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URS

DRAFT REPORT
PHASE I CONTAMINANT SOURCE AUDIT AND PRELIMINARY PHASE II SOIL AND GROUNDWATER INVESTIGATION AT

NIPA LABORATORIES LTD
LLANTWIT FARDRE, WALES

For
CLARIANT UK LTD

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URS Dames & Moore
1 Drake Walk
Brigantine Place
Cardiff
CF10 4AN
Tel: 029 2046 5960
Fax: 029 2046 5961

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1 INTRODUCTION

1.1 GENERAL INTRODUCTION

This report has been prepared for Clariant UK Ltd (Clariant) in accordance with Dames & Moore's (URS Dames & Moore's) proposal dated 29th May 2001 (ref: ProC051/09402/DTP/jrs), and presents the findings of Phase I contaminant source audit and preliminary Phase II soil and groundwater investigation works undertaken at the NIPA Laboratories Ltd (Nipa) facility in Llantwit Fardre, Wales. Works were authorised by Mr Andrew Dawson of solicitors Dibb Lupton Allsop (DLA) (on behalf of Clariant) in a letter dated 7th June 2001 (reference AWD.LCC.Let303.111936.244) and subsequent e-mails from Clariant dated 6th and 13th July 2001.

1.2 OBJECTIVES OF THE WORKS

The main objective of the works was to undertake a preliminary assessment of the presence and significance of soil and groundwater contamination at the Nipa site to provide a preliminary assessment of any potential environment liabilities associated with the site.

Specific identified objectives of the works were as follows:

- identification of potential contaminant source areas, relating to both historical and current activities at the site;

- to characterise the environmental setting of the site, including identification of potential migration pathways and sensitive receptors;

- to identify potential off-site sources of contamination relating to historical and/or current operations in areas surrounding the site;

- to assess potential non-compliance issues with regards to environmental legislative requirements for asbestos containing materials (ACMs), polychlorinated biphenyl (PCBs), ozone depleting substances (ODS) and radioactive substances;

- preliminary investigation of geological conditions and soil and groundwater contaminant concentrations beneath the site through intrusive investigation works, to identify potential site specific source-pathway-receptor series;

- to undertake a Tier 1 screen on soil and groundwater contaminant analytical data obtained during the Phase II works to provide a preliminary assessment of the significance of the results; and,

- to provide conclusions and recommendations for additional works to identify liabilities, where necessary e.g. Phase III investigation and quantitative human health and/or controlled waters risk assessment.

1.3 CONTENTS OF THIS REPORT

This report presents the findings of the Phase I contaminant source audit and Preliminary Phase II soil and groundwater investigation works undertaken at the Nipa facility in Llantwit Fardre, Wales. A summary of site environmental setting (topography, geology, hydrogeology and hydrology), site history and a third party database search are presented in Section 2. Current and historical site operations are presented in Section 3. The findings of the contaminant source audit are presented in Section 4. The scope and methodology of the preliminary Phase II works are presented in Section 5. Section 6 presents a discussion of the results of the preliminary Phase II works. Conceptual site model (CSM) development for the site is discussed in Section 7. Conclusions and recommendations are presented in Section 8.

1.4 LIMITATIONS OF THIS REPORT

URS Dames & Moore has prepared this report for the sole use of Clariant UK Ltd in accordance with generally accepted consulting practices and for the intended purposes as stated in the agreement under which this work was completed. This report may not be relied upon by any other party without the explicit written agreement of URS Dames & Moore. No warranty, expressed or implied, is made as to the professional advice included in this report.

In undertaking these works, URS Dames & Moore has utilised information provided by Clariant UK Ltd. Site visit and employee interviews have been restricted to a level of detail appropriate for the study. It is important that these implications be clearly recognised when the findings of the study are being interpreted.

Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work. The results of any measurements taken may vary spatially or temporally and further confirmatory measurements should be made after any significant delay.

No copies of reports, prepared by URS Dames & Moore for Clariant UK Ltd, may be altered without the express knowledge and permission of URS Dames & Moore.

2 ENVIRONMENTAL SETTING

2.1 INTRODUCTION

The following sources of information have been utilised in compiling the following section of this report:

- British Geological Society (BGS) 1:50,000 Sheet 248, Pontypridd;
- EA 1:100,000 Groundwater Vulnerability Map of Gwent, South and Mid Glamorgan, Sheet 36;
- Ordnance Survey 1:25,000 Pathfinder sheet 1148; and,
- Third Party Database Search (EnviroCheck Report) obtained from Landmark Information Group (Landmark).

As indicated above, a third party database search was undertaken by Landmark as part of these works. It should be noted that neither this nor any of the other information obtained from third parties has been independently verified by URS Dames & Moore.

