLED WITH GROUND GAS / GROUNDWATER MONITORING WELLS

HISTORICAL INFORMATION

- HISTORICAL MINE OPENING
- ▲ APPROXIMATE LOCATION OF CAPPED MINE SHAFT ENCOUNTERED BY SITE REPRESENTATIVES

A	27/06/11	TS	FIRST ISSUE	PG
REV	DATE	BY	DESCRIPTION	CHK
				APD

FOR INFORMATION ONLY



The Victoria, 150-182 The Quays, Salford M50 3SP
Tel: +44 (0)161 886 2400 Fax: +44 (0)161 886 2401
<http://www.wsjgroup.com>

AIR PRODUCTS LIMITED

N/A

**SOUTH (FORMER ENGINEERING WORKS) ACREFAIR
WREXHAM**

TITLE:

EXPLORATORY HOLE LOCATION PLAN

SCALE @ AS:	CHECKED:	APPROVED:
1:1250	PG	PG
DWG FILE:	DESIGN-DRAWN:	DATE:
FIGURE 2 (SOUTH)	TS	June 2011
PROJECT No:	DRAWING No:	REV:
21240/001	FIGURE 2	A

© WSP Group plc



Figure 3 Former Site Layout Plan





TITLE:

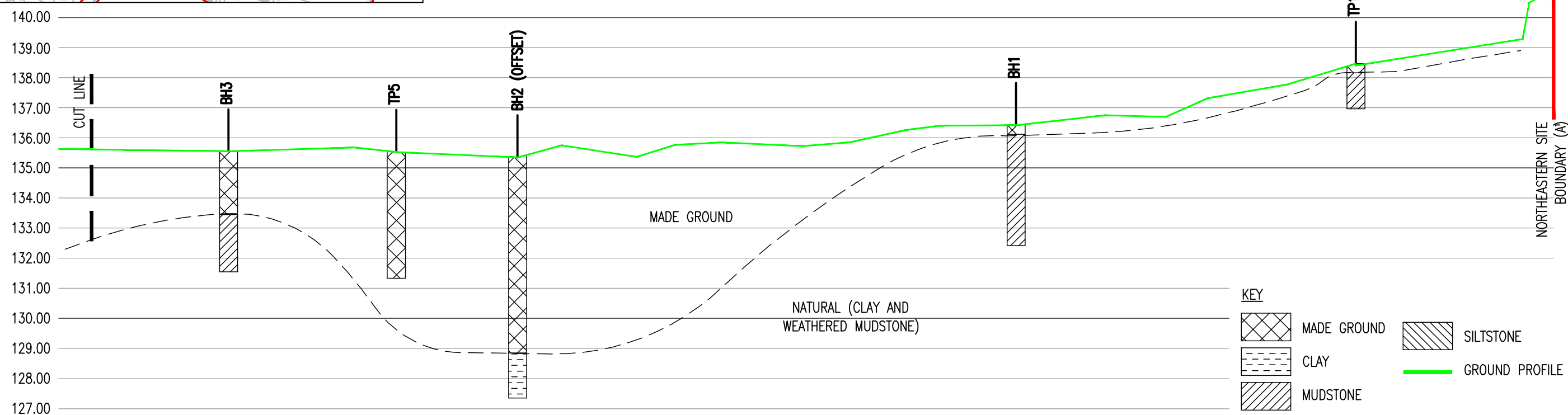
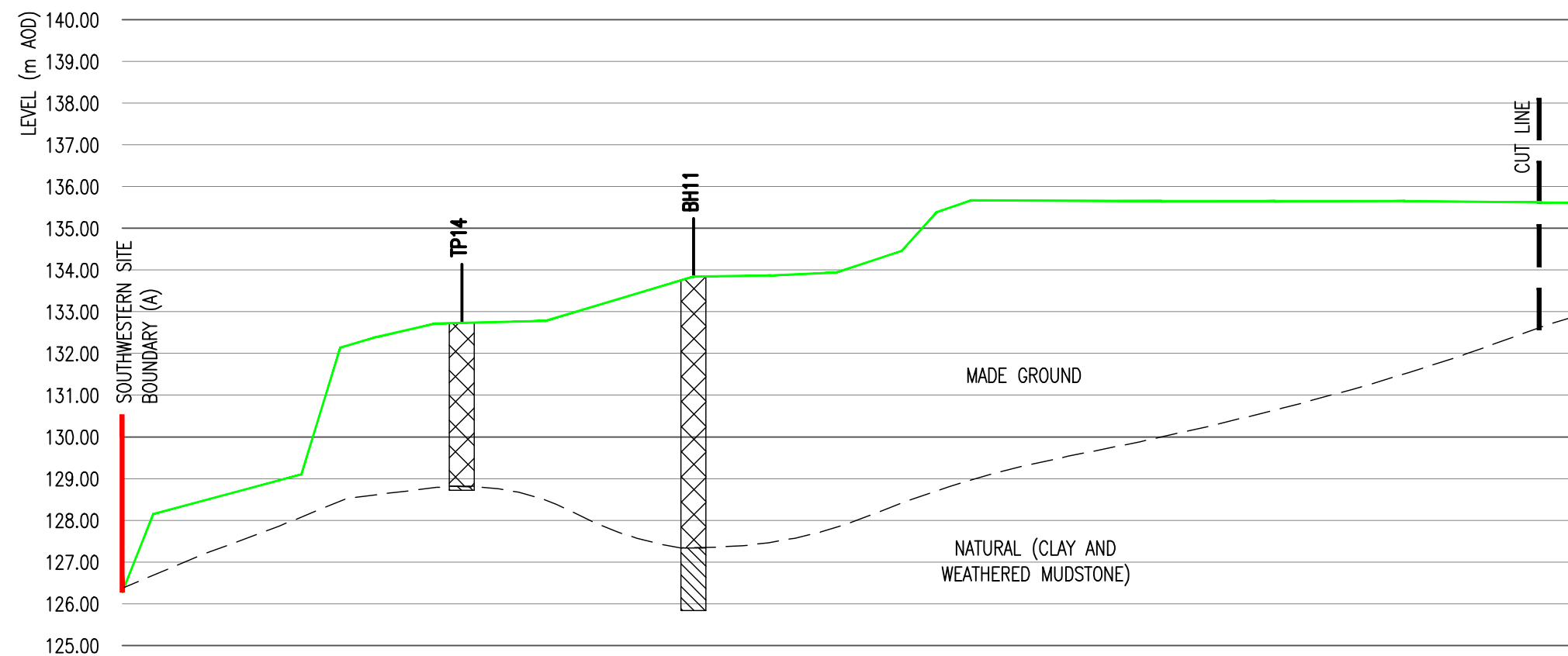
SOUTH (FORMER ENGINEERING WORKS), ACREFAIR, WREXHAM

FIGURE NO:

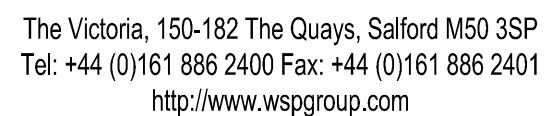
FIGURE 3: FORMER SITE LAYOUT PLAN

Figure 4

A, B and C: Geological Cross Sections A-A', B-B' and C-C'



A	20/06/11	TS	ISSUED	PG	PG
REV	DATE	BY	DESCRIPTION	CHK	APP
DRAWING STATUS:					
FOR INFORMATION ONLY					



CLIENT: AIR PRODUCTS LIMITED

ARCHITECT: N/A

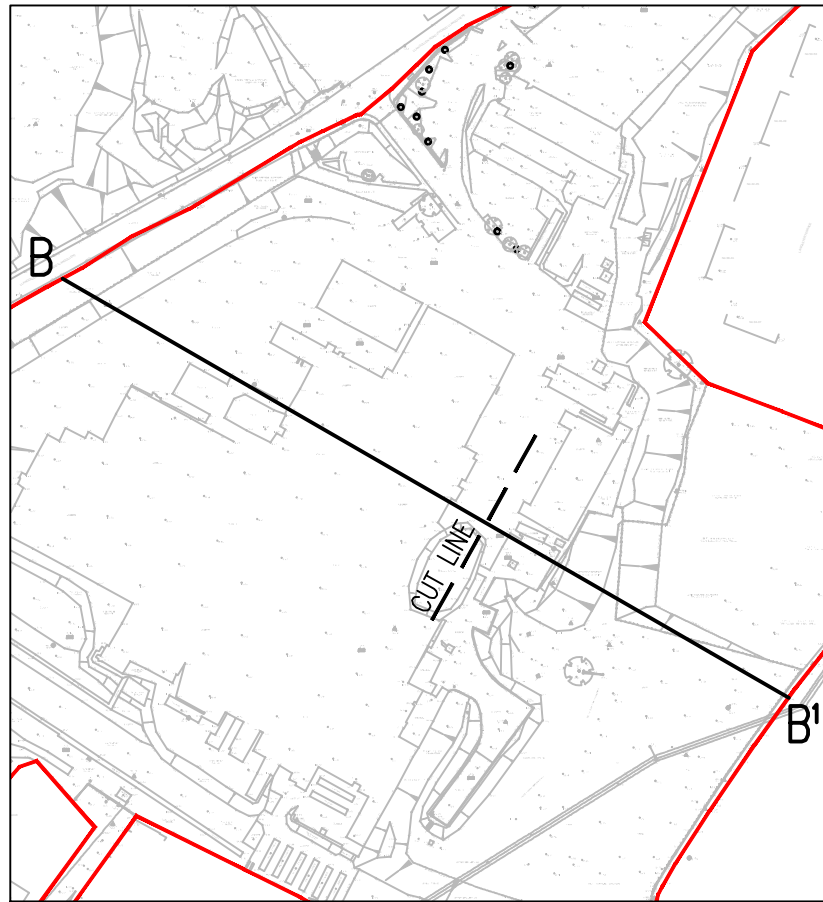
PROJECT: SOUTH (FORMER ENGINEERING WORKS)
ACREFAIR
WREXHAM

TITLE: CROSS SECTION A - A'

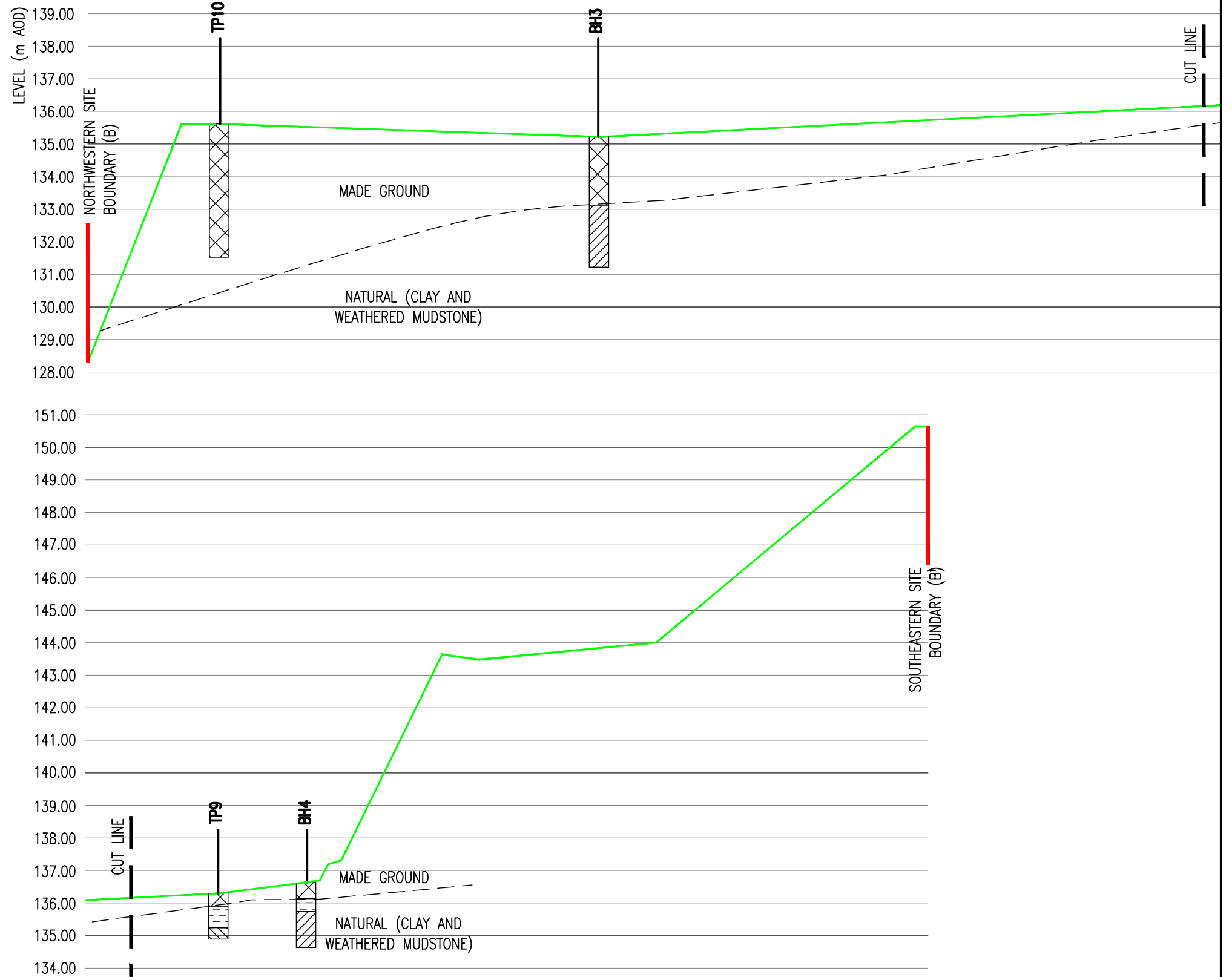
SCALE @ A3: N.T.S.	CHECKED: PG	APPROVED: PG
CAD FILE: FIGURE 4A (SOUTH)	DESIGN-DRAWN: TS	DATE: June 2011
PROJECT No: 21240/001	DRAWING No: FIGURE 4A	REV: A

© WSP Group plc

J:\WSPDSCHMES\WSP\ACREFAIR\FIGURE 4B (SOUTH).DWG 20/06/2011 15:56:28 Smith, Toby



KEY	
	MADE GROUND
	CLAY
	MUDSTONE
	SILTSTONE
	GROUND PROFILE



REV	DATE	BY	DESCRIPTION	CHK	APD
A	20/06/11	TS	ISSUED	PG	PG
DRAWING STATUS: FOR INFORMATION ONLY					



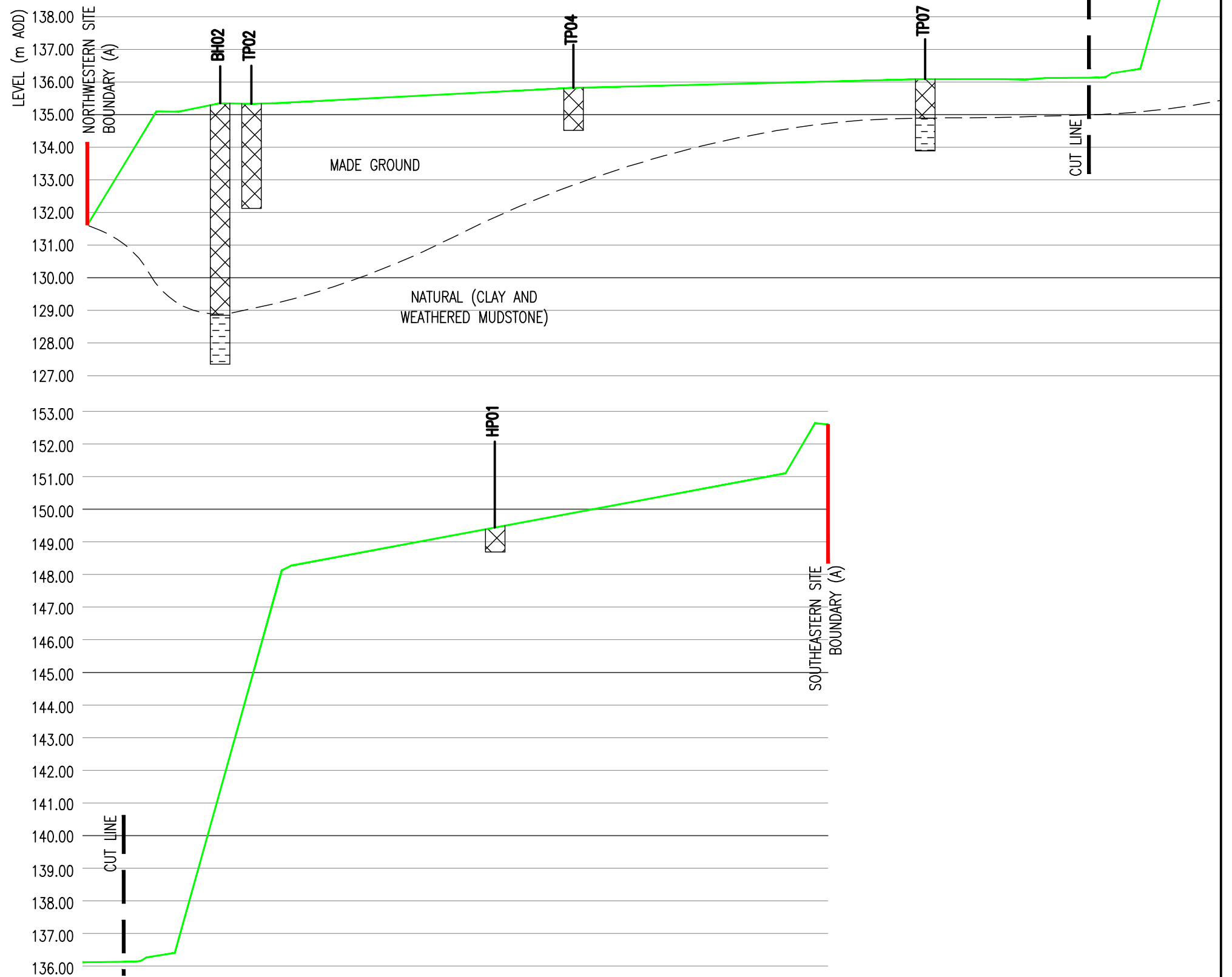
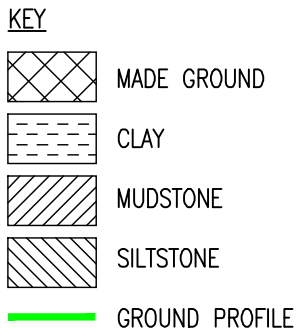
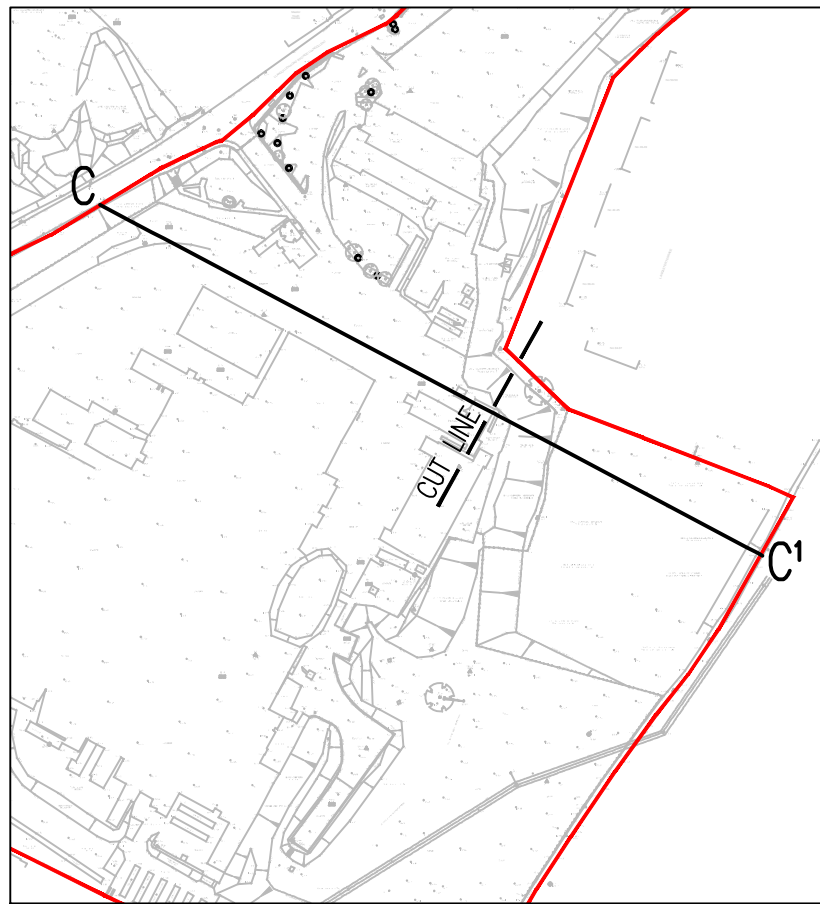
The Victoria, 150-182 The Quays, Salford M50 3SP
Tel: +44 (0)161 886 2400 Fax: +44 (0)161 886 2401
<http://www.wspgroup.com>

CLIENT:	AIR PRODUCTS LIMITED
ARCHITECT:	N/A

PROJECT:	SOUTH (FORMER ENGINEERING WORKS) ACREFAIR WREXHAM
TITLE:	CROSS SECTION B - B'

SCALE @ A3:	N.T.S.	CHECKED:	PG	APPROVED:	PG
CAD FILE:	FIGURE 4B (SOUTH)	DESIGN-DRAWN:	TS	DATE:	June 2011
PROJECT No:	21240/001	DRAWING No:	FIGURE 4b	REV:	A
© WSP Group plc					

J:\WSPDSCHMES\WSP\ACREFAIR\FIGURE 4C (SOUTH).DWG 20/06/2011 15:56:33 Smith, Toby



A	20/06/11	TS	ISSUED	PG	PG
REV	DATE	BY	DESCRIPTION	CHK	APD
DRAWING STATUS: FOR INFORMATION ONLY					



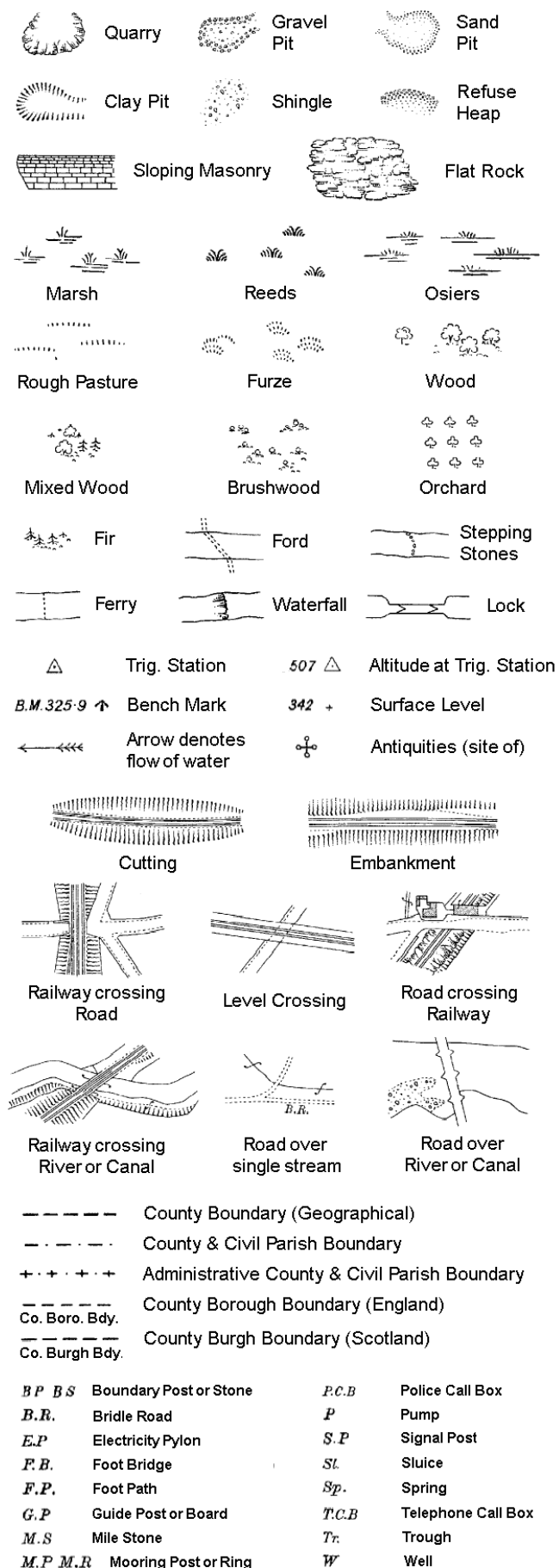
The Victoria, 150-182 The Quays, Salford M50 3SP
Tel: +44 (0)161 886 2400 Fax: +44 (0)161 886 2401
<http://www.wspgroup.com>

CLIENT: AIR PRODUCTS LIMITED	PROJECT: SOUTH (FORMER ENGINEERING WORKS) ACREFAIR WREXHAM	SCALE @ A3: N.T.S.	CHECKED: PG	APPROVED: PG
ARCHITECT: N/A	TITLE: CROSS SECTION C - C'	CAD FILE: FIGURE 4C (SOUTH)	DESIGN-DRAWN: TS	DATE: June 2011
		PROJECT No: 21240/001	DRAWING No: FIGURE 4c	REV: A
© WSP Group plc				

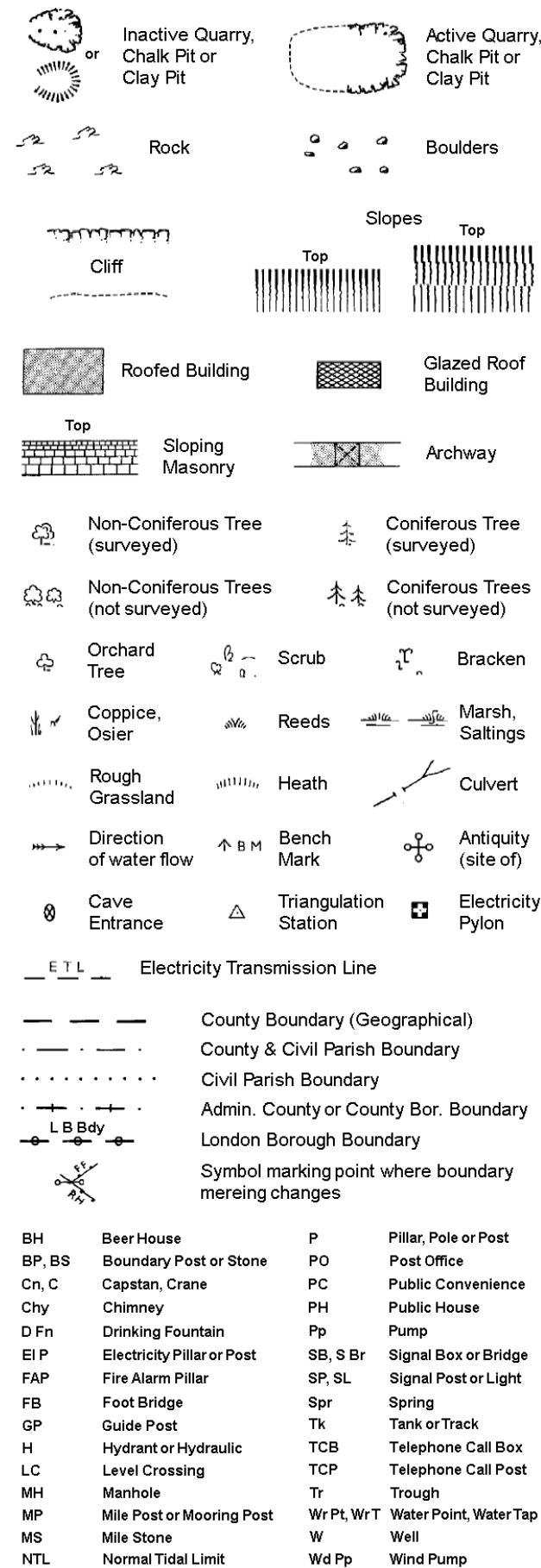
Appendix A Historical Maps

Historical Mapping Legends

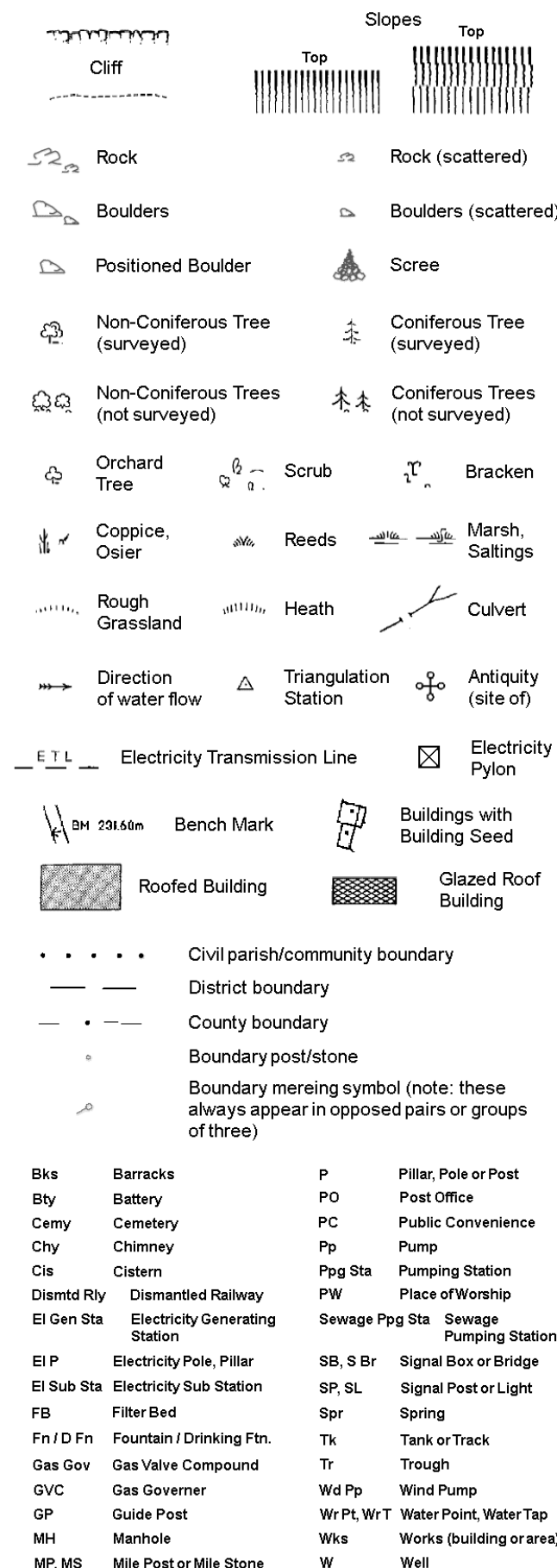
Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



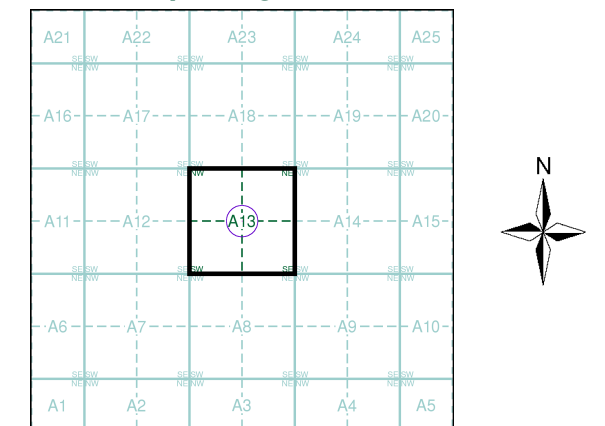
Large-Scale National Grid Data 1:2,500 and 1:1,250



Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Denbighshire	1:2,500	1874	2
Denbighshire	1:2,500	1899	3
Denbighshire	1:2,500	1912	4
Ordnance Survey Plan	1:2,500	1962 - 1963	5
Additional SIMs	1:2,500	1962 - 1980	6
Ordnance Survey Plan	1:2,500	1968	7
Ordnance Survey Plan	1:2,500	1972	8
Supply of Unpublished Survey Information	1:2,500	1974	9
Additional SIMs	1:2,500	1978 - 1991	10
Additional SIMs	1:2,500	1988 - 1992	11
Ordnance Survey Plan	1:2,500	1991	12
Large-Scale National Grid Data	1:2,500	1994	13

Historical Map - Segment A13



Order Details

Order Number: 29328266_1_1
Customer Ref: 69628
National Grid Reference: 327980, 343170
Slice: A
Site Area (Ha): 0.01
Search Buffer (m): 100

Site Details

Air Products Plc, Llangollen Road, Acrefair, WREXHAM, Clwyd, LL14 3HW



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

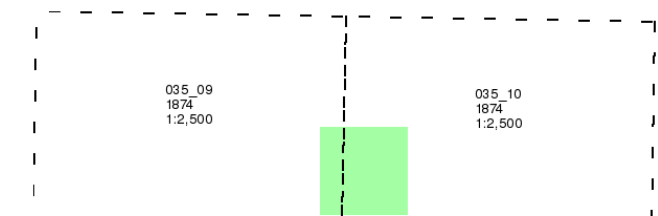
Denbighshire

Published 1874

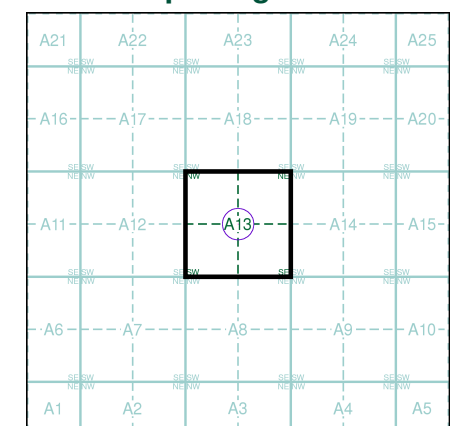
Source map scale - 1:2,500

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

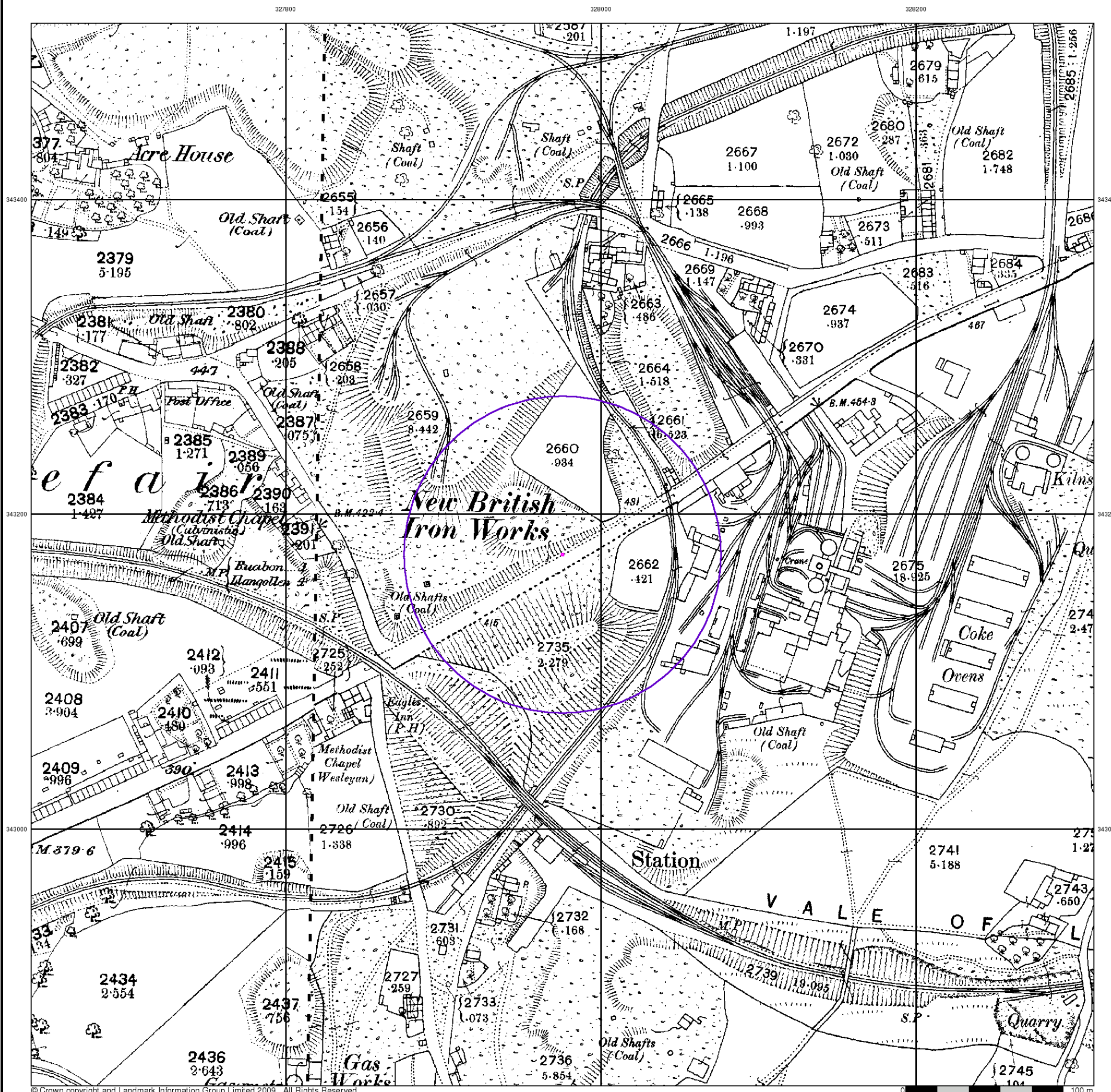


Order Details

Order Number: 29328266_1_1
Customer Ref: 69628
National Grid Reference: 327980, 343170
Slice: A
Site Area (Ha): 0.01
Search Buffer (m): 100

Site Details

Air Products Plc, Llangollen Road, Acrefair, WREXHAM, Clwyd, LL14 3HW



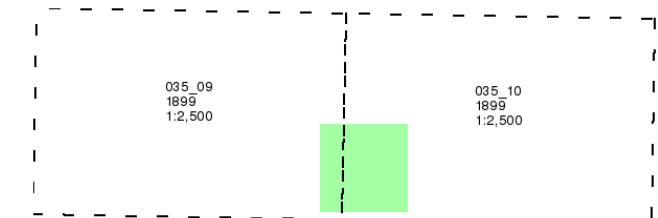
Denbighshire

Published 1899

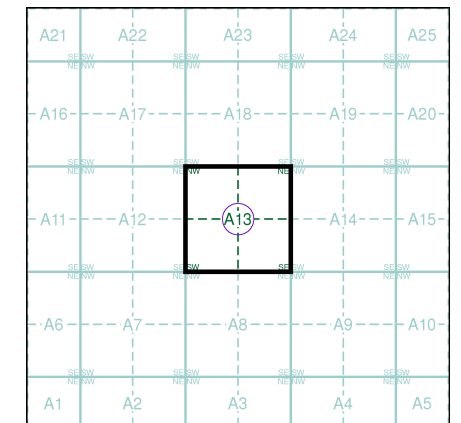
Source map scale - 1:2,500

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

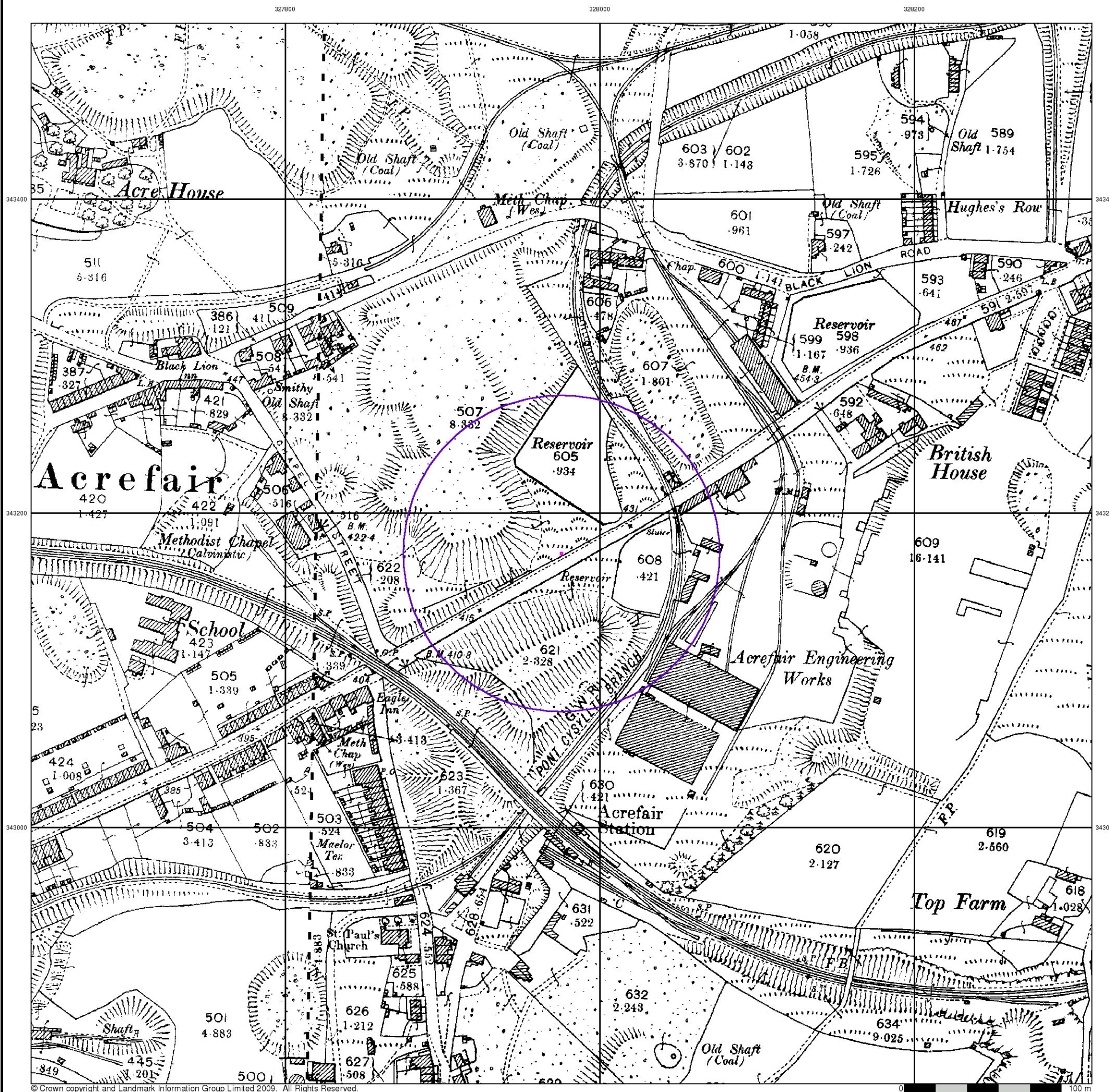


Order Details

Order Number: 29328266_1_1
Customer Ref: 69628
National Grid Reference: 327980, 343170
Slice: A
Site Area (Ha): 0.01
Search Buffer (m): 100

Site Details

Air Products Plc, Llangollen Road, Acrefair, WREXHAM, Clwyd, LL14 3HW



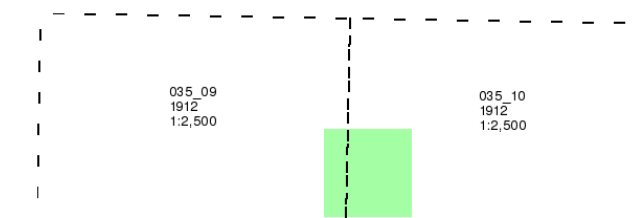
Denbighshire

Published 1912

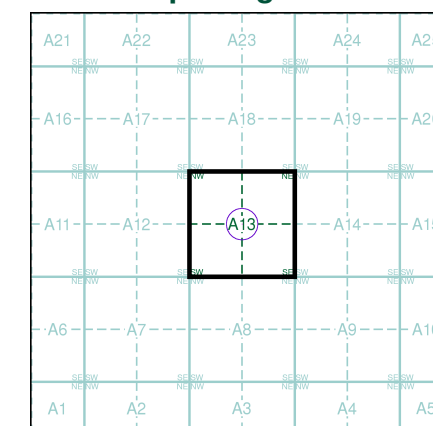
Source map scale - 1:2,500

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

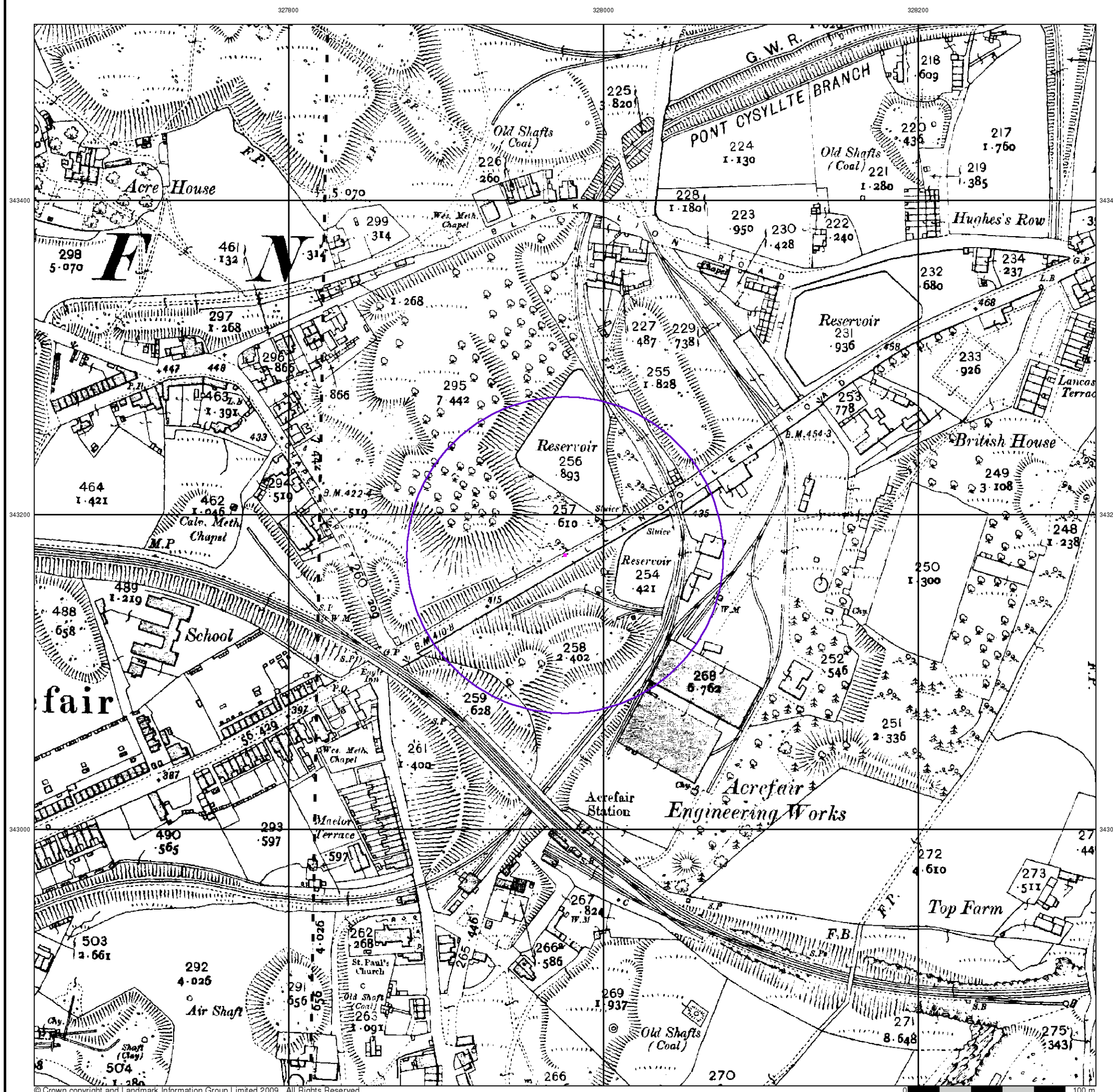


Order Details

Order Number: 29328266_1_1
 Customer Ref: 69628
 National Grid Reference: 327980, 343170
 Slice: A
 Site Area (Ha): 0.01
 Search Buffer (m): 100

Site Details

Air Products Plc, Llangollen Road, Acrefair, WREXHAM, Clwyd, LL14 3HW



Ordnance Survey Plan

Published 1962 - 1963

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)

SJ2743	SJ2843
1962	1962
1:2,500	1:2,500
SJ2742	SJ2842
1963	1962
1:2,500	1:2,500

Historical Map - Segment A13

A21	A22	A23	A24	A25
A16	A17	A18	A19	A20
A11	A12	A13	A14	A15
A6	A7	A8	A9	A10
A1	A2	A3	A4	A5



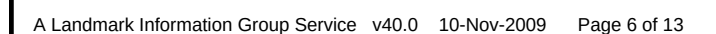
Order Details

Order Number: 29328266_1_1
 Customer Ref: 69628
 National Grid Reference: 327980, 343170
 Slice: A
 Site Area (Ha): 0.01
 Search Buffer (m): 100

Site Details

Air Products Plc, Llangollen Road, Acrefair, WREXHAM, Clwyd, LL14 3HW





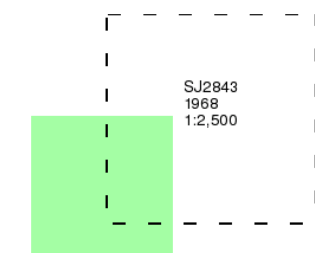
Ordnance Survey Plan

Published 1968

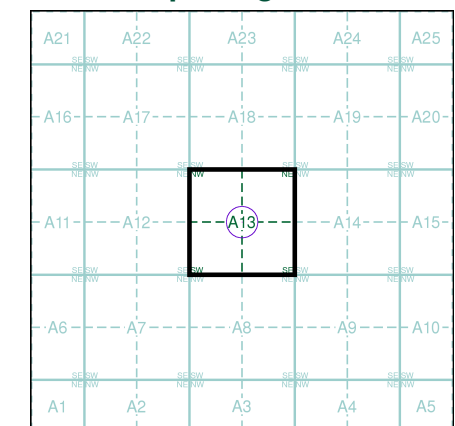
Source map scale - 1:2,500

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: 29328266_1_1
 Customer Ref: 69628
 National Grid Reference: 327980, 343170
 Slice: A
 Site Area (Ha): 0.01
 Search Buffer (m): 100

Site Details

Air Products Plc, Llangollen Road, Acrefair, WREXHAM, Clwyd, LL14 3HW



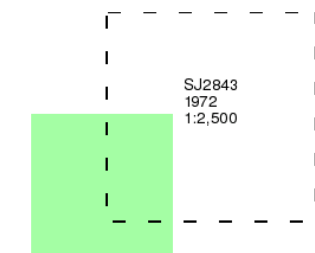
Ordnance Survey Plan

Published 1972

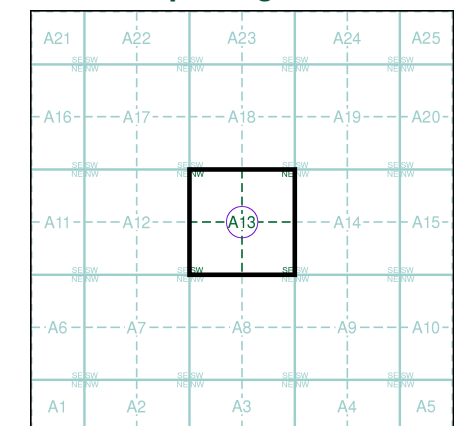
Source map scale - 1:2,500

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

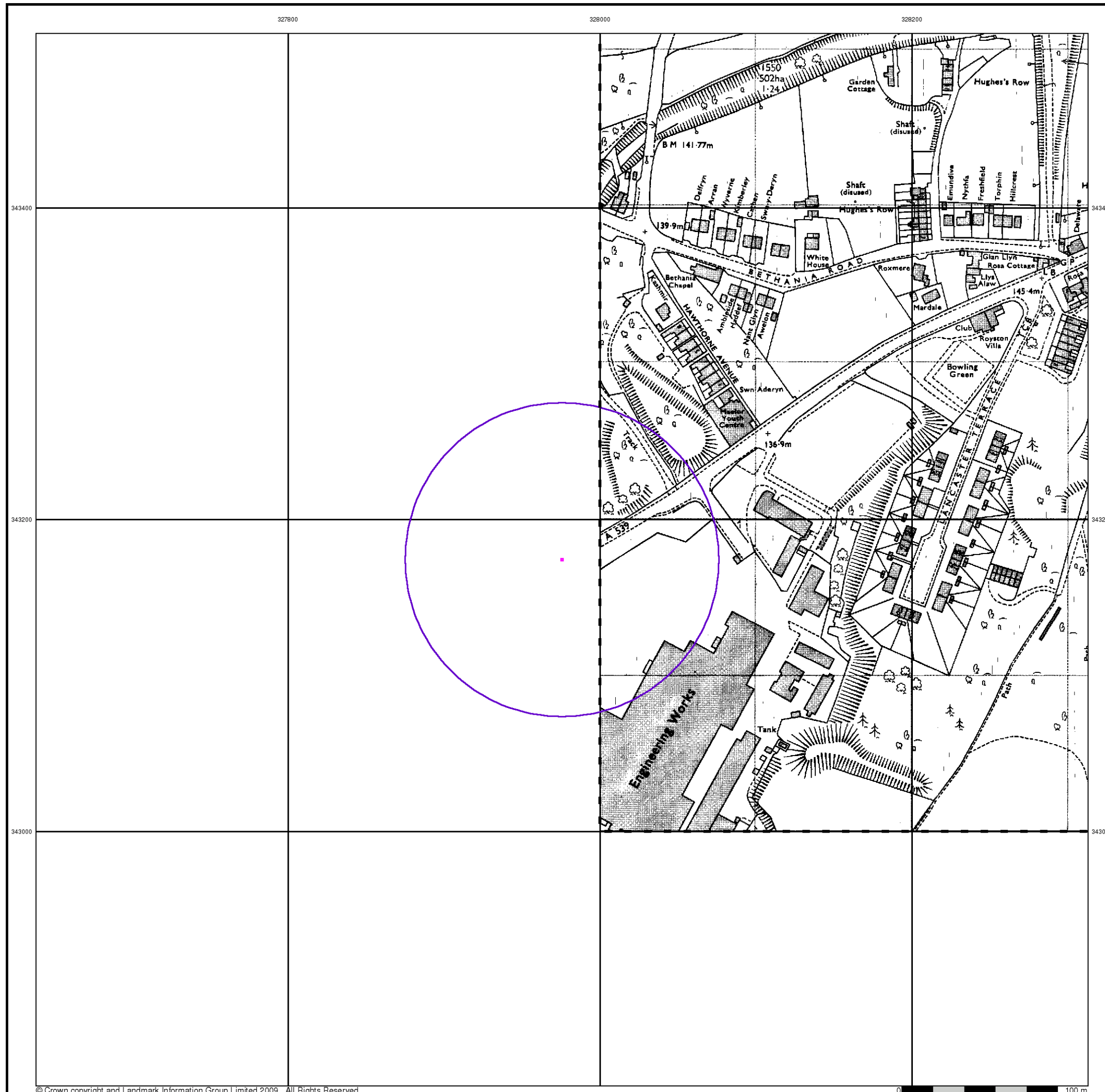


Order Details

Order Number: 29328266_1_1
 Customer Ref: 69628
 National Grid Reference: 327980, 343170
 Slice: A
 Site Area (Ha): 0.01
 Search Buffer (m): 100

Site Details

Air Products Plc, Llangollen Road, Acrefair, WREXHAM, Clwyd, LL14 3HW



Supply of Unpublished Survey Information

Published 1974

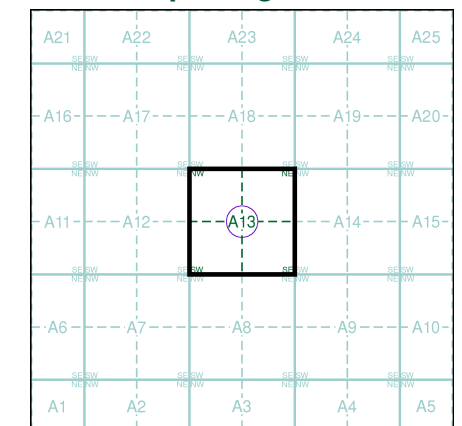
Source map scale - 1:2,500

SUSI maps (Supply of Unpublished Survey Information) were produced between 1972 and 1977, mainly for internal use at Ordnance Survey. These were more of a 'work-in-progress' plan as they showed updates of individual areas on a map. These maps were unpublished, and they do not represent a single moment in time. They were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)

SJ2743	SJ2843
1974	1974
1:2,500	1:2,500
SJ2742	SJ2842
1974	1974
1:2,500	1:2,500

Historical Map - Segment A13

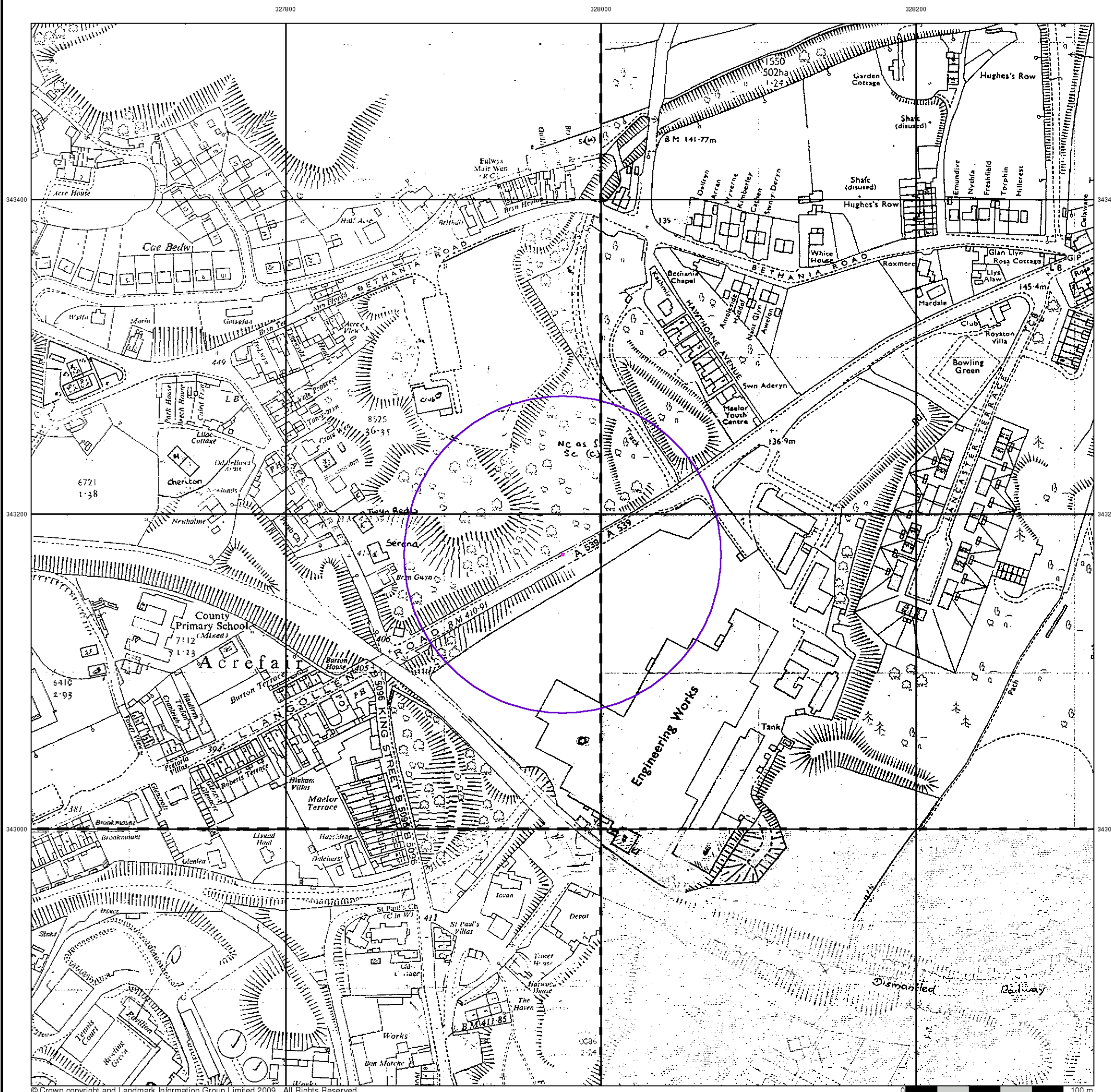


Order Details

Order Number: 29328266_1_1
 Customer Ref: 69628
 National Grid Reference: 327980, 343170
 Slice: A
 Site Area (Ha): 0.01
 Search Buffer (m): 100

Site Details

Air Products Plc, Llangollen Road, Acrefair, WREXHAM, Clwyd, LL14 3HW



Additional SIMs

Published 1988 - 1992

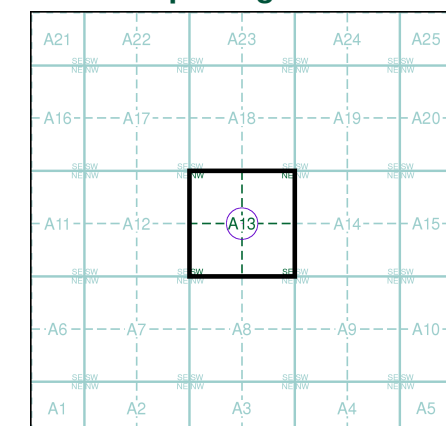
Source map scale - 1:2,500

The SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)

SJ2743	1992	12,500
SJ2742	1992	12,500
SJ2842	1988	12,500

Historical Map - Segment A13

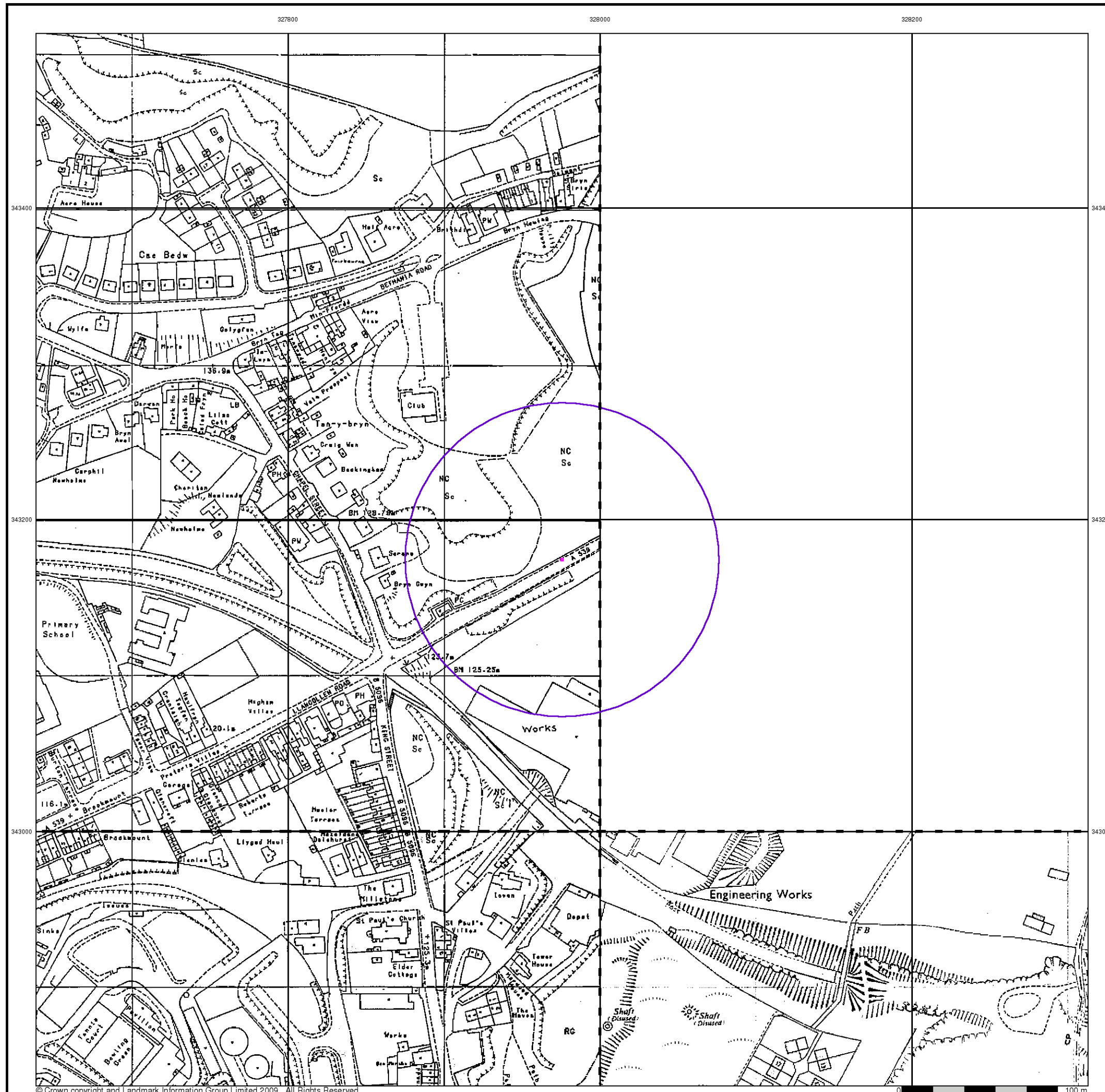


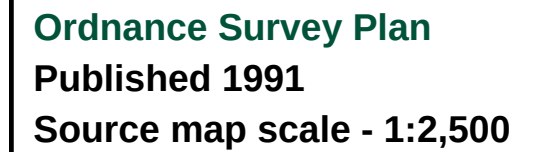
Order Details

Order Number: 29328266_1_1
 Customer Ref: 69628
 National Grid Reference: 327980, 343170
 Slice: A
 Site Area (Ha): 0.01
 Search Buffer (m): 100

Site Details

Air Products Plc, Llangollen Road, Acrefair, WREXHAM, Clwyd, LL14 3HW





Map Name(s) and Date(s)



Order Number: 29328266_1_1
Customer Ref: 69628
National Grid Reference: 327980, 343170
Slice: A
Site Area (Ha): 0.01
Search Buffer (m): 100

Air Products Plc, Llangollen Road, Acrefair, WREXHAM,
Clwyd, LL14 3HW



Large-Scale National Grid Data

Published 1994

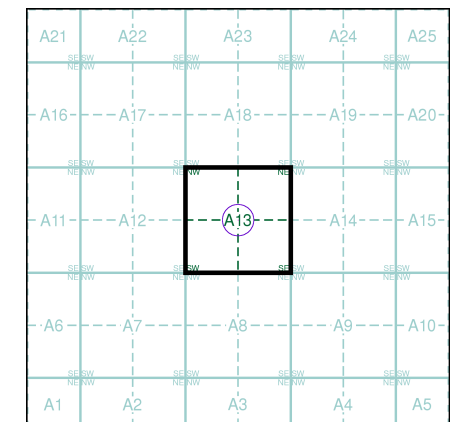
Source map scale - 1:2,500

'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)

SJ2743	SJ2843
1994	1994
1:2,500	1:2,500
SJ2742	SJ2842
1994	1994
1:2,500	1:2,500

Historical Map - Segment A13

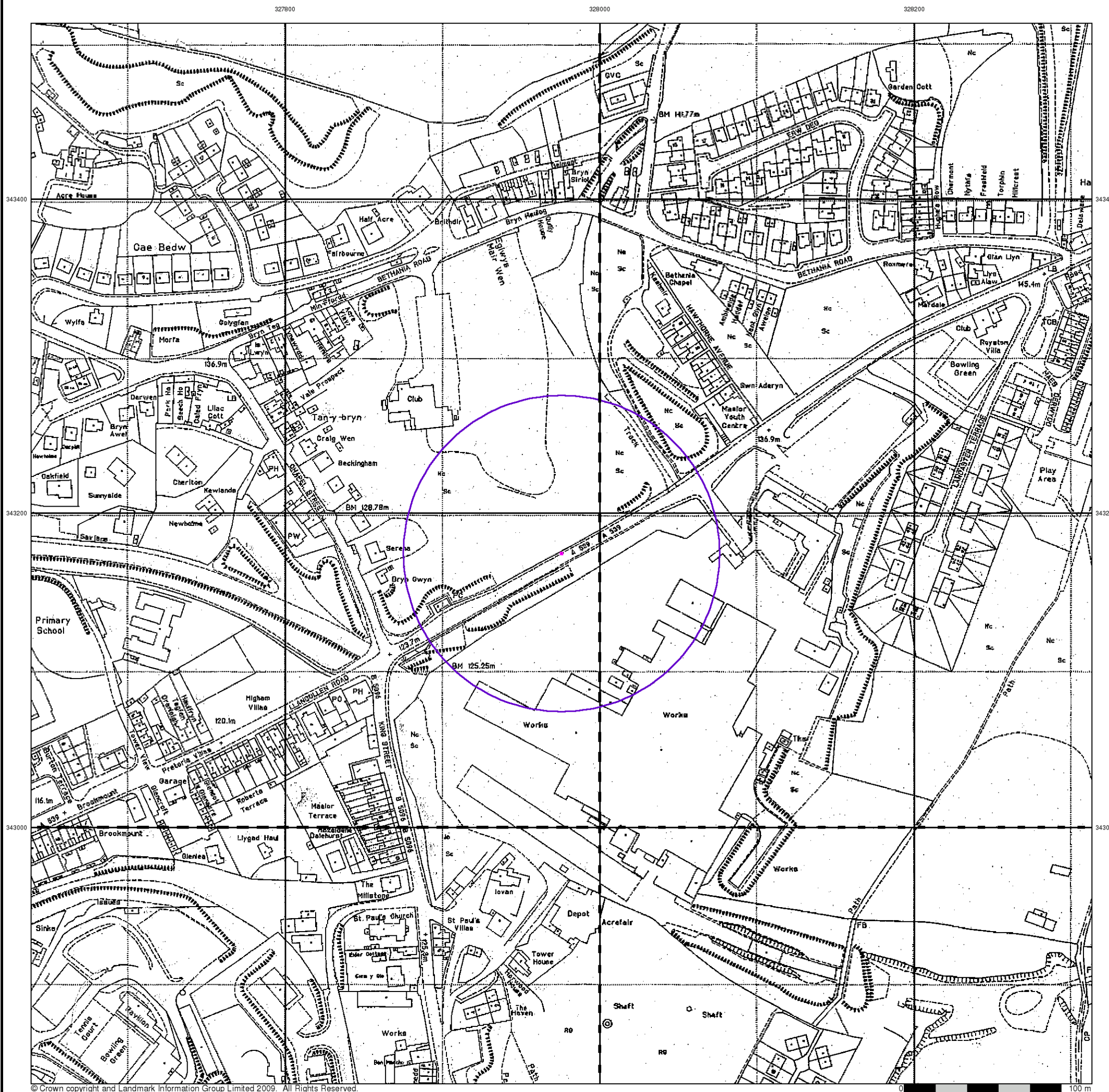


Order Details

Order Number: 29328266_1_1
 Customer Ref: 69628
 National Grid Reference: 327980, 343170
 Slice: A
 Site Area (Ha): 0.01
 Search Buffer (m): 100

Site Details

Air Products Plc, Llangollen Road, Acrefair, WREXHAM, Clwyd, LL14 3HW



Historical Mapping Legends

Ordnance Survey County Series 1:10,560

	Gravel Pit		Sand Pit		Other Pits
	Quarry		Shingle		Orchard
	Osiers		Reeds		Marsh
	Mixed Wood		Deciduous		Brushwood
	Fir		Furze		Rough Pasture
	Arrow denotes flow of water		Trigonometrical Station		
	Site of Antiquities		Bench Mark		
	Pump, Guide Post, Signal Post		Well, Spring, Boundary Post		
	Surface Level				
	Sketched Contour		Instrumental Contour		
	Main Roads		Minor Roads		
	Sunken Road		Raised Road		
	Road over Railway		Railway over River		
	Railway over Road		Level Crossing		
	Road over River or Canal		Road over Stream		
	Road over Stream				
	County Boundary (Geographical)				
	County & Civil Parish Boundary				
	Administrative County & Civil Parish Boundary				
	County Borough Boundary (England)				
	County Burgh Boundary (Scotland)				
	Rural District Boundary				
	Civil Parish Boundary				

Ordnance Survey Plan 1:10,000

	Chalk Pit, Clay Pit or Quarry		Gravel Pit
	Sand Pit		Disused Pit or Quarry
	Refuse or Slag Heap		Lake, Loch or Pond
	Dunes		Boulders
	Coniferous Trees		Non-Coniferous Trees
	Orchard		Scrub
	Bracken		Heath
	Marsh		Reeds
	Building		Glasshouse
	Sloping Masonry		Pylon
	Cutting		Embankment
	Road Under		Road Over
	Level Crossing		Foot Bridge
	Standard Gauge Multiple Track		Standard Gauge Single Track
	Siding, Tramway or Mineral Line		Narrow Gauge
	Geographical County		Administrative County, County Borough or County of City
	Municipal Borough, Urban or Rural District, Burgh or District Council		Borough, Burgh or County Constituency
	Civil Parish		
	Boundary Post or Stone		Police Station
	Church		Post Office
	Club House		Public Convenience
	Fire Engine Station		Public House
	Foot Bridge		Signal Box
	Fountain		Spring
	Guide Post		Telephone Call Box
	Mile Post		Telephone Call Post
	Mile Stone		Well

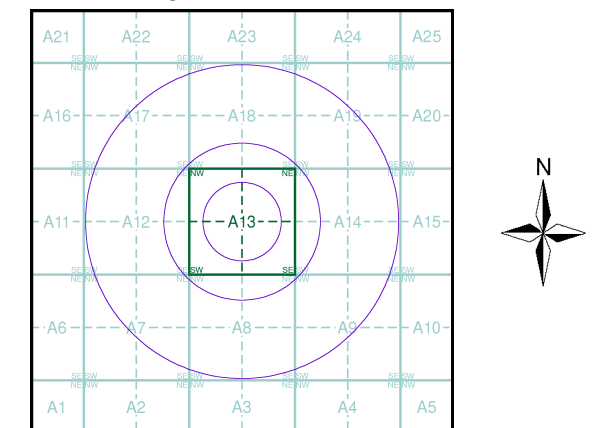
1:10,000 Raster Mapping

	Gravel Pit		Refuse tip or slag heap
	Rock		Rock (scattered)
	Boulders		Boulders (scattered)
	Shingle		Mud
	Sand		Sand Pit
	Slopes		Top of cliff
	General detail		Underground detail
	Overhead detail		Narrow gauge railway
	Multi-track railway		Single track railway
	County boundary (England only)		Civil, parish or community boundary
	District, Unitary, Metropolitan, London Borough boundary		Constituency boundary
	Area of wooded vegetation		Non-coniferous trees
	Non-coniferous trees (scattered)		Coniferous trees
	Coniferous trees (scattered)		Positioned tree
	Orchard		Coppice or Osiers
	Rough Grassland		Heath
	Scrub		Marsh, Salt Marsh or Reeds
	Water feature		Flow arrows
	Mean high water (springs)		Mean low water (springs)
	Telephone line (where shown)		Electricity transmission line (with poles)
	Bench mark (where shown)		Triangulation station
	Point feature (e.g. Guide Post or Mile Stone)		Pylon, flare stack or lighting tower
	Site of (antiquity)		Glasshouse
	General Building		Important Building

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Denbighshire	1:10,560	1879	2
Denbighshire	1:10,560	1900	3
Denbighshire	1:10,560	1914	4
Denbighshire	1:10,560	1938	5
Denbighshire	1:10,560	1953 - 1954	6
Ordnance Survey Plan	1:10,000	1963	7
Ordnance Survey Plan	1:10,000	1977	8
Ordnance Survey Plan	1:10,000	1986	9
Ordnance Survey Plan	1:10,000	1995	10
10K Raster Mapping	1:10,000	2000	11
10K Raster Mapping	1:10,000	2006	12
10K Raster Mapping	1:10,000	2009	13

Historical Map - Slice A



Order Details

Order Number: 29328266_1_1
 Customer Ref: 69628
 National Grid Reference: 327980, 343170
 Slice: A
 Site Area (Ha): 0.01
 Search Buffer (m): 1000

Site Details

Air Products Plc, Llangollen Road, Acrefair, WREXHAM, Clwyd, LL14 3HW

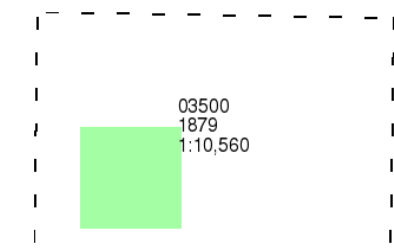
Denbighshire

Published 1879

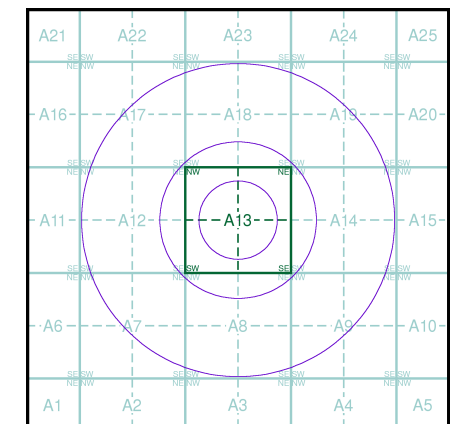
Source map scale - 1:10,560

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: 29328266_1_1
Customer Ref: 69628
National Grid Reference: 327980, 343170
Slice: A
Site Area (Ha): 0.01
Search Buffer (m): 1000

Site Details

Air Products Plc, Llangollen Road, Acrefair, WREXHAM,
Clwyd, LL14 3HW



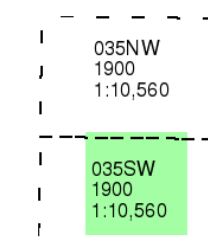
Denbighshire

Published 1900

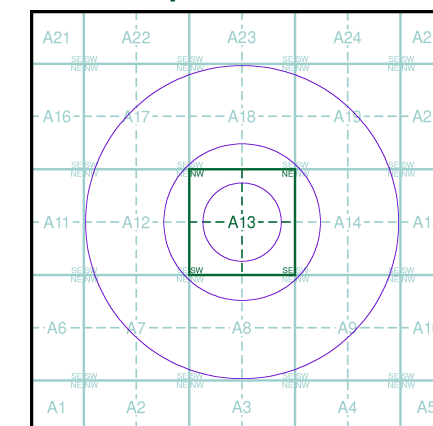
Source map scale - 1:10,560

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

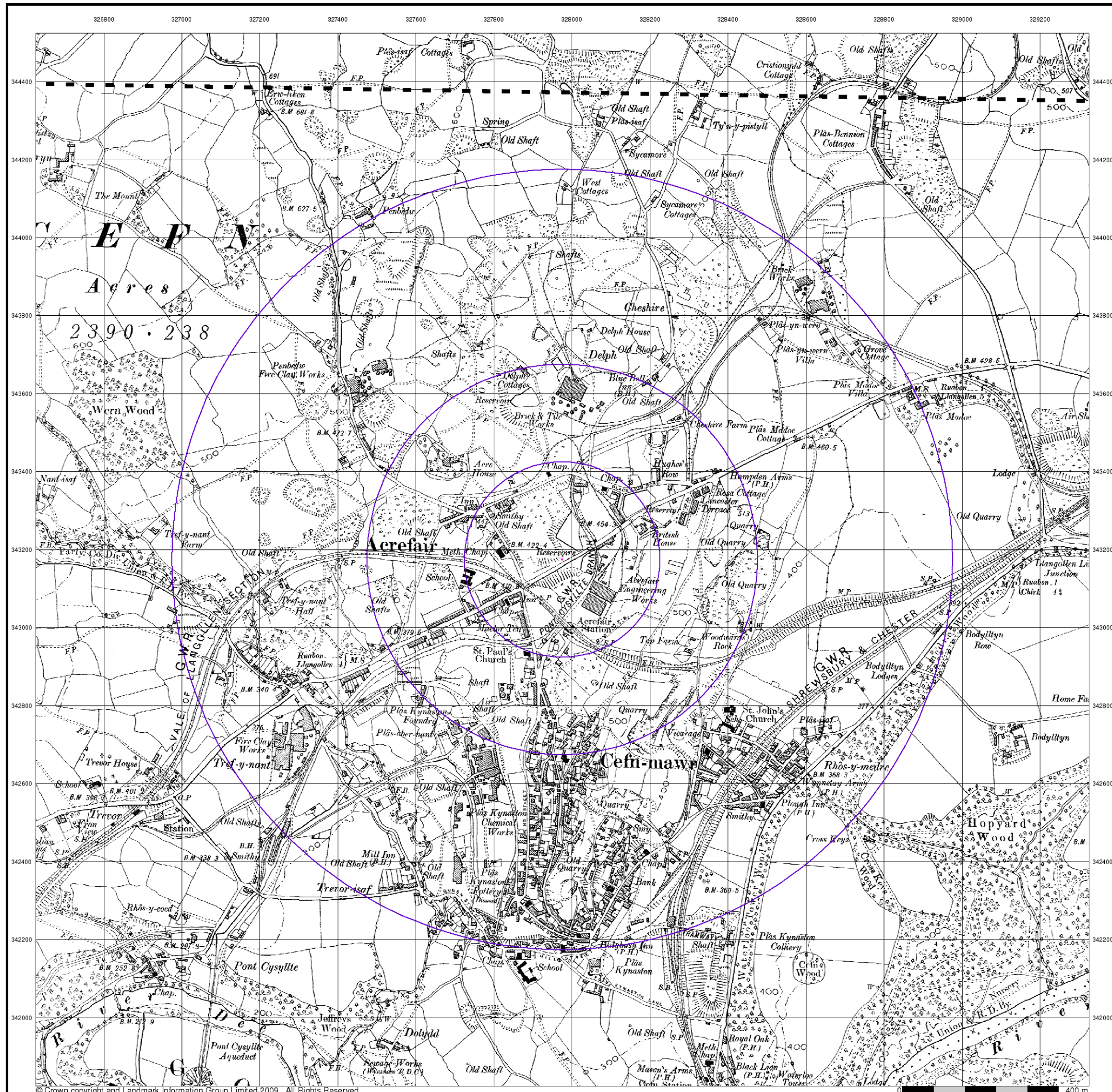


Order Details

Order Number: 29328266_1_1
Customer Ref: 69628
National Grid Reference: 327980, 343170
Slice: A
Site Area (Ha): 0.01
Search Buffer (m): 1000

Site Details

Air Products Plc, Llangollen Road, Acrefair, WREXHAM, Clwyd, LL14 3HW



Denbighshire

Published 1938

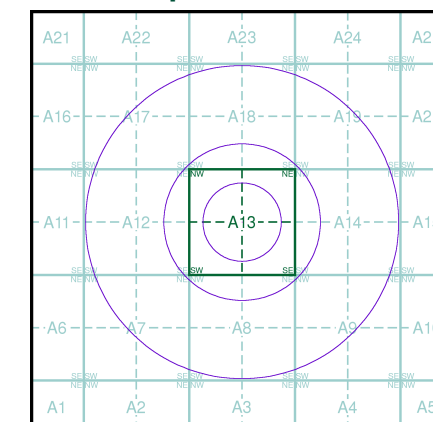
Source map scale - 1:10,560

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)