2.2 SITE SETTING

The site is located on the A473 Llantrisant Road between Llantwit Fardre and Church Village, approximately 2.5 kilometres (km) southwest of Pontypridd centre, at National Grid Reference ST 30800 185400 (centre of site). The location of the site is shown on Figure 1.

The site comprises an operational chemical plant manufacturing preservatives/biocides for the cosmetic industry, occupying a total area of approximately 7.5 acres. It is understood that the Functional Chemicals division of Clariant acquired British Tar Products Ltd (BTP) in 2000 including Nipa with its head office located at Llantwit Fardre. The site was reported to have been developed from greenfield approximately 30 years ago, being relocated from the Treforest Industrial Estate near Pontypridd.

Surrounding neighbours to the site are as follows:

- to the north and northwest, the A473 Llantrisant Road beyond which is a residential area and the East Glamorgan Hospital approximately 400 m north of the site;

- to the northeast, a minor road, an area of woodland and undeveloped agricultural land, beyond which lies the township of Church Village approximately 500 m from the site;

- to the south and southeast, undeveloped agricultural land and woodlands, a residential development approximately 300m from the site, and a dismantled railway approximately 750m from the site. The village of Efail Isaf is located approximately 800m to the south of the site. The Nant Dowlais stream, which flows in a southwesterly direction, is located approximately 130 m to the south of the site. The Nant Ty-crwyn stream, a tributary of the Nant Dowlais stream confluences with the latter at approximately 100m from the southeast of the site; and

- to the southwest, a series of light industrial/commercial units. A tyre distribution centre is located immediately southwest of the site. The village of Llantwit Fardre is located approximately 140 m to the southwest.

A number of disused quarry workings and mine shafts are indicated in surrounding areas to the site.

2.3 TOPOGRAPHY

The site is located on the southeast aspect of a northeast-southwest trending valley feature and slopes at a gradient of approximately 5%. The site lies at an approximate elevation of between 78 and 96 metres above Ordnance Datum (mAOD). Land to the northwest of the site rises to an approximate elevation of 170 mAOD, at a distance of 750 m. Land beyond the Nant Dowlais stream to the southeast rises gently to an elevation of approximately 300 mAOD.

2.4 REGIONAL GEOLOGY

Based upon the BGS 1:50,000 sheet for the area, the site and surrounding areas are anticipated to be underlain by a series of Carboniferous aged rocks belonging to the Lower and Middle Coal Measures. These rocks, which are anticipated to be up to 200 m thick in the area, typically comprise a series of interbedded sandstones, shales and coals.

The Lower Coal Measures rocks are anticipated to underlie the Middle Coal Measures in the area to a depth of up to 800 m.

Drift deposits in the area of the site are indicated to comprise a series of Pleistocene Glacial Boulder Clays.

Although not indicated on the published geology map sheet, made ground may also be present beneath the site typical of such an industrial development.

2.5 REGIONAL HYDROGEOLOGY

According to information published by the EA, the Carboniferous rocks underlying the area are classified as a "Minor Aquifer" with low permeability. Although these deposits are not reported to produce large quantities of water for abstraction, they may be important for local supplies and in supplying base flow to rivers.

Localised shallow "perched" groundwater may be expected within made ground beneath the site area. Groundwater movement within made ground is likely to be controlled by a number of local factors including (i) recharge from precipitation, (ii) the presence of foundations which may act a barriers to flow, (iii) variability in the composition and permeability of fill material, (iv) topography of the top surface of the underlying deposits, and (v) leakage into and out of site drains. Ultimately, shallow groundwater would be expected to flow in a broadly southerly direction towards the Nant Dowlais stream.

The third party database search indicates that there are two licensed groundwater abstractions within a 1 km radius of the site as follows:

- National Grid Reference ST 308050 185900 (located to the north of the site). A total of 74,880 m^3 are licensed to be abstracted annually from this location for general industrial use. This abstraction is licensed to East Glamorgan NHS Trust; and,

- National Grid Reference ST 308130 185950 (located to the north of the site). A total of 49,920 m^3 are licensed to be abstracted annually from this location for general industrial use. This abstraction is also licensed to East Glamorgan NHS Trust.

Based upon a review of the published maps, both groundwater abstractions are inferred to be up and lateral to the hydraulic gradient of the site area. As a result, it is considered unlikely that the groundwater abstraction wells are receptors of groundwater flowing beneath the site.

2.6 REGIONAL HYDROLOGY

The nearest watercourse to the site is the southwesterly flowing Nant Dowlais stream, located approximately 130 m to the southeast. The third party database search undertaken as part of these works has not identified any surface water abstraction points within a 1 km radius of the site area.

2.7 THIRD PARTY UK REGULATORY DATABASE SEARCH

To gain a better understanding of activities in the vicinity of the site area, and to assess potential impacts from those activities, URS Dames & Moore commissioned an EnviroCheck Report from Landmark providing a third party UK regulatory authority database search comprising information on the following types of operations within an approximate 1 km radius of the site:

- landfill operations;
- waste treatment or disposal and waste transfer operations;
- facilities holding either Part A or Part B authorisations under the Environmental Protection Act 1990;
- sites holding radioactive substances authorisations;
- pollution incidents to controlled waters;
- sites holding hazardous substances consents;
- operators holding consents to discharge to controlled waters;
- sites which have been the subject of regulatory authority enforcement notices and/or prosecutions; and,

- Sites of Special Scientific Interest/Nature Reserves.

The EnviroCheck Report essentially relates to operational activities for which licences or authorisations are required and have been obtained pursuant to environmental laws. It is therefore possible that there are unauthorised activities being carried out (e.g. surface water discharges, fly tipping etc) in the vicinity of the site that are not identified.

Landfill Sites

The third party database search has indicated one registered non-operational landfill within the site area (NGR 308000 185400). The license, which was registered to Creigian Factors Ltd of Cowbridge, allowed it to landfill wastes at the Atlantic Trading Estate in Llantwit Fardre up to a maximum input of 250,000 tonnes per year. The licence is indicated to have either lapsed or been cancelled/surrendered on 1st June 1986. Authorised wastes are reported to include inert, non-toxic building waste, hardcore, sub-soil and/or topsoil. The licence prohibited disposal of biodegradable, putrescible, toxic and poisonous wastes and empty chemical, solvent and oil containers.

Waste Treatment or Disposal Sites

The EnviroCheck Report indicated a registered waste transfer site (Licence Ref: CT/01/96) and incinerator (Licence Ref: CT/91/04) at the East Glamorgan General Hospital registered to the East Glamorgan NHS Trust, located approximately 800 m to the north of the site. The waste transfer permit is for the transfer of clinical wastes up to 10,000 tonnes per year while the incineration input was undefined. The records indicate that the waste transfer permit now supersedes the incineration permit.

Prescribed Processes

Part I of the Environmental Protection Act 1990 established a licensing system for certain processes that have the potential to cause significant harm to the air, water or land environments. Processes with the potential to cause serious environmental pollution are prescribed for Environment Agency control in England and Wales under an Integrated Pollution Control (IPC) system whereby control is exercised over discharges to all environmental media - air, water and land. Less polluting processes come under the control of Local Authorities, which are responsible for regulating emissions to air

only. The Environmental Protection (Prescribed Processes and Substances) Regulations 1991 (SI 1991 No. 472 as amended) lists those processes falling under central control (Part A processes) and Local Authority control (Part B processes) respectively.

The EnviroCheck Report has identified a total of 19 Integrated Pollution Control (IPC) permits registered to the site between 22 February 1994 and 17 May 2001. All permits relate to the manufacture and use of organic chemicals. Of these permits, 14 are indicated as superseded by a major (substantial) or minor (non-substantial) variation. In February 1994 it appeared that the site was authorised for five processes which were then reregistered from Her Majesty's Inspectorate of Pollution (HMIP) to the Environment Agency. Two of these authorised processes are indicated as having been surrendered by the operator at that time. The remaining three authorised processes have been varied since then with three permits indicated as being current. These are as follows:

- permit reference BF9174 (dated 24th June 1999);
- BH3096 (dated 3rd March 2000); and,
- BK3972 (dated 17th May 2001).

No other Part A IPC authorisations were identified within a 1 km radius of the site.

The third party database search has indicated that there are also two Local Authority Part B Air Pollution Controls registered within a 1 km radius of the site as follows:

- Bebb Travel Plc, Llantwit Fardre, located approximately 300 m southwest of the site (NGR 307730 185270). This control is registered to waste oil burners of less than 0.4 MW thermal input; and
- Shell Church Village, Llantwit Fardre, located approximately 315 m southwest of the site (NGR 307710 185270). This control is registered to a PG 1/14 petrol filling station.

Radioactive Substances Authorisations

The Radioactive Substances Act 1993 regulates the keeping and use of radioactive materials and the accumulation and disposal of radioactive waste. Any person who uses or keeps radioactive materials must be duly registered in respect of the premises and materials concerned.

Review of the EnviroCheck Report indicates that there are 14 registered permits related to the use, storage and/or disposal of radioactive substances within a 1km radius of the site. All permits are registered to ether the East Glamorgan NHS trust or the Pontypridd and Rhondda NHS Trust at the East Glamorgan General Hospital located to the north of the site. Of these permits, nine are indicated as superseded by a substantial or non-substantial variation. Two are indicated as having been surrendered by the operator.

Pollution Incidents

The database search reports pollution incidents to controlled waters that have occurred since 1990. URS Dames & Moore understands that Landmark is updated with the relevant information by the Environment Agency every six months.