035NW
1938
1:10,560
035SW
1938
1:10,560

Historical Map - Slice A

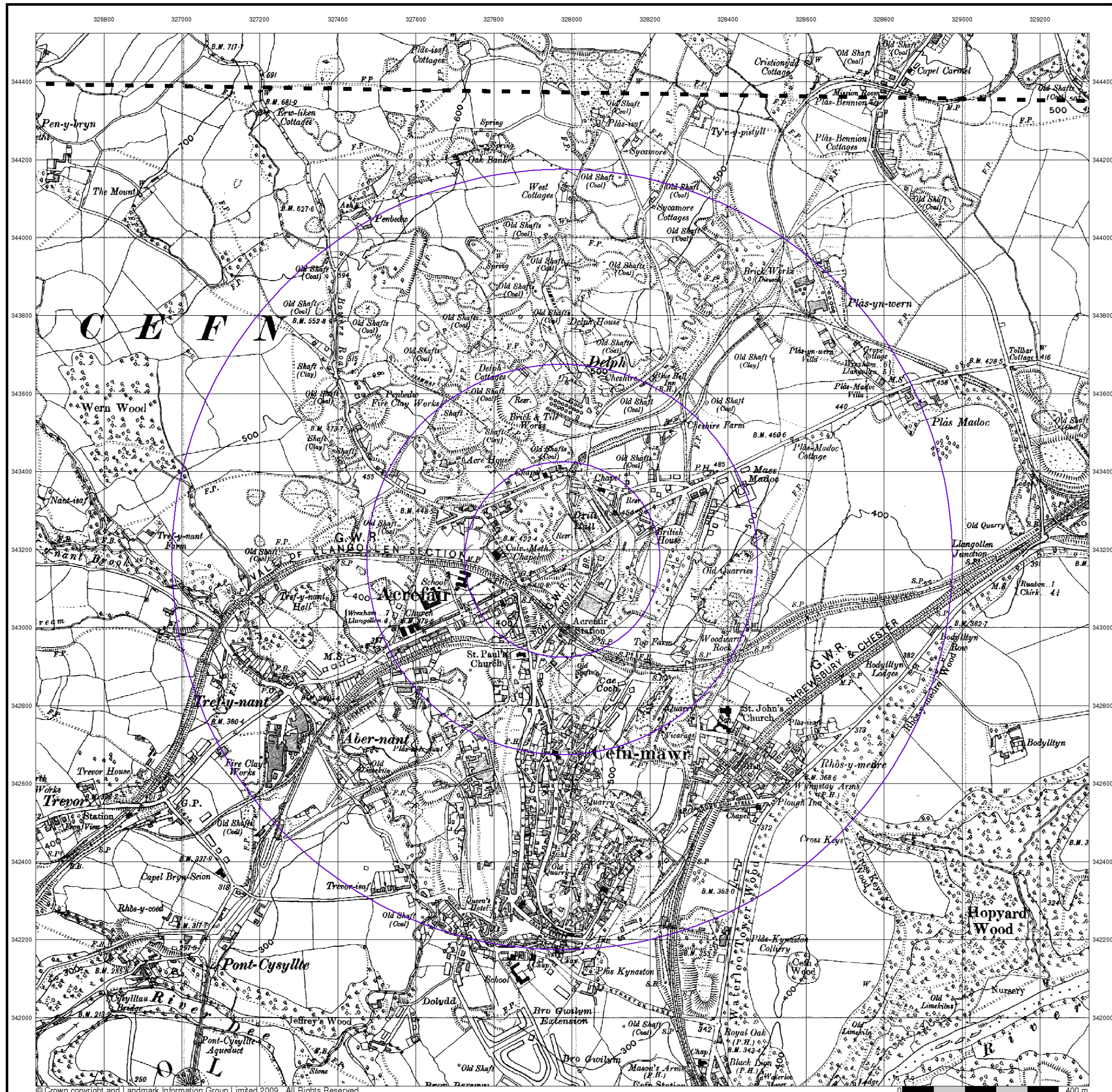


Order Details

Order Number: 29328266_1_1
 Customer Ref: 69628
 National Grid Reference: 327980, 343170
 Slice: A
 Site Area (Ha): 0.01
 Search Buffer (m): 1000

Site Details

Air Products Plc, Llangollen Road, Acrefair, WREXHAM, Clwyd, LL14 3HW



Denbighshire

Published 1953 - 1954

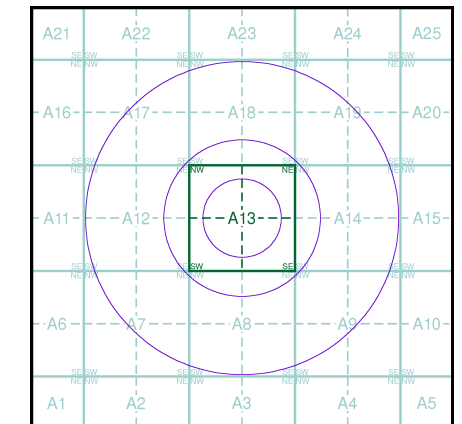
Source map scale - 1:10,560

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)

035NW
1953
1:10,560
035SW
1954
1:10,560

Historical Map - Slice A

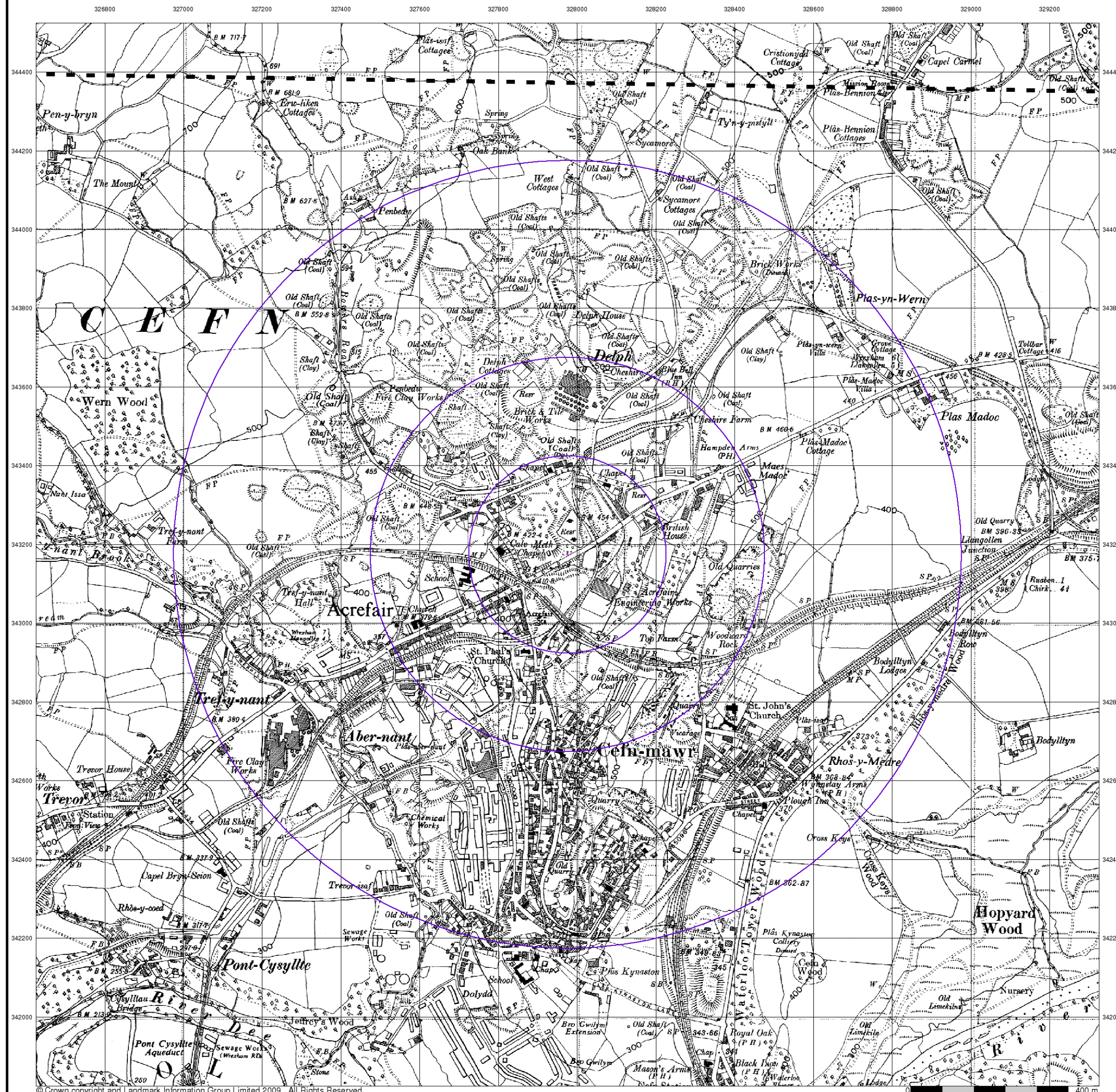


Order Details

Order Number: 29328266_1_1
 Customer Ref: 69628
 National Grid Reference: 327980, 343170
 Slice: A
 Site Area (Ha): 0.01
 Search Buffer (m): 1000

Site Details

Air Products Plc, Llangollen Road, Acrefair, WREXHAM, Clwyd, LL14 3HW



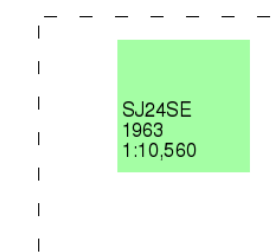
Ordnance Survey Plan

Published 1963

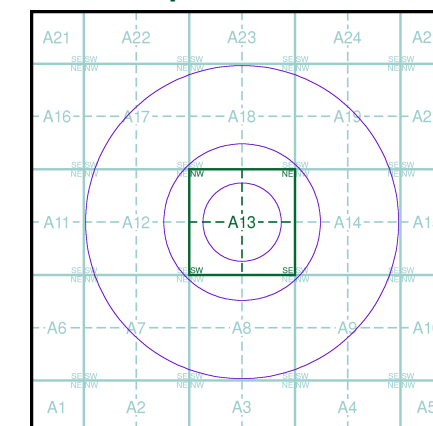
Source map scale - 1:10,000

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

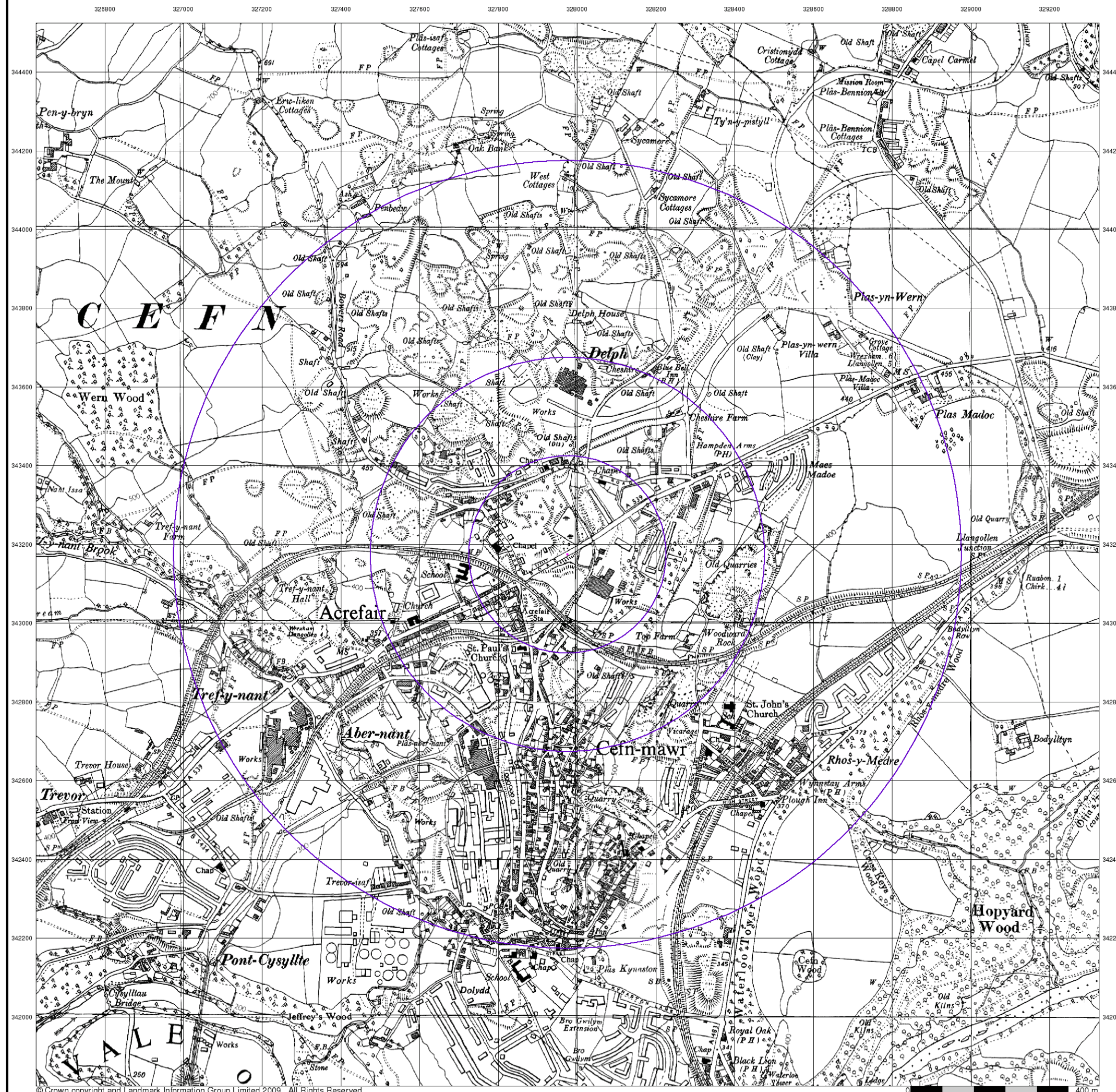


Order Details

Order Number: 29328266_1_1
 Customer Ref: 69628
 National Grid Reference: 327980, 343170
 Slice: A
 Site Area (Ha): 0.01
 Search Buffer (m): 1000

Site Details

Air Products Plc, Llangollen Road, Acrefair, WREXHAM, Clwyd, LL14 3HW



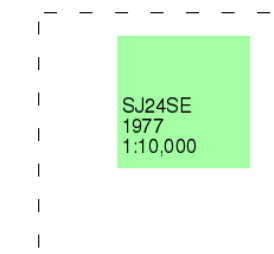
Ordnance Survey Plan

Published 1977

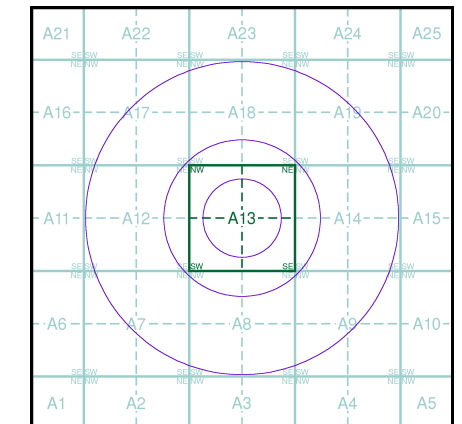
Source map scale - 1:10,000

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

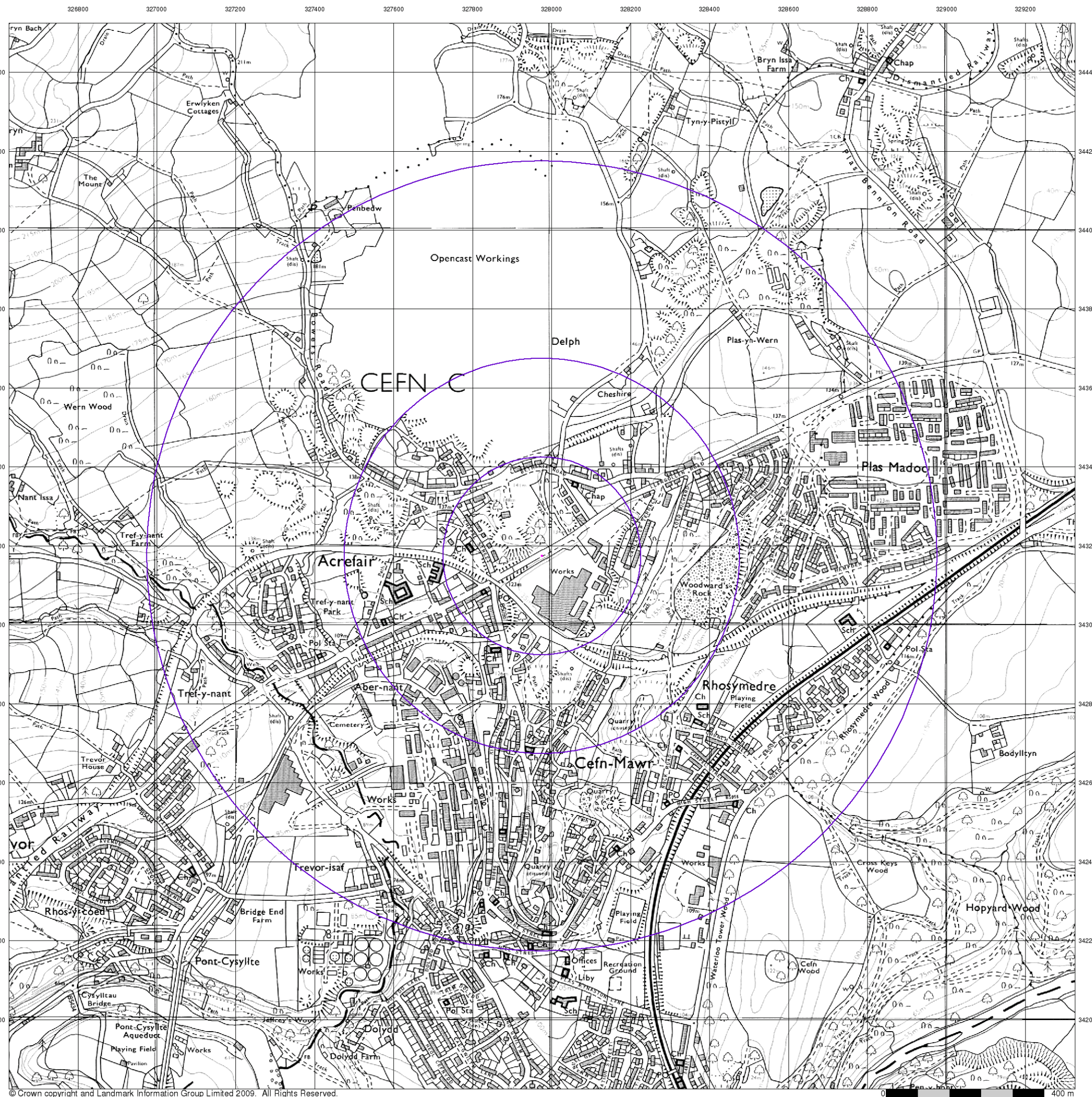


Order Details

Order Number: 29328266_1_1
 Customer Ref: 69628
 National Grid Reference: 327980, 343170
 Slice: A
 Site Area (Ha): 0.01
 Search Buffer (m): 1000

Site Details

Air Products Plc, Llangollen Road, Acrefair, WREXHAM, Clwyd, LL14 3HW



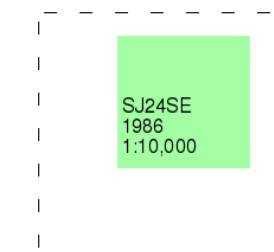
Ordnance Survey Plan

Published 1986

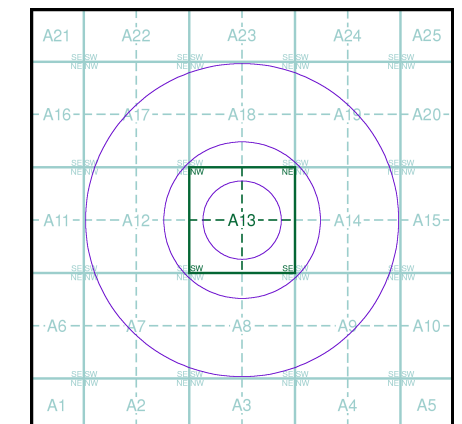
Source map scale - 1:10,000

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)



Historical Map - Slice A



Order Details

Order Number: 29328266_1_1
Customer Ref: 69628
National Grid Reference: 327980, 343170
Slice: A
Site Area (Ha): 0.01
Search Buffer (m): 1000

Site Details

Air Products Plc, Llangollen Road, Acrefair, WREXHAM, Clwyd, LL14 3HW



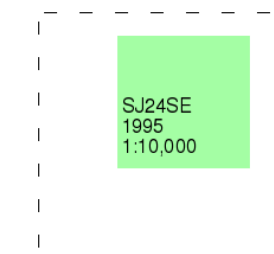
Ordnance Survey Plan

Published 1995

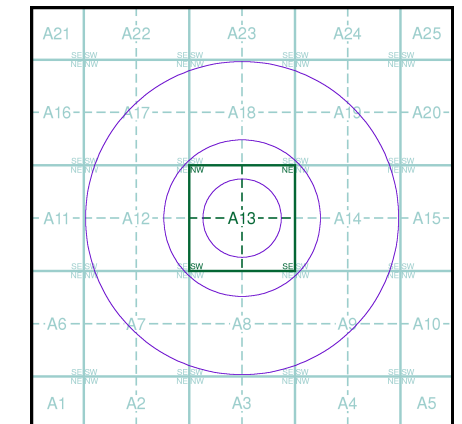
Source map scale - 1:10,000

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

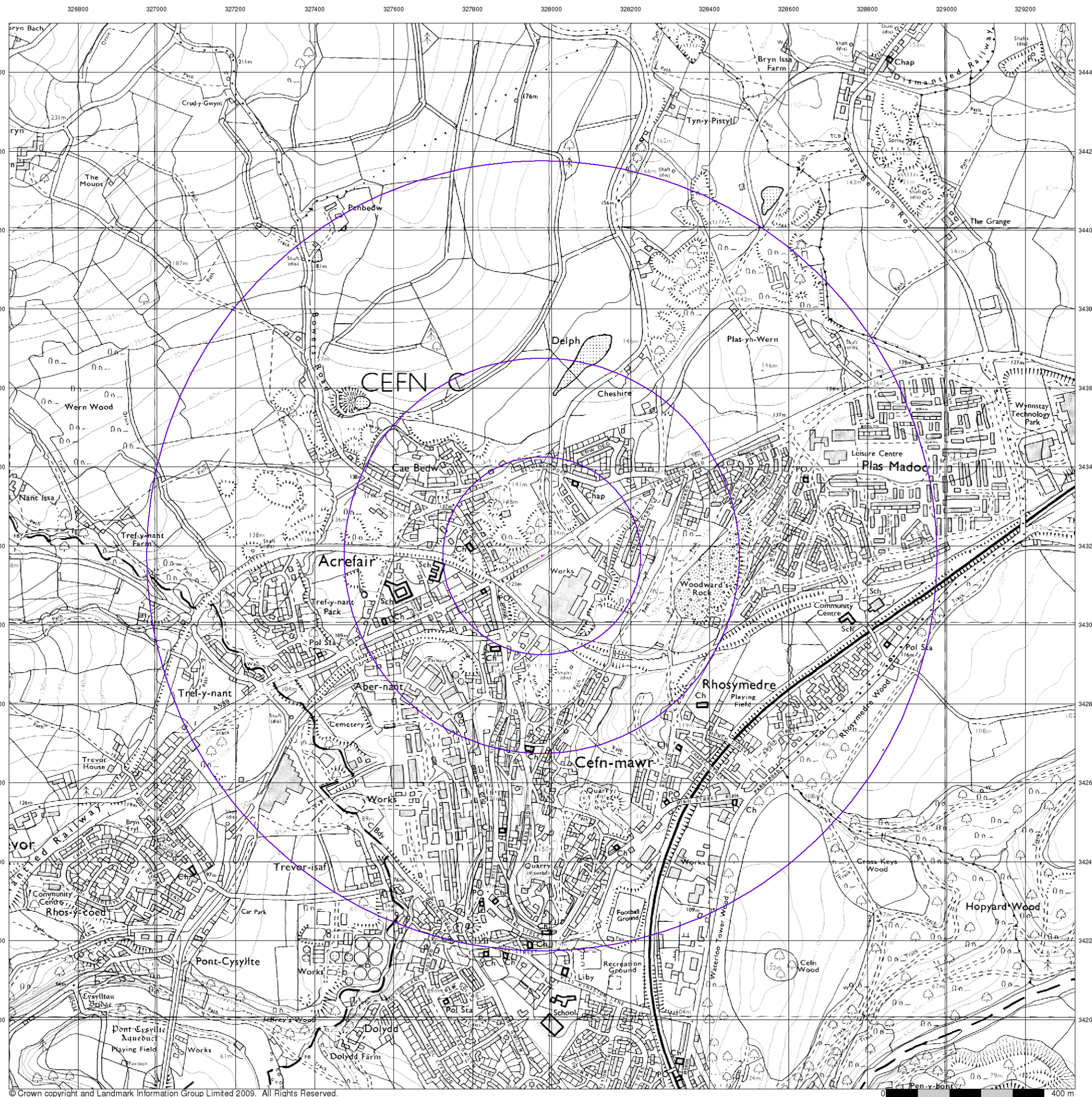


Order Details

Order Number: 29328266_1_1
Customer Ref: 69628
National Grid Reference: 327980, 343170
Slice: A
Site Area (Ha): 0.01
Search Buffer (m): 1000

Site Details

Air Products Plc, Llangollen Road, Acrefair, WREXHAM, Clwyd, LL14 3HW



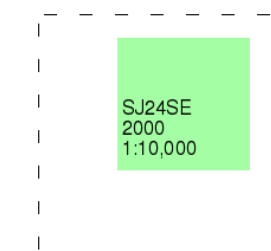
10k Raster Mapping

Published 2000

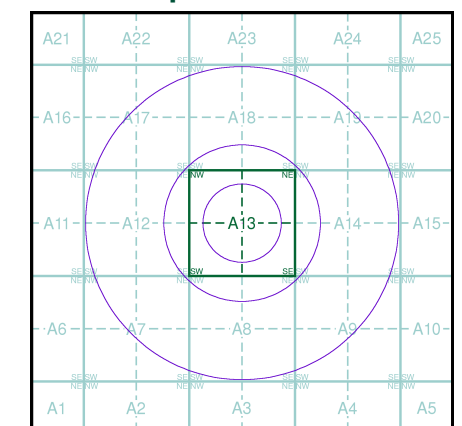
Source map scale - 1:10,000

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)



Historical Map - Slice A



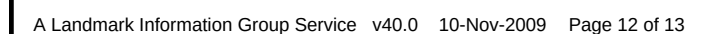
Order Details

Order Number: 29328266_1_1
Customer Ref: 69628
National Grid Reference: 327980, 343170
Slice: A
Site Area (Ha): 0.01
Search Buffer (m): 1000

Site Details

Air Products Plc, Llangollen Road, Acrefair, WREXHAM, Clwyd, LL14 3HW





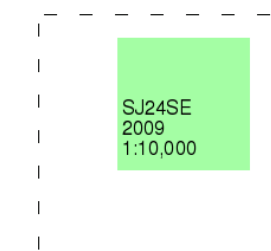
10k Raster Mapping

Published 2009

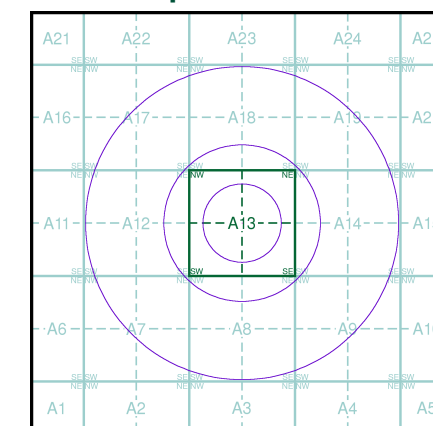
Source map scale - 1:10,000

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)



Historical Map - Slice A

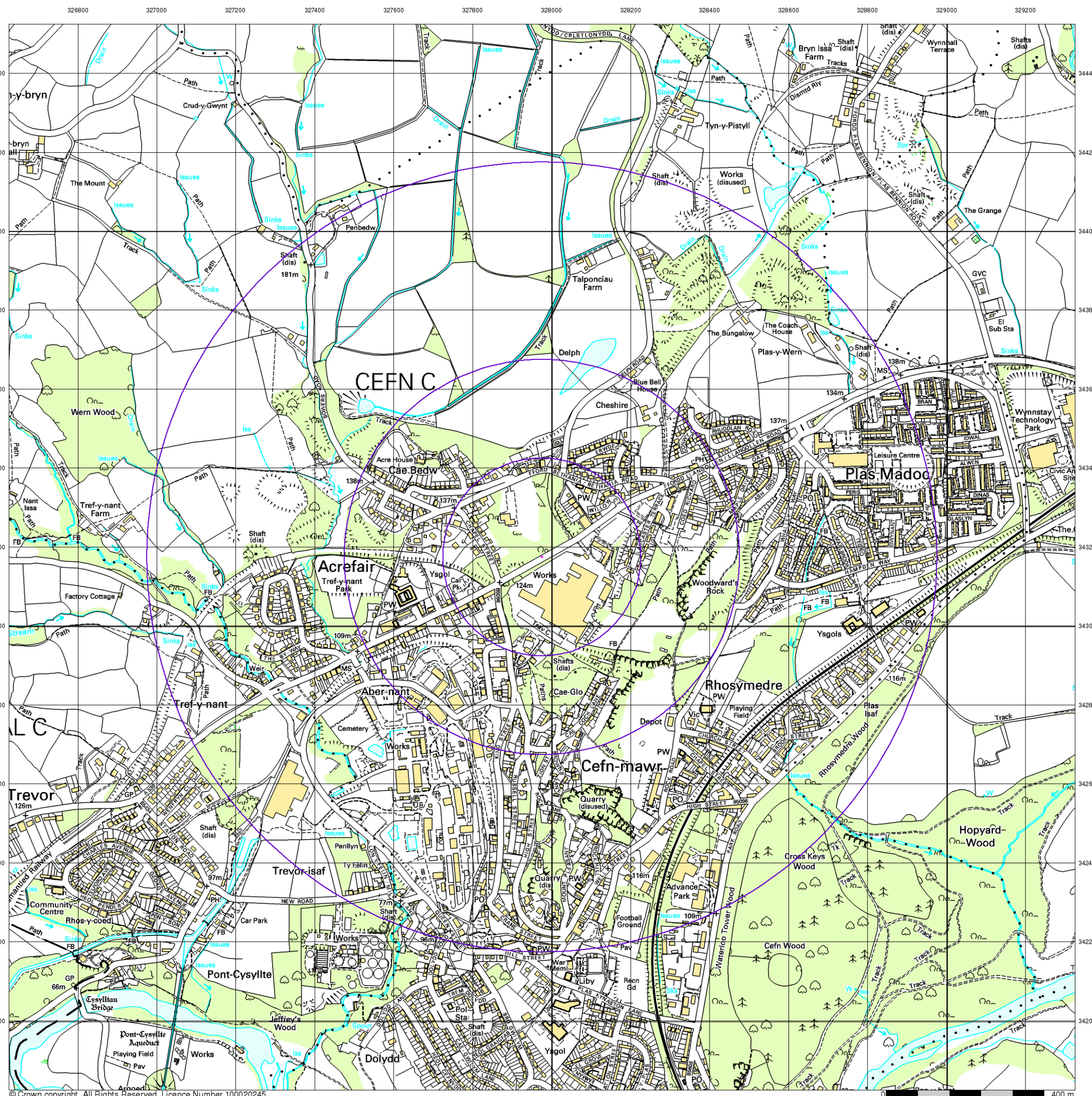


Order Details

Order Number: 29328266_1_1
 Customer Ref: 69628
 National Grid Reference: 327980, 343170
 Slice: A
 Site Area (Ha): 0.01
 Search Buffer (m): 1000

Site Details

Air Products Plc, Llangollen Road, Acrefair, WREXHAM, Clwyd, LL14 3HW



Appendix B Exploratory Hole Logs

 WSP Environmental The Victoria, 150-182 The Quays Manchester, M50 3SP Telephone: Fax:	BOREHOLE LOG		Hole No. BH01
	Project South Site, Acrefair Works, Wrexham		Sheet 1 of 1
Job No 21240	Client Air Products PLC		Date 19-04-11
Contractor / Driller Dynamic Sampling	Method/Plant Used Comacchio 205	Logged By Chris Kennedy	Co-Ordinates (NGR) E 328109.000 N 343217.000
		Ground Level (m AOD) 136.420	

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P. Pen (kN/m2)	Water	Elev. (m AOD)	Depth (Thickness)	Description	Legend	Geology	Dia. mm
							136.22	0.20	Asphalt (MADE GROUND).		MG	
							136.12	0.30	Grey fine to coarse angular to subangular GRAVEL of limestone (MADE GROUND - Sub-base).		MG	
									Weathered MUDSTONE recovered as a slightly clayey GRAVEL. Gravel is fine to coarse angular tabular of mudstone (MIDDLE COAL MEASURES)			
								(3.70)			MCM	
							132.42	4.00				

Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing
Chiselling				Water Added		General Remarks No Groundwater observed. No visual or olfactory evidence of hydrocarbon contamination observed. Borehole installed upon completion. Response zone 1.0n-3.8m bgl.					
From	To	Hours	Tool	From	To						
Scale 1:75		Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.									

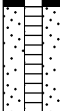
 WSP Environmental The Victoria, 150-182 The Quays Manchester, M50 3SP Telephone: Fax:	BOREHOLE LOG		Hole No. BH02	
	Project South Site, Acrefair Works, Wrexham		Sheet 1 of 1	
Job No 21240		Client Air Products PLC		Date 19-04-11
Contractor / Driller Dynamic Sampling	Method/Plant Used Comacchio 205	Logged By Chris Kennedy	Co-Ordinates (NGR) E 328034.000 N 343177.000	Ground Level (m AOD) 135.350

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P. Pen (kN/m2)	Water	Elev. (m AOD)	Depth (Thickness)	Description	Legend	Geology	Dia. mm
							135.15	0.20	Asphalt (MADE GROUND).		MG	
							134.95	0.40	Brown fine to coarse angular to subangular slightly sandy GRAVEL. Gravel is of sandstone (MADE GROUND Sub- base).		MG	
1.00	ES								Redish brown sandy GRAVEL with cobbles of slag, clinker, sandstone, ironstone and siltstone. Gravel is fine to coarse, angular to subrounded of brick, burnt shale, ash clinker and rare slag (MADE GROUND).		MG	
								(3.30)				
2.50	ES											
							131.65	3.70				
4.00	ES						131.25	4.10	Brown clayey GRAVEL with frequent large fragments of timber. Gravel is fine to coarse, angular to subrounded of ash, clinker, slag, coal, burnt shale and burnt ironstone (MADE GROUND).		MG	
									Dark brown silty gravelly CLAY with frequent rootlets. Gravel is fine to coarse, angular to subrounded of brick and sandstone (MADE GROUND).		MG	
5.00	ES							(2.40)				
							128.85	6.50				
6.80	ES							(1.50)	Light brown/olive slightly silty fissured CLAY with iron oxide staining.		GT	
							127.35	8.00				

Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing
Chiselling				Water Added		General Remarks No Groundwater observed. No visual or olfactory evidence of hydrocarbon contamination observed. Borehole installed upon completion. Response zone 1.0m tp 6.0m bgl.					
From	To	Hours	Tool	From	To						
Scale 1:75		Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.									

08 WSP BH LOG 21240 - ACREFAIR LOGS.GPJ WSPTEMPLATE1.03.GDT 27/6/11

 WSP Environmental The Victoria, 150-182 The Quays Manchester, M50 3SP Telephone: Fax:	BOREHOLE LOG		Hole No. BH03	
	Project South Site, Acrefair Works, Wrexham		Sheet 1 of 1	
Job No 21240	Client Air Products PLC		Date 19-04-11	
Contractor / Driller Dynamic Sampling	Method/Plant Used Comacchio 205	Logged By Chris Kennedy	Co-Ordinates (NGR) E 328024.000 N 343118.000	Ground Level (m AOD) 135.530

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P. Pen (kN/m2)	Water	Elev. (m AOD)	Depth (Thickness)	Description	Legend	Geology	Dia. mm
0.50	ES						135.38	0.15	Asphalt (MADE GROUND).		MG	
							135.23	0.30	Grey fine to coarse angular slightly sandy GRAVEL of Limestone (MADE GROUND - Sub-base).		MG	
1.50	ES							(1.80)	Redish brown sandy GRAVEL with cobbles of ironstone and clinker. Gravel is fine to coarse, angular to subrounded of clinker, brick, coal and burnt shale (MADE GROUND).		MG	
							133.43	2.10	Grey weathered MUDSTONE recovered as a clayey gravel. Gravel is medium coarse, angular tabular of mudstone (MIDDLE COAL MEASURES).			
							131.53	4.00				

Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing
Chiselling				Water Added		General Remarks No Groundwater observed. No visual or olfactory evidence of hydrocarbon contamination observed. Borehole installed upon completion. Response zone 1.0m tp 2.2m bgl.					
From	To	Hours	Tool	From	To						
Scale 1:75		Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.									

08 WSP BH LOG 21240 - ACREFAIR LOGS.GPJ WSPTEMPLATE1.03.GDT 27/6/11

 WSP Environmental The Victoria, 150-182 The Quays Manchester, M50 3SP Telephone: Fax:	BOREHOLE LOG		Hole No. BH04	
	Project South Site, Acrefair Works, Wrexham		Sheet 1 of 1	
Job No 21240		Client Air Products PLC		Date 19-04-11
Contractor / Driller Dynamic Sampling	Method/Plant Used Comacchio 205	Logged By Chris Kennedy	Co-Ordinates (NGR) E 328128.000 N 343061.000	Ground Level (m AOD) 136.640

SAMPLES & TESTS							STRATA					Install / Backfill		
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P. Pen (kN/m2)	Water	Elev. (m AOD)	Depth (Thickness)	Description	Legend	Geology	Dia. mm		
0.40 0.80	ES						136.54	0.10	Light brown fine to coarse, angular GRAVEL of sandstone (MADE GROUND).		MG			
							136.14	0.50					Brown sandy gravelly CLAY with occassional rootlets. Gravel is fine to caorse angular to subangular of concrete, sandstone and siltstone (MADE GROUND - Reworked Natural).	
							135.74	0.90	Grey mottled brown gravelly fissured CLAY. Gravel is fine to medium, tabular, angular to subrounded of coal shale and mudstone.	MCM				
								(1.10)			Light brown grey weathered MUDSTONE with orange iron oxide stained fractures, recovered as a clayey GRAVEL (MIDDLE COAL MEASURES).			
								134.64	2.00					

Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing
Chiselling				Water Added		General Remarks No Groundwater observed. No visual or olfactory evidence of hydrocarbon contamination observed. Hole backfilled once completed.					
From	To	Hours	Tool	From	To						
Scale 1:75		Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.									

 WSP Environmental The Victoria, 150-182 The Quays Manchester, M50 3SP Telephone: Fax:	BOREHOLE LOG		Hole No. BH05	
	Project South Site, Acrefair Works, Wrexham		Sheet 1 of 1	
Job No 21240		Client Air Products PLC		Date 18-04-11
Contractor / Driller Dynamic Sampling	Method/Plant Used Comacchio 205	Logged By Chris Kennedy	Co-Ordinates (NGR) E 327907.000 N 343037.000	Ground Level (m AOD) 133.090

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P. Pen (kN/m2)	Water	Elev. (m AOD)	Depth (Thickness)	Description	Legend	Geology	Dia. mm
							132.89	0.20	Scrub over dark grey brown SANDS & GRAVEL with rare cobbles of brick and sandstone. Gravel is fine to coarse angular to subrounded of coal, ash, brick, mudstone and burnt shale (MADE GROUND). Dark brown very sandy GRAVEL. Gravel is fine to coarse, angular to subrounded of ash, clinker, brick, coal and rare slag (MADE GROUND). Grey weathered MUDSTONE with orange iron oxide staining recovered as a slightly sandy GRAVEL with cobbles of mudstone. Gravel is fine to coarse, angular tabular of mudstone (MIDDLE COAL MEASURES).		MG	
							(0.70)				MG	
						132.19	0.90				MCM	
												
							(4.10)					
						128.09	5.00					

Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing
Chiselling				Water Added		General Remarks No Groundwater observed. No visual or olfactory evidence of hydrocarbon contamination observed. Hole backfilled once completed.					
From	To	Hours	Tool	From	To						
Scale 1:75		Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.									

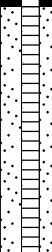
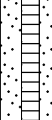
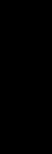
 WSP Environmental The Victoria, 150-182 The Quays Manchester, M50 3SP Telephone: Fax:	BOREHOLE LOG		Hole No. BH05A	
	Project South Site, Acrefair Works, Wrexham		Sheet 1 of 1	
Job No 21240	Client Air Products PLC		Date 18-04-11	
Contractor / Driller Dynamic Sampling	Method/Plant Used Comacchio 205	Logged By Chris Kennedy	Co-Ordinates (NGR) E 327901.000 N 343032.000	Ground Level (m AOD) 132.950

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P. Pen (kN/m2)	Water	Elev. (m AOD)	Depth (Thickness)	Description	Legend	Geology	Dia. mm
							132.75	0.20	Scrub over dark grey brown SANDS & GRAVEL with rare cobbles of brick and sandstone. Gravel is fine to coarse angular to subrounded of coal, ash, brick, mudstone and burnt shale (MADE GROUND). Dark brown very sandy GRAVEL. Gravel is fine to coarse, angular to subrounded of ash, clinker, brick, coal and rare slag (MADE GROUND). Grey weathered MUDSTONE with orange iron oxide staining recovered as a slightly sandy GRAVEL with cobbles of mudstone. Gravel is fine to coarse, angular tabular of mudstone (MIDDLE COAL MEASURES).		MG	
							(1.00)				MG	
						131.75	1.20				MCM	
							(3.80)					
												
							127.95	5.00				

Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing
Chiselling				Water Added		General Remarks No Groundwater observed. No visual or olfactory evidence of hydrocarbon contamination observed. Hole backfilled once completed.					
From	To	Hours	Tool	From	To						
Scale 1:75		Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.									

08 WSP BH LOG 21240 - ACREFAIR LOGS.GPJ WSPTEMPLATE1.03.GDT 27/6/11

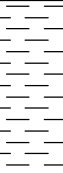
 WSP Environmental The Victoria, 150-182 The Quays Manchester, M50 3SP Telephone: Fax:	BOREHOLE LOG		Hole No. BH06	
	Project South Site, Acrefair Works, Wrexham		Sheet 1 of 1	
Job No 21240		Client Air Products PLC		Date 18-04-11
Contractor / Driller Dynamic Sampling	Method/Plant Used Comacchio 205	Logged By Chris Kennedy	Co-Ordinates (NGR) E 328001.000 N 343002.000	Ground Level (m AOD) 135.730

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P. Pen (kN/m2)	Water	Elev. (m AOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. mm
0.50	ES						134.73	1.00	Brown grey sandy GRAVEL with cobbles of brick. Gravel is fine to coarse, angular to subrounded of brick, concrete, ash, clinker and burnt shale (MADE GROUND).		MG	
1.20	ES							(2.50)	Black mottled orange brown sandy GRAVEL. Gravel is fine to medium angular of ash, clinker, coal and burnt shale (MADE GROUND).		MG	
3.00	ES						132.23	3.50	Orange brown sandy GRAVEL with cobbles of slag and ironstone. Gravel is fine to coarse, angular of burnt shale and rare ash, clinker and coal (MADE GROUND).		MG	
4.00	ES						131.03	4.70	Grey gravelly CLAY. Gravel is fine to medium, angular tabular of mudstone, siltstone and coal (MADE GROUND - Reworked Natural). 4.80 - 5.20 m bgl Slight hydrocarbon odour.		MG	
5.00	ES						130.23	5.50	Olive brown gravelly fissured CLAY with orange iron oxide staining and occassional fine rootlets. Gravel is fine to coarse angular to subangular of mudstone, shale and siltstone.		MCM	
5.70	ES						128.73	7.00				

Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing
Chiselling				Water Added		General Remarks No Groundwater observed. Slight hydrocarbon odour noted at 4.80m bgl. Borehole installed upon completion. Response zone 1.0m tp 5.0m bgl.					
From	To	Hours	Tool	From	To						
Scale 1:75		Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.									

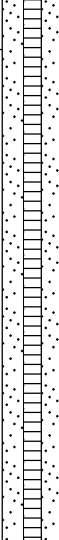
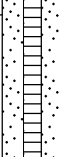
08 WSP BH LOG 21240 - ACREFAIR LOGS.GPJ WSPTEMPLATE1.03.GDT 27/6/11

 WSP Environmental The Victoria, 150-182 The Quays Manchester, M50 3SP Telephone: Fax:	BOREHOLE LOG		Hole No. BH07	
	Project South Site, Acrefair Works, Wrexham		Sheet 1 of 1	
Job No 21240	Client Air Products PLC		Date 20-04-11	
Contractor / Driller Dynamic Sampling	Method/Plant Used Comacchio 205	Logged By Chris Kennedy	Co-Ordinates (NGR) E 328163.000 N 342955.000	Ground Level (m AOD) 149.730

SAMPLES & TESTS							STRATA					
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P. Pen (kN/m2)	Water	Elev. (m AOD)	Depth (Thickness)	Description	Legend	Geology	Install / Backfill Dia. mm
								(1.80)	Brown mottled grey slightly sandy gravelly fissured CLAY with occasional rootlets. Gravel is fine to coarse angular to subrounded of mudstone, shale and rare sandstone (GLACIAL TILL)		GT	
							147.93	1.80	Grey weathered MUDSTONE with orange iron oxide staining recovered as a slightly sandy GRAVEL with cobbles of mudstone. Gravel is fine to coarse, angular tabular of mudstone (MIDDLE COAL MEASURES).		MCM	
							147.73	2.00				

Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing
Chiselling				Water Added		General Remarks No Groundwater observed. No visual or olfactory evidence of hydrocarbon contamination observed. Borehole installed upon completion. Response zone 1.0m tp 1.8m bgl.					
From	To	Hours	Tool	From	To						
Scale 1:75		Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.									

 WSP Environmental The Victoria, 150-182 The Quays Manchester, M50 3SP Telephone: Fax:	BOREHOLE LOG		Hole No. BH11	
	Project South Site, Acrefair Works, Wrexham		Sheet 1 of 1	
Job No 21240	Client Air Products PLC		Date 18-04-11	
Contractor / Driller Dynamic Sampling	Method/Plant Used Comacchio 205	Logged By Chris Kennedy	Co-Ordinates (NGR) E 327954.000 N 343027.000	Ground Level (m AOD) 133.840

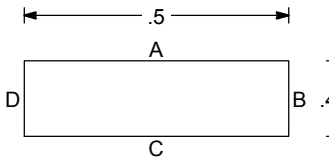
SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m AOD)	Depth (Thickness)	Description	Legend	Geology	Dia. mm
2.00-3.00	ES						132.34	1.50	Grey fine to coarse, angular to subrounded sandy GRAVEL of limestone (MADE GROUND).		MG	
								(5.00)	Dense light grey yellow slightly gravelly SAND, sand is of ash. Gravel is of blue shell and rare brick (MADE GROUND).		MG	
							127.34	6.50				
							125.84	8.00	Grey finely grained SILTSTONE (MIDDLE COAL MEASURES).		MCM	

Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing
Chiselling				Water Added		General Remarks No Groundwater observed. No visual or olfactory evidence of hydrocarbon contamination observed. Borehole installed upon completion. Response zone 1.0m tp 8.0m bgl.					
From	To	Hours	Tool	From	To						
Scale 1:75		Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.									

08 WSP BH LOG 21240 - ACREFAIR LOGS.GPJ WSPTEMPLATE1.03.GDT 27/6/11

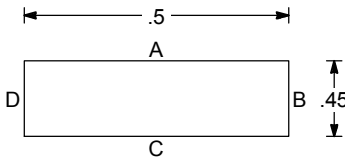
 WSP Environmental The Victoria, 150-182 The Quays Manchester, M50 3SP Telephone: Fax:	TRIAL PIT LOG		Hole No. HP01	
	Project South Site, Acrefair Works, Wrexham		Sheet 1 of 1	
Job No 21240	Client Air Products PLC		Date 20-04-11	
Contractor / Driller WSP	Method/Plant Used Hand Pit	Logged By Chris Kennedy	Co-Ordinates (NGR)	Ground Level (m AOD)

SAMPLES & TESTS						STRATA				Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m AOD)	Depth (Thickness)	Description	Legend	
0.50	ES						0.20	Brown slightly clayey gravelly SAND with frequent roots and rootlets.. Gravel is fine to coarse angular to subangular of brick, ash and clinker (MADE GROUND).	X	MG
							0.30			MG
							0.60			MG
								Insitu brick floor.		
								Dark reddish brown sandy GRAVEL. Gravel is fine to coarse, angular to subangular of ash, clinker and rare coal (MADE GROUND).		
								Hole stopped at 0.60m bgl due to brick boulder.		

	Length 0.50m	Shoring/Support: None	Water Strikes					
	Width 0.45m		Date	Time	Strike	Minutes	Standing	Remarks
	Orientation degrees from north	Stability: Fair	General Remarks No Groundwater observed. No visual or olfactory evidence of hydrocarbon contamination observed. Trial pit backfilled upon completion.					
Scale 1:75	Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.							

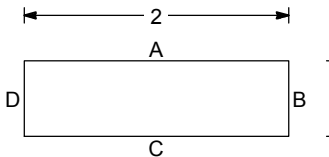
 WSP Environmental The Victoria, 150-182 The Quays Manchester, M50 3SP Telephone: Fax:	TRIAL PIT LOG		Hole No. HP02	
	Project South Site, Acrefair Works, Wrexham		Sheet 1 of 1	
Job No 21240	Client Air Products PLC		Date 20-04-11	
Contractor / Driller WSP	Method/Plant Used Hand Pit	Logged By Chris Kennedy	Co-Ordinates (NGR)	Ground Level (m AOD)

SAMPLES & TESTS							STRATA				Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m AOD)	Depth (Thickness)	Description	Legend	Geology	
0.50	ES						0.30	Brown slightly clayey gravelly SAND with frequent roots and rootlets.. Gravel is fine to coarse angular to subangular of brick, ash and clinker (MADE GROUND).	X	MG	
							0.70	Dark reddish brown sandy GRAVEL. Gravel is fine to coarse, angular to subangular of ash, clinker and rare coal (MADE GROUND).			
								Hole stopped at 0.70m bgl due to frequent cobbles of clinker.			

	Length 0.50m	Shoring/Support: None	Water Strikes					
	Width 0.45m		Date	Time	Strike	Minutes	Standing	Remarks
	Orientation degrees from north	Stability: Fair	General Remarks No Groundwater observed. No visual or olfactory evidence of hydrocarbon contamination observed. Trial pit backfilled upon completion.					
	Scale 1:75							

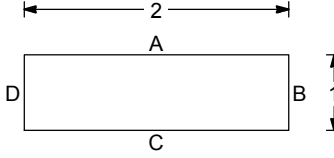
 WSP Environmental The Victoria, 150-182 The Quays Manchester, M50 3SP Telephone: Fax:	TRIAL PIT LOG		Hole No. TP01	
	Project South Site, Acrefair Works, Wrexham		Sheet 1 of 1	
Job No 21240	Client Air Products PLC		Date 20-04-11	
Contractor / Driller Hughes Ltd	Method/Plant Used JCB-3CX	Logged By Chris Kennedy	Co-Ordinates (NGR) E 328160.000 N 343249.000	Ground Level (m AOD) 138.460

SAMPLES & TESTS						STRATA				Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m AOD)	Depth (Thick-ness)	Description	Legend	
0.40	ES					138.26	0.20	Asphalt (MADE GROUND).		MG
						138.16	0.30	Grey fine to coarse angular to subangular GRAVEL of limestone (MADE GROUND - Sub-base).		MG
							(1.20)	Weathered MUDSTONE recovered as a slightly clayey GRAVEL. Gravel is fine to coarse angular tabular of mudstone (MIDDLE COAL MEASURES)		MCM
						136.96	1.50			

	Length 2.00m	Shoring/Support: None	Water Strikes					
	Width 1.00m		Date	Time	Strike	Minutes	Standing	Remarks
	Orientation degrees from north	Stability: Good	General Remarks No Groundwater observed. No visual or olfactory evidence of hydrocarbon contamination observed. Trial pit backfilled upon completion.					
Scale 1:50	Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.							

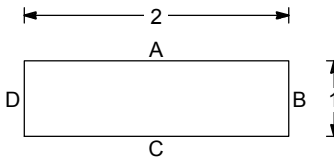
 WSP Environmental The Victoria, 150-182 The Quays Manchester, M50 3SP Telephone: Fax:		TRIAL PIT LOG		Hole No. TP02	
Project South Site, Acrefair Works, Wrexham		Sheet 1 of 1			
Job No 21240		Client Air Products PLC		Date 20-04-11	
Contractor / Driller Hughes Ltd		Method/Plant Used JCB-3CX		Logged By Chris Kennedy	
		Co-Ordinates (NGR) E 328043.000 N 343182.000		Ground Level (m AOD) 135.330	

SAMPLES & TESTS						STRATA				Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m AOD)	Depth (Thick-ness)	Description	Legend	
						135.23	0.10	Asphalt (MADE GROUND).		MG
						134.93	0.40	Grey slightly sandy fine to coarse, angular to subangular GRAVEL of limestone (MADE GROUND - Sub-base).		MG
0.50	ES							Brown sandy GRAVEL with occasional cobbles of slag, sandstone and brick. Gravel is fine to coarse, angular to subrounded of ash, clinker, sandstone, coal and burnt ironstone (MADE GROUND).		MG
1.00	ES									
							(2.70)			
2.00	ES									
						132.23	3.10			
3.00	ES					132.13	3.20	Redish black coarse subrounded COBBLES of slag (MADE GROUND).		MG
								Hole stopped at 3.20m bgl unable to advance through slag.		

	Length 2.00m	Shoring/Support: None	Water Strikes						
	Width 1.00m		Stability: Good	Date	Time	Strike	Minutes	Standing	Remarks
	Orientation degrees from north	General Remarks No Groundwater observed. No visual or olfactory evidence of hydrocarbon contamination observed. Trial pit backfilled upon completion.							
	Scale 1:50		Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.						

 WSP Environmental The Victoria, 150-182 The Quays Manchester, M50 3SP Telephone: Fax:		TRIAL PIT LOG		Hole No. TP03	
Project South Site, Acrefair Works, Wrexham		Sheet 1 of 1			
Job No 21240		Client Air Products PLC		Date 20-04-11	
Contractor / Driller Hughes Ltd		Method/Plant Used JCB-3CX		Logged By Chris Kennedy	
		Co-Ordinates (NGR) E 328143.000 N 343149.000		Ground Level (m AOD) 136.050	

SAMPLES & TESTS					Water	STRATA				Install / Backfill	
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)		Elev. (m AOD)	Depth (Thickness)	Description	Legend		Geology
1.00	ES					135.75	0.30	Asphalt (MADE GROUND).		MG	
						135.55	0.50	Grey fine to coarse, angular to subangular slightly sandy GRAVEL of limestone (MADE GROUND).		MG	
							(1.50)	Brown sandy gravel with frequent cobbles of brick and sandstone. Gravel is fine to coarse, agular to subrounded of brick, concrete, sandstone, burnt shale and rare clinker (MADE GROUND).		MG	
						134.05	2.00				
1.80	ES						(0.50)	Light brown slightly silty slightly gravelly CLAY with some fine rootlets. Gravel is fine to medium, tabular, subrounded of shale mudstone, sandstone and rare coal.		GT	
						133.55	2.50	Hole stopped at 2.50m bgl due to the presence of a boulder extending out of the eastern side of the pit from 1.90m bgl.			

	Length	2.00m	Shoring/Support:	Water Strikes					
	Width	1.00m		Stability:	Date	Time	Strike	Minutes	Standing
	Orientation	degrees from north	Good		General Remarks No Groundwater observed. No visual or olfactory evidence of hydrocarbon contamination observed. Trial pit backfilled upon completion.				

Scale 1:50

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

TRIAL PIT LOG

Hole No.

TP04

Project

South Site, Acrefair Works, Wrexham

Sheet

1 of 1

Job No	
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21240

Client	
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Air Products PLC

Date	
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20-04-11

Contractor / Driller

Hughes Ltd

Method/Plant Used

JCB-3CX

Logged By

Chris Kennedy

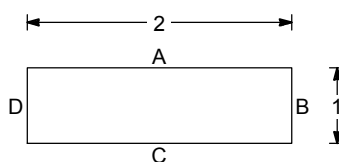
Co-Ordinates (NGR)

E 328087.000
N 343161.000

Ground Level (m AOD)

135.820

SAMPLES & TESTS						STRATA				Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m AOD)	Depth (Thick-ness)	Description	Legend	Geology
0.50	ES					135.72	0.10	Asphalt (MADE GROUND).		MG
						135.52	0.30	Light brown slightly sandy GRAVEL. Gravel is fine to coarse, angular of sandstone (MADE GROUND - Sub-base).		MG
							(0.70)	Dark brown sandy GRAVEL with occassional cobbles of slag. Gravel is fine to coarse, angular to subrounded of slag, ash, clinker and burnt shale (MADE GROUND).		MG
1.10	ES					134.82	1.00	brown mottled orange gravelly COBBLES. Cobbles are of slag. Gravel is fine to coarse subangular to subrounded of slag and clinker (MADE GROUND).		MG
						134.52	1.30	Hole stopped at 1.30m bgl unable to advance through slag.		



Length

2.00m

Shoring/Support:

None

Width

1.00m

Orientation

degrees from
north

Water Strikes

Date _____

Tim

Strike

Minutes

Standing

Remarks

General Remarks	
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General Remarks
No Groundwater observed.

No visual or olfactory evidence of hydrocarbon contamination observed.

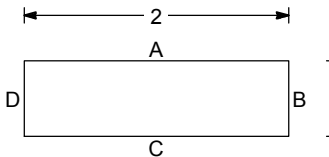
Trial pit backfilled upon completion.

Scale 1:50

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

 WSP Environmental The Victoria, 150-182 The Quays Manchester, M50 3SP Telephone: Fax:		TRIAL PIT LOG		Hole No. TP05	
Project South Site, Acrefair Works, Wrexham		Sheet 1 of 1			
Job No 21240		Client Air Products PLC		Date 20-04-11	
Contractor / Driller Hughes Ltd		Method/Plant Used JCB-3CX		Logged By Chris Kennedy	
		Co-Ordinates (NGR) E 328042.000 N 343139.000		Ground Level (m AOD) 135.530	

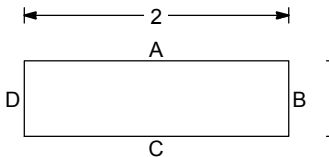
SAMPLES & TESTS						STRATA				Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m AOD)	Depth (Thickness)	Description	Legend	
0.50						135.33	0.20	Asphalt (MADE GROUND).		MG
						135.13	0.40	Grey fine to coarse angular to subangular GRAVEL of limestone (MADE GROUND - Sub-base).		MG
								Brown/slightly redish brown sandy GRAVEL with cobbles of ironstone and slag. Gravel is fine to coarse, angular to subrounded of ash. clinker, slag, ironstone, burnt ironstone, sandstone and burnt shale (MADE GROUND).		MG
1.00										
2.50										
4.20						131.33	4.20	Hole stopped at 4.20m bgl due to strength of strata.		

	Length 2.00m	Shoring/Support: None	Water Strikes					
	Width 1.00m		Date	Time	Strike	Minutes	Standing	Remarks
	Orientation degrees from north	Stability: Good	General Remarks No Groundwater observed. No visual or olfactory evidence of hydrocarbon contamination observed. Trial pit backfilled upon completion.					

Scale 1:50
 Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

 WSP Environmental The Victoria, 150-182 The Quays Manchester, M50 3SP Telephone: Fax:	TRIAL PIT LOG		Hole No. TP06	
	Project South Site, Acrefair Works, Wrexham		Sheet 1 of 1	
Job No 21240	Client Air Products PLC		Date 19-04-11	
Contractor / Driller Hughes Ltd	Method/Plant Used JCB-3CX	Logged By Chris Kennedy	Co-Ordinates (NGR) E 328061.000 N 343133.000	Ground Level (m AOD) 135.500

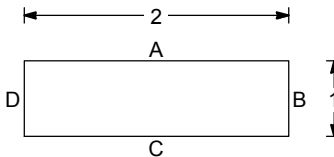
SAMPLES & TESTS						STRATA				Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m AOD)	Depth (Thickness)	Description	Legend	
0.50	ES					135.30	0.20	Asphalt (MADE GROUND).		MG
						135.10	0.40	Grey fine to coarse angular to subangular silty sandy GRAVEL of sandstone (MADE GROUND - Sub-base).		MG
	ES							Redish brown sandy GRAVEL with frequent cobbles of slag, brick and ironstone and burnt ironstone. Gravel is fine to coarse angular to subrounded of clinker, brick, burnt shale, slag, ironstone and ash (MADE GROUND).		MG
1.50	ES									
							(4.10)			
4.50	ES					131.00	4.50			

	Length 2.00m	Shoring/Support: None	Water Strikes					
	Width 1.00m		Date	Time	Strike	Minutes	Standing	Remarks
	Orientation degrees from north	Stability: Good	General Remarks No Groundwater observed. No visual or olfactory evidence of hydrocarbon contamination observed. Trial pit backfilled upon completion.					

Scale 1:50 Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

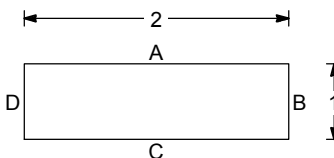
 WSP Environmental The Victoria, 150-182 The Quays Manchester, M50 3SP Telephone: Fax:	TRIAL PIT LOG		Hole No. TP07	
	Project South Site, Acrefair Works, Wrexham		Sheet 1 of 1	
Job No 21240	Client Air Products PLC		Date 19-04-11	
Contractor / Driller Hughes Ltd	Method/Plant Used JCB-3CX	Logged By Chris Kennedy	Co-Ordinates (NGR) E 328131.000 N 343182.000	Ground Level (m AOD) 136.090

SAMPLES & TESTS						STRATA				Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m AOD)	Depth (Thickness)	Description	Legend	Geology
0.50	ES					135.89	0.20	Asphalt (MADE GROUND).		MG
						135.69	0.40	Grey fine to coarse angular GRAVEL of limestone (MADE GROUND - Sub-base).		MG
1.30	ES						(0.80)	Black sandy GRAVEL. Gravel is fine to coarse, angular to subangular of ash, clinker and coal (MADE GROUND).		MG
						134.89	1.20			
							(1.00)	Light brown slightly silty slightly gravelly CLAY with some fine rootlets. Gravel is fine to medium, tabular, subrounded of shale mudstone, sandstone and rare coal.		GT
						133.89	2.20			
						133.79	2.30	Weathered MUDSTONE recovered as a slightly clayey GRAVEL. Gravel is fine to coarse angular tabular of mudstone (MIDDLE COAL MEASURES).		MCM

	Length 2.00m	Shoring/Support: None	Water Strikes					
	Width 1.00m		Date	Time	Strike	Minutes	Standing	Remarks
	Orientation degrees from north	Stability: Fair	General Remarks No Groundwater observed. No visual or olfactory evidence of hydrocarbon contamination observed. Trial pit backfilled upon completion.					
Scale 1:50	Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.							

 WSP Environmental The Victoria, 150-182 The Quays Manchester, M50 3SP Telephone: Fax:		TRIAL PIT LOG		Hole No. TP08	
Project South Site, Acrefair Works, Wrexham		Sheet 1 of 1			
Job No 21240		Client Air Products PLC		Date 19-04-11	
Contractor / Driller Hughes Ltd		Method/Plant Used JCB-3CX		Logged By Chris Kennedy	
		Co-Ordinates (NGR) E 328109.000 N 343066.000		Ground Level (m AOD) 136.320	

SAMPLES & TESTS						STRATA				Install / Backfill
Depth	Type	PID (ppmV)	HSV (kNm/m2)	P Pen (kN/m2)	Water	Elev. (m AOD)	Depth (Thickness)	Description	Legend	
						136.17	0.15	Asphalt (MADE GROUND).		MG
						135.92	0.40	Brown sandy fine to coarse, angular to subrounded GRAVEL. Gravel is of brick concrete and burnt shale (MADE GROUND).		MG
0.50	ES					135.72	0.60	Black sandy GRAVEL. Gravel is fine to coarse, angular of ash, clinker, coal and burnt shale (MADE GROUND).		MG
0.80	ES						(1.10)	Light brown/olive mottled grey slightl silty slightly gravelly CLAY with occassional fine rootlets. Gravel is fine to medium, angular to subrounded of sandstone, siltstone, mudstone. 0.60 - 0.70 m bgl Hydrocarbon odour.		GT
1.70	ES					134.62	1.70			

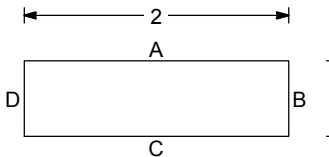
	Length 2.00m	Shoring/Support: None	Water Strikes					
	Width 1.00m		Date	Time	Strike	Minutes	Standing	Remarks
	Orientation degrees from north	Stability: Fair	General Remarks No Groundwater observed. No visual or olfactory evidence of hydrocarbon contamination observed. Trial pit backfilled upon completion.					

Scale 1:50

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

 WSP Environmental The Victoria, 150-182 The Quays Manchester, M50 3SP Telephone: Fax:		TRIAL PIT LOG		Hole No. TP09	
Project South Site, Acrefair Works, Wrexham		Sheet 1 of 1			
Job No 21240		Client Air Products PLC		Date 19-04-11	
Contractor / Driller Hughes Ltd		Method/Plant Used JCB-3CX		Logged By Chris Kennedy	
		Co-Ordinates (NGR) E 328112.000 N 343058.000		Ground Level (m AOD) 136.420	

SAMPLES & TESTS						STRATA				Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m AOD)	Depth (Thickness)	Description	Legend	
0.50	ES					136.12	0.30	Concrete (MADE GROUND).		MG
						136.02	0.40	Light brown slightly sandy GRAVEL. Gravel is fine to coarse angular of sandstone (MADE GROUND - Sub-base).		MG
1.00	ES						(0.80)	Light brown slightly sandy slightly gravelly CLAY with occassional fine rootlets. Gravel fine to medium, tabular subrounded of shale, siltstone, mudstone and rare coal.		GT
						135.22	1.20			
						135.02	1.40	Grey SILTSTONE recovered as a coarse angular GRAVEL (MIDDLE COAL MEASURES).		MCM

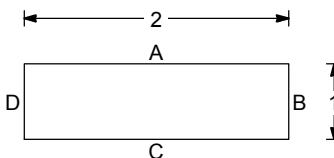
	Length 2.00m	Shoring/Support: None	Water Strikes					
	Width 1.00m		Date	Time	Strike	Minutes	Standing	Remarks
	Orientation degrees from north	Stability: Good	General Remarks No Groundwater observed. No visual or olfactory evidence of hydrocarbon contamination observed. Trial pit backfilled upon completion.					

Scale 1:50

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

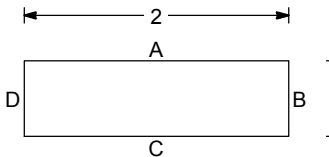
 WSP Environmental The Victoria, 150-182 The Quays Manchester, M50 3SP Telephone: Fax:		TRIAL PIT LOG		Hole No. TP10	
Project South Site, Acrefair Works, Wrexham		Sheet 1 of 1			
Job No 21240		Client Air Products PLC		Date 19-04-11	
Contractor / Driller Hughes Ltd		Method/Plant Used JCB-3CX		Logged By Chris Kennedy	
		Co-Ordinates (NGR) E 327973.000 N 343146.000		Ground Level (m AOD) 135.620	

SAMPLES & TESTS						STRATA				Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m AOD)	Depth (Thickness)	Description	Legend	
0.50	ES					135.42	0.20	Grey fine to coarse angular to subangular GRAVEL of limestone (MADE GROUND - Sub-base).		MG
								Dark redish brown sandy GRAVEL with cobbles of clinker, slag and burnt ironstone. Gravel is fine to coarse, angular to subangular of ash, clinker, slag, ironstone, brick and burnt shale (MADE GROUND).		
1.50	ES									
2.50	ES									
4.00	ES					131.52	4.10	Hole stopped at 4.10m bgl due to instability.		

	Length 2.00m	Shoring/Support: None	Water Strikes						
	Width 1.00m		Date	Time	Strike	Minutes	Standing	Remarks	
	Orientation degrees from north	Stability: Poor	General Remarks No Groundwater observed. No visual or olfactory evidence of hydrocarbon contamination observed. Trial pit backfilled upon completion.						
Scale 1:50		Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.							

 WSP Environmental The Victoria, 150-182 The Quays Manchester, M50 3SP Telephone: Fax:	TRIAL PIT LOG		Hole No. TP11	
	Project South Site, Acrefair Works, Wrexham		Sheet 1 of 1	
Job No 21240	Client Air Products PLC		Date 19-04-11	
Contractor / Driller Hughes Ltd	Method/Plant Used JCB-3CX	Logged By Chris Kennedy	Co-Ordinates (NGR) E 328105.000 N 343039.000	Ground Level (m AOD) 136.300

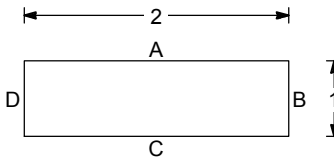
SAMPLES & TESTS						STRATA				Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m AOD)	Depth (Thickness)	Description	Legend	
0.40 0.60	ES ES					136.00	0.30	Concrete (MADE GROUND).		MG
						135.90	0.40	Light brown slightly sandy GRAVEL. Gravel is fine to coarse angular of sandstone (MADE GROUND - Sub-base).		MG
						135.85	0.45			MG
							(0.65)	Black fine to coarse, angular SAND & GRAVEL of ash and clinker (MADE GROUND).		GT
						135.20	1.10	Brown mottled grey slightly sandy gravelly fissured CLAY with occasional rootlets. Gravel is fine to coarse angular to subrounded of mudstone, shale and rare sandstone.		MCM
						135.10	1.20			
								Weathered MUDSTONE with orange iron oxide stained fractures, recovered as a light brown/grey clayey GRAVEL (MIDDLE COAL MEASURES).		

	Length 2.00m	Shoring/Support: None	Water Strikes					
	Width 1.00m		Date	Time	Strike	Minutes	Standing	Remarks
	Orientation degrees from north	Stability: Good	General Remarks No Groundwater observed. No visual or olfactory evidence of hydrocarbon contamination observed. Trial pit backfilled upon completion.					

Scale 1:50 Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

 WSP Environmental The Victoria, 150-182 The Quays Manchester, M50 3SP Telephone: Fax:		TRIAL PIT LOG		Hole No. TP12	
Project South Site, Acrefair Works, Wrexham		Sheet 1 of 1			
Job No 21240		Client Air Products PLC		Date 19-04-11	
Contractor / Driller Hughes Ltd		Method/Plant Used JCB-3CX		Logged By Chris Kennedy	
		Co-Ordinates (NGR) E 328061.000 N 343026.000		Ground Level (m AOD) 135.700	

SAMPLES & TESTS						STRATA				Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m AOD)	Depth (Thickness)	Description	Legend	Geology
0.50	ES					135.50	0.20	Concrete (MADE GROUND).		MG
						135.30	0.40	Light brown very sandy GRAVEL. Gravel is fine to coarse, angular to subangular of limestone (MADE GROUND - Sub-base).		MG
							(1.20)	Dark brown/black sandy GRAVEL with cobbles of concrete, brick and sandstone. Gravel is fine to coarse, angular to subrounded of ash, clinker, brick burnt sahle concrete mudstone, ironstone and sandstone (MADE GROUND).		MG
1.50	ES					134.10	1.60	Insitu concrete (MADE GROUND)		MG
2.00	ES					133.80	1.90			
						133.60	2.10	Weathered MUDSTONE recovered as a slightly clayey GRAVEL. Gravel is fine to coarse angular tabular of mudstone (MIDDLE COAL MEASURES).		MCM

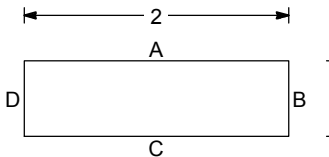
	Length 2.00m	Shoring/Support: None	Water Strikes					
	Width 1.00m		Stability: Good	Date	Time	Strike	Minutes	Standing
	Orientation degrees from north	General Remarks No Groundwater observed. No visual or olfactory evidence of hydrocarbon contamination observed. Trial pit backfilled upon completion.						

Scale 1:50

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

 WSP Environmental The Victoria, 150-182 The Quays Manchester, M50 3SP Telephone: Fax:		TRIAL PIT LOG		Hole No. TP13	
Project South Site, Acrefair Works, Wrexham		Sheet 1 of 1			
Job No 21240		Client Air Products PLC		Date 19-04-11	
Contractor / Driller Hughes Ltd		Method/Plant Used JCB-3CX		Logged By Chris Kennedy	
		Co-Ordinates (NGR) E 327960.000 N 343030.000		Ground Level (m AOD) 134.080	

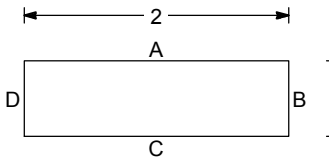
SAMPLES & TESTS						STRATA				Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m AOD)	Depth (Thickness)	Description	Legend	
						133.88	0.20	Asphalt (MADE GROUND).		MG
						133.68	0.40	Light grey fine to coarse, angular to subangular GRAVEL of limestone (MADE GROUND).		MG
0.90	ES						(1.40)	Black slightly clayey sandy GRAVEL with cobbles of brick and sandstone. Gravel is fine to coarse, angular to subrounded of of brick, coal, clinker, concrete and sandstone (MADE GROUND).		MG
						132.28	1.80			
2.00	ES						(1.40)	Black gravelly CLAY with cobbles of brick. Gravel is fine to coarse, angular to subrounded of coal, brick, clinker, concrete shale and mudstone (MADE GROUND).		MG
						130.88	3.20			
3.40	ES						(0.70)	Redish brown slightly sandy GRAVEL of burnt shale, clinker, slag, ash and rare coal (MADE GROUND).		MG
						130.18	3.90	Hole stopped at 3.90m bgl due to pit collapse.		

	Length 2.00m	Shoring/Support: None	Water Strikes					
	Width 1.00m		Date	Time	Strike	Minutes	Standing	Remarks
	Orientation degrees from north	Stability: Poor	General Remarks No Groundwater observed. No visual or olfactory evidence of hydrocarbon contamination observed. Trial pit backfilled upon completion.					

Scale 1:50
Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

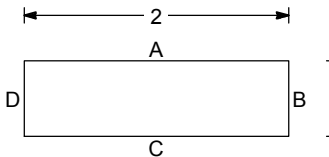
 WSP Environmental The Victoria, 150-182 The Quays Manchester, M50 3SP Telephone: Fax:		TRIAL PIT LOG		Hole No. TP14	
Project South Site, Acrefair Works, Wrexham		Sheet 1 of 1			
Job No 21240		Client Air Products PLC		Date 18-04-11	
Contractor / Driller Hughes Ltd		Method/Plant Used JCB-3CX		Logged By Chris Kennedy	
		Co-Ordinates (NGR) E 327909.000 N 343017.000		Ground Level (m AOD) 132.720	

SAMPLES & TESTS					STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m AOD)	Depth (Thickness)	Description	Legend	Geology
0.50	ES					132.52	0.20	Asphalt (MADE GROUND).		MG
							(0.80)	Brown sandy GRAVEL with frequent cobbles of brick. Gravel is fine to coarse, angular to subangular of brick. mudstone and burnt shale (MADE GROUND).		MG
1.20	ES									131.72
2.50	ES						(2.90)			
						128.82	3.90			
						128.72	4.00	Light Grey slightly weathered SILTSTONE (MIDDLE COAL MEASURES).	x x x	MCM

	Length 2.00m	Shoring/Support: None	Water Strikes						
	Width 1.00m		Date	Time	Strike	Minutes	Standing	Remarks	
	Orientation degrees from north	Stability: Good	General Remarks No Groundwater observed. No visual or olfactory evidence of hydrocarbon contamination observed. Trial pit backfilled upon completion.						
Scale 1:50		Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.							

 WSP Environmental The Victoria, 150-182 The Quays Manchester, M50 3SP Telephone: Fax:		TRIAL PIT LOG		Hole No. TP15	
Project South Site, Acrefair Works, Wrexham		Sheet 1 of 1			
Job No 21240		Client Air Products PLC		Date 18-04-11	
Contractor / Driller Hughes Ltd		Method/Plant Used JCB-3CX		Logged By Chris Kennedy	
		Co-Ordinates (NGR) E 327958.000 N 342991.000		Ground Level (m AOD) 133.610	

SAMPLES & TESTS						STRATA				Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m AOD)	Depth (Thickness)	Description	Legend	Geology
0.50	ES						(1.60)	Scrub over dark grey brown SANDS & GRAVEL with rare cobbles of brick and sandstone. Gravel is fine to coarse angular to subrounded of coal, ash, brick, mudstone and burnt shale (MADE GROUND).		MG
1.00	ES					132.01	1.60	Brown BOULDERS & COBBLES of angular to subrounded of SANDSTONE (MADE GROUND). Grey slightly weathered SILTSTONE (MIDDLE COAL MEASURES).		MG
						131.91	1.70			MCM

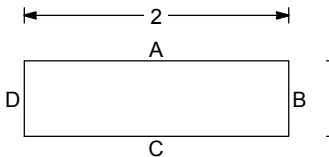
	Length	2.00m	Shoring/Support:	Water Strikes					
	Width	1.00m		Stability:	Date	Time	Strike	Minutes	Standing
	Orientation	degrees from north	Good		General Remarks No Groundwater observed. No visual or olfactory evidence of hydrocarbon contamination observed. Trial pit backfilled upon completion.				

Scale 1:50

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

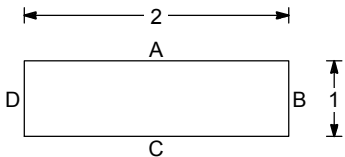
 WSP Environmental The Victoria, 150-182 The Quays Manchester, M50 3SP Telephone: Fax:		TRIAL PIT LOG		Hole No. TP16	
Job No 21240		Project South Site, Acrefair Works, Wrexham		Sheet 1 of 1	
Client Air Products PLC		Date 18-04-11			
Contractor / Driller Hughes Ltd		Method/Plant Used JCB-3CX		Logged By Chris Kennedy	
		Co-Ordinates (NGR) E 328099.000 N 342981.000		Ground Level (m AOD) 136.830	

SAMPLES & TESTS						STRATA				Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m AOD)	Depth (Thickness)	Description	Legend	
0.30						136.53	0.30	Concrete (MADE GROUND).		MG
						136.33	0.50	Grey weathered MUDSTONE with orange iron oxide staining recovered as a slightly sandy GRAVEL with cobbles of mudstone. Gravel is fine to coarse, angular tabular of mudstone (MIDDLE COAL MEASURES).		MCM

	Length 2.00m	Shoring/Support: None	Water Strikes						
	Width 1.00m		Date	Time	Strike	Minutes	Standing	Remarks	
	Orientation degrees from north	Stability: Good	General Remarks No Groundwater observed. No visual or olfactory evidence of hydrocarbon contamination observed. Trial pit backfilled upon completion.						
Scale 1:50		Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.							

 WSP Environmental The Victoria, 150-182 The Quays Manchester, M50 3SP Telephone: Fax:	TRIAL PIT LOG		Hole No. TP17	
	Project South Site, Acrefair Works, Wrexham		Sheet 1 of 1	
Job No 21240	Client Air Products PLC		Date 18-04-11	
Contractor / Driller Hughes Ltd	Method/Plant Used JCB-3CX	Logged By Chris Kennedy	Co-Ordinates (NGR) E 328091.000 N 342932.000	Ground Level (m AOD) 135.350

SAMPLES & TESTS						STRATA				Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m AOD)	Depth (Thickness)	Description	Legend	Geology
0.40	ES					134.85	0.50	Grey fine to coarse, angular to subrounded sandy GRAVEL with rare cobbles of brick. Gravel is of brick and limestone (MADE GROUND).		MG
0.70	ES					134.25	1.10	Dark brown very sandy GRAVEL. Gravel is fine to coarse, angular to subrounded of ash, clinker, brick, coal and rare slag (MADE GROUND).		MG
						134.15	1.20	Grey slightly weathered MUDSTONE (MIDDLE COAL MEASURES)		MCM

	Length 2.00m	Shoring/Support: None	Water Strikes						
	Width 1.00m		Date	Time	Strike	Minutes	Standing	Remarks	
	Orientation degrees from north	Stability: Good	General Remarks No Groundwater observed. No visual or olfactory evidence of hydrocarbon contamination observed. Trial pit backfilled upon completion.						
Scale 1:50		Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.							

Appendix C Chemical Testing Results



WSP Environmental
The Victoria
150-182 The Quays
Salford
Manchester
Lancashire
M50 3SP

Attention: Christopher Kennedy

CERTIFICATE OF ANALYSIS

Date: 07 June 2011
Customer: H_WSP_MAN
Sample Delivery Group (SDG): 110426-11
Your Reference: 21240
Location: Former Acrefair Works
Report No: 132721

This report has been revised and directly supersedes 129842 in its entirety.

We received 101 samples on Thursday April 21, 2011 and 37 of these samples were scheduled for analysis which was completed on Tuesday June 07, 2011. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
3359369	BH02		1.00	
3359387	BH02		2.50	
3359398	BH02		4.00	
3359409	BH02		5.00	
3359421	BH02		6.80	
3359435	BH03		0.50	
3359448	BH03		1.50	
3359460	BH04		0.40	
3359475	BH04		0.80	
3359370	BH05		0.50	
3359375	BH06		0.50	
3359376	BH06		1.20	
3359379	BH06		3.00	
3359380	BH06		4.00	
3359381	BH06		5.00	
3359382	BH06		5.70	
3359383	BH07		0.50	
3359385	BH11		2.00 - 3.00	
3359372	BH11		4.00 - 5.00	
3359371	BH7		1.00	
3359386	BHN01		0.50	
3359388	BHN01		1.50	
3359389	BHN01		3.00	
3359390	BHN01		4.00	
3359392	BHN03		0.50	
3359393	BHN03		1.00	
3359394	BHN03		2.50	
3359374	BHN1		4.50	
3359484	BHN2		4.00 - 5.00	
3359486	TP			
3359395	TP01		0.40	
3359396	TP02		0.50	
3359397	TP02		1.00	
3359399	TP02		2.00	
3359400	TP02		3.00	
3359401	TP03		1.00	
3359402	TP03		1.80	
3359403	TP04		0.50	
3359404	TP04		1.10	
3359482	TP04		1.10	
3359405	TP05		0.50	
3359406	TP05		1.00	
3359407	TP05		2.50	
3359408	TP05		4.20	
3359410	TP06		0.50	
3359412	TP06		1.50	
3359413	TP07		0.50	
3359414	TP07		1.30	
3359415	TP08		0.50	
3359417	TP08		1.70	
3359418	TP09		0.50	
3359419	TP09		1.00	



CERTIFICATE OF ANALYSIS

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Client Reference: 21240

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Attention: Christopher Kennedy

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Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
3359420	TP10		0.50	
3359422	TP10		1.50	
3359425	TP10		2.50	
3359427	TP10		4.00	
3359428	TP11		0.40	
3359429	TP11		0.60	
3359430	TP12		0.50	
3359431	TP12		1.50	
3359432	TP12		2.00	
3359433	TP13		0.90	
3359434	TP13		2.00	
3359436	TP13		3.40	
3359438	TP14		0.50	
3359439	TP14		1.20	
3359440	TP14		2.50	
3359441	TP15		0.50	
3359442	TP15		1.00	
3359443	TP16		0.30	
3359444	TP17		0.40	
3359446	TP17		0.70	
3359488	TP3		3.00	
3359490	TP6		4.50	
3359491	TP8		0.80	
3359447	TPN01		0.50	
3359450	TPN01		1.00	
3359451	TPN01		2.00	
3359452	TPN01		3.50	
3359454	TPN02		1.50	
3359455	TPN02		2.50	
3359456	TPN02		3.50	
3359457	TPN03		0.50	
3359458	TPN03		2.00	
3359459	TPN03		3.00	
3359461	TPN04		0.60	
3359462	TPN04		1.40	
3359463	TPN04		2.50	
3359464	TPN04		4.30	
3359465	TPN05		0.50	
3359467	TPN05		1.50	
3359469	TPN05		3.00	
3359470	TPN06		0.50	
3359471	TPN06		1.50	
3359473	TPN06		2.50	
3359478	TPN06		3.70	
3359480	TPN07		1.00	
3359493	TPN2			
3359494	TPN3		1.00	

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

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SOLID**Results Legend**

Test



No Determination Possible

Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container
3359427	TP10		4.00	60g VOC
3359420	TP10		0.50	250g Amber Jar 60g VOC
3359418	TP09		0.50	250g Amber Jar 60g VOC
3359417	TP08		1.70	250g Amber Jar 60g VOC
3359415	TP08		0.50	400g Tub 250g Amber Jar 60g VOC
3359413	TP07		0.50	250g Amber Jar 60g VOC
3359410	TP06		0.50	250g Amber Jar 60g VOC
3359381	BH06		5.00	250g Amber Jar 60g VOC
3359376	BH06		1.20	250g Amber Jar 60g VOC
3359408	TP05		4.20	250g Amber Jar 60g VOC
3359405	TP05		0.50	250g Amber Jar 60g VOC
3359403	TP04		0.50	250g Amber Jar 60g VOC
3359401	TP03		1.00	250g Amber Jar 60g VOC
3359394	BHN03		2.50	250g Amber Jar 60g VOC
3359392	BHN03		0.50	250g Amber Jar 60g VOC
3359397	TP02		1.00	250g Amber Jar 60g VOC
3359409	BH02		5.00	250g Amber Jar 60g VOC
3359369	BH02		1.00	250g Amber Jar 60g VOC
3359395	TP01		0.40	250g Amber Jar 60g VOC
3359386	BHN01		0.50	250g Amber Jar 60g VOC
Asbestos Containing Material Screen	All	NDPs: 0 Tests: 19		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 33		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 8		
EPH CWG (Aliphatic) Filtered GC (W)	All	NDPs: 0 Tests: 8		
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 35		
EPH CWG (Aromatic) Filtered GC (W)	All	NDPs: 0 Tests: 8		
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 35		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 35		
GRO by GC-FID (W)	All	NDPs: 0 Tests: 8		
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 5		
Mercury Dissolved	All	NDPs: 0 Tests: 8		
Metals by iCap-OES (Soil)	Arsenic	NDPs: 0 Tests: 33		
	Barium	NDPs: 0 Tests: 2		
	Beryllium	NDPs: 0 Tests: 2		

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[illegible]

CERTIFICATE OF ANALYSIS

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SOLID

Results Legend



Test



No Determination Possible

[illegible]



CERTIFICATE OF ANALYSIS

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SOLID Results Legend X Test N No Determination Possible	Lab Sample No(s)		Customer Sample Reference		AGS Reference		Depth (m)		Container	
	3359446		TP17				0.70		60g VOC	
	3359441		TP15				0.50		250g Amber Jar 60g VOC	
	3359439		TP14				1.20		250g Amber Jar 60g VOC	
	3359438		TP14				0.50		250g Amber Jar 250g Amber Jar 60g VOC	
	3359436		TP13				3.40		250g Amber Jar 60g VOC	
	3359433		TP13				0.90		250g Amber Jar 60g VOC	
	3359431		TP12				1.50		250g Amber Jar 60g VOC	
	3359428		TP11				0.40		250g Amber Jar 60g VOC	
	3359478		TPN06				3.70		250g Amber Jar 60g VOC	
	3359470		TPN06				0.50		250g Amber Jar 60g VOC	
	3359465		TPN05				0.50		250g Amber Jar 60g VOC	
	3359461		TPN04				0.60		250g Amber Jar 60g VOC	
	3359460		BH04				0.40		250g Amber Jar 60g VOC	
	3588530		TPN2				0.50		250g Amber Jar 60g VOC	
	3359456		TPN02				3.50		250g Amber Jar 60g VOC	
	3359484		BHN2				4.00 - 5.00		250g Amber Jar 60g VOC	
	3359450		TPN01				1.00		250g Amber Jar 60g VOC	
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 1								
Anions by Kone (soil)	All	NDPs: 0 Tests: 1								
Anions by Kone (w)	All	NDPs: 0 Tests: 1								
Asbestos Containing Material Screen	All	NDPs: 0 Tests: 19								
Asbestos Identification	All	NDPs: 0 Tests: 1								
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 33								
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 8								
Easily Liberated Sulphide	All	NDPs: 0 Tests: 1								
EPH CWG (Aliphatic) Filtered GC (W)	All	NDPs: 0 Tests: 8								
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 35								
EPH CWG (Aromatic) Filtered GC (W)	All	NDPs: 0 Tests: 8								
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 35								
GRO by GC-FID (S)	All	NDPs: 0 Tests: 35								
GRO by GC-FID (W)	All	NDPs: 0 Tests: 8								

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SOLID

Results Legend



Test



No Determination Possible

Lab Sample No(s)		Customer Sample Reference	AGS Reference	Depth (m)	Container
3359440		TP17		0.70	250g Amber Jar 60g VOC
3359441		TP15		0.50	250g Amber Jar 60g VOC
3359439		TP14		1.20	250g Amber Jar 60g VOC
3359438		TP14		0.50	250g Amber Jar 250g Amber Jar
3359436		TP13		3.40	250g Amber Jar 60g VOC
3359433		TP13		0.90	250g Amber Jar 60g VOC
3359431		TP12		1.50	250g Amber Jar 60g VOC
3359428		TP11		0.40	250g Amber Jar 60g VOC
3359478		TPN06		3.70	250g Amber Jar 60g VOC
3359470		TPN06		0.50	250g Amber Jar 60g VOC
3359465		TPN05		0.50	250g Amber Jar 60g VOC
3359461		TPN04		0.60	250g Amber Jar 60g VOC
3359460		BH04		0.40	250g Amber Jar 60g VOC
3588530		TPN2		0.50	250g Amber Jar 60g VOC
3359456		TPN02		3.50	250g Amber Jar 60g VOC
3359484		BHN2		4.00 - 5.00	250g Amber Jar 250g Amber Jar
3359450		TPN01		1.00	60g VOC 250g Amber Jar
All	NDPs: 0 Tests: 5		X		
All	NDPs: 0 Tests: 8			X X	
Arsenic	NDPs: 0 Tests: 33		X		X X
Barium	NDPs: 0 Tests: 2				X X
Beryllium	NDPs: 0 Tests: 2				
Cadmium	NDPs: 0 Tests: 33		X		X X
Chromium	NDPs: 0 Tests: 33		X		X X
Copper	NDPs: 0 Tests: 33		X		X X
Lead	NDPs: 0 Tests: 33		X		X X
Mercury	NDPs: 0 Tests: 33		X		X X
Nickel	NDPs: 0 Tests: 33		X		X X
Selenium	NDPs: 0 Tests: 33		X		X X
Vanadium	NDPs: 0 Tests: 2				
Zinc	NDPs: 0 Tests: 33		X		X X



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SOLID																		
Results Legend	Lab Sample No(s)																	
	Customer Sample Reference																	
	AGS Reference																	
	Depth (m)																	
	Container																	
			3359446	TP17		0.70	60g VOC											
			3359441	TP15		0.50	250g Amber Jar											
			3359439	TP14		1.20	250g Amber Jar											
			3359438	TP14		0.50	250g Amber Jar											
			3359436	TP13		3.40	250g Amber Jar											
			3359433	TP13		0.90	250g Amber Jar											
			3359431	TP12		1.50	250g Amber Jar											
			3359428	TP11		0.40	250g Amber Jar											
			3359478	TPN06		3.70	250g Amber Jar											
			3359470	TPN06		0.50	250g Amber Jar											
			3359465	TPN05		0.50	250g Amber Jar											
			3359461	TPN04		0.60	250g Amber Jar											
			3359460	BH04		0.40	250g Amber Jar											
			3588530	TPN2		0.50	250g Amber Jar											
			3359456	TPN02		3.50	250g Amber Jar											
			3359484	BHN2		4.00 - 5.00	250g Amber Jar											
			3359450	TPN01		1.00	250g Amber Jar											
Metals by iCap-OES Dissolved (W)	All	NDPs: 0 Tests: 3																
PAH by GCMS	All	NDPs: 0 Tests: 34																
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 8																
PCBs by GCMS	All	NDPs: 0 Tests: 1																
pH	All	NDPs: 0 Tests: 31																
pH Value of Filtered Water	All	NDPs: 0 Tests: 8																
Phenols by HPLC (S)	All	NDPs: 0 Tests: 33																
Phenols by HPLC (W)	All	NDPs: 0 Tests: 8																
Sample description	All	NDPs: 0 Tests: 36																
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 4																
Sulphide	All	NDPs: 0 Tests: 1																
Total Organic Carbon	All	NDPs: 0 Tests: 14																
Total Sulphate	All	NDPs: 0 Tests: 5																
TPH CWG Filtered (W)	All	NDPs: 0 Tests: 8																

CERTIFICATE OF ANALYSIS

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SOLID

Results Legend



Test



No Determination Possible

[illegible]



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Sample Descriptions

Grain Sizes

very fine <0.063mm fine 0.063mm - 0.1mm medium 0.1mm - 2mm coarse 2mm - 10mm very coarse >10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
3359369	BH02	1.00	Dark Brown	Sand	0.1 - 2 mm	Stones	None
3359409	BH02	5.00	Dark Brown	Sandy Loam	0.1 - 2 mm	Stones	None
3359460	BH04	0.40	Dark Brown	Clay	<0.063 mm	None	None
3359376	BH06	1.20	Light Brown	Sand	0.1 - 2 mm	Stones	Brick
3359381	BH06	5.00	Light Brown	Sandy Silt Loam	0.1 - 2 mm	Stones	None
3359386	BHN01	0.50	Dark Brown	Sandy Loam	0.1 - 2 mm	Stones	None
3359484	BHN2	4.00 - 5.00	Dark Brown	Sand	0.1 - 2 mm	Stones	Fibres
3359392	BHN03	0.50	Dark Brown	Sand	0.1 - 2 mm	Stones	N/A
3359394	BHN03	2.50	Dark Brown	Silty Sand	0.1 - 2 mm	Stones	Vegetation
3359395	TP01	0.40	Beige	Silty Clay	0.063 - 0.1 mm	N/A	N/A
3359397	TP02	1.00	Dark Brown	Sand	0.1 - 2 mm	Stones	N/A
3359401	TP03	1.00	Dark Brown	Sand	0.1 - 2 mm	Stones	Plastic
3359403	TP04	0.50	Dark Brown	Sand	0.1 - 2 mm	Stones	N/A
3359405	TP05	0.50	Dark Brown	Sand	0.1 - 2 mm	Stones	None
3359408	TP05	4.20	Dark Brown	Sand	0.1 - 2 mm	Stones	None
3359410	TP06	0.50	Dark Brown	Sand	0.1 - 2 mm	Stones	None
3359413	TP07	0.50	Dark Brown	Sand	0.1 - 2 mm	Stones	N/A
3359415	TP08	0.50	Dark Brown	Sand	0.1 - 2 mm	Oil/Petroleum	Stones
3359417	TP08	1.70	Light Brown	Clay	<0.063 mm	None	None
3359418	TP09	0.50	Light Brown	Clay Loam	0.1 - 2 mm	Stones	Coal fragments
3359420	TP10	0.50	Dark Brown	Sandy Loam	0.1 - 2 mm	Stones	None
3359427	TP10	4.00	Dark Brown	Sand	0.1 - 2 mm	Stones	N/A
3359428	TP11	0.40	Light Brown	Silty Clay Loam	0.063 - 0.1 mm	Stones	None
3359431	TP12	1.50	Dark Brown	Sandy Loam	0.1 - 2 mm	Stones	None
3359433	TP13	0.90	Dark Brown	Sandy Loam	0.1 - 2 mm	Stones	None
3359436	TP13	3.40	Dark Brown	Sandy Loam	0.1 - 2 mm	Stones	None
3359439	TP14	1.20	Dark Brown	Sandy Loam	0.1 - 2 mm	Coal fragments	Stones
3359441	TP15	0.50	Dark Brown	Sandy Loam	0.1 - 2 mm	Stones	None
3359446	TP17	0.70	Dark Brown	Sand	0.1 - 2 mm	Stones	None
3359450	TPN01	1.00	Dark Brown	Sand	0.1 - 2 mm	Stones	None
3359456	TPN02	3.50	Dark Brown	Sand	0.1 - 2 mm	Stones	None
3588530	TPN2	0.50	Dark Brown	Sandy Loam	0.1 - 2 mm	Stones	None
3359461	TPN04	0.60	Light Brown	Sandy Loam	0.1 - 2 mm	Stones	None
3359465	TPN05	0.50	Grey	Silt	0.063 - 0.1 mm	N/A	N/A
3359470	TPN06	0.50	Dark Brown	Silty Sand	0.1 - 2 mm	Stones	Vegetation



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Client Reference:	21240	Attention:	Christopher Kennedy	Superseded Report:	129842

			Colour	Description	Grain size	Inclusions	Inclusions 2
3359478	TPN06	3.70	Dark Brown	Silty Sand	0.1 - 2 mm	Stones	N/A

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

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



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			BH02	BH02	BH04	BH06	BH06	BHN01
			1.00 Soil/Solid - 21/04/2011 110426-11 3359369	5.00 Soil/Solid - 21/04/2011 110426-11 3359409	0.40 Soil/Solid - 21/04/2011 110426-11 3359460	1.20 Soil/Solid - 21/04/2011 110426-11 3359376	5.00 Soil/Solid - 21/04/2011 110426-11 3359381	0.50 Soil/Solid - 21/04/2011 110426-11 3359386
Asbestos Containing Material Screen	-	TM001				No ACM Detected		
Catechol	<0.01 mg/kg	TM062 (S)	<0.01	<0.01		<0.01	<0.01	<0.01
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M		<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M		<0.01 M	<0.01 M	<0.01 M
Resorcinol	<0.05 mg/kg	TM062 (S)	<0.05	<0.05		<0.05	<0.05	<0.05
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M		<0.015 M	<0.015 M	<0.015 M
1-Naphthol	<0.01 mg/kg	TM062 (S)	<0.01	<0.01		<0.01	<0.01	<0.01
2,3,5-Trimethylphenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M		<0.01 M	<0.01 M	<0.01 M
2-Isopropylphenol	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M		<0.015 M	<0.015 M	<0.015 M
Phenols, Total Detected 8 Speciated	mg/kg	TM062 (S)	<0.15	<0.15		<0.15	<0.15	<0.15
Soil Organic Matter (SOM)	<0.35 %	TM132	4.33 #	4.97 #		10.8 #	5.64 #	
pH	1 pH Units	TM133	8.42 M	8.22 M		7.84 M	7.08 M	7.83 M
pH (diss.filt) NRA leach	1 pH Units	TM133			7.77			
Arsenic (diss.filt) NRA leach	<0.12 µg/l	TM152			0.196			
Cadmium (diss.filt) NRA leach	<0.1 µg/l	TM152			<0.1			
Chromium (diss.filt) NRA leach	<0.22 µg/l	TM152			2.53			
Copper (diss.filt) NRA leach	<0.85 µg/l	TM152			<0.85			
Lead (diss.filt) NRA leach	<0.02 µg/l	TM152			<0.02			
Nickel (diss.filt) NRA leach	<0.15 µg/l	TM152			0.651			
Selenium (diss.filt) NRA leach	<0.39 µg/l	TM152			<0.39			
Zinc (diss.filt) NRA leach	<0.41 µg/l	TM152			0.711			
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M		1.23 M	<1 M	<1 M
PCB congener 28	<0.003 mg/kg	TM168			<0.003 M			
PCB congener 52	<0.003 mg/kg	TM168			<0.003 M			
PCB congener 101	<0.003 mg/kg	TM168			<0.003 M			
PCB congener 118	<0.003 mg/kg	TM168			<0.003 M			
PCB congener 138	<0.003 mg/kg	TM168			<0.003 M			
PCB congener 153	<0.003 mg/kg	TM168			<0.003 M			
PCB congener 180	<0.003 mg/kg	TM168			<0.003 M			
PCBs, Total ICES 7	mg/kg	TM168			<0.003			
Total Aliphatics & Aromatics >C5-35 (diss.filt)	<10 µg/l	TM174			<10			
Aliphatics >C12-C16 (diss.filt) NRA leach	<10 µg/l	TM174			<10			



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Superseded Report: 129842

			BH02	BH02	BH04	BH06	BH06	BHN01
			1.00 Soil/Solid - 21/04/2011 110426-11 3359369	5.00 Soil/Solid - 21/04/2011 110426-11 3359409	0.40 Soil/Solid - 21/04/2011 110426-11 3359460	1.20 Soil/Solid - 21/04/2011 110426-11 3359376	5.00 Soil/Solid - 21/04/2011 110426-11 3359381	0.50 Soil/Solid - 21/04/2011 110426-11 3359386
Aromatics >EC12-EC16 (diss.filt) NRA leach	<10 µg/l	TM174			<10			
Aliphatics >C16-C21 (diss.filt) NRA leach	<10 µg/l	TM174			<10			
Aromatics >EC16-EC21 (diss.filt) NRA leach	<10 µg/l	TM174			<10			
Aliphatics >C21-C35 (diss.filt) NRA leach	<10 µg/l	TM174			<10			
Aromatics >EC21-EC35 (diss.filt) NRA leach	<10 µg/l	TM174			<10			
Total Aliphatics >C12-C35 (diss.filt) NRA leach	<10 µg/l	TM174			<10			
Total Aromatics >EC12-EC35 (diss.filt)	<10 µg/l	TM174			<10			
Arsenic	<0.6 mg/kg	TM181	5.74 M	8.65 M		24.1 M	13.3 M	22 M
Cadmium	<0.02 mg/kg	TM181	0.734 M	1.5 M		1.03 M	0.741 M	2.95 M
Chromium	<0.9 mg/kg	TM181	39 M	27.6 M		24.3 M	17.6 M	88.3 M
Copper	<1.4 mg/kg	TM181	31 M	65.2 M		258 M	36.6 M	116 M
Lead	<0.7 mg/kg	TM181	7.9 M	16.8 M		274 M	37 M	63.4 M
Mercury	<0.14 mg/kg	TM181	<0.14 M	<0.14 M		<0.14 M	<0.14 M	<0.14 M
Nickel	<0.2 mg/kg	TM181	10.9 M	39.9 M		53.7 M	29.8 M	91.7 M
Selenium	<1 mg/kg	TM181	4.89 #	<1 #		1.44 #	<1 #	<10 #
Zinc	<1.9 mg/kg	TM181	12.8 M	67 M		188 M	105 M	120 M
Mercury (diss.filt) NRA leach	<0.01 µg/l	TM183			<0.01			
Resorcinol NRA leach	<10 µg/l	TM259			<10			
Catechol NRA leach	<10 µg/l	TM259			<10			
Phenol NRA leach	<2 µg/l	TM259			<2			
Cresols NRA leach	<6 µg/l	TM259			<6			
Xylenols NRA leach	<8 µg/l	TM259			<8			
1-Naphthol NRA leach	<10 µg/l	TM259			<10			
2,3,5-Trimethylphenol NRA leach	<3 µg/l	TM259			<3			
2-Isopropylphenol NRA leach	<6 µg/l	TM259			<6			

CERTIFICATE OF ANALYSIS

SDG:	110426-11
Job:	H_WSP_MAN-34
Client Reference:	21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

[illegible]



CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
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			BHN2	BHN03	BHN03	TP01	TP02	TP03
			4.00 - 5.00 Soil/Solid - 21/04/2011 110426-11 3359484	0.50 Soil/Solid - 21/04/2011 110426-11 3359392	2.50 Soil/Solid - 21/04/2011 110426-11 3359394	0.40 Soil/Solid - 21/04/2011 110426-11 3359395	1.00 Soil/Solid - 21/04/2011 110426-11 3359397	1.00 Soil/Solid - 21/04/2011 110426-11 3359401
Asbestos Containing Material Screen	-	TM001	Possible ACM Det			No ACM Detected	No ACM Detected	
Catechol	<0.01 mg/kg	TM062 (S)	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01
Phenol	<0.01 mg/kg	TM062 (S)	95.3	<0.01	<0.01	<0.01	<0.01	<0.01
Cresols	<0.01 mg/kg	TM062 (S)	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01
Resorcinol	<0.05 mg/kg	TM062 (S)	<2.5	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenols	<0.015 mg/kg	TM062 (S)	<0.75	<0.015	<0.015	<0.015	<0.015	<0.015
1-Naphthol	<0.01 mg/kg	TM062 (S)	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01
2,3,5-Trimethylphenol	<0.01 mg/kg	TM062 (S)	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01
2-Isopropylphenol	<0.015 mg/kg	TM062 (S)	<0.75	<0.015	<0.015	<0.015	<0.015	<0.015
Phenols, Total Detected 8 Speciated	mg/kg	TM062 (S)	95.3	<0.15	<0.15	<0.15	<0.15	<0.15
Sulphide NRA leach	<10 µg/l	TM101	<10					
Soil Organic Matter (SOM)	<0.35 %	TM132		5.17		1.39		4.38
pH	1 pH Units	TM133				8.21	8.46	8.31
pH (diss.filt) NRA leach	1 pH Units	TM133	7.52				7.73	
Arsenic (diss.filt) NRA leach	<0.12 µg/l	TM152	5.24				4.21	
Cadmium (diss.filt) NRA leach	<0.1 µg/l	TM152	<0.1				<0.1	
Chromium (diss.filt) NRA leach	<0.22 µg/l	TM152	4.15				1.59	
Copper (diss.filt) NRA leach	<0.85 µg/l	TM152	30.1				0.993	
Lead (diss.filt) NRA leach	<0.02 µg/l	TM152	0.225				0.271	
Nickel (diss.filt) NRA leach	<0.15 µg/l	TM152	3.61				0.338	
Selenium (diss.filt) NRA leach	<0.39 µg/l	TM152	13.9				0.569	
Zinc (diss.filt) NRA leach	<0.41 µg/l	TM152	11.9				0.709	
Cyanide, Total	<1 mg/kg	TM153		<1	<1	<1	<1	16
Total Aliphatics & Aromatics >C5-35 (diss.filt)	<10 µg/l	TM174	3690				<10	
Aliphatics >C12-C16 (diss.filt) NRA leach	<10 µg/l	TM174	<10				<10	
Aromatics >EC12-EC16 (diss.filt) NRA leach	<10 µg/l	TM174	153				<10	
Aliphatics >C16-C21 (diss.filt) NRA leach	<10 µg/l	TM174	<10				<10	
Aromatics >EC16-EC21 (diss.filt) NRA leach	<10 µg/l	TM174	3540				<10	
Aliphatics >C21-C35 (diss.filt) NRA leach	<10 µg/l	TM174	<10				<10	
Aromatics >EC21-EC35 (diss.filt) NRA leach	<10 µg/l	TM174	<10				<10	
Total Aliphatics >C12-C35 (diss.filt) NRA leach	<10 µg/l	TM174	<10				<10	
Total Aromatics >EC12-EC35 (diss.filt)	<10 µg/l	TM174	3690				<10	



CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

			BHN2	BHN03	BHN03	TP01	TP02	TP03
			4.00 - 5.00 Soil/Solid - 21/04/2011 110426-11 3359484	0.50 Soil/Solid - 21/04/2011 110426-11 3359392	2.50 Soil/Solid - 21/04/2011 110426-11 3359394	0.40 Soil/Solid - 21/04/2011 110426-11 3359395	1.00 Soil/Solid - 21/04/2011 110426-11 3359397	1.00 Soil/Solid - 21/04/2011 110426-11 3359401
Sulphide, Easily liberated	<15 mg/kg	TM180	853 #					
Arsenic	<0.6 mg/kg	TM181		12.8 M	12.4 M	11.2 M	9.26 M	15.2 M
Cadmium	<0.02 mg/kg	TM181		2.46 M	2.04 M	0.686 M	1.7 M	2.12 M
Chromium	<0.9 mg/kg	TM181		47.3 M	47.9 M	35.9 M	49.3 M	20.5 M
Copper	<1.4 mg/kg	TM181		60.7 M	63.5 M	25.7 M	45.7 M	30.2 M
Lead	<0.7 mg/kg	TM181		10.2 M	11.7 M	40.3 M	18.4 M	149 M
Mercury	<0.14 mg/kg	TM181		<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M
Nickel	<0.2 mg/kg	TM181		46.2 M	33.7 M	41.5 M	21.9 M	18.8 M
Selenium	<1 mg/kg	TM181		<1 #	2.23 #	<1 #	2.81 #	<1 #
Zinc	<1.9 mg/kg	TM181		15.4 M	19.8 M	90.3 M	42.4 M	409 M
Mercury (diss.filt) NRA leach	<0.01 µg/l	TM183	<0.01				<0.01	
Sulphate NRA leach	<2000 µg/l	TM184	15400000					
Water Soluble Sulphate as SO4 2:1 Extract	<0.008 g/l	TM243	76.8 M					
Resorcinol NRA leach	<10 µg/l	TM259	<10				<10	
Catechol NRA leach	<10 µg/l	TM259	<10				<10	
Phenol NRA leach	<2 µg/l	TM259	1700				<2	
Cresols NRA leach	<6 µg/l	TM259	<6				<6	
Xylenols NRA leach	<8 µg/l	TM259	<8				<8	
1-Naphthol NRA leach	<10 µg/l	TM259	<10				<10	
2,3,5-Trimethylphenol NRA leach	<3 µg/l	TM259	<3				<3	
2-Isopropylphenol NRA leach	<6 µg/l	TM259	<6				<6	

CERTIFICATE OF ANALYSIS

SDG:	110426-11
Job:	H_WSP_MAN-34
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Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

[illegible]



CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

			TP04	TP05	TP05	TP06	TP07	TP08
			0.50 Soil/Solid - 21/04/2011 110426-11 3359403	0.50 Soil/Solid - 21/04/2011 110426-11 3359405	4.20 Soil/Solid - 21/04/2011 110426-11 3359408	0.50 Soil/Solid - 21/04/2011 110426-11 3359410	0.50 Soil/Solid - 21/04/2011 110426-11 3359413	0.50 Soil/Solid - 21/04/2011 110426-11 3359415
Asbestos Containing Material Screen	-	TM001		No ACM Detected	No ACM Detected		No ACM Detected	No ACM Detected
Catechol	<0.01 mg/kg	TM062 (S)	<0.01		<0.01	<0.01	<0.01	<0.01
Phenol	<0.01 mg/kg	TM062 (S)	<0.01		<0.01	<0.01	<0.01	<0.01
Cresols	<0.01 mg/kg	TM062 (S)	<0.01		<0.01	<0.01	<0.01	<0.01
Resorcinol	<0.05 mg/kg	TM062 (S)	<0.05		<0.05	<0.05	<0.05	<0.05
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015		<0.015	<0.015	<0.015	<0.015
1-Naphthol	<0.01 mg/kg	TM062 (S)	<0.01		<0.01	<0.01	<0.01	<0.01
2,3,5-Trimethylphenol	<0.01 mg/kg	TM062 (S)	<0.01		<0.01	<0.01	<0.01	<0.01
2-Isopropylphenol	<0.015 mg/kg	TM062 (S)	<0.015		<0.015	<0.015	<0.015	<0.015
Phenols, Total Detected 8 Speciated	mg/kg	TM062 (S)	<0.15		<0.15	<0.15	<0.15	<0.15
Soil Organic Matter (SOM)	<0.35 %	TM132		4.64				18.4
pH	1 pH Units	TM133	8.2	8.54	8.53	8.42	8.16	7.82
pH (diss.filt) NRA leach	1 pH Units	TM133		7.66				
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6		<0.6			
Arsenic (diss.filt) NRA leach	<0.12 µg/l	TM152		8.97				
Barium (diss.filt) NRA leach	<0.03 µg/l	TM152		2.69				
Beryllium (diss.filt) NRA leach	<0.07 µg/l	TM152		<0.07				
Cadmium (diss.filt) NRA leach	<0.1 µg/l	TM152		<0.1				
Chromium (diss.filt) NRA leach	<0.22 µg/l	TM152		1.52				
Copper (diss.filt) NRA leach	<0.85 µg/l	TM152		0.93				
Lead (diss.filt) NRA leach	<0.02 µg/l	TM152		0.388				
Nickel (diss.filt) NRA leach	<0.15 µg/l	TM152		0.428				
Selenium (diss.filt) NRA leach	<0.39 µg/l	TM152		0.549				
Vanadium (diss.filt) NRA leach	<0.24 µg/l	TM152		12.5				
Zinc (diss.filt) NRA leach	<0.41 µg/l	TM152		0.935				
Cyanide, Total	<1 mg/kg	TM153	<1	<1	<1	<1	<1	<1
Total Aliphatics & Aromatics >C5-35 (diss.filt)	<10 µg/l	TM174		<10				
Aliphatics >C12-C16 (diss.filt) NRA leach	<10 µg/l	TM174		<10				
Aromatics >EC12-EC16 (diss.filt) NRA leach	<10 µg/l	TM174		<10				
Aliphatics >C16-C21 (diss.filt) NRA leach	<10 µg/l	TM174		<10				
Aromatics >EC16-EC21 (diss.filt) NRA leach	<10 µg/l	TM174		<10				
Aliphatics >C21-C35 (diss.filt) NRA leach	<10 µg/l	TM174		<10				



CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

			TP04	TP05	TP05	TP06	TP07	TP08
			0.50 Soil/Solid - 21/04/2011 110426-11 3359403	0.50 Soil/Solid - 21/04/2011 110426-11 3359405	4.20 Soil/Solid - 21/04/2011 110426-11 3359408	0.50 Soil/Solid - 21/04/2011 110426-11 3359410	0.50 Soil/Solid - 21/04/2011 110426-11 3359413	0.50 Soil/Solid - 21/04/2011 110426-11 3359415
Aromatics >EC21-EC35 (diss.filt) NRA leach	<10 µg/l	TM174		<10				
Total Aliphatics >C12-C35 (diss.filt) NRA leach	<10 µg/l	TM174		<10				
Total Aromatics >EC12-EC35 (diss.filt)	<10 µg/l	TM174		<10				
Arsenic	<0.6 mg/kg	TM181	45 M	10.2 M	8.47 M	9.58 M	24.1 M	25.3 M
Barium	<0.6 mg/kg	TM181		452 #				
Beryllium	<0.01 mg/kg	TM181		5.13 M				
Cadmium	<0.02 mg/kg	TM181	3.67 M	1.25 M	1.33 M	1.22 M	0.661 M	1.04 M
Chromium	<0.9 mg/kg	TM181	258 M	54.6 M	60.1 M	56.8 M	33.9 M	22.9 M
Copper	<1.4 mg/kg	TM181	365 M	37.1 M	31.4 M	53.9 M	73.5 M	142 M
Lead	<0.7 mg/kg	TM181	210 M	11.5 M	10.3 M	29.6 M	44 M	55.6 M
Mercury	<0.14 mg/kg	TM181	<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M
Nickel	<0.2 mg/kg	TM181	145 M	26.5 M	21.9 M	27.1 M	69 M	43.2 M
Selenium	<1 mg/kg	TM181	<10 #	1.77 #	2.37 #	1.57 #	<1 #	2.14 #
Vanadium	<0.2 mg/kg	TM181		120 #				
Zinc	<1.9 mg/kg	TM181	218 M	21 M	20.4 M	71.7 M	49.5 M	177 M
Mercury (diss.filt) NRA leach	<0.01 µg/l	TM183		<0.01				
Calcium (diss.filt) NRA leach	<12 µg/l	TM228		7410				
Sodium (diss.filt) NRA leach	<76 µg/l	TM228		724				
Magnesium (diss.filt) NRA leach	<36 µg/l	TM228		<36				
Potassium (diss.filt) NRA leach	<2335 µg/l	TM228		<2340				
Resorcinol NRA leach	<10 µg/l	TM259		<10				
Catechol NRA leach	<10 µg/l	TM259		<10				
Phenol NRA leach	<2 µg/l	TM259		<2				
Cresols NRA leach	<6 µg/l	TM259		<6				
Xylenols NRA leach	<8 µg/l	TM259		<8				
1-Naphthol NRA leach	<10 µg/l	TM259		<10				
2,3,5-Trimethylphenol NRA leach	<3 µg/l	TM259		<3				
2-Isopropylphenol NRA leach	<6 µg/l	TM259		<6				

CERTIFICATE OF ANALYSIS

SDG:	110426-11
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CERTIFICATE OF ANALYSIS

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			TP08	TP10	TP10	TP11	TP12	TP13
			1.70 Soil/Solid - 21/04/2011 110426-11 3359417	0.50 Soil/Solid - 21/04/2011 110426-11 3359420	4.00 Soil/Solid - 21/04/2011 110426-11 3359427	0.40 Soil/Solid - 21/04/2011 110426-11 3359428	1.50 Soil/Solid - 21/04/2011 110426-11 3359431	0.90 Soil/Solid - 21/04/2011 110426-11 3359433
Asbestos Containing Material Screen	-	TM001	No ACM Detected	No ACM Detected		No ACM Detected		
Catechol	<0.01 mg/kg	TM062 (S)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Resorcinol	<0.05 mg/kg	TM062 (S)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M
1-Naphthol	<0.01 mg/kg	TM062 (S)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,3,5-Trimethylphenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
2-Isopropylphenol	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M
Phenols, Total Detected 8 Speciated	mg/kg	TM062 (S)	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
pH	1 pH Units	TM133	8.73 M	8.33 M	8.62 M	7.84 M	10.3 M	8.28 M
pH (diss.filt) NRA leach	1 pH Units	TM133						7.83
Arsenic (diss.filt) NRA leach	<0.12 µg/l	TM152						3.8
Barium (diss.filt) NRA leach	<0.03 µg/l	TM152						16.2
Beryllium (diss.filt) NRA leach	<0.07 µg/l	TM152						<0.07
Cadmium (diss.filt) NRA leach	<0.1 µg/l	TM152						<0.1
Chromium (diss.filt) NRA leach	<0.22 µg/l	TM152						2.47
Copper (diss.filt) NRA leach	<0.85 µg/l	TM152						3.66
Lead (diss.filt) NRA leach	<0.02 µg/l	TM152						0.541
Nickel (diss.filt) NRA leach	<0.15 µg/l	TM152						1.28
Selenium (diss.filt) NRA leach	<0.39 µg/l	TM152						2.39
Vanadium (diss.filt) NRA leach	<0.24 µg/l	TM152						8.17
Zinc (diss.filt) NRA leach	<0.41 µg/l	TM152						0.802
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Total Aliphatics & Aromatics >C5-35 (diss.filt)	<10 µg/l	TM174						<10
Aliphatics >C12-C16 (diss.filt) NRA leach	<10 µg/l	TM174						<10
Aromatics >EC12-EC16 (diss.filt) NRA leach	<10 µg/l	TM174						<10
Aliphatics >C16-C21 (diss.filt) NRA leach	<10 µg/l	TM174						<10
Aromatics >EC16-EC21 (diss.filt) NRA leach	<10 µg/l	TM174						<10
Aliphatics >C21-C35 (diss.filt) NRA leach	<10 µg/l	TM174						<10
Aromatics >EC21-EC35 (diss.filt) NRA leach	<10 µg/l	TM174						<10
Total Aliphatics >C12-C35 (diss.filt) NRA leach	<10 µg/l	TM174						<10



CERTIFICATE OF ANALYSIS

SDG: 110426-11
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Report Number: 132721
Superseded Report: 129842

			TP08	TP10	TP10	TP11	TP12	TP13
			1.70 Soil/Solid - 21/04/2011 110426-11 3359417	0.50 Soil/Solid - 21/04/2011 110426-11 3359420	4.00 Soil/Solid - 21/04/2011 110426-11 3359427	0.40 Soil/Solid - 21/04/2011 110426-11 3359428	1.50 Soil/Solid - 21/04/2011 110426-11 3359431	0.90 Soil/Solid - 21/04/2011 110426-11 3359433
Total Aromatics >EC12-EC35 (diss.filt)	<10 µg/l	TM174						<10
Arsenic	<0.6 mg/kg	TM181	11.2 M	11.4 M	4.06 M	12 M	10.7 M	16.2 M
Barium	<0.6 mg/kg	TM181						270 #
Beryllium	<0.01 mg/kg	TM181						2.39 M
Cadmium	<0.02 mg/kg	TM181	0.609 M	0.945 M	0.249 M	0.664 M	0.897 M	1.3 M
Chromium	<0.9 mg/kg	TM181	33.6 M	50.8 M	28.5 M	26.3 M	21 M	32.3 M
Copper	<1.4 mg/kg	TM181	26.3 M	38.6 M	10.9 M	76.2 M	61.6 M	59.2 M
Lead	<0.7 mg/kg	TM181	23.3 M	17.8 M	2.77 M	78.3 M	159 M	57.8 M
Mercury	<0.14 mg/kg	TM181	<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M
Nickel	<0.2 mg/kg	TM181	43.6 M	24.1 M	5.6 M	38.9 M	36.7 M	56.9 M
Selenium	<1 mg/kg	TM181	<1 #	1.46 #	1.43 #	<1 #	<1 #	<1 #
Vanadium	<0.2 mg/kg	TM181						55 #
Zinc	<1.9 mg/kg	TM181	91.6 M	39 M	11.6 M	101 M	88.8 M	137 M
Mercury (diss.filt) NRA leach	<0.01 µg/l	TM183						0.0111
Sulphate, Total	<48 mg/kg	TM221				275 M	1050 M	4650 M
Calcium (diss.filt) NRA leach	<12 µg/l	TM228						19900
Sodium (diss.filt) NRA leach	<76 µg/l	TM228						257
Magnesium (diss.filt) NRA leach	<36 µg/l	TM228						236
Potassium (diss.filt) NRA leach	<2335 µg/l	TM228						2380
Ammoniacal N as NH4 in 2:1 extract BRE	<0.0003 g/l	TM248						<0.0003
Resorcinol NRA leach	<10 µg/l	TM259						<10
Catechol NRA leach	<10 µg/l	TM259						<10
Phenol NRA leach	<2 µg/l	TM259						<2
Cresols NRA leach	<6 µg/l	TM259						<6
Xylenols NRA leach	<8 µg/l	TM259						<8
1-Naphthol NRA leach	<10 µg/l	TM259						<10
2,3,5-Trimethylphenol NRA leach	<3 µg/l	TM259						<3
2-Isopropylphenol NRA leach	<6 µg/l	TM259						<6

CERTIFICATE OF ANALYSIS

SDG:	110426-11
Job:	H_WSP_MAN-34
Client Reference:	21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

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CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

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			TP13	TP14	TP14	TP15	TP17	TPN01
			3.40 Soil/Solid - 21/04/2011 110426-11 3359436	0.50 Soil/Solid - 21/04/2011 110426-11 3359438	1.20 Soil/Solid - 21/04/2011 110426-11 3359439	0.50 Soil/Solid - 21/04/2011 110426-11 3359441	0.70 Soil/Solid - 21/04/2011 110426-11 3359446	1.00 Soil/Solid - 21/04/2011 110426-11 3359450
Asbestos Containing Material Screen	-	TM001		No ACM Detected		No ACM Detected	No ACM Detected	
Catechol	<0.01 mg/kg	TM062 (S)	<0.01		<0.01	<0.01	<0.01	<0.01
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M		<0.01 M	<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M		<0.01 M	<0.01 M	<0.01 M	<0.01 M
Resorcinol	<0.05 mg/kg	TM062 (S)	<0.05		<0.05	<0.05	<0.05	<0.05
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M		<0.015 M	<0.015 M	<0.015 M	<0.015 M
1-Naphthol	<0.01 mg/kg	TM062 (S)	<0.01		<0.01	<0.01	<0.01	<0.01
2,3,5-Trimethylphenol	<0.01 mg/kg	TM062 (S)	<0.01 M		<0.01 M	<0.01 M	<0.01 M	<0.01 M
2-Isopropylphenol	<0.015 mg/kg	TM062 (S)	<0.015 M		<0.015 M	<0.015 M	<0.015 M	<0.015 M
Phenols, Total Detected 8 Speciated	mg/kg	TM062 (S)	<0.15		<0.15	<0.15	<0.15	<0.15
pH	1 pH Units	TM133	8.02 M		8.39 M	8.46 M	8.43 M	7.6 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #					7.31 #
Cyanide, Total	<1 mg/kg	TM153	<1 M		<1 M	<1 M	<1 M	<1 M
Arsenic	<0.6 mg/kg	TM181	19.8 M		15.4 M	13 M	14 M	8.7 M
Cadmium	<0.02 mg/kg	TM181	1.9 M		0.26 M	1.61 M	1.25 M	0.564 M
Chromium	<0.9 mg/kg	TM181	72.5 M		12.4 M	37.5 M	40.9 M	550 M
Copper	<1.4 mg/kg	TM181	100 M		47.2 M	85 M	86.6 M	676 M
Lead	<0.7 mg/kg	TM181	130 M		32.1 M	137 M	27.8 M	142 M
Mercury	<0.14 mg/kg	TM181	<0.14 M		<0.14 M	<0.14 M	0.927 M	<0.14 M
Nickel	<0.2 mg/kg	TM181	60.3 M		24.1 M	37.3 M	32.7 M	74.6 M
Selenium	<1 mg/kg	TM181	1.18 #		1.15 #	<1 #	1.94 #	<1 #
Zinc	<1.9 mg/kg	TM181	126 M		47.7 M	194 M	42.8 M	52.1 M
Sulphate, Total	<48 mg/kg	TM221					23000 M	595 M

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Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

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CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

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Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

			TPN02	TPN2	TPN04	TPN05	TPN06	TPN06
			3.50 Soil/Solid 21/04/2011 110426-11 3359456	0.50 Soil/Solid 21/04/2011 110426-11 3588530	0.60 Soil/Solid 21/04/2011 110426-11 3359461	0.50 Soil/Solid 21/04/2011 110426-11 3359465	0.50 Soil/Solid 21/04/2011 110426-11 3359470	3.70 Soil/Solid 21/04/2011 110426-11 3359478
Asbestos Containing Material Screen	-	TM001	No ACM Detected	No ACM Detected	No ACM Detected	No ACM Detected	No ACM Detected	
Catechol	<0.01 mg/kg	TM062 (S)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 #	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 #	<0.01 M	<0.01 M
Resorcinol	<0.05 mg/kg	TM062 (S)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 #	<0.015 M	<0.015 M
1-Naphthol	<0.01 mg/kg	TM062 (S)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2,3,5-Trimethylphenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 #	<0.01 M	<0.01 M
2-Isopropylphenol	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 #	<0.015 M	<0.015 M
Phenols, Total Detected 8 Speciated	mg/kg	TM062 (S)	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Soil Organic Matter (SOM)	<0.35 %	TM132		15.8 #	13.4 #	7.81 #	5.43 #	7.86 #
pH	1 pH Units	TM133	8.4 M	8.17 M	7.69 M	6.93 #	8.32 M	7.97 M
pH (diss.filt) NRA leach	1 pH Units	TM133	7.78		7.86			7.86
Chromium, Hexavalent	<0.6 mg/kg	TM151						<0.6 #
Arsenic (diss.filt) NRA leach	<0.12 µg/l	TM152	10		0.981			1.57
Barium (diss.filt) NRA leach	<0.03 µg/l	TM152	33.8		16.2			
Beryllium (diss.filt) NRA leach	<0.07 µg/l	TM152	<0.07		0.099			
Cadmium (diss.filt) NRA leach	<0.1 µg/l	TM152	<0.1		<0.1			<0.1
Chromium (diss.filt) NRA leach	<0.22 µg/l	TM152	2.39		3.42			2.78
Copper (diss.filt) NRA leach	<0.85 µg/l	TM152	3.81		9.17			6.78
Lead (diss.filt) NRA leach	<0.02 µg/l	TM152	2.39		2.92			0.855
Nickel (diss.filt) NRA leach	<0.15 µg/l	TM152	5.05		2.23			0.913
Selenium (diss.filt) NRA leach	<0.39 µg/l	TM152	1.31		0.527			0.606
Vanadium (diss.filt) NRA leach	<0.24 µg/l	TM152	2.95		2.05			
Zinc (diss.filt) NRA leach	<0.41 µg/l	TM152	3.53		4.65			3.13
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 #	<1 M	<1 M
Total Aliphatics & Aromatics >C5-35 (diss.filt)	<10 µg/l	TM174	<10		<10			<10
Aliphatics >C12-C16 (diss.filt) NRA leach	<10 µg/l	TM174	<10		<10			<10
Aromatics >EC12-EC16 (diss.filt) NRA leach	<10 µg/l	TM174	<10		<10			<10
Aliphatics >C16-C21 (diss.filt) NRA leach	<10 µg/l	TM174	<10		<10			<10
Aromatics >EC16-EC21 (diss.filt) NRA leach	<10 µg/l	TM174	<10		<10			<10
Aliphatics >C21-C35 (diss.filt) NRA leach	<10 µg/l	TM174	<10		<10			<10



CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

			TPN02	TPN2	TPN04	TPN05	TPN06	TPN06
			3.50 Soil/Solid - 21/04/2011 110426-11 3359456	0.50 Soil/Solid - 21/04/2011 110426-11 3588530	0.60 Soil/Solid - 21/04/2011 110426-11 3359461	0.50 Soil/Solid - 21/04/2011 110426-11 3359465	0.50 Soil/Solid - 21/04/2011 110426-11 3359470	3.70 Soil/Solid - 21/04/2011 110426-11 3359478
Aromatics >EC21-EC35 (diss.filt) NRA leach	<10 µg/l	TM174	<10		<10			<10
Total Aliphatics >C12-C35 (diss.filt) NRA leach	<10 µg/l	TM174	<10		<10			<10
Total Aromatics >EC12-EC35 (diss.filt)	<10 µg/l	TM174	<10		<10			<10
Arsenic	<0.6 mg/kg	TM181	19	24.8	22.4	1.11	21.9	17.9
			M	M	M	#	M	M
Cadmium	<0.02 mg/kg	TM181	1.39	0.716	2.71	0.379	1.52	1.49
			M	M	M	#	M	M
Chromium	<0.9 mg/kg	TM181	25.3	23.2	55.3	11.5	43.7	882
			M	M	M	#	M	M
Copper	<1.4 mg/kg	TM181	80.6	243	185	28.9	1080	1790
			M	M	M	#	M	M
Lead	<0.7 mg/kg	TM181	62.7	154	107	18.4	214	209
			M	M	M	#	M	M
Mercury	<0.14 mg/kg	TM181	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14
			M	M	M	#	M	M
Nickel	<0.2 mg/kg	TM181	57	43	86.8	16.3	67.5	574
			M	M	M	#	M	M
Selenium	<1 mg/kg	TM181	<1	<1	1.14	<1	<1	<1
			#	#	#	#	#	#
Zinc	<1.9 mg/kg	TM181	166	92.6	827	83	904	917
			M	M	M	#	M	M
Mercury (diss.filt) NRA leach	<0.01 µg/l	TM183	<0.01		0.0141			0.0108
Calcium (diss.filt) NRA leach	<12 µg/l	TM228	15000					
Sodium (diss.filt) NRA leach	<76 µg/l	TM228	554					
Magnesium (diss.filt) NRA leach	<36 µg/l	TM228	<36					
Potassium (diss.filt) NRA leach	<2335 µg/l	TM228	<2340					
Resorcinol NRA leach	<10 µg/l	TM259	<10		<10			<10
Catechol NRA leach	<10 µg/l	TM259	<10		<10			<10
Phenol NRA leach	<2 µg/l	TM259	<2		<2			<2
Cresols NRA leach	<6 µg/l	TM259	<6		<6			<6
Xylenols NRA leach	<8 µg/l	TM259	<8		<8			<8
1-Naphthol NRA leach	<10 µg/l	TM259	<10		<10			<10
2,3,5-Trimethylphenol NRA leach	<3 µg/l	TM259	<3		<3			<3
2-Isopropylphenol NRA leach	<6 µg/l	TM259	<6		<6			<6



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GRO by GC-FID (W)

CERTIFICATE OF ANALYSIS

SDG:	110426-11
Job:	H_WSP_MAN-34
Client Reference:	21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
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GRO by GC-FID (W)

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CERTIFICATE OF ANALYSIS

SDG: 110426-11
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Client Reference: 21240

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GRO by GC-FID (W)

			BHN2					
			4.00 - 5.00 Soil/Solid - 21/04/2011 110426-11 3359484					
GRO Surrogate % recovery** NRA leach	%	TM245	115					
GRO >C5-C12 NRA leach	<50 µg/l	TM245	<50					
Methyl tertiary butyl ether (MTBE) NRA leach	<3 µg/l	TM245	<3					
Benzene NRA leach	<7 µg/l	TM245	<7					
Toluene NRA leach	<4 µg/l	TM245	<4					
Ethylbenzene NRA leach	<5 µg/l	TM245	<5					
m,p-Xylene NRA leach	<8 µg/l	TM245	<8					
o-Xylene NRA leach	<3 µg/l	TM245	<3					
m,p,o-Xylene NRA leach	µg/l	TM245	<10					
BTEX, Total NRA leach	µg/l	TM245	<10					
Aliphatics >C5-C6 NRA leach	<10 µg/l	TM245	<10					
Aliphatics >C6-C8 NRA leach	<10 µg/l	TM245	<10					
Aliphatics >C8-C10 NRA leach	<10 µg/l	TM245	<10					
Aliphatics >C10-C12 NRA leach	<10 µg/l	TM245	<10					
Aromatics >EC5-EC7 NRA leach	<10 µg/l	TM245	<10					
Aromatics >EC7-EC8 NRA leach	<10 µg/l	TM245	<10					
Aromatics >EC8-EC10 NRA leach	<10 µg/l	TM245	<10					
Aromatics >EC10-EC12 NRA leach	<10 µg/l	TM245	<10					



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PAH by GCMS

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PAH by GCMS

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PAH by GCMS

			BH02	BH02	BH04	BH06	BH06	BHN01
			1.00 Soil/Solid - 21/04/2011 110426-11 3359369	5.00 Soil/Solid - 21/04/2011 110426-11 3359409	0.40 Soil/Solid - 21/04/2011 110426-11 3359460	1.20 Soil/Solid - 21/04/2011 110426-11 3359376	5.00 Soil/Solid - 21/04/2011 110426-11 3359381	0.50 Soil/Solid - 21/04/2011 110426-11 3359386
Naphthalene-d8 % recovery**	%	TM218	89.4	89.7	94.7	99.2	96.6	90.4
Acenaphthene-d10 % recovery**	%	TM218	89.2	90.6	94.7	100	95.1	90.1
Phenanthrene-d10 % recovery**	%	TM218	83.6	86.6	91.5	91.7	89.5	89.4
Chrysene-d12 % recovery**	%	TM218	84.1	92.2	91.4	88.6	86.1	91.5
Perylene-d12 % recovery**	%	TM218	80.5	96.6	95	82.6	87	95.5
Naphthalene	<0.009 mg/kg	TM218	<0.009 M	0.0716 M	<0.009 M	1.33 M	0.109 M	0.141 M
Acenaphthylene	<0.012 mg/kg	TM218	<0.012 M	<0.012 M	<0.012 M	0.125 M	<0.012 M	0.0302 M
Acenaphthene	<0.008 mg/kg	TM218	<0.008 M	0.0283 M	<0.008 M	0.138 M	0.0103 M	0.0357 M
Fluorene	<0.01 mg/kg	TM218	<0.01 M	0.0318 M	<0.01 M	0.182 M	0.0246 M	0.0395 M
Phenanthrene	<0.015 mg/kg	TM218	0.0515 M	0.404 M	0.04 M	1.91 M	0.241 M	0.449 M
Anthracene	<0.016 mg/kg	TM218	<0.016 M	0.0912 M	<0.016 M	0.562 M	0.0368 M	0.145 M
Fluoranthene	<0.017 mg/kg	TM218	<0.017 M	0.131 M	0.0203 M	1.85 M	0.116 M	0.762 M
Pyrene	<0.015 mg/kg	TM218	<0.015 M	0.185 M	0.0219 M	1.54 M	0.0907 M	0.652 M
Benz(a)anthracene	<0.014 mg/kg	TM218	0.0193 M	0.165 M	0.0324 M	1.13 M	0.0853 M	0.441 M
Chrysene	<0.01 mg/kg	TM218	0.0142 M	0.155 M	0.0259 M	0.875 M	0.0846 M	0.389 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218	<0.015 M	0.128 M	0.0454 M	1.24 M	0.102 M	0.6 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218	<0.014 M	0.0342 M	<0.014 M	0.449 M	0.0246 M	0.203 M
Benzo(a)pyrene	<0.015 mg/kg	TM218	<0.015 M	0.0927 M	<0.015 M	0.903 M	0.0395 M	0.435 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218	<0.018 M	0.0333 M	<0.018 M	0.454 M	0.0283 M	0.249 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218	<0.023 M	<0.023 M	<0.023 M	0.157 M	<0.023 M	0.0797 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218	<0.024 M	0.172 M	0.0513 M	0.578 M	0.0752 M	0.33 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218	<0.118	1.72	0.237	13.4	1.07	4.98

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PAH by GCMS

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PAH by GCMS

			BHN03	BHN03	TP01	TP02	TP03	TP04
			0.50 Soil/Solid - 21/04/2011 110426-11 3359392	2.50 Soil/Solid - 21/04/2011 110426-11 3359394	0.40 Soil/Solid - 21/04/2011 110426-11 3359395	1.00 Soil/Solid - 21/04/2011 110426-11 3359397	1.00 Soil/Solid - 21/04/2011 110426-11 3359401	0.50 Soil/Solid - 21/04/2011 110426-11 3359403
Naphthalene-d8 % recovery**	%	TM218	92.6	95.5	90.4	89.6	89.7	89.8
Acenaphthene-d10 % recovery**	%	TM218	91.3	93.3	91.2	89.6	90.1	90.5
Phenanthrene-d10 % recovery**	%	TM218	88.5	90.3	86.3	85.9	86.1	86.8
Chrysene-d12 % recovery**	%	TM218	80.9	82.4	92.7	92.7	95	93.8
Perylene-d12 % recovery**	%	TM218	82.8	86.5	99.5	98.9	104	98.4
Naphthalene	<0.009 mg/kg	TM218	0.0652 M	0.0685 M	<0.009 M	0.191 M	0.364 M	0.359 M
Acenaphthylene	<0.012 mg/kg	TM218	0.0263 M	0.0214 M	<0.012 M	<0.012 M	0.146 M	0.0835 M
Acenaphthene	<0.008 mg/kg	TM218	0.0837 M	0.24 M	<0.008 M	0.0237 M	0.0253 M	0.0307 M
Fluorene	<0.01 mg/kg	TM218	0.07 M	0.187 M	<0.01 M	0.0409 M	0.069 M	0.045 M
Phenanthrene	<0.015 mg/kg	TM218	0.756 M	1.57 M	0.0291 M	0.574 M	1.81 M	1.03 M
Anthracene	<0.016 mg/kg	TM218	0.19 M	0.403 M	<0.016 M	0.119 M	0.257 M	0.197 M
Fluoranthene	<0.017 mg/kg	TM218	1.2 M	1.68 M	0.0342 M	0.246 M	3 M	1.27 M
Pyrene	<0.015 mg/kg	TM218	0.956 M	1.23 M	0.0318 M	0.259 M	2.1 M	1.1 M
Benz(a)anthracene	<0.014 mg/kg	TM218	0.534 M	0.628 M	0.0302 M	0.228 M	1.41 M	0.924 M
Chrysene	<0.01 mg/kg	TM218	0.442 M	0.488 M	0.0244 M	0.208 M	1.45 M	0.875 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218	0.579 M	0.619 M	0.0402 M	0.239 M	1.79 M	1.17 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218	0.281 M	0.282 M	<0.014 M	0.101 M	0.78 M	0.455 M
Benzo(a)pyrene	<0.015 mg/kg	TM218	0.456 M	0.506 M	0.0234 M	0.184 M	1.42 M	0.876 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218	0.229 M	0.247 M	<0.018 M	0.0887 M	0.713 M	0.472 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218	0.0649 M	0.0736 M	<0.023 M	0.0308 M	0.223 M	0.141 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218	0.271 M	0.29 M	<0.024 M	0.195 M	0.753 M	0.635 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218	6.21	8.53	0.213	2.73	16.3	9.66

SDG:	110426-11
Job:	H_WSP_MAN-34
Client Reference:	21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

PAH by GCMS

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CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

PAH by GCMS

			TP05	TP05	TP06	TP07	TP08	TP08
			0.50 Soil/Solid - 21/04/2011 110426-11 3359405	4.20 Soil/Solid - 21/04/2011 110426-11 3359408	0.50 Soil/Solid - 21/04/2011 110426-11 3359410	0.50 Soil/Solid - 21/04/2011 110426-11 3359413	0.50 Soil/Solid - 21/04/2011 110426-11 3359415	1.70 Soil/Solid - 21/04/2011 110426-11 3359417
Naphthalene-d8 % recovery**	%	TM218	88.9	90.4	89.8	96.9	98.4	91.4
Acenaphthene-d10 % recovery**	%	TM218	88.3	90.1	89.4	95.4	93.9	90.6
Phenanthrene-d10 % recovery**	%	TM218	87.2	89.2	88.7	90.8	85.2	86
Chrysene-d12 % recovery**	%	TM218	88.3	89.8	88.8	83.1	75.2	89.9
Perylene-d12 % recovery**	%	TM218	92.4	92.7	92	83.1	82.6	91.3
Naphthalene	<0.009 mg/kg	TM218	<0.009 M	0.012 M	<0.009 M	0.217 M	1.26 M	<0.009 M
Acenaphthylene	<0.012 mg/kg	TM218	<0.012 M	<0.012 M	<0.012 M	0.0142 M	0.105 M	<0.012 M
Acenaphthene	<0.008 mg/kg	TM218	<0.008 M	<0.008 M	<0.008 M	<0.008 M	0.607 M	<0.008 M
Fluorene	<0.01 mg/kg	TM218	<0.01 M	<0.01 M	<0.01 M	<0.01 M	1.36 M	<0.01 M
Phenanthrene	<0.015 mg/kg	TM218	0.0274 M	0.0523 M	0.0203 M	0.147 M	3.72 M	<0.015 M
Anthracene	<0.016 mg/kg	TM218	<0.016 M	<0.016 M	<0.016 M	0.0199 M	1.06 M	<0.016 M
Fluoranthene	<0.017 mg/kg	TM218	<0.017 M	0.0418 M	<0.017 M	0.0971 M	2.6 M	<0.017 M
Pyrene	<0.015 mg/kg	TM218	<0.015 M	0.0376 M	<0.015 M	0.0881 M	2.44 M	<0.015 M
Benz(a)anthracene	<0.014 mg/kg	TM218	<0.014 M	0.0544 M	0.0171 M	0.0874 M	1.82 M	<0.014 M
Chrysene	<0.01 mg/kg	TM218	0.0153 M	0.0458 M	0.015 M	0.0721 M	1.45 M	<0.01 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218	0.0206 M	0.0491 M	0.0222 M	0.102 M	3.13 M	<0.015 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218	<0.014 M	0.0166 M	<0.014 M	0.0335 M	1.19 M	<0.014 M
Benzo(a)pyrene	<0.015 mg/kg	TM218	<0.015 M	0.0319 M	<0.015 M	0.0656 M	2.62 M	<0.015 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218	<0.018 M	<0.018 M	<0.018 M	0.0369 M	1.7 M	<0.018 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218	<0.023 M	<0.023 M	<0.023 M	<0.023 M	0.474 M	<0.023 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218	<0.024 M	<0.024 M	<0.024 M	0.0662 M	2.13 M	<0.024 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218	<0.118	0.341	<0.118	1.05	27.7	<0.118

CERTIFICATE OF ANALYSIS

SDG:	110426-11
Job:	H_WSP_MAN-34
Client Reference:	21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

PAH by GCMS

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CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

Location: Former Acrefair Works
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Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

PAH by GCMS

			TP10	TP10	TP11	TP12	TP13	TP13
			0.50 Soil/Solid - 21/04/2011 110426-11 3359420	4.00 Soil/Solid - 21/04/2011 110426-11 3359427	0.40 Soil/Solid - 21/04/2011 110426-11 3359428	1.50 Soil/Solid - 21/04/2011 110426-11 3359431	0.90 Soil/Solid - 21/04/2011 110426-11 3359433	3.40 Soil/Solid - 21/04/2011 110426-11 3359436
Naphthalene-d8 % recovery**	%	TM218	92.2	95.3	90.1	93.2	91.5	89.7
Acenaphthene-d10 % recovery**	%	TM218	91.4	95	89.8	93.2	91.7	90.2
Phenanthrene-d10 % recovery**	%	TM218	87.4	92.1	85.3	92.8	91.5	87
Chrysene-d12 % recovery**	%	TM218	92.2	87	90.2	95.5	95	97.7
Perylene-d12 % recovery**	%	TM218	94.4	91.6	93.1	97.9	98.4	104
Naphthalene	<0.009 mg/kg	TM218	0.0251 M	<0.009 M	0.156 M	0.116 M	0.685 M	1.6 M
Acenaphthylene	<0.012 mg/kg	TM218	<0.012 M	<0.012 M	<0.012 M	0.0569 M	0.139 M	0.118 M
Acenaphthene	<0.008 mg/kg	TM218	<0.008 M	<0.008 M	0.0277 M	0.0356 M	0.142 M	0.379 M
Fluorene	<0.01 mg/kg	TM218	<0.01 M	<0.01 M	0.0378 M	0.0553 M	0.155 M	0.241 M
Phenanthrene	<0.015 mg/kg	TM218	0.0337 M	<0.015 M	0.504 M	1.18 M	2.04 M	5.37 M
Anthracene	<0.016 mg/kg	TM218	<0.016 M	<0.016 M	0.087 M	0.286 M	0.617 M	1.51 M
Fluoranthene	<0.017 mg/kg	TM218	0.0374 M	<0.017 M	0.202 M	3.01 M	3.85 M	8.97 M
Pyrene	<0.015 mg/kg	TM218	0.0351 M	<0.015 M	0.18 M	2.5 M	3.29 M	7.11 M
Benz(a)anthracene	<0.014 mg/kg	TM218	0.0361 M	<0.014 M	0.167 M	1.55 M	2.02 M	4.14 M
Chrysene	<0.01 mg/kg	TM218	0.0313 M	<0.01 M	0.157 M	1.34 M	1.87 M	3.39 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218	0.0437 M	<0.015 M	0.186 M	1.99 M	2.81 M	4.65 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218	0.019 M	<0.014 M	0.0715 M	0.715 M	0.946 M	1.71 M
Benzo(a)pyrene	<0.015 mg/kg	TM218	0.0279 M	<0.015 M	0.138 M	1.56 M	2.05 M	3.79 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218	<0.018 M	<0.018 M	0.0666 M	0.785 M	1.07 M	1.84 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218	<0.023 M	<0.023 M	0.029 M	0.262 M	0.328 M	0.498 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218	0.0285 M	<0.024 M	0.119 M	1.01 M	1.29 M	2.05 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218	0.318	<0.118	2.13	16.4	23.3	47.4

CERTIFICATE OF ANALYSIS

SDG:	110426-11
Job:	H_WSP_MAN-34
Client Reference:	21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number:	DC/1212/232
Report Number:	132721
Superseded Report:	129842

PAH by GCMS

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CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

PAH by GCMS

			TP14	TP15	TP17	TPN01	TPN02	TPN2
			1.20 Soil/Solid - 21/04/2011 110426-11 3359439	0.50 Soil/Solid - 21/04/2011 110426-11 3359441	0.70 Soil/Solid - 21/04/2011 110426-11 3359446	1.00 Soil/Solid - 21/04/2011 110426-11 3359450	3.50 Soil/Solid - 21/04/2011 110426-11 3359456	0.50 Soil/Solid - 21/04/2011 110426-11 3588530
Naphthalene-d8 % recovery**	%	TM218	89.4	88.4	92.4	91.3	96.7	96
Acenaphthene-d10 % recovery**	%	TM218	92.5	90.1	92.4	94.1	97.6	93.5
Phenanthrene-d10 % recovery**	%	TM218	89.4	85.8	91.8	89.8	92	88
Chrysene-d12 % recovery**	%	TM218	97	94.3	93.1	83.9	90.3	91.1
Perylene-d12 % recovery**	%	TM218	98.8	99.2	95.5	79.2	88.6	92.6
Naphthalene	<0.009 mg/kg	TM218	5.53 M	0.819 M	0.299 M	0.25 M	0.365 M	0.325 M
Acenaphthylene	<0.012 mg/kg	TM218	0.0268 M	0.107 M	0.0451 M	<0.012 M	0.0314 M	0.0326 M
Acenaphthene	<0.008 mg/kg	TM218	0.083 M	0.0699 M	0.0251 M	<0.008 M	0.0151 M	0.0222 M
Fluorene	<0.01 mg/kg	TM218	0.459 M	0.0674 M	0.03 M	<0.01 M	0.0174 M	0.0176 M
Phenanthrene	<0.015 mg/kg	TM218	4.92 M	1.61 M	0.432 M	0.167 M	0.352 M	0.495 M
Anthracene	<0.016 mg/kg	TM218	0.17 M	0.364 M	0.18 M	0.0235 M	0.092 M	0.0862 M
Fluoranthene	<0.017 mg/kg	TM218	0.609 M	2.8 M	0.552 M	0.162 M	0.508 M	0.472 M
Pyrene	<0.015 mg/kg	TM218	0.528 M	2.59 M	0.649 M	0.172 M	0.441 M	0.401 M
Benz(a)anthracene	<0.014 mg/kg	TM218	0.655 M	1.93 M	0.381 M	0.14 M	0.371 M	0.371 M
Chrysene	<0.01 mg/kg	TM218	0.729 M	1.57 M	0.386 M	0.185 M	0.294 M	0.365 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218	0.4 M	3.13 M	0.738 M	0.25 M	0.419 M	0.502 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218	0.101 M	1.17 M	0.225 M	0.0796 M	0.18 M	0.149 M
Benzo(a)pyrene	<0.015 mg/kg	TM218	0.427 M	2.53 M	0.38 M	0.167 M	0.353 M	0.334 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218	0.0916 M	1.56 M	0.217 M	0.0884 M	0.187 M	0.18 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218	0.0842 M	0.418 M	0.0868 M	0.029 M	0.0592 M	0.0671 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218	0.585 M	1.79 M	0.298 M	0.136 M	0.23 M	0.28 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218	15.4	22.5	4.92	1.85	3.92	4.1

SDG:	110426-11
Job:	H_WSP_MAN-34
Client Reference:	21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

PAH by GCMS

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CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

PAH by GCMS

			TPN04	TPN05	TPN06	TPN06		
			0.60 Soil/Solid - 21/04/2011 110426-11 3359461	0.50 Soil/Solid - 21/04/2011 110426-11 3359465	0.50 Soil/Solid - 21/04/2011 110426-11 3359470	3.70 Soil/Solid - 21/04/2011 110426-11 3359478		
Naphthalene-d8 % recovery**	%	TM218	101	93.5	86.6	94.1		
Acenaphthene-d10 % recovery**	%	TM218	101	91.2	86.3	94.5		
Phenanthrene-d10 % recovery**	%	TM218	96.9	89.2	82.9	88.9		
Chrysene-d12 % recovery**	%	TM218	95.2	87	83.2	100		
Perylene-d12 % recovery**	%	TM218	97.5	81.8	80.7	107		
Naphthalene	<0.009 mg/kg	TM218	0.555 M	0.241 #	0.453 M	1.27 M		
Acenaphthylene	<0.012 mg/kg	TM218	0.116 M	0.0193 #	0.0348 M	0.394 M		
Acenaphthene	<0.008 mg/kg	TM218	0.0858 M	0.0233 #	0.0401 M	0.4 M		
Fluorene	<0.01 mg/kg	TM218	0.0631 M	0.0287 #	0.0464 M	0.325 M		
Phenanthrene	<0.015 mg/kg	TM218	1.63 M	1.1 #	0.96 M	3.45 M		
Anthracene	<0.016 mg/kg	TM218	0.314 M	0.149 #	0.131 M	1.3 M		
Fluoranthene	<0.017 mg/kg	TM218	1.09 M	0.607 #	0.845 M	7.85 M		
Pyrene	<0.015 mg/kg	TM218	0.901 M	0.627 #	0.726 M	6.82 M		
Benz(a)anthracene	<0.014 mg/kg	TM218	0.69 M	0.437 #	0.603 M	4.66 M		
Chrysene	<0.01 mg/kg	TM218	0.555 M	0.424 #	0.631 M	3.98 M		
Benzo(b)fluoranthene	<0.015 mg/kg	TM218	0.764 M	0.539 #	1.07 M	5.87 M		
Benzo(k)fluoranthene	<0.014 mg/kg	TM218	0.298 M	0.129 #	0.351 M	2.27 M		
Benzo(a)pyrene	<0.015 mg/kg	TM218	0.567 M	0.321 #	0.757 M	5.34 M		
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218	0.301 M	0.158 #	0.525 M	2.88 M		
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218	0.105 M	0.0994 #	0.184 M	0.701 M		
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218	0.468 M	0.735 #	0.693 M	3.18 M		
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218	8.51	5.63	8.05	50.7		



CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

PAH Spec MS - Aqueous (W)

CERTIFICATE OF ANALYSIS

SDG:	110426-11
Job:	H_WSP_MAN-34
Client Reference:	21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

PAH Spec MS - Aqueous (W)

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CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

PAH Spec MS - Aqueous (W)

			BH04	BHN2	TP02	TP05	TP13	TPN02
			0.40 Soil/Solid - 21/04/2011 110426-11 3359460	4.00 - 5.00 Soil/Solid - 21/04/2011 110426-11 3359484	1.00 Soil/Solid - 21/04/2011 110426-11 3359397	0.50 Soil/Solid - 21/04/2011 110426-11 3359405	0.90 Soil/Solid - 21/04/2011 110426-11 3359433	3.50 Soil/Solid - 21/04/2011 110426-11 3359456
Naphthalene (aq) NRA leach	<0.1 µg/l	TM178	<0.1	0.195	<0.1	<0.1	<0.1	<0.1
Acenaphthene (aq) NRA leach	<0.015 µg/l	TM178	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
Acenaphthylene (aq) NRA leach	<0.011 µg/l	TM178	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011
Fluoranthene (aq) NRA leach	<0.017 µg/l	TM178	<0.017	0.021	<0.017	<0.017	<0.017	<0.017
Anthracene (aq) NRA leach	<0.015 µg/l	TM178	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
Phenanthrene (aq) NRA leach	<0.022 µg/l	TM178	<0.022	0.0498	<0.022	<0.022	0.0279	<0.022
Fluorene (aq) NRA leach	<0.014 µg/l	TM178	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
Chrysene (aq) NRA leach	<0.013 µg/l	TM178	<0.013	0.0134	<0.013	<0.013	0.0154	<0.013
Pyrene (aq) NRA leach	<0.015 µg/l	TM178	<0.015	0.0172	<0.015	<0.015	<0.015	<0.015
Benzo(a)anthracene (aq) NRA leach	<0.017 µg/l	TM178	<0.017	0.0234	<0.017	<0.017	<0.017	<0.017
Benzo(b)fluoranthene (aq) NRA leach	<0.023 µg/l	TM178	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023
Benzo(k)fluoranthene (aq) NRA leach	<0.027 µg/l	TM178	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027
Benzo(a)pyrene (aq) NRA leach	<0.009 µg/l	TM178	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009
Dibenzo(a,h)anthracene (aq) NRA leach	<0.016 µg/l	TM178	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016
Benzo(g,h,i)perylene (aq) NRA leach	<0.016 µg/l	TM178	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016
Indeno(1,2,3-cd)pyrene (aq) NRA leach	<0.014 µg/l	TM178	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
PAH, Total Detected USEPA 16 (aq) NRA leach	µg/l	TM178	<0.17	0.32	<0.17	<0.17	<0.17	<0.17

SDG:	110426-11
Job:	H_WSP_MAN-34
Client Reference:	21240

Location: Former Acrefair Works
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Order Number: DC/1212/232
Report Number: 132721
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PAH Spec MS - Aqueous (W)

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CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

PAH Spec MS - Aqueous (W)

			TPN04	TPN06				
			0.60 Soil/Solid - 21/04/2011 110426-11 3359461	3.70 Soil/Solid - 21/04/2011 110426-11 3359478				
Naphthalene (aq) NRA leach	<0.1 µg/l	TM178	<0.1	<0.1				
Acenaphthene (aq) NRA leach	<0.015 µg/l	TM178	<0.015	0.0189				
Acenaphthylene (aq) NRA leach	<0.011 µg/l	TM178	<0.011	<0.011				
Fluoranthene (aq) NRA leach	<0.017 µg/l	TM178	<0.017	0.208				
Anthracene (aq) NRA leach	<0.015 µg/l	TM178	<0.015	0.0269				
Phenanthrene (aq) NRA leach	<0.022 µg/l	TM178	<0.022	0.0577				
Fluorene (aq) NRA leach	<0.014 µg/l	TM178	<0.014	<0.014				
Chrysene (aq) NRA leach	<0.013 µg/l	TM178	<0.013	0.0478				
Pyrene (aq) NRA leach	<0.015 µg/l	TM178	<0.015	0.212				
Benzo(a)anthracene (aq) NRA leach	<0.017 µg/l	TM178	<0.017	0.0256				
Benzo(b)fluoranthene (aq) NRA leach	<0.023 µg/l	TM178	<0.023	<0.023				
Benzo(k)fluoranthene (aq) NRA leach	<0.027 µg/l	TM178	<0.027	<0.027				
Benzo(a)pyrene (aq) NRA leach	<0.009 µg/l	TM178	<0.009	0.0121				
Dibenzo(a,h)anthracene (aq) NRA leach	<0.016 µg/l	TM178	<0.016	<0.016				
Benzo(g,h,i)perylene (aq) NRA leach	<0.016 µg/l	TM178	<0.016	<0.016				
Indeno(1,2,3-cd)pyrene (aq) NRA leach	<0.014 µg/l	TM178	<0.014	<0.014				
PAH, Total Detected USEPA 16 (aq) NRA leach	µg/l	TM178	<0.17	0.609				



CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

Semi Volatile Organic Compounds

SDG:	110426-11
Job:	H_WSP_MAN-34
Client Reference:	21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

Semi Volatile Organic Compounds

[illegible]



CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

Semi Volatile Organic Compounds

			TP05	TP09	TP12	TP13		
			0.50 Soil/Solid - 21/04/2011 110426-11 3359405	0.50 Soil/Solid - 21/04/2011 110426-11 3359418	1.50 Soil/Solid - 21/04/2011 110426-11 3359431	0.90 Soil/Solid - 21/04/2011 110426-11 3359433		
Phenol	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1		
Pentachlorophenol	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1		
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1		
Nitrobenzene	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1		
Isophorone	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1		
Hexachloroethane	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1		
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1		
Hexachlorobutadiene	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1		
Hexachlorobenzene	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1		
n-Dioctyl phthalate	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1		
Dimethyl phthalate	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1		
Diethyl phthalate	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1		
n-Dibutyl phthalate	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1		
Dibenzofuran	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	0.367		
Carbazole	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	0.248		
Butylbenzyl phthalate	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1		
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1		
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1		
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1		
Azobenzene	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1		
4-Nitrophenol	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1		
4-Nitroaniline	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1		
4-Methylphenol	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1		
4-Chlorophenylphenylether	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1		
4-Chloroaniline	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1		
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1		
4-Bromophenylphenylether	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1		
3-Nitroaniline	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1		
2-Nitrophenol	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1		
2-Nitroaniline	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1		
2-Methylphenol	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1		
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1		



CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

			TP05	TP09	TP12	TP13
			0.50 Soil/Solid - 21/04/2011 110426-11 3359405	0.50 Soil/Solid - 21/04/2011 110426-11 3359418	1.50 Soil/Solid - 21/04/2011 110426-11 3359431	0.90 Soil/Solid - 21/04/2011 110426-11 3359433
2-Chlorophenol	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1
2,6-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1
2,4-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1
2,4-Dimethylphenol	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1
2,4-Dichlorophenol	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1
1,4-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1
1,3-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1
1,2-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1
2-Chloronaphthalene	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1
2-Methylnaphthalene	<0.1 mg/kg	TM157	<0.1	<0.1	0.191	0.953
Acenaphthylene	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1
Acenaphthene	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	0.149
Anthracene	<0.1 mg/kg	TM157	<0.1	<0.1	0.181	0.67
Benzo(a)anthracene	<0.1 mg/kg	TM157	<0.1	<0.1	1.09	1.45
Benzo(b)fluoranthene	<0.1 mg/kg	TM157	<0.1	<0.1	0.88	1.25
Benzo(k)fluoranthene	<0.1 mg/kg	TM157	<0.1	<0.1	0.901	0.984
Benzo(a)pyrene	<0.1 mg/kg	TM157	<0.1	<0.1	1.29	1.58
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157	<0.1	<0.1	0.516	0.697
Chrysene	<0.1 mg/kg	TM157	<0.1	<0.1	1.17	1.62
Fluoranthene	<0.1 mg/kg	TM157	<0.1	0.2	2.35	3.23
Fluorene	<0.1 mg/kg	TM157	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157	<0.1	<0.1	0.551	0.665
Phenanthrene	<0.1 mg/kg	TM157	<0.1	0.241	0.835	2.27
Pyrene	<0.1 mg/kg	TM157	<0.1	0.141	2.03	2.71
Naphthalene	<0.1 mg/kg	TM157	<0.1	<0.1	0.129	0.864
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157	<0.1	<0.1	0.14	0.151



CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

TPH CWG (S)

SDG:	110426-11
Job:	H_WSP_MAN-34
Client Reference:	21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

TPH CWG (S)[illegible]



CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

TPH CWG (S)

			BH02	BH02	BH04	BH06	BH06	BHN01
			1.00 Soil/Solid - 21/04/2011 110426-11 3359369	5.00 Soil/Solid - 21/04/2011 110426-11 3359409	0.40 Soil/Solid - 21/04/2011 110426-11 3359460	1.20 Soil/Solid - 21/04/2011 110426-11 3359376	5.00 Soil/Solid - 21/04/2011 110426-11 3359381	0.50 Soil/Solid - 21/04/2011 110426-11 3359386
GRO Surrogate % recovery**	%	TM089	113	86	66	82	95	50
GRO >C5-C12	<0.044 mg/kg	TM089	<0.044	<0.044	<0.044	<0.044	<0.044	<0.044
Methyl tertiary butyl ether (MTBE)	<0.005 mg/kg	TM089	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Benzene	<0.01 mg/kg	TM089	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Toluene	<0.002 mg/kg	TM089	0.0075 M	0.0046 M	0.00342 M	0.0072 M	0.00984 M	<0.002 M
Ethylbenzene	<0.003 mg/kg	TM089	0.00643 M	0.0046 M	0.00342 M	0.0072 M	0.0111 M	<0.003 M
m,p-Xylene	<0.006 mg/kg	TM089	<0.006 M	<0.006 M	<0.006 M	<0.006 M	<0.006 M	<0.006 M
o-Xylene	<0.003 mg/kg	TM089	<0.003 M	<0.003 M	<0.003 M	<0.003 M	<0.003 M	<0.003 M
m,p,o-Xylene	mg/kg	TM089	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
BTEX, Total	mg/kg	TM089	0.0139	<0.01	<0.01	0.0144	0.0209	<0.01
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C10-C12	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C12-C16	<0.1 mg/kg	TM173	0.339	16.5	25.8	7.53	46.4	4.8
Aliphatics >C16-C21	<0.1 mg/kg	TM173	0.689	12.8	13.1	7.01	56.8	5.61
Aliphatics >C21-C35	<0.1 mg/kg	TM173	<0.1	11.4	10	24	21.1	13.1
Aliphatics >C35-C44	<0.1 mg/kg	TM173	<0.1	0.936	0.941	<0.1	1	0.367
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173	1.03	41.6	49.8	38.6	125	23.9
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	0.0139	<0.01	<0.01	0.0156	0.0185	<0.01
Aromatics >EC10-EC12	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC12-EC16	<0.1 mg/kg	TM173	0.538	23.9	32.8	8.82	56.3	11.8
Aromatics >EC16-EC21	<0.1 mg/kg	TM173	0.692	21.7	10.9	13	49.5	13.1
Aromatics >EC21-EC35	<0.1 mg/kg	TM173	7.88	43.6	13.3	31.4	58.6	34.3
Aromatics >EC35-EC44	<0.1 mg/kg	TM173	1.86	8.56	3.08	6.47	3.87	7.88
Aromatics >EC40-EC44	<0.1 mg/kg	TM173	0.656	3.17	1.16	2.03	3.48	1.94
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173	11	97.7	60	59.7	168	67
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173	12	139	110	98.3	294	90.9
Total Aliphatics >C5-35	<0.1 mg/kg	TM173	1.03	40.7	48.8	38.6	124	23.5
Total Aromatics >C5-35	<0.1 mg/kg	TM173	9.13	89.2	57	53.2	164	59.1



CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

			BH02	BH02	BH04	BH06	BH06	BHN01
			1.00 Soil/Solid - 21/04/2011 110426-11 3359369	5.00 Soil/Solid - 21/04/2011 110426-11 3359409	0.40 Soil/Solid - 21/04/2011 110426-11 3359460	1.20 Soil/Solid - 21/04/2011 110426-11 3359376	5.00 Soil/Solid - 21/04/2011 110426-11 3359381	0.50 Soil/Solid - 21/04/2011 110426-11 3359386
Total Aliphatics & Aromatics >C5-35	<0.1 mg/kg	TM173	10.2	130	106	91.8	289	82.6

Order Number: DC/1212/232
Report Number: 132721
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CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

TPH CWG (S)

			BHN03	BHN03	TP01	TP02	TP03	TP04
			0.50 Soil/Solid 21/04/2011 110426-11 3359392	2.50 Soil/Solid 21/04/2011 110426-11 3359394	0.40 Soil/Solid 21/04/2011 110426-11 3359395	1.00 Soil/Solid 21/04/2011 110426-11 3359397	1.00 Soil/Solid 21/04/2011 110426-11 3359401	0.50 Soil/Solid 21/04/2011 110426-11 3359403
GRO Surrogate % recovery**	%	TM089	100	92	121	78	84	48
GRO >C5-C12	<0.044 mg/kg	TM089	<0.044	<0.044	<0.044	0.0825	<0.044	<0.044
Methyl tertiary butyl ether (MTBE)	<0.005 mg/kg	TM089	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Benzene	<0.01 mg/kg	TM089	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Toluene	<0.002 mg/kg	TM089	0.00326 M	0.00532 M	<0.002 M	0.0088 M	0.00236 M	0.00226 M
Ethylbenzene	<0.003 mg/kg	TM089	<0.003 M	0.00319 M	<0.003 M	0.0066 M	<0.003 M	0.00678 M
m,p-Xylene	<0.006 mg/kg	TM089	<0.006 M	<0.006 M	<0.006 M	0.0077 M	<0.006 M	0.00678 M
o-Xylene	<0.003 mg/kg	TM089	<0.003 M	<0.003 M	<0.003 M	0.0044 M	<0.003 M	<0.003 M
m,p,o-Xylene	mg/kg	TM089	<0.01	<0.01	<0.01	0.0121	<0.01	<0.01
BTEX, Total	mg/kg	TM089	<0.01	<0.01	<0.01	0.0275	<0.01	0.0158
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	0.0264	<0.01	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C10-C12	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	0.0132	<0.01	<0.01
Aliphatics >C12-C16	<0.1 mg/kg	TM173	20.7	14	12.9	14.7	14.2	21.5
Aliphatics >C16-C21	<0.1 mg/kg	TM173	12.5	10.2	8.06	18.4	14.1	18.4
Aliphatics >C21-C35	<0.1 mg/kg	TM173	<0.1	16	34.6	22.7	38.2	20.7
Aliphatics >C35-C44	<0.1 mg/kg	TM173	<0.1	2.73	2.18	1.4	6.02	1.17
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173	33.2	43	57.7	57.2	72.6	61.8
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	0.0198	<0.01	0.0158
Aromatics >EC10-EC12	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC12-EC16	<0.1 mg/kg	TM173	25	18.8	15.9	20.6	21.2	27.9
Aromatics >EC16-EC21	<0.1 mg/kg	TM173	12.1	19.7	7.92	14.8	20.6	24.3
Aromatics >EC21-EC35	<0.1 mg/kg	TM173	17.7	32.5	24	27.2	64.6	48.6
Aromatics >EC35-EC44	<0.1 mg/kg	TM173	4.46	5.82	9.11	8.38	25.9	9.27
Aromatics >EC40-EC44	<0.1 mg/kg	TM173	1.53	1.34	2.92	2.7	9.53	2.03
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173	59.2	76.8	56.9	70.9	132	110
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173	92.4	120	115	128	205	172
Total Aliphatics >C5-35	<0.1 mg/kg	TM173	33.2	40.3	55.6	55.8	66.6	60.6
Total Aromatics >C5-35	<0.1 mg/kg	TM173	54.7	71	47.8	62.6	106	101



CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

			BHN03	BHN03	TP01	TP02	TP03	TP04
			0.50 Soil/Solid - 21/04/2011 110426-11 3359392	2.50 Soil/Solid - 21/04/2011 110426-11 3359394	0.40 Soil/Solid - 21/04/2011 110426-11 3359395	1.00 Soil/Solid - 21/04/2011 110426-11 3359397	1.00 Soil/Solid - 21/04/2011 110426-11 3359401	0.50 Soil/Solid - 21/04/2011 110426-11 3359403
Total Aliphatics & Aromatics >C5-35	<0.1 mg/kg	TM173	87.9	111	103	118	173	161

CERTIFICATE OF ANALYSIS

SDG:	110426-11
Job:	H_WSP_MAN-34
Client Reference:	21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

TPH CWG (S)[illegible]



CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

TPH CWG (S)

			TP05	TP05	TP06	TP07	TP08	TP08
			0.50 Soil/Solid 21/04/2011 110426-11 3359405	4.20 Soil/Solid 21/04/2011 110426-11 3359408	0.50 Soil/Solid 21/04/2011 110426-11 3359410	0.50 Soil/Solid 21/04/2011 110426-11 3359413	0.50 Soil/Solid 21/04/2011 110426-11 3359415	1.70 Soil/Solid 21/04/2011 110426-11 3359417
GRO Surrogate % recovery**	%	TM089	108	72	72	74	34	125
GRO >C5-C12	<0.044 mg/kg	TM089	<0.044	<0.044	<0.044	<0.088	19.1	0.256
Methyl tertiary butyl ether (MTBE)	<0.005 mg/kg	TM089	<0.005 #	<0.005 #	<0.005 #	<0.01 #	<0.005 #	<0.005 #
Benzene	<0.01 mg/kg	TM089	<0.01 M	<0.01 M	<0.01 M	<0.02 M	<0.01 M	<0.01 M
Toluene	<0.002 mg/kg	TM089	0.00328 M	0.00875 M	<0.002 M	0.0319 M	0.00464 M	0.00234 M
Ethylbenzene	<0.003 mg/kg	TM089	0.00656 M	0.00766 M	<0.003 M	0.0251 M	<0.003 M	<0.003 M
m,p-Xylene	<0.006 mg/kg	TM089	<0.006 M	<0.006 M	<0.006 M	0.0228 M	0.0812 M	<0.006 M
o-Xylene	<0.003 mg/kg	TM089	<0.003 M	<0.003 M	<0.003 M	<0.006 M	<0.003 M	<0.003 M
m,p,o-Xylene	mg/kg	TM089	<0.01	<0.01	<0.01	0.0228	0.0812	<0.01
BTEX, Total	mg/kg	TM089	<0.01	0.0164	<0.01	0.0798	0.0858	<0.01
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.02	0.155	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.02	4.25	<0.01
Aliphatics >C10-C12	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.02	7.08	0.138
Aliphatics >C12-C16	<0.1 mg/kg	TM173	2.81	3.61	0.615	6.61	289	5.78
Aliphatics >C16-C21	<0.1 mg/kg	TM173	2.83	3.11	0.774	5.67	985	6.21
Aliphatics >C21-C35	<0.1 mg/kg	TM173	<0.1	<0.1	0.7	11.4	477	11.4
Aliphatics >C35-C44	<0.1 mg/kg	TM173	<0.1	<0.1	<0.1	<0.1	20.7	1.17
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173	5.64	6.72	2.09	23.6	1770	24.5
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	0.0319	<0.01	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	0.0131	0.012	<0.01	0.0536	2.91	0.0129
Aromatics >EC10-EC12	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.02	4.72	0.0924
Aromatics >EC12-EC16	<0.1 mg/kg	TM173	7.18	8.66	1.55	4.94	164	15.9
Aromatics >EC16-EC21	<0.1 mg/kg	TM173	5.59	5.75	3.09	3.25	397	5.49
Aromatics >EC21-EC35	<0.1 mg/kg	TM173	14	12	7.55	<0.1	205	10.4
Aromatics >EC35-EC44	<0.1 mg/kg	TM173	3.76	0.543	2.25	<0.1	12.5	2.68
Aromatics >EC40-EC44	<0.1 mg/kg	TM173	0.824	0.236	0.692	<0.1	2.97	1.02
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173	30.6	26.9	14.4	8.19	778	34.4
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173	36.2	33.7	16.5	31.9	2570	59.2
Total Aliphatics >C5-35	<0.1 mg/kg	TM173	5.64	6.72	2.09	23.6	1760	23.5
Total Aromatics >C5-35	<0.1 mg/kg	TM173	26.8	26.4	12.2	8.28	773	31.9



CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

			TP05	TP05	TP06	TP07	TP08	TP08
			0.50 Soil/Solid - 21/04/2011 110426-11 3359405	4.20 Soil/Solid - 21/04/2011 110426-11 3359408	0.50 Soil/Solid - 21/04/2011 110426-11 3359410	0.50 Soil/Solid - 21/04/2011 110426-11 3359413	0.50 Soil/Solid - 21/04/2011 110426-11 3359415	1.70 Soil/Solid - 21/04/2011 110426-11 3359417
Total Aliphatics & Aromatics >C5-35	<0.1 mg/kg	TM173	32.5	33.1	14.3	31.9	2540	55.4

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SDG: 110426-11
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TPH CWG (S)

			TP09	TP10	TP10	TP11	TP12	TP13
			0.50 Soil/Solid - 21/04/2011 110426-11 3359418	0.50 Soil/Solid - 21/04/2011 110426-11 3359420	4.00 Soil/Solid - 21/04/2011 110426-11 3359427	0.40 Soil/Solid - 21/04/2011 110426-11 3359428	1.50 Soil/Solid - 21/04/2011 110426-11 3359431	0.90 Soil/Solid - 21/04/2011 110426-11 3359433
GRO Surrogate % recovery**	%	TM089	88	116	130	48	58	38
GRO >C5-C12	<0.044 mg/kg	TM089	0.0638	<0.044	<0.044	0.0893	<0.044	<0.044
Methyl tertiary butyl ether (MTBE)	<0.005 mg/kg	TM089	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Benzene	<0.01 mg/kg	TM089	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Toluene	<0.002 mg/kg	TM089	<0.002 M	0.00212 M	0.00529 M	0.00744 M	0.00452 M	0.0124 M
Ethylbenzene	<0.003 mg/kg	TM089	<0.003 M	<0.003 M	0.00423 M	0.00744 M	0.00339 M	0.00565 M
m,p-Xylene	<0.006 mg/kg	TM089	<0.006 M	<0.006 M	<0.006 M	<0.006 M	<0.006 M	0.00904 M
o-Xylene	<0.003 mg/kg	TM089	<0.003 M	0.00423 M	<0.003 M	<0.003 M	<0.003 M	0.00339 M
m,p,o-Xylene	mg/kg	TM089	<0.01	<0.01	<0.01	<0.01	<0.01	0.0124
BTEX, Total	mg/kg	TM089	<0.01	<0.01	<0.01	0.0149	<0.01	0.0305
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089	0.0128	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C10-C12	<0.01 mg/kg	TM089	0.0162	<0.01	<0.01	0.026	<0.01	<0.01
Aliphatics >C12-C16	<0.1 mg/kg	TM173	12.3	2	<0.1	6.96	6.54	5.93
Aliphatics >C16-C21	<0.1 mg/kg	TM173	26.5	2.81	<0.1	9.94	10.8	12.4
Aliphatics >C21-C35	<0.1 mg/kg	TM173	49.7	8.88	<0.1	29.7	33.3	59.4
Aliphatics >C35-C44	<0.1 mg/kg	TM173	8.94	1.16	<0.1	4.53	0.987	6.73
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173	97.4	14.8	<0.1	51.1	51.6	84.4
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.01	<0.01	0.0124
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	0.0128	<0.01	0.0106	0.0198	<0.01	0.0181
Aromatics >EC10-EC12	<0.01 mg/kg	TM089	0.0104	<0.01	<0.01	0.0174	<0.01	<0.01
Aromatics >EC12-EC16	<0.1 mg/kg	TM173	31.5	4.23	<0.1	17.8	8.34	12
Aromatics >EC16-EC21	<0.1 mg/kg	TM173	60.1	2.97	<0.1	13.6	28.9	28.9
Aromatics >EC21-EC35	<0.1 mg/kg	TM173	88	9.71	<0.1	38	85.2	101
Aromatics >EC35-EC44	<0.1 mg/kg	TM173	18.1	5.73	<0.1	10.7	21.7	31.3
Aromatics >EC40-EC44	<0.1 mg/kg	TM173	5.34	2.62	<0.1	3.96	6.9	10.5
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173	198	22.6	<0.1	80.1	144	173
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173	295	37.5	<0.1	131	196	258
Total Aliphatics >C5-35	<0.1 mg/kg	TM173	88.5	13.7	<0.1	46.7	50.6	77.7
Total Aromatics >C5-35	<0.1 mg/kg	TM173	180	16.9	<0.1	69.4	122	142



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SDG: 110426-11
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Client Reference: 21240

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Attention: Christopher Kennedy

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Report Number: 132721
Superseded Report: 129842

			TP09	TP10	TP10	TP11	TP12	TP13
			0.50 Soil/Solid - 21/04/2011 110426-11 3359418	0.50 Soil/Solid - 21/04/2011 110426-11 3359420	4.00 Soil/Solid - 21/04/2011 110426-11 3359427	0.40 Soil/Solid - 21/04/2011 110426-11 3359428	1.50 Soil/Solid - 21/04/2011 110426-11 3359431	0.90 Soil/Solid - 21/04/2011 110426-11 3359433
Total Aliphatics & Aromatics >C5-35	<0.1 mg/kg	TM173	268	30.6	<0.1	116	173	219

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Order Number: DC/1212/232
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TPH CWG (S)[illegible]



CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

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Attention: Christopher Kennedy

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TPH CWG (S)

			TP13	TP14	TP15	TP17	TPN01	TPN02
			3.40 Soil/Solid 21/04/2011 110426-11 3359436	1.20 Soil/Solid 21/04/2011 110426-11 3359439	0.50 Soil/Solid 21/04/2011 110426-11 3359441	0.70 Soil/Solid 21/04/2011 110426-11 3359446	1.00 Soil/Solid 21/04/2011 110426-11 3359450	3.50 Soil/Solid 21/04/2011 110426-11 3359456
GRO Surrogate % recovery**	%	TM089	48	23	39	39	68	72
GRO >C5-C12	<0.044 mg/kg	TM089	<0.044	<0.044	<0.044	<0.044	0.112	<0.088
Methyl tertiary butyl ether (MTBE)	<0.005 mg/kg	TM089	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.01 #	<0.01 #
Benzene	<0.01 mg/kg	TM089	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.02 M	<0.02 M
Toluene	<0.002 mg/kg	TM089	0.0127 M	0.00656 M	0.0125 M	0.00696 M	0.0425 M	0.0162 M
Ethylbenzene	<0.003 mg/kg	TM089	0.00575 M	0.00328 M	0.00912 M	0.00464 M	0.0354 M	0.0139 M
m,p-Xylene	<0.006 mg/kg	TM089	0.00805 M	0.00874 M	<0.006 M	<0.006 M	0.0212 M	<0.012 M
o-Xylene	<0.003 mg/kg	TM089	0.00345 M	0.00437 M	<0.003 M	0.00348 M	0.00826 M	<0.006 M
m,p,o-Xylene	mg/kg	TM089	0.0115	0.0131	<0.01	<0.01	0.0295	<0.01
BTEX, Total	mg/kg	TM089	0.0299	0.023	0.0217	0.0151	0.107	0.0302
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02
Aliphatics >C6-C8	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02
Aliphatics >C8-C10	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02
Aliphatics >C10-C12	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02
Aliphatics >C12-C16	<0.1 mg/kg	TM173	13.6	39.3	11.9	6.44	4.89	8
Aliphatics >C16-C21	<0.1 mg/kg	TM173	71.1	32.4	15.9	8.86	3.83	5.91
Aliphatics >C21-C35	<0.1 mg/kg	TM173	309	47.3	44.7	30	17.9	9.44
Aliphatics >C35-C44	<0.1 mg/kg	TM173	65.7	4.48	3.49	1.65	4.72	1.17
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173	459	123	76	47	31.4	24.5
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	0.0127	<0.01	0.0125	<0.01	0.0425	<0.02
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	0.0173	0.0153	0.016	0.0139	0.0649	0.0267
Aromatics >EC10-EC12	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02
Aromatics >EC12-EC16	<0.1 mg/kg	TM173	16.7	71.9	33.9	10.2	14.9	14.2
Aromatics >EC16-EC21	<0.1 mg/kg	TM173	108	57.7	108	20.1	9.11	11
Aromatics >EC21-EC35	<0.1 mg/kg	TM173	541	112	222	63	26.4	22.1
Aromatics >EC35-EC44	<0.1 mg/kg	TM173	199	18.2	50.5	11.8	6.54	4.35
Aromatics >EC40-EC44	<0.1 mg/kg	TM173	75.7	4.28	15.7	2.69	1.51	1.47
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173	865	260	414	105	56.9	51.7
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173	1320	383	490	152	88.4	76.2
Total Aliphatics >C5-35	<0.1 mg/kg	TM173	394	119	72.5	45.3	26.6	23.4
Total Aromatics >C5-35	<0.1 mg/kg	TM173	666	242	364	93.3	50.5	47.4



CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

Location: Former Acrefair Works
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Report Number: 132721
Superseded Report: 129842

			TP13	TP14	TP15	TP17	TPN01	TPN02
			3.40 Soil/Solid - 21/04/2011 110426-11 3359436	1.20 Soil/Solid - 21/04/2011 110426-11 3359439	0.50 Soil/Solid - 21/04/2011 110426-11 3359441	0.70 Soil/Solid - 21/04/2011 110426-11 3359446	1.00 Soil/Solid - 21/04/2011 110426-11 3359450	3.50 Soil/Solid - 21/04/2011 110426-11 3359456
Total Aliphatics & Aromatics >C5-35	<0.1 mg/kg	TM173	1060	361	436	139	77.1	70.7

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TPH CWG (S)

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CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

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TPH CWG (S)

			TPN2	TPN04	TPN05	TPN06	TPN06
			0.50 Soil/Solid - 21/04/2011 110426-11 3588530	0.60 Soil/Solid - 21/04/2011 110426-11 3359461	0.50 Soil/Solid - 21/04/2011 110426-11 3359465	0.50 Soil/Solid - 21/04/2011 110426-11 3359470	3.70 Soil/Solid - 21/04/2011 110426-11 3359478
GRO Surrogate % recovery**	%	TM089	42	45	47	59	43
GRO >C5-C12	<0.044 mg/kg	TM089	0.0515	<0.044	<0.044	0.0515	0.122
Methyl tertiary butyl ether (MTBE)	<0.005 mg/kg	TM089	<0.005	<0.005	<0.005	<0.005	<0.005
Benzene	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.01	<0.01
Toluene	<0.002 mg/kg	TM089	0.014	0.0103	0.0109	0.00702	0.00268
Ethylbenzene	<0.003 mg/kg	TM089	0.0117	0.00912	0.00874	0.00351	<0.003
m,p-Xylene	<0.006 mg/kg	TM089	0.00702	<0.006	<0.006	<0.006	<0.006
o-Xylene	<0.003 mg/kg	TM089	<0.003	<0.003	<0.003	<0.003	<0.003
m,p,o-Xylene	mg/kg	TM089	<0.01	<0.01	<0.01	<0.01	<0.01
BTEX, Total	mg/kg	TM089	0.0328	0.0194	0.0197	0.0105	<0.01
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.01	0.0161
Aliphatics >C8-C10	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.01	0.0201
Aliphatics >C10-C12	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.01	0.0348
Aliphatics >C12-C16	<0.1 mg/kg	TM173	13.3	24.1	21.3	10.6	9.9
Aliphatics >C16-C21	<0.1 mg/kg	TM173	32	18.1	17.7	20.8	24.6
Aliphatics >C21-C35	<0.1 mg/kg	TM173	89.2	33.4	28.6	82.2	96.1
Aliphatics >C35-C44	<0.1 mg/kg	TM173	16.9	10.6	4.53	17.8	34.9
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173	151	86.2	72.1	131	166
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	0.014	0.0103	0.0109	<0.01	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	0.0234	0.0171	0.0153	0.0129	0.0161
Aromatics >EC10-EC12	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.01	0.0228
Aromatics >EC12-EC16	<0.1 mg/kg	TM173	75.9	38.8	21.5	9.35	19.2
Aromatics >EC16-EC21	<0.1 mg/kg	TM173	350	51.4	37.1	17.1	88.7
Aromatics >EC21-EC35	<0.1 mg/kg	TM173	604	119	90.4	80.7	264
Aromatics >EC35-EC44	<0.1 mg/kg	TM173	120	38.5	23	29.2	82
Aromatics >EC40-EC44	<0.1 mg/kg	TM173	35.7	15.9	8.44	10.5	29.8
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173	1150	247	172	136	454
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173	1300	334	244	268	620
Total Aliphatics >C5-35	<0.1 mg/kg	TM173	134	75.6	67.5	114	131
Total Aromatics >C5-35	<0.1 mg/kg	TM173	1030	209	149	107	372



CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

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			TPN2	TPN04	TPN05	TPN06	TPN06
			0.50 Soil/Solid - 21/04/2011 110426-11 3588530	0.60 Soil/Solid - 21/04/2011 110426-11 3359461	0.50 Soil/Solid - 21/04/2011 110426-11 3359465	0.50 Soil/Solid - 21/04/2011 110426-11 3359470	3.70 Soil/Solid - 21/04/2011 110426-11 3359478
Total Aliphatics & Aromatics >C5-35	<0.1 mg/kg	TM173	1160	284	217	221	503



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Client Reference: 21240

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Attention: Christopher Kennedy

Order Number: DC/1212/232
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TPH CWG (W)

CERTIFICATE OF ANALYSIS

SDG:	110426-11
Job:	H_WSP_MAN-34
Client Reference:	21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

TPH CWG (W)[illegible]



CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
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TPH CWG (W)

			BH04	TP02	TP05	TP13	TPN02	TPN04
			0.40 Soil/Solid - 21/04/2011 110426-11 3359460	1.00 Soil/Solid - 21/04/2011 110426-11 3359397	0.50 Soil/Solid - 21/04/2011 110426-11 3359405	0.90 Soil/Solid - 21/04/2011 110426-11 3359433	3.50 Soil/Solid - 21/04/2011 110426-11 3359456	0.60 Soil/Solid - 21/04/2011 110426-11 3359461
GRO Surrogate % recovery** NRA leach	%	TM245	100	102	100	102	100	99
GRO >C5-C12 NRA leach	<50 µg/l	TM245	<50	<50	<50	<50	<50	<50
Methyl tertiary butyl ether (MTBE) NRA leach	<3 µg/l	TM245	<3	<3	<3	<3	<3	<3
Benzene NRA leach	<7 µg/l	TM245	<7	<7	<7	<7	<7	<7
Toluene NRA leach	<4 µg/l	TM245	<4	<4	<4	<4	<4	<4
Ethylbenzene NRA leach	<5 µg/l	TM245	<5	<5	<5	<5	<5	<5
m,p-Xylene NRA leach	<8 µg/l	TM245	<8	<8	<8	<8	<8	<8
o-Xylene NRA leach	<3 µg/l	TM245	<3	<3	<3	<3	<3	<3
m,p,o-Xylene NRA leach	µg/l	TM245	<10	<10	<10	<10	<10	<10
BTEX, Total NRA leach	µg/l	TM245	<10	<10	<10	<10	<10	<10
Aliphatics >C5-C6 NRA leach	<10 µg/l	TM245	<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8 NRA leach	<10 µg/l	TM245	<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10 NRA leach	<10 µg/l	TM245	<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12 NRA leach	<10 µg/l	TM245	<10	<10	<10	<10	<10	<10
Aromatics >EC5-EC7 NRA leach	<10 µg/l	TM245	<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8 NRA leach	<10 µg/l	TM245	<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10 NRA leach	<10 µg/l	TM245	<10	<10	<10	<10	<10	<10
Aromatics >EC10-EC12 NRA leach	<10 µg/l	TM245	<10	<10	<10	<10	<10	<10

CERTIFICATE OF ANALYSIS

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Order Number: DC/1212/232
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TPH CWG (W)[illegible]



CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

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Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

TPH CWG (W)

			TPN06					
			3.70 Soil/Solid - 21/04/2011 110426-11 3359478					
GRO Surrogate % recovery** NRA leach	%	TM245	98					
GRO >C5-C12 NRA leach	<50 µg/l	TM245	<50					
Methyl tertiary butyl ether (MTBE) NRA leach	<3 µg/l	TM245	<3					
Benzene NRA leach	<7 µg/l	TM245	<7					
Toluene NRA leach	<4 µg/l	TM245	<4					
Ethylbenzene NRA leach	<5 µg/l	TM245	<5					
m,p-Xylene NRA leach	<8 µg/l	TM245	<8					
o-Xylene NRA leach	<3 µg/l	TM245	<3					
m,p,o-Xylene NRA leach	µg/l	TM245	<10					
BTEX, Total NRA leach	µg/l	TM245	<10					
Aliphatics >C5-C6 NRA leach	<10 µg/l	TM245	<10					
Aliphatics >C6-C8 NRA leach	<10 µg/l	TM245	<10					
Aliphatics >C8-C10 NRA leach	<10 µg/l	TM245	<10					
Aliphatics >C10-C12 NRA leach	<10 µg/l	TM245	<10					
Aromatics >EC5-EC7 NRA leach	<10 µg/l	TM245	<10					
Aromatics >EC7-EC8 NRA leach	<10 µg/l	TM245	<10					
Aromatics >EC8-EC10 NRA leach	<10 µg/l	TM245	<10					
Aromatics >EC10-EC12 NRA leach	<10 µg/l	TM245	<10					



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VOC MS (S)

CERTIFICATE OF ANALYSIS

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Job:	H_WSP_MAN-34
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VOC MS (S)

[illegible]



CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

Location: Former Acrefair Works
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Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

VOC MS (S)

			TP05	TP09	TP12	TP13		
			0.50 Soil/Solid - 21/04/2011 110426-11 3359405	0.50 Soil/Solid - 21/04/2011 110426-11 3359418	1.50 Soil/Solid - 21/04/2011 110426-11 3359431	0.90 Soil/Solid - 21/04/2011 110426-11 3359433		
Dibromofluoromethane**	%	TM116	100	74	22.7	51.9		
Toluene-d8**	%	TM116	105	97.2	94.4	88.5		
4-Bromofluorobenzene**	%	TM116	110	130	143	153		
Dichlorodifluoromethane	<0.004 mg/kg	TM116	<0.004 M	<0.004 M	<0.004 M	<0.004 M		
Chloromethane	<0.007 mg/kg	TM116	<0.007 #	<0.007 #	<0.007 #	<0.007 #		
Vinyl Chloride	<0.01 mg/kg	TM116	<0.01 #	<0.01 #	<0.01 #	<0.01 #		
Bromomethane	<0.013 mg/kg	TM116	<0.013 M	<0.013 M	<0.013 M	<0.013 M		
Chloroethane	<0.014 mg/kg	TM116	<0.014 M	<0.014 M	<0.014 M	<0.014 M		
Trichlorofluoromethane	<0.006 mg/kg	TM116	<0.006 M	<0.006 M	<0.006 M	<0.006 M		
1,1-Dichloroethene	<0.01 mg/kg	TM116	<0.01 #	<0.01 #	<0.01 #	<0.01 #		
Carbon Disulphide	<0.007 mg/kg	TM116	<0.007 M	<0.007 M	<0.007 M	0.017 M		
Dichloromethane	<0.01 mg/kg	TM116	<0.01 #	<0.01 #	<0.01 #	<0.01 #		
Methyl Tertiary Butyl Ether	<0.011 mg/kg	TM116	<0.011 M	<0.011 M	<0.011 M	<0.011 M		
trans-1-2-Dichloroethene	<0.011 mg/kg	TM116	<0.011 M	<0.011 M	<0.011 M	<0.011 M		
1,1-Dichloroethane	<0.008 mg/kg	TM116	<0.008 M	<0.008 M	<0.008 M	<0.008 M		
cis-1-2-Dichloroethene	<0.005 mg/kg	TM116	<0.005 M	<0.005 M	<0.005 M	<0.005 M		
2,2-Dichloropropane	<0.012 mg/kg	TM116	<0.012 M	<0.012 M	<0.012 M	<0.012 M		
Bromochloromethane	<0.014 mg/kg	TM116	<0.014 M	<0.014 M	<0.014 M	<0.014 M		
Chloroform	<0.008 mg/kg	TM116	<0.008 M	<0.008 M	<0.008 M	<0.008 M		
1,1,1-Trichloroethane	<0.007 mg/kg	TM116	<0.007 M	<0.007 M	0.0306 M	<0.007 M		
1,1-Dichloropropene	<0.011 mg/kg	TM116	<0.011 M	<0.011 M	<0.011 M	<0.011 M		
Carbontetrachloride	<0.014 mg/kg	TM116	<0.014 M	<0.014 M	<0.014 M	<0.014 M		
1,2-Dichloroethane	<0.005 mg/kg	TM116	<0.005 M	<0.005 M	<0.005 M	<0.005 M		
Benzene	<0.009 mg/kg	TM116	<0.009 M	<0.009 M	<0.009 M	0.0204 M		
Trichloroethene	<0.009 mg/kg	TM116	0.0536 M	0.0211 M	0.783 M	0.0327 M		
1,2-Dichloropropane	<0.012 mg/kg	TM116	<0.012 M	<0.012 M	<0.012 M	<0.012 M		
Dibromomethane	<0.009 mg/kg	TM116	<0.009 M	<0.009 M	<0.009 M	<0.009 M		
Bromodichloromethane	<0.007 mg/kg	TM116	<0.007 M	<0.007 M	<0.007 M	<0.007 M		
cis-1-3-Dichloropropene	<0.014 mg/kg	TM116	<0.014 M	<0.014 M	<0.014 M	<0.014 M		
Toluene	<0.005 mg/kg	TM116	<0.005 M	0.00708 M	0.0151 M	0.0365 M		
trans-1-3-Dichloropropene	<0.014 mg/kg	TM116	<0.014 M	<0.014 M	<0.014 M	<0.014 M		
1,1,2-Trichloroethane	<0.01 mg/kg	TM116	<0.01 M	<0.01 M	<0.01 M	<0.01 M		



CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

			TP05	TP09	TP12	TP13
			0.50 Soil/Solid - 21/04/2011 110426-11 3359405	0.50 Soil/Solid - 21/04/2011 110426-11 3359418	1.50 Soil/Solid - 21/04/2011 110426-11 3359431	0.90 Soil/Solid - 21/04/2011 110426-11 3359433
1.3-Dichloropropane	<0.007 mg/kg	TM116	<0.007 #	<0.007 #	<0.007 #	<0.007 #
Tetrachloroethene	<0.005 mg/kg	TM116	<0.005 M	<0.005 M	0.00731 M	<0.005 M
Dibromochloromethane	<0.013 mg/kg	TM116	<0.013 M	<0.013 M	<0.013 M	<0.013 M
1.2-Dibromoethane	<0.012 mg/kg	TM116	<0.012 M	<0.012 M	<0.012 M	<0.012 M
Chlorobenzene	<0.005 mg/kg	TM116	<0.005 M	<0.005 M	0.00688 M	<0.005 M
1.1.1.2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Ethylbenzene	<0.004 mg/kg	TM116	<0.004 M	<0.004 M	0.00894 M	0.0174 M
p/m-Xylene	<0.014 mg/kg	TM116	<0.014 #	<0.014 #	<0.014 #	0.0243 #
o-Xylene	<0.01 mg/kg	TM116	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Styrene	<0.01 mg/kg	TM116	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Bromoform	<0.01 mg/kg	TM116	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Isopropylbenzene	<0.005 mg/kg	TM116	<0.005 M	<0.005 M	<0.005 M	<0.005 M
1.1.2.2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.01 #	<0.01 #	<0.01 #	<0.01 #
1.2.3-Trichloropropane	<0.017 mg/kg	TM116	<0.017 M	<0.017 M	<0.017 M	<0.017 M
Bromobenzene	<0.01 mg/kg	TM116	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Propylbenzene	<0.011 mg/kg	TM116	<0.011 M	<0.011 M	<0.011 M	<0.011 M
2-Chlorotoluene	<0.009 mg/kg	TM116	<0.009 M	<0.009 M	<0.009 M	<0.009 M
1.3.5-Trimethylbenzene	<0.008 mg/kg	TM116	<0.008 #	<0.008 #	<0.008 #	<0.008 #
4-Chlorotoluene	<0.012 mg/kg	TM116	<0.012 M	<0.012 M	<0.012 M	<0.012 M
tert-Butylbenzene	<0.012 mg/kg	TM116	<0.012 #	<0.012 #	<0.012 #	<0.012 #
1.2.4-Trimethylbenzene	<0.009 mg/kg	TM116	<0.009 #	<0.009 #	<0.009 #	<0.009 #
sec-Butylbenzene	<0.01 mg/kg	TM116	<0.01 M	<0.01 M	<0.01 M	<0.01 M
4-Isopropyltoluene	<0.011 mg/kg	TM116	<0.011 M	<0.011 M	<0.011 M	<0.011 M
1.3-Dichlorobenzene	<0.006 mg/kg	TM116	<0.006 M	<0.006 M	<0.006 M	<0.006 M
1.4-Dichlorobenzene	<0.005 mg/kg	TM116	<0.005 M	<0.005 M	<0.005 M	<0.005 M
n-Butylbenzene	<0.01 mg/kg	TM116	<0.01 M	<0.01 M	<0.01 M	<0.01 M
1.2-Dichlorobenzene	<0.012 mg/kg	TM116	<0.012 M	<0.012 M	<0.012 M	<0.012 M
1.2-Dibromo-3-chloropropene	<0.014 mg/kg	TM116	<0.014 M	<0.014 M	<0.014 M	<0.014 M
Tert-amyl methyl ether	<0.015 mg/kg	TM116	<0.015	<0.015	<0.015	<0.015
1.2.4-Trichlorobenzene	<0.006 mg/kg	TM116	<0.006 #	<0.006 #	<0.006 #	<0.006 #
Hexachlorobutadiene	<0.012 mg/kg	TM116	<0.012	<0.012	<0.012	<0.012
Naphthalene	<0.013 mg/kg	TM116	<0.013 M	<0.013 M	<0.013 M	<0.013 M
1.2.3-Trichlorobenzene	<0.006 mg/kg	TM116	<0.006 M	<0.006 M	<0.006 M	<0.006 M



CERTIFICATE OF ANALYSIS

SDG:	110426-11	Location:	Former Acrefair Works	Order Number:	DC/1212/232
Job:	H_WSP_MAN-34	Customer:	WSP Environmental	Report Number:	132721
Client Reference:	21240	Attention:	Christopher Kennedy	Superseded Report:	129842

Asbestos Identification

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	BHN2 NS Z 4.00 - 5.00 SOLID 26/04/2011 10:35:57 110426-11 3,359,484 TM048	05/05/2011	Kevin Bowron	Typical of Asbestos Insulation Material	Not Detected (#)	Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected



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Job:	H_WSP_MAN-34	Customer:	WSP Environmental	Report Number:	132721
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Table of Results - Appendix

REPORT KEY

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03x10⁻⁷

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

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

Method No	Reference	Description	Wet/Dry Sample ¹	Surrogate Corrected
PM001		Preparation of Samples for Metals Analysis		
PM023	Leaching test method for the Assessment of Contaminated Land: Interim NRA Guidance. National Rivers Authority R & D note 301. (1994).	Leaching Procedure for NRA Leachates		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM001	In - house Method	Determination of asbestos containing material by screening on solids		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM061	Method for the Determination of EPH, Massachusetts Dept. of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM133	BS 1377: Part 3 1990; BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser		
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone		
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters		
TM180	Sulphide in waters and waste waters 1991 ISBN 01 175 7186 SCA rec. 2007 (unpublished)	The Determination Of Easily Liberated Sulphide In Soil Samples by Ion Selective Electrode Technique		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry		
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM221	Inductively Coupled Plasma - Atomic Emission Spectroscopy. An Atlas of Spectral Information: Winge, Fassel, Peterson and Floyd	Determination of Acid extractable Sulphate in Soils by IRIS Emission Spectrometer		
TM228	US EPA Method 6010B	Determination of Major Cations in Water by iCap 6500 Duo ICP-OES		
TM243				
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids		
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC		

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



SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
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Test Completion Dates

Lab Sample No(s) Customer Sample Ref.	3359369	3359409	3359460	3359376	3359381	3359386	3359484	3359392	3359394	3359395
	BH02	BH02	BH04	BH06	BH06	BHN01	BHN2	BHN03	BHN03	TP01
AGS Ref.										
Depth	1.00	5.00	0.40	1.20	5.00	0.50	4.00 - 5.00	0.50	2.50	0.40
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Anions by Kone (soil)							10-May-2011			
Anions by Kone (w)							09-May-2011			
Asbestos Containing Material Screen				28-Apr-2011			05-May-2011			27-Apr-2011
Asbestos Identification							05-May-2011			
Cyanide Comp/Free/Total/Thiocyanate	03-May-2011	03-May-2011		04-May-2011	03-May-2011	03-May-2011		03-May-2011	03-May-2011	03-May-2011
Dissolved Metals by ICP-MS			05-May-2011				09-May-2011			
Easily Liberated Sulphide							09-May-2011			
EPH CWG (Aliphatic) Filtered GC (W)			05-May-2011				10-May-2011			
EPH CWG (Aliphatic) GC (S)	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011		05-May-2011	05-May-2011	05-May-2011
EPH CWG (Aromatic) Filtered GC (W)			05-May-2011				10-May-2011			
EPH CWG (Aromatic) GC (S)	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011		05-May-2011	05-May-2011	05-May-2011
GRO by GC-FID (S)	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011		05-May-2011	05-May-2011	05-May-2011
GRO by GC-FID (W)			06-May-2011				08-May-2011			
Mercury Dissolved			05-May-2011				09-May-2011			
Metals by iCap-OES (Soil)	04-May-2011	04-May-2011		04-May-2011	04-May-2011	03-May-2011		04-May-2011	04-May-2011	03-May-2011
NRA Leachate			03-May-2011				05-May-2011			
PAH by GCMS	04-May-2011	04-May-2011	03-May-2011	04-May-2011	03-May-2011	03-May-2011		03-May-2011	03-May-2011	04-May-2011
PAH Spec MS - Aqueous (W)			05-May-2011				10-May-2011			
PCBs by GCMS			05-May-2011							
pH	05-May-2011	05-May-2011		05-May-2011	05-May-2011	05-May-2011				05-May-2011
pH Value of Filtered Water			05-May-2011				10-May-2011			
Phenols by HPLC (S)	03-May-2011	03-May-2011		04-May-2011	03-May-2011	03-May-2011	10-May-2011	03-May-2011	03-May-2011	03-May-2011
Phenols by HPLC (W)			06-May-2011				10-May-2011			
Sample description	28-Apr-2011	28-Apr-2011	28-Apr-2011	28-Apr-2011	28-Apr-2011	28-Apr-2011	05-May-2011	28-Apr-2011	28-Apr-2011	28-Apr-2011
Sulphide							09-May-2011			
Total Organic Carbon	05-May-2011	05-May-2011		05-May-2011	05-May-2011			04-May-2011		04-May-2011
TPH CWG Filtered (W)			06-May-2011				10-May-2011			
TPH CWG GC (S)	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011		05-May-2011	05-May-2011	05-May-2011

Lab Sample No(s) Customer Sample Ref.	3359397	3359401	3359403	3359405	3359408	3359410	3359413	3359415	3359417	3359418
	TP02	TP03	TP04	TP05	TP05	TP06	TP07	TP08	TP08	TP09
AGS Ref.										
Depth	1.00	1.00	0.50	0.50	4.20	0.50	0.50	0.50	1.70	0.50
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Asbestos Containing Material Screen	27-Apr-2011			27-Apr-2011	27-Apr-2011		27-Apr-2011	27-Apr-2011	27-Apr-2011	
Cyanide Comp/Free/Total/Thiocyanate	03-May-2011	03-May-2011	03-May-2011	03-May-2011	03-May-2011	03-May-2011	03-May-2011	03-May-2011	03-May-2011	
Dissolved Metals by ICP-MS	04-May-2011			04-May-2011						
EPH CWG (Aliphatic) Filtered GC (W)	05-May-2011			05-May-2011						
EPH CWG (Aliphatic) GC (S)	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	10-May-2011
EPH CWG (Aromatic) Filtered GC (W)	05-May-2011			05-May-2011						
EPH CWG (Aromatic) GC (S)	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	10-May-2011
GRO by GC-FID (S)	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	08-May-2011
GRO by GC-FID (W)	06-May-2011			06-May-2011						
Hexavalent Chromium (s)			03-Jun-2011		07-Jun-2011					
Mercury Dissolved	04-May-2011			04-May-2011						
Metals by iCap-OES (Soil)	03-May-2011	03-May-2011	03-May-2011	03-May-2011	03-May-2011	03-May-2011	04-May-2011	04-May-2011	04-May-2011	
Metals by iCap-OES Dissolved (W)				04-May-2011						
NRA Leachate	28-Apr-2011			28-Apr-2011						
PAH by GCMS	04-May-2011	04-May-2011	04-May-2011	03-May-2011	03-May-2011	03-May-2011	03-May-2011	03-May-2011	04-May-2011	
PAH Spec MS - Aqueous (W)	05-May-2011			05-May-2011						
pH	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	
pH Value of Filtered Water	05-May-2011			05-May-2011						
Phenols by HPLC (S)	03-May-2011	03-May-2011	03-May-2011		03-May-2011	03-May-2011	03-May-2011	03-May-2011	03-May-2011	
Phenols by HPLC (W)	05-May-2011			04-May-2011						
Sample description	28-Apr-2011	28-Apr-2011	28-Apr-2011	28-Apr-2011	28-Apr-2011	28-Apr-2011	28-Apr-2011	28-Apr-2011	28-Apr-2011	04-May-2011
Semi Volatile Organic Compounds				04-May-2011						09-May-2011
Total Organic Carbon		04-May-2011		05-May-2011				05-May-2011		
TPH CWG Filtered (W)	06-May-2011			06-May-2011						
TPH CWG GC (S)	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	10-May-2011
VOC MS (S)				05-May-2011						06-May-2011



CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

Lab Sample No(s)	3359420	3359427	3359428	3359431	3359433	3359436	3359438	3359439	3359441	3359446
Customer Sample Ref.	TP10	TP10	TP11	TP12	TP13	TP13	TP14	TP14	TP15	TP17
AGS Ref.										
Depth	0.50	4.00	0.40	1.50	0.90	3.40	0.50	1.20	0.50	0.70
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Ammoniacal N as NH4 in 2:1 extract					05-May-2011					
Asbestos Containing Material Screen	27-Apr-2011		27-Apr-2011				27-Apr-2011		27-Apr-2011	27-Apr-2011
Cyanide Comp/Free/Total/Thiocyanate	03-May-2011	03-May-2011	03-May-2011	03-May-2011	03-May-2011	03-May-2011		03-May-2011	03-May-2011	03-May-2011
Dissolved Metals by ICP-MS					05-May-2011					
EPH CWG (Aliphatic) Filtered GC (W)					05-May-2011					
EPH CWG (Aliphatic) GC (S)	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011		05-May-2011	05-May-2011	05-May-2011
EPH CWG (Aromatic) Filtered GC (W)					05-May-2011					
EPH CWG (Aromatic) GC (S)	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011		05-May-2011	05-May-2011	05-May-2011
GRO by GC-FID (S)	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011		05-May-2011	05-May-2011	05-May-2011
GRO by GC-FID (W)					06-May-2011					
Hexavalent Chromium (s)						07-Jun-2011				
Mercury Dissolved					04-May-2011					
Metals by iCap-OES (Soil)	04-May-2011	04-May-2011	04-May-2011	03-May-2011	03-May-2011	03-May-2011		03-May-2011	03-May-2011	03-May-2011
Metals by iCap-OES Dissolved (W)					04-May-2011					
NRA Leachate					28-Apr-2011					
PAH by GCMS	04-May-2011	03-May-2011	04-May-2011	03-May-2011	03-May-2011	04-May-2011		04-May-2011	04-May-2011	03-May-2011
PAH Spec MS - Aqueous (W)					05-May-2011					
pH	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011		05-May-2011	05-May-2011	05-May-2011
pH Value of Filtered Water					05-May-2011					
Phenols by HPLC (S)	03-May-2011	03-May-2011	03-May-2011	03-May-2011	03-May-2011	03-May-2011		03-May-2011	03-May-2011	03-May-2011
Phenols by HPLC (W)					05-May-2011					
Sample description	28-Apr-2011	28-Apr-2011	28-Apr-2011	28-Apr-2011	28-Apr-2011	28-Apr-2011		28-Apr-2011	28-Apr-2011	28-Apr-2011
Semi Volatile Organic Compounds				04-May-2011	04-May-2011					
Total Sulphate			04-May-2011	04-May-2011	04-May-2011					04-May-2011
TPH CWG Filtered (W)					06-May-2011					
TPH CWG GC (S)	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011		05-May-2011	05-May-2011	05-May-2011
VOC MS (S)				04-May-2011	04-May-2011					

Lab Sample No(s)	3359450	3359456	3588530	3359461	3359465	3359470	3359478
Customer Sample Ref.	TPN01	TPN02	TPN2	TPN04	TPN05	TPN06	TPN06
AGS Ref.							
Depth	1.00	3.50	0.50	0.60	0.50	0.50	3.70
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Asbestos Containing Material Screen		27-Apr-2011	05-May-2011	27-Apr-2011	27-Apr-2011	27-Apr-2011	
Cyanide Comp/Free/Total/Thiocyanate	03-May-2011	03-May-2011	10-May-2011	03-May-2011	03-May-2011	03-May-2011	03-May-2011
Dissolved Metals by ICP-MS		05-May-2011		05-May-2011			05-May-2011
EPH CWG (Aliphatic) Filtered GC (W)		05-May-2011		05-May-2011			05-May-2011
EPH CWG (Aliphatic) GC (S)	05-May-2011	05-May-2011	10-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011
EPH CWG (Aromatic) Filtered GC (W)		05-May-2011		05-May-2011			05-May-2011
EPH CWG (Aromatic) GC (S)	05-May-2011	05-May-2011	10-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011
GRO by GC-FID (S)	05-May-2011	05-May-2011	08-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011
GRO by GC-FID (W)		06-May-2011		06-May-2011			06-May-2011
Hexavalent Chromium (s)	07-Jun-2011						07-Jun-2011
Mercury Dissolved		05-May-2011		05-May-2011			04-May-2011
Metals by iCap-OES (Soil)	03-May-2011	04-May-2011	10-May-2011	04-May-2011	04-May-2011	04-May-2011	04-May-2011
Metals by iCap-OES Dissolved (W)		05-May-2011					
NRA Leachate		03-May-2011		03-May-2011			28-Apr-2011
PAH by GCMS	03-May-2011	04-May-2011	06-May-2011	03-May-2011	03-May-2011	03-May-2011	04-May-2011
PAH Spec MS - Aqueous (W)		05-May-2011		05-May-2011			05-May-2011
pH	05-May-2011	05-May-2011	09-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011
pH Value of Filtered Water		05-May-2011		05-May-2011			05-May-2011
Phenols by HPLC (S)	03-May-2011	03-May-2011	09-May-2011	03-May-2011	03-May-2011	03-May-2011	03-May-2011
Phenols by HPLC (W)		06-May-2011		06-May-2011			05-May-2011
Sample description	28-Apr-2011	28-Apr-2011	05-May-2011	28-Apr-2011	28-Apr-2011	28-Apr-2011	28-Apr-2011
Total Organic Carbon			10-May-2011	05-May-2011	04-May-2011	04-May-2011	04-May-2011
Total Sulphate	04-May-2011						
TPH CWG Filtered (W)		06-May-2011		06-May-2011			06-May-2011
TPH CWG GC (S)	05-May-2011	05-May-2011	10-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011



CERTIFICATE OF ANALYSIS

SDG: 110426-11
Job: H_WSP_MAN-34
Client Reference: 21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number: DC/1212/232
Report Number: 132721
Superseded Report: 129842

Appendix

SOLID MATRICES EXTRACTION SUMMARY

CERTIFICATE OF ANALYSIS

SDG:	110426-11
Job:	H_WSP_MAN-34
Client Reference:	21240

Location: Former Acrefair Works
Customer: WSP Environmental
Attention: Christopher Kennedy

Order Number:	DC/1212/232
Report Number:	132721
Superseded Report:	129842

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH₄ by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS TICS.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be screened in house for the presence of large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. If asbestos containing material is detected it will be removed and analysed by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.

7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample -similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP -No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals -total metals must be requested separately.

11. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

14. **Product analyses** -Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethylphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GC/FID/GCMS and all subcontracted analysis.

21. For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

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

23. Analysis and identification of specific compounds using GC/FID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C4 -C10 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect

ANALYTE	DO OR VET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYTE
SOLVENT EXTRACTABLE MATTER	DO	DOM	SOXHLETH	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	DO	CYCLOHEXANE	SOXHLETH	GRAVIMETRIC
THIN LAYER CHROMATOGRAPHY	DO	DOM	SOXHLETH	KITORECAN
ELEMENTALSULPHUR	DO	DOM	SOXHLETH	HPLC
PHENOLSYGOLS	VET	DOM	SOXHLETH	CONIS
HERBICIDES	DO	H B/XANEXCETONE	SOXHLETH	CONIS
PESTICIDES	DO	H B/XANEXCETONE	SOXHLETH	CONIS
EPH (PRO)	DO	H B/XANEXCETONE	ENDOVEREND	COFFID
EPH (MINO I)	DO	H B/XANEXCETONE	ENDOVEREND	COFFID
EPH (CLEANED UP)	DO	H B/XANEXCETONE	ENDOVEREND	COFFID
EPH OMS BYOC	DO	H B/XANEXCETONE	ENDOVEREND	COFFID
POB TOT/ POB CON	DO	H B/XANEXCETONE	ENDOVEREND	CONIS
POLYAROMATC HYDROCARBONS (MS)	VET	H B/XANEXCETONE	MICROWAVE TUNIS.	CONIS
CSC40(CSC40) EZ FUSEH	VET	H B/XANEXCETONE	SHAKER	COEZ
POLYAROMATC HYDROCARBONS RAPID OC	VET	H B/XANEXCETONE	SHAKER	COEZ
SBL10 LITTLE RGNAD CONFO UNDS	VET	DOMXCEONE	SONICATE	CONIS

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAHMS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC/MS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC/FID
EPH CMG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC/FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC/FID
POB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC/MS
POB TOTAL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC/MS
SVOC	DOM	LIQUID/LIQUID SHAKE	GC/MS
FREESULPHUR	DOM	SOLID PHASE EXTRACTION	HPLC
PEST COP/OPP	DOM	LIQUID/LIQUID SHAKE	GC/MS
TRIAZINE HERBS	DOM	LIQUID/LIQUID SHAKE	GC/MS
PHENOLS/MS	DOM	SOLID PHASE EXTRACTION	GC/MS
TPH by INFRARED (IR)	TCE	LIQUID/LIQUID SHAKE	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID SHAKE	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GC/MS

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials or those identified as potentially asbestos containing during sample description which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-



CERTIFICATE OF ANALYSIS

SDG:	110426-11	Location:	Former Acrefair Works	Order Number:	DC/1212/232
Job:	H_WSP_MAN-34	Customer:	WSP Environmental	Report Number:	132721
Client Reference:	21240	Attention:	Christopher Kennedy	Superseded Report:	129842

to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: -
Trace -Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Appendix D Ground Gas Monitoring and Groundwater Gauging Results

Groundwater and Ground Gas Monitoring Form



VISIT 1

Site Name	Acrefair Works - SOUTH SITE
Client	AirProducts Ltd
Job No.	21240
Date	04/05/2011
Start Time	11:30:00
End Time	14:30:00

Operator	Chris Kennedy
Pressure at Start mB	1005
Pressure at End mB	1002
Weather Conditions	Sunny
Temperature oC	

Equipment	Serial No.	Calibrated
Gas Analyser		
Dipmeter		
Interface Probe		
PID		

	Borehole	Response Zone (m)		Gas Flow (l/hr)		Borehole Pressure (mB)	Methane (% v/v)		Carbon Dioxide (% v/v)		Oxygen (% v/v)		Other Gasses (ppmV)			Depth to Water (m)	Depth to Base (m)	Thickness of product (mm)	Sampled? (Y/N)
		Top	Bottom	Initial	Steady		Initial	Steady	Initial	Steady	Initial	Steady	PID	H2S	CO	(m)	(m)	(mm)	(Y/N)
1	BH01			0.0	0.0		0	0	0	0	20.6	20.5				2.77	3.80		
2	BH02			0.0	0.0		0	0	0	0	20.8	20.8				3.63	6.62		
3	BH03			0.0	0.0		0	0	0.1	0.1	20.0	20.0				0	2.56		
4	BH06			0.0	0.0		0	0	0.4	0.5	20.3	20.1				0	4.95		
5	BH07			0.0	0.0		0	0	0	0	20.8	20.9				0	1.80		
6	BH11			0.0	0.0		0	0	0.1	0.1	20.1	20.1				0	8.00		
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
COMMENTS & GROUND CONDITIONS:																			

Groundwater and Ground Gas Monitoring Form



VISIT 2

Site Name	Acrefair Works - SOUTH SITE
Client	AirProducts Ltd
Job No.	21240
Date	11/05/2011
Start Time	09:20:00
End Time	12:55:00

Operator	Ed Richardson
Pressure at Start mB	1006
Pressure at End mB	1006
Weather Conditions	Sunny
Temperature oC	

Equipment	Serial No.	Calibrated
Gas Analyser	5262	Yes
Dipmeter	3693	N/A
Interface Probe		
PID		

	Borehole	Response Zone (m)		Gas Flow (l/hr)		Borehole Pressure	Methane (% v/v)		Carbon Dioxide (% v/v)		Oxygen (% v/v)		Other Gasses (ppmV)			Depth to Water	Depth to Base	Thickness of product	Sampled
		Top	Bottom	Initial	Steady		(mB)	Initial	Steady	Initial	Steady	Initial	Steady	PID	H2S	CO	(m)	(m)	(mm)
1	BH01			-0.2	0.0		0	0	0.2	0.3	20.4	20.3		0	1	1.81	3.80		No
2	BH02			0.1	0.1		0	0	0.5	0.8	19.7	19.3		0	1	3.5	6.62		No
3	BH03			0.1	0.0		0	0	0.1	0.2	20.1	20.0		0	1	DRY	2.56		No
4	BH06			0.0	0.1		0	0	0.6	0.7	19.6	19.7		0	1	DRY	4.95		No
5	BH07			0.1	0.0		0	0	0.8	1	19.8	19.6		0	1	DRY	1.80		No
6	BH11			0.0	0.0		0	0	0	0	20.1	20.1		0	2	DRY	8.00		No
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
COMMENTS & GROUND CONDITIONS: BHN01 - Cover and GT missing, BHN03 - No bung, BN03 Tap found open																			

Groundwater and Ground Gas Monitoring Form



VISIT 3

Site Name	Acrefair Works - SOUTH SITE
Client	AirProducts Ltd
Job No.	21240
Date	17/05/2011
Start Time	09:15:00
End Time	10:30:00

Operator	Ed Richardson
Pressure at Start mB	1002
Pressure at End mB	1003
Weather Conditions	Cloudy (4/8)
Temperature oC	

Equipment	Serial No.	Calibrated
Gas Analyser	5262	Yes
Dipmeter	3689	N/A
Interface Probe	N/A	
PID	N/A	

	Borehole	Response Zone (m)		Gas Flow (l/hr)		Borehole Pressure	Methane (% v/v)		Carbon Dioxide (% v/v)		Oxygen (% v/v)		Other Gasses (ppmV)			Depth to Water	Depth to Base	Thickness of product	Sampled?
		Top	Bottom	Initial	Steady		(mB)	Initial	Steady	Initial	Steady	Initial	Steady	PID	H2S				
1	BH01			0.2	0.0	1003	0	0	0.1	0.2	20.2	20.1	-	0	0	1.43	3.80	-	No
2	BH02			0.1	0.0	1003	0	0	2.1	2.1	17.4	17.1	-	0	0	3.51	6.62	-	No
3	BH03			0.1	0.0	1003	0	0	0.8	0.9	18.7	18.4	-	0	1	DRY	2.56	-	No
4	BH06			-0.1	0.0	1003	0	0	0.5	0.7	19.8	19.7	-	0	2	DRY	4.95	-	No
5	BH07			-0.1	0.0	1003	0	0	0.7	1	19.7	19.5	-	0	2	DRY	1.80	-	No
6	BH11			-0.1	0.0	1003	0	0	0	0	20.2	20.2	-	0	0	5.77	7.98	-	No
7																			
8																			
9																			
10																			
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16																			
COMMENTS & GROUND CONDITIONS:																			

Appendix E WSPE Assessment Methods

Appendix E

Summary of Risk Assessment Approach

The following section provides a summary of the approach adopted by our risk assessment team including the context and the derivation of the screening criteria used. This document does not seek to present an exhaustive listing nor detailed understanding of the UK contaminated land regime and its assessment. The reader is instead directed towards appropriate source materials for a greater understanding, it is however intended to provide herein an overview of our general assumptions and practices that we have followed.

ANALYSIS PROTOCOLS

In selecting a laboratory testing suite contaminants must have the potential to be present on a site following an understanding of its current or former industrial use. They should also be likely to be present at a perceived concentration that may cause harm, whereby "harm" is defined under Part 2A legislation. The purpose of this criterion is to exclude substances and unnecessary costs in the testing for analytes that are rarely found or are unlikely to be present at harmful concentrations.

In selecting an analyte we therefore assume that it is:

- Likely to occur at the target site in sufficient concentrations to cause harm or pollution; and,
- Known or suspected to pose significant risk to humans (death, serious injury, cancer or other disease, genetic mutation, birth defects or the impairment of reproductive functions); or,
- Known or suspected to pose a significant risk in the water environment, or likely to cause other adverse impacts in the water environment, as a result of their presence on land; or,
- Known or suspected to pose a significant risk to ecosystems as a result of their presence on land; or,
- Known or suspected to have a significant effect on buildings or building materials; or,
- Known or suspected to be persistent and mobile in soils or have tendency to bio-accumulate through exposure of sensitive organisms.

The following documents will have been used where available to assist in informing our selection;

- The available desk study/preliminary risk assessment reports available for the site to proffer an understanding of site history, waste, chemical storage and poor management practices that may have resulted in the potential for depleted land quality;
- CLR 8 'Priority Contaminants for the Assessment of Land' (Environment Agency 2002a). This document identifies priority contaminants, selected on the basis that they are likely to be present on many current or former sites affected by industrial or waste management activity in the UK in sufficient concentrations to cause harm; and
- The Department of the Environment's Industry Profiles (DoE 1995-95) which describe specific industrial processes and those chemicals that are commonly found on a given industrial land use type.

APPROACH TO THE ASSESSMENT OF HUMAN HEALTH RISKS

Our approach is consistent with that established in the publication *Model Procedures for the Management of Land Contamination (CLR11)* (Environment Agency 2004a). This establishes a tiered approach including:

- Preliminary Risk Assessment (e.g. the establishment of potential pollutant linkages);
- Generic Quantitative Risk Assessment (GQRA) (e.g. the comparison of contaminant concentrations against Soil Guideline Values (SGV) or other Generic Assessment Criteria (GAC)); and
- Detailed Quantitative Risk Assessment (DQRA) (e.g. the comparison of contaminant concentrations against site specific assessment criteria).

Generic Quantitative Risk Assessment (GQRA) is described in outline here. Detailed Quantitative Risk Assessment (DQRA) where applicable will have been defined in detail of main body reporting.

Generic Quantitative Risk Assessment – Human Health

In order to undertake a GQRA, contaminant concentrations need to be compared to appropriate generic assessment criteria. Current UK industry practice is to use, as first preference, UK SGVs which are generic assessment criteria published by the Environment Agency and derived using the Contaminated Land Exposure Assessment model (CLEA).

The CLEA model provides an approach for the assessment of chronic risks to human health from concentrations of a substance within soil; where appropriate.

The current version of the model (V1.06) was published in September 2009 and, following its publication, a number of SGVs have also been produced. However, the SGVs published to date are limited to only a small number of contaminants. Consequently, where published SGV do not exist, other GAC can be used including:

- GAC prepared in accordance with the CLEA V1.06 model by authoritative bodies (e.g. Chartered Institute of Environmental Health (CIEH), Environment Industries Commission (EIC)); or in their absence,
- WSP in-house GAC prepared in accordance with the CLEA V1.06 model and associated documents.

The approach adopted by WSP has been to generate GAC for chronic risks to human health using CLEA V1.06. In generating GAC, input parameters consistent with Environment Agency publications have been adopted by WSP including:

- Environment Agency (2009a), *Human Health Toxicological Assessment of Contaminants in Soil*, Report SC050021/SR2, January 2009;
- Environment Agency (2009b), *CLEA Software (Version 1.04) Handbook (and Software)*, Report SC050021/SR4, January 2009; and
- Environment Agency (2009c), *Updated Technical Background to the CLEA Model*, Report SC050021/SR3, January 2009.

Toxicological data for respective contaminants have been selected following Environment Agency guidance. Where UK guidance is available (i.e. existing published TOX (toxicological) reports respective Health Criteria Values (HCV) have been adopted. Where no UK TOX reports are available the following references have been used (given in order of preference);

- Published UK toxicity reviews to derive HCV within Nathaniel *et. al*, 2009 and EIC/CL:AIRE 2009;
- Other appropriate UK sources;
- Authoritative European sources;
- International Organisations (e.g. World Health Organisation); or
- Appropriate, authoritative US sources (e.g. USEPA).

Fate and transport characteristics for the contaminants for which GAC have been derived have included the following hierarchy of data sources;

- Environment Agency (2008a), *Compilation of Data for Priority Organic Pollutants*, Report SC050021/SR7, November 2008;
- Defra/Environment Agency sources (e.g. Environment Agency, *Review of the Fate and Transport of Selected Contaminants in the Soil Environment, Draft Technical Report P5- 079/TR1* (Environment Agency 2003a));
- Published fate and transport reviews to derive HCV within Nathaniel *et. al*, 2009 and EIC/CL:AIRE 2009;
- Other UK Government documents;
- European data sources;
- International data sources; (e.g. World Health Organisation); or
- Other international sources (e.g. USEPA).

Where appropriate and where sufficient data is available, values have been adjusted to reflect a UK soil temperature of 10°C (e.g. K_{aw}).

In generating GAC, the default CLEA assumptions have been applied to a range of likely human health exposure models and associated critical age receptor groups including:

- Residential with Plant Uptake;
- Residential without Plant Uptake;
- Allotments;

- Parks;
- Open Spaces; and,
- Commercial/Industrial.

Additional land use scenarios have been considered within the context of a DQRA, for example, a residential care home land use.

Please also observe that GAC for organic substances have not been limited to their theoretical soil saturation although the theoretical soil saturation limit is provided and can be considered by our risk assessors in their assessment. Petroleum hydrocarbon fractions are, where appropriate, addressed based on Hazard Index and so are additionally not limited to soil saturation within their assessment.

Our default soil type under a GQRA has been established as a Sandy Loam with a default pH of 7; Soil Organic Matter of 1%, 3% and 6%.

Cyanides

The primary risk to human receptors from free cyanide in soils is an acute risk (i.e. a single dose could have a lethal affect as opposed to adverse affects from cumulative intake (chronic affect)).

There is no current UK guidance available for calculating acute risks from free cyanide, therefore an in-house methodology has been used to derive an acute GAC of 60 mg/kg for all exposure scenarios. The value is given for Free or Easily Liberatable Cyanide but should be used to assess Total Cyanide in the absence of cyanide speciation. In cases where the Total Cyanide exceeds the GAC then analysis for Free or Easily Liberatable Cyanide should be completed.

Open Spaces Land Use

The existing CLEA model does not explicitly consider an Open Spaces land use and, in many cases, an assessor typically applies a residential end use model and associated Generic Assessment Criteria. This approach however can lead to unnecessary remediation as the values derived for a residential end use consider exposure pathways and characteristics which are not representative of an Open Spaces land use, for example indoor air inhalation of contaminant vapours and the ingestion of food grown on site.

The Open Spaces land use category developed by WSP is considered to be appropriate for areas generally larger than local parks which are visited less frequently and are typically a distance from residential areas (e.g. a nature reserve).

WSP have developed a set of Generic Assessment Criteria for Open Spaces end use through the development of a Conceptual Site Model for Open Space which considers the relevant exposure pathways and receptor characteristics. These criteria are considered suitably sensitive to apply to a wide range of Open Space areas. The Conceptual Site Model adopted may be described as follows:

- The soil ingestion and dermal exposure pathways are active;
- The inhalation of outdoor dusts and vapours pathways are active;
- The soil is a typical sandy loam type;
- The critical receptor is a female child between the ages of 0-6 years (i.e. based on a standard residential receptor) who visits the site on three occasions a fortnight and spends 3 hours on the site on each visit (the exception being during the first year of life when exposure frequency is set at 50% of the number of visits and duration).
- Fifty per cent of the time spent on site is involved in moderate intensity activity and fifty per cent in passive activity;

A detailed breakdown of the chosen modelling characteristics can be provided on request. It should be noted that Open Space criteria are not considered appropriate for use for a School Playing Fields scenario where formal and regular sports take place or for a Parks land use where visits will tend to be far more frequent.

Parks Land Use

The existing CLEA model does not explicitly consider a Parks land use and, in many cases, an assessor typically applies a residential end use model and associated Generic Assessment Criteria. This approach however can lead to unnecessary remediation as the values derived for a residential end use consider exposure pathways and characteristics which are not representative of a an Parks land use, for example indoor air inhalation of contaminant vapours and the ingestion of food grown on site.

The Parks land use is considered to be appropriate for local parks and open areas typically located adjacent to residential housing and more frequently used than in an Open Spaces scenario.

WSP have developed a set of Generic Assessment Criteria for Parks end use through the development of a Conceptual Site Model for Parks which considers the relevant exposure pathways and receptor characteristics. These criteria are considered suitably sensitive to apply to a wide range of Open Space areas. The Conceptual Site Model adopted may be described as follows:

- The soil ingestion and dermal exposure pathways are active;
- The inhalation of outdoor dusts and vapours pathways are active;
- The soil is a typical sandy loam type;
- The critical receptor is a female child between the ages of 0-6 years (i.e. based on a standard residential receptor) who visits the site on five days a week and typically spends 1.5 hours on the site on each visit with two weeks holiday a year
- Two-thirds of the time spent on site is involved in moderate intensity activity and one-third in passive activity;

A detailed breakdown of the chosen modelling characteristics can be provided on request. It should be noted that Parks criteria are not considered appropriate for use for a School Playing Fields scenario where formal and regular sports take place.

Groundwater to Indoor Air (Human Health)

The CLEA model does not explicitly consider the potential for chronic impact to Human Health from indoor inhalation of concentrations of volatile vapours from dissolved phase contamination. The potential exists for this to be an important exposure route for a limited number of highly volatile contaminants. GAC have been calculated for volatile contaminants for volatilisation from groundwater using an in-house implementation of the Johnson and Ettinger model (WSP In-house Groundwater Model V1.1). The WSP model is based upon the Johnson and Ettinger model described in the CLEA guidance has been adapted to account for a dissolved phase source through consideration of (a) partitioning from groundwater to soil vapour, and, (b) transport through the capillary zone.

The WSP spreadsheet implementation also includes checks to ensure that values generated do not exceed the pure phase solubility of a substance within water.

The target concentration in air is set based upon the Inhalation TDI or ID determined for the substance either from published Environment Agency or other sources.

TDI or ID values are usually presented in units of $\mu\text{g}/\text{kg bw}^{-1} \text{ day}^{-1}$ in which case the values are converted into $\mu\text{g}/\text{m}^3$ based on an adult inhaling 20m^3 per day and weighing 70kg (Table 3.3 SR2 (Environment Agency 2009a)). Where appropriate the TDI is adjusted to take account of the MDI.

In the absence of UK guidelines, our exposure scenario conservatively considers a groundwater source 1.0m below the base of any building i.e. a very shallow aquifer, corresponding with the depth of a soil source as adopted in the generic scenario in the CLEA model. Our default soil type under a GQRA has been established as a Sandy Loam with the characteristics detailed below.

Parameters Applied within the derivation of WSP groundwater GAC

Parameter	Definition (Units)	Value	Source
θ_a	air filled soil porosity (cm^3/cm^3)	0.2	Environment Agency (2009c), Table 4.4 (Sandy Loam)
θ_w	water filled soil porosity(cm^3/cm^3)	0.33	Environment Agency (2009c), Table 4.4 (Sandy Loam)
θ_T	total air and water filled soil porosity(cm^3/cm^3)	0.53	Environment Agency (2009c), Table 4.4 (Sandy Loam)
θ_r	Residual soil water content cm^3/cm^3	0.12	Environment Agency (2009c), Table 4.4 (Sandy Loam)
θ_s	Saturated soil water content cm^3/cm^3	0.387	USEPA (2004), <i>User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings</i> , Table 4 (Sandy Loam)
α_1	Point of inflection in the water retention curve where $d\theta_w/dh$ is maximal, cm^{-1}	0.0689	Environment Agency (2009c), Table 4.4 (Sandy Loam)
N	van Genuchten curve shape parameter, dimensionless	1.4708	Calculated from Equation 4.1 Environment Agency (2009c), Table 4.4 (Sandy Loam)
M	van Genuchten curve shape parameter,	0.3201	Environment Agency (2009c), Table 4.4 (Sandy Loam)

Parameter	Definition (Units)	Value	Source
	dimensionless		
R	Mean inter-particle pore radius (cm)	0.006	USEPA (2004), <i>User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings</i> , Table 4 (Sandy Loam)

Building specific parameters have been considered for all of the generic building types as defined in the CLEA (2009a) report:

Building Parameters

	Units	Small Terraced	Justification (based on Environment Agency 2009c)	Office (pre 1970)	Justification (based on Environment Agency 2009c)
A_B	cm ²	280000	Table 4.21 (No basement)	4240000	Table 4.21 (No basement)
L_T	cm	115	Assumes source is 1 m below the building	115	Assumes source is 1m below the building
Q_S	cm ³ s ⁻¹	25	Section 10.3, p131	150	Section 10.3, p131
L_{crack}	cm	15	Table 4.21	15	Table 4.21
A_{crack}	cm ²	423.3	Table 4.21	1647.3	Table 4.21
H	m	4.8	Table 4.21	9.6	Table 4.21
A_{foot}	m ²	28	Table 4.21	424	Table 4.21
Ex	hr ⁻¹	0.5	Table 4.21	1	Table 4.21

The required contaminant specific inputs for each contaminant have been obtained from published Environment Agency sources as detailed in the table below or obtained from a literature review as described in SR7 (Environment Agency 2008).

Contaminant Specific Parameter Sources

Parameter	Units	Source/Justification
D_{air}	m ² s ⁻¹	Environment Agency (2008), Compilation of Data for Priority Organic Pollutants for Derivation of Soil Guideline Values, Ref. SC050021/SR7
D_{water}	m ² s ⁻¹	Environment Agency (2008), Compilation of Data for Priority Organic Pollutants for Derivation of Soil Guideline Values, Ref. SC050021/SR7
K_{aw}	unitless	Environment Agency (2008), Compilation of Data for Priority Organic Pollutants for Derivation of Soil Guideline Values, Ref. SC050021/SR7
S	µg/l	Environment Agency (2008), Compilation of Data for Priority Organic Pollutants for Derivation of Soil Guideline Values, Ref. SC050021/SR7

For many contaminants, no risk is calculated at concentrations below the pure phase solubility of the contaminant. Caution is applied when Non-Aqueous Phase Liquids (NAPL) are likely to be present, either where these have been detected during monitoring or where the concentration of a component in a mixture exceeds 10% of its calculated effective solubility. In such cases a separate assessment of the generation of volatile vapours from NAPL via modelling or a soil vapour survey may be required.

Finally, it is important to note that the values we calculate are only applicable to Human Health and cannot be used to determine the potential risks to the water environment.

STATISTICAL ASSESSMENT

The data collected on site can be subject to statistical analysis using the techniques published by CL:AIRE and the Chartered Institute of Environmental Health (CIEH) in the guidance document '*Guidance on Comparing Soil Contamination Data with Critical Concentrations*' (CL:AIRE, 2008) as part of the package of improved UK guidance highlighted in DEFRA discussion paper *Assessing risks from contamination – a proportionate approach. Soil Guidance Values: the Way Forward* (CLAN 06/2006).

In identifying realistic hazards to human health then exposure areas must be first identified as the area across which a critical receptor is likely to be active. The application of individual or average concentrations within an exposure area, derived from a limited number of samples, may not be representative of actual risk. Consequently, to be representative of uncertainty and risk, an appropriate Upper Confidence Limit of the mean for each exposure area should be applied within the assessment of risk in the context of assessment for planning purposes. However, this approach is only appropriate where non-targeted sampling has been undertaken and sufficient samples have been collected from the same population.

The approach to assessment can be summarised as follows:

1. Compare the recorded concentrations directly against appropriate applicable Generic Assessment Criteria to identify those contaminants which require further consideration as they record concentrations in excess of or near to the applied Generic Assessment Criteria, these will be considered contaminants of concern;
2. Identify whether it is appropriate to undertake any statistical testing on the contaminants of concern (i.e. consider whether sampling was non targeted and whether there are sufficient samples from the appropriate population to make the assessment meaningful). It should be noted that in a large proportion of investigations it is not appropriate to adopt statistical techniques;
3. Where appropriate, prepare a histogram of the data using ProUCL to potentially identify the nature of the distribution;
4. Undertake analysis of the data using ProUCL to determine the type of distribution and most appropriate test to calculate a 95% Upper Confidence Limit (UCL95);
5. Undertake analysis of the data using ProUCL to determine whether the highest value represents an outlier, and, if so, remove this outlier and re-run the statistical tests to determine the type of distribution and most appropriate test to calculate a 95% Upper Confidence Limit (UCL95);
6. Once a satisfactory UCL95 has been determined then this will be compared again to the applied Generic Assessment Criteria to determine the potential significance of the recorded concentrations.

This approach is considered to be appropriate within the Planning Context, however a different approach is adopted where assessments are to be undertaken for Part 2A purposes.

Part 2A and Planning

Planning investigations assume a guilty until proven innocent approach, or "the mean concentration of a contaminant in soil at the site exceeds the assessment criteria until significantly proven otherwise".

Based on the CIEH guidance, under Part 2A the key question will usually be "can we confidently say that the level of contamination on the site is high relative to the appropriate measure of risk".

In Part 2A contaminated land investigations, the issue is therefore framed assuming an innocent until proven guilty approach, or "the mean concentration of a contaminant in soil at the site does not exceed the assessment criteria until significantly proven otherwise".

Under Part 2A therefore the tests applied are required to determine if the 95th Lower Confidence Limit of the true population mean falls above the applied screening criteria. If it is identified that the 95th Lower Confidence Limit of the true mean concentration does not fall above the applied screening criteria then a further test can be applied to determine if the true mean concentration falls below the applied screening criteria on the balance of probabilities. The CIEH guidance emphasizes that "*In all cases, the significance tests should be applied only if the regulator is satisfied that all sampling and testing has been carried out according to good technical practice and that the data are representative of the land under scrutiny at an appropriate scale.*"

Averaging Zones

Where appropriate, averaging zones based on previous / current spatial land use, soil type, proposed site end uses or other distinguishing features have been considered. All soil samples across the site have been considered as a single averaging area as potential exposure for users is considered relatively uniform across the site.

Sample Depths

At the generic assessment stage, it should be assumed that all pathways contained within the generic model applied will be active. In reality, unless a contaminant is volatile (e.g. organic), exposure by direct contact will likely be mitigated by the depth of the contaminant or available surface cover. As a rule of thumb, direct contact with contaminants at greater than 600mm depth or under hardstanding is highly unlikely to occur unless the ground is to be disturbed through removal of surfacing or earthworks.

Groundwater Data

It is not considered appropriate to undertake statistical analysis on groundwater data based on an absence of UK guidance on such an approach and US guidance on completing such assessments.

Application of GAC and SGV for Human Health

In the application of GAC (and SGV) to a site the user must recognise the limitations of CLEA model. Specifically these relate to the absence of certain pollutant considerations such as risks to services, of fire and explosion, aesthetics, institutional perception, groundwater, surface waters, ecotoxicological risk and risks to buildings (amongst others).

CLAN 2/05 prepared by Defra provides guidance to Local Authorities on the application of Soil Guideline Values and equivalent screens for the determination of contaminated land under Part 2A of the Environmental Protection Act 1990. This document states that should a Local Authority choose to apply SGV and equivalent values in determining land under Part 2A then:

*'the authority would have to make a firm and deliberate judgement about whether the estimated contaminant intake, in comparison to an SGV (and the HCV on which it is based), "would represent an **unacceptable** intake or direct bodily contact...". Such a judgement might be subject to scrutiny in the event of any subsequent appeal, so should be appropriately recorded.'*

SGV's and equivalent GACs mark the concentration of a substance in soil at or below which human exposure can be considered to represent a 'tolerable' or 'minimal' level of risk for long term exposure. Given the definition of Health Criteria Values set out in Environment Agency Publication SC050021/SR2 (2008), and the nature of the CLEA methodology (where contaminated land is land where the intake of a substance would represent an unacceptable intake), CLAN 2/05 states that it

'should be a matter for careful consideration by Local Authorities whether concentrations of substances in soil equal to, or not significantly greater than, an SGV would meet the legal test set out in Table B in Chapter A of the statutory guidance to Part 2A'

There exists a wide body of opinion that SGV concentrations (or equivalent GAC) would not necessarily satisfy the legal test for Part 2A determination. A key question is how far above an SGV the relevant soil concentration would have to be to meet the '*unacceptable intake*' test.

Contemporary discussions suggest that defining '*probably unacceptable*'

- For threshold substances basing guidance on the Lowest Observed Adverse Effect Level (LOEL) rather than the No Observed Adverse Effect Level (NOAL) and/or making allowance for the range in the general population of responsiveness to harmful effects of chemicals.
- For non-threshold substances defining an annual risk of fatal cancer of 1 in 10,000 following similar methodologies applied within the nuclear industry.

Unfortunately, resolving either of the above is far more complicated than it would at first appear. As a consequence, identifying 'unacceptable' for Part 2A definition continues to be a protracted yet priority focus for government. Consultation currently suggests that in defining the term 'unacceptable' then screening concentrations may be upwards of an order of magnitude higher for some contaminants than the existing SGV.

Whilst it remains at the discretion of the Local Authority as to whether Part 2A designation should be applied, in light of the above discussion WSP has made its recommendations based primarily on our assessment of the site conditions with respect to contemporary regulations and guidance; however, we offer that the emerging legislative context as discussed above should be included in the clients consideration.

GENERIC QUANTITATIVE RISK ASSESSMENT - CONTROLLED WATERS

An assessment of plausible pollutant linkages with respect to the pollution of Controlled Waters is presented, consistent with UK guidance.

The guidance identifies that for the pollution of the water environment to occur; poisonous, noxious, polluting or solid waste matter must be entering such waters or must be considered more likely than not to enter the water environment in the future. Implicit in this definition is that substances must have the potential to cause detriment or damage to water quality or the environment. The assessment of whether the pollution of the water environment is likely to occur in the future requires consideration of those contaminants at source, which are present in a mobile form, at such concentration that they will reach a receptor at concentrations considered to be poisonous, noxious, polluting or solid waste matter.

Assessment Approach – England and Wales

In England and Wales, no specific detailed guidance has been produced to date on the approach to be adopted following the publication of Directions and other legislation. Until such time as detailed guidance is provided, the approach to be adopted at the GQRA level, assessment typically comprises the following:

- Consideration of soil concentrations of organic substances in the context of soil saturation to determine the potential for migration under gravity;
- Comparison of soil leachate/pore water concentrations against appropriate GAC; and
- Comparison of groundwater concentrations against appropriate GAC.

This approach is equivalent to Tier 1 / Level 1 Assessment as undertaken using ConSim (2009) / Environment Agency Remedial Targets Methodology V3.1 (2006).

Pollutant types, receptors and assessment points are defined in summary below:

Pollutant Type	Receptor	Assessment Point	Assessment limit
Hazardous (List 1)	Groundwater	Base of unsaturated zone	Drinking Water Standard
Non-hazardous (List 2)	Domestic groundwater Abstraction	Abstracted water	Drinking Water Standard
Non-hazardous (List 2)	Surface Water	In Surface Water after Dilution	Environmental Quality Standard
Non-hazardous (List 2)	Groundwater Resource	In strata and ~50m from source boundary	Drinking Water Standard taking into account of up gradient concentrations.

Effectively, for the majority of sites, contaminant concentrations are compared to both drinking water standards and environmental quality standards to identify the need for further consideration/DQRA.

The ideal remediation standard from the regulatory perspective is natural background quality, namely, there should be no significant deterioration in the water quality at the receptor (that is, it should not be detectable against natural background variations). This data may be obtained from up hydraulic gradient locations or regional datasets. The Environment Agency has published information on the baseline condition of several aquifers, it is recognised, however, that such data is rarely available and remediation to such a standard is often not technically achievable or cost effective. For this reason target concentrations utilised as GAC may be based on water quality standards that are appropriate for the intended use or to ensure that objectives for a groundwater or associated water body are met. In England and Wales, the standards selected (as appropriate) include the following:

- **Drinking Water Standards:** The Water Supply (Water Quality) Regulations: 2001 (WSR) (as amended);
- **EQS:** Environmental Quality Standards, The River Basin District Typology, Standards and Groundwater Threshold Values (Water Framework Directive) (England and Wales) Directions 2010;

Secondary sources for GAC include:

- The Private Water Supplies Regulations 2009/2010 (England/Wales);
- European Drinking Water Standards, (Council Directive 98/83/EC);
- World Health Organisation, Guidelines for Drinking Water Quality, Second Addendum to the Third Edition, Volume 1 2008; and
- United States Environmental Protection Agency (USEPA) Region Three, Six and Nine Human Health Medium Specific Risk Based Screening Levels for soils and tap water with dermal exposure routes, which have been derived using human health exposure models consistent with the ASTM Risk Based Corrective Action, approach (ASTM, E1739-95, 1995).

Priority is given to UK standards, however, where data is not available for a specific substance, additional standards such as those published by the WHO or USEPA are used.

Consideration is also given by WSP to River Basin Management Plans required as part of the WFD that have been published and provide surface and groundwater quality classifications, unit descriptions, and future quality targets for specific River Basins.

Petroleum Hydrocarbons

Despite Mineral Oils/Hydrocarbons being a List I (Hazardous) substance there exists no current guidance on the assessment of hydrocarbon fractions in relation to the water environment. At the time of writing, it is understood that the Environment Agency is in the process of producing guidance on this issue. In the meantime, negotiation at a local level will be undertaken to agree the assessment approach.

ECOLOGICAL RISK ASSESSMENT

Where a statutory ecological receptor is identified on, or in proximity to the site, an assessment in accordance with current Environment Agency Ecological Risk Assessment (ERA) Framework will be undertaken. The framework is currently in development (<http://www.environment-agency.gov.uk/research/planning/40375.aspx>)

EXCEEDANCES

Where a GAC is exceeded further work and/or remediation is normally required. For moderate exceedances further work may include progression to a Detailed Quantitative Risk Assessment (DQRA) which is likely to require further data collection. The outcome of the DQRA may be that the risk is not significant or, if the risk is identified as being significant, the generation of site-specific remedial targets.

Where significant exceedances of GAC are identified or there is evidence of potential acute risks remedial measures may be immediately required.

SELECTED REFERENCES

The following key references have been considered (this list is not exhaustive):

CL:AIRE / CIEH (2008), *Guidance on Comparing Soil Contamination Data with a Critical Concentration*, May 2008;

CL:AIRE / EIC (2009), *The Soil Generic Assessment Criteria for Human Health*, December 2009.

Environment Agency & Defra (2002), *R&D Publication CLR8 Priority Contaminants for the Assessment of Land*;

Environment Agency (2003), *Review of fate & transport of selected contaminants in the Environment*, Report P5-079-TR1;

Environment Agency (2004), *Model Procedures for the Management of Land Contamination*, September 2004, ISBN: 1844322955;

Environment Agency (2008a), *Compilation of Data for Priority Organic Pollutants*, Report SC050021/SR7, November 2008;

Environment Agency (2009a), *Human Health Toxicological Assessment of Contaminants in Soil*, Report SC050021/SR2, January 2009;

Environment Agency (2009b), *CLEA Software (Version 1.04) Handbook (and Software)*, Report SC050021/SR4, January 2009;

Environment Agency (2009c), *Updated Technical Background to the CLEA Model*, Report SC050021/SR3, January 2009;

Environment Agency (2009d), *A Review of Body Weight and Height Data Used in the CLEA Model*, Report SC050021/Final Technical Review 1, January 2009;

Nathanial et. al., (2009), *The LQM/CIEH Generic Assessment Criteria for Human Health Risk Assessment (2nd edition)*, Land Quality Press, Nottingham, ISBN 0-9547474-7-X

USEPA (2004), *User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings*

Appendix F Notes on Limitations

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General

WSP Environmental Limited has prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from WSP Environmental Limited; a charge may be levied against such approval.

WSP Environmental Limited accepts no responsibility or liability for:

- a) the consequences of this document being used for any purpose or project other than for which it was commissioned, and
- b) this document to any third party with whom an agreement has not been executed.

Phase I Environmental Audits

The work undertaken to provide the basis of this report comprised a study of available documented information from a variety of sources (including the Client), together with (where appropriate) a brief walk over inspection of the site and meetings and discussions with relevant authorities and other interested parties. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only to the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, WSP Environmental Limited reserves the right to review such information and, if warranted, to modify the opinions accordingly.

It should be noted that any risks identified in this report are perceived risks based on the information reviewed; actual risks can only be assessed following a physical investigation of the site.

Phase II Environmental Audits

The investigation of the site has been carried out to provide sufficient information concerning the type and degree of contamination, and ground and groundwater conditions to allow a reasonable risk assessment to be made. The objectives of the investigation have been limited to establishing the risks associated with potential human targets, building materials, the environment (including adjacent land), and to surface and groundwater.

The amount of exploratory work and chemical testing undertaken has necessarily been restricted by the short timescale available, and the locations of exploratory holes have been restricted to the areas unoccupied by the building(s) on the site and by buried services. A more comprehensive investigation may be required if the site is to be redeveloped as, in addition to risk assessment, a number of important engineering and environmental issues may need to be resolved.

For these reasons if costs have been included in relation to site remediation these must be considered as tentative only and must, in any event, be confirmed by a qualified quantity surveyor.

The exploratory holes undertaken, which investigate only a small volume of the ground in relation to the size of the site, can only provide a general indication of site conditions. The number of sampling points and the methods of sampling and testing do not preclude the existence of localised "hotspots" of contamination where concentrations may be significantly higher than those actually encountered.

The risk assessment and opinions provided, inter alia, take in to consideration currently available guidance values relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values.

Geo-environmental Investigations

The investigation of the site has been carried out to provide sufficient information concerning the type and degree of contamination, geotechnical characteristics, and ground and groundwater conditions to provide a reasonable assessment of the environmental risks together with engineering and development implications.

If costs have been included in relation to site remediation these must be confirmed by a qualified quantity surveyor.

The exploratory holes undertaken, which investigate only a small volume of the ground in relation to the size of the site, can only provide a general indication of site conditions. The opinions provided and recommendations given in this report are based on the ground conditions apparent at the site of each of the exploratory holes. There may be exceptional ground conditions elsewhere on the site which have not been disclosed by this investigation and which have therefore not been taken into account in this report.

The comments made on groundwater conditions are based on observations made at the time that site work was carried out. It should be noted that groundwater levels will vary owing to seasonal, tidal and weather related effects.

The scope of the investigation was selected on the basis of the specific development proposed by the Client and may be inappropriate to another form of development or scheme.

The risk assessment and opinions provided, inter alia, take in to consideration currently available guidance values relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values.