The third party database search indicates a total of 15 pollution incidents to controlled waters registered within a 1 km radius of the site, five of which are indicated within 250 m of the site. The database record indicates one incident either within the site area, or immediately to the north (NGR 308000 185500) for the release of "Chemicals - Other Inorganic". Details of the property and the receiving water body involved in the incident are not indicated, however the incident was reported to have occurred on 4th December 1995. This incident is understood to relate to the release of process effluent from the site to Controlled Waters in December 1995 (Section 3.3)

Fourteen of these incidents are reported to have been classified as minor (Category 3) by the EA. Contaminants involved in these incidents are identified to be crude sewage, mining water, oils (including diesel) and other inorganics. One incident was reportedly classified as significant (Category 2) by the EA where light oil was released due to poor operational practise at a site located approximately 760m southwest of the site.

Hazardous Substances

The Planning (Hazardous Substances) Act 1990 and the Planning (Hazardous Substances) Regulations 1992, regulate the storage on, over or under land of some 71 hazardous substances. Storage of any listed hazardous substances in an amount above a controlled quantity requires an appropriate consent from the hazardous substances authority (Local Authority). Nipa applied for one such consent to RCT County Borough Council on 19 October 1999 but the decision on the application was not reported.

The Control of Major Accident Hazard Regulations 1999 (COMAH) apply to industrial sites where there are substances present in sufficient quantities to cause a major accident hazard. These sites must register with the Health and Safety Executive and the EA. The EnviroCheck report indicated the site is registered as Lower Tier under COMAH Regulations.

Discharge Consents

The third party database search indicated two discharge consents within a 1 km radius of the southwest of the site (NGR 307700 184600 and 307700 184500). Both discharge consents are registered to Dwr Cymru Cyfyngedig Sewage Networks, for the discharge of sewage effluent and storm water effluent into the Nant Dowlais, approximately 800m down stream of the site.

Prosecutions and Enforcements

The EnviroCheck Report database records indicated a prosecution relating to one pollution incident for a release of effluent to controlled waters in the vicinity of the site. The prosecution, the hearing date for which was 1st March 1996, was reported to have resulted in a fine of £10,000. One enforcement and prohibition notice is registered at the same location, dated 3rd February 1995 relating to the unauthorised release of effluent to controlled waters. This prosecution is understood to relate to the release of process effluent from the site to Controlled Waters in December 1995 (Section 3.3).

Potentially Contaminative Land Uses – Current or Planned

During the period 1995 to present, there were five recorded planning applications of possible contaminative use within a 1,000m radius of the site. These include an extension to the factory buildings at the site. Detailed plans were reportedly submitted on 29 October 1997. There is also a report of a preplanning entry for a chemical production unit at the site. In the nearby vicinity of the site there is a report of a steel-framed industrial tower. Plans were reportedly submitted on 17 January 2001. A vehicle workshop extension for M&M Autos, located in the industrial estate to the southwest of the site, were reported to have plans submitted on 26 September 1998. A change of use for an electrical workshop approximately 750m north of the site was registered on 13 March 195.

A review of the Contemporary Trade Directory in the EnviroCheck Report indicated the following industrial land use within 1 km of the vicinity of the site:

Land Use	**Direction**	**Distance (m)**
Car Servicing & Repairs		
- Gilbern Car Sales	Southwest	149
- M&M Autos	Southwest	149
- AV Motor Repairs	Southwest	283
- Autowise Vehicle Services	Northwest	926
- D.Humphreys	Northeast	879
- Duffryn Garage	East	812
Petrol Filling Stations		
- Clearway Filling Station	Southwest	315
Bus & Coach Operators		
- Bebb Travel	Southwest	203
Engineering – Precision		
- FSG Tool & Die	Southwest	283
Sheet Metal Manufacturer & Fabrication		
- Newtown Welding	Northeast	907
PVC Manufacturer		
- RN Jones	North	1,000

The site was not listed in the Contemporary Trade Directory.

Protected Nature Areas

No protected nature areas were reported by Landmark in a 1,000 m radius of the site.

COMAH Sites

The Control of Major Accident Hazard Regulations 1999 (COMAH) apply to industrial sites where there are substances present in sufficient quantities to cause a major accident hazard. These sites must register with the Health and Safety Executive and the EA. The EnviroCheck report indicated the site is registered as Lower Tier under COMAH Regulations.

Mining Activity

A review of historical maps indicates a history of coal mining activity in the areas surrounding the site. The database search indicates one, low risk shallow mining hazard approximately 210 m east of the site at NGR 308210 185420.

2.8 SUMMARY OF SITE ENVIRONMENTAL SENSITIVITY

The site environmental setting is considered to be of moderate sensitivity given the presence of perched groundwater within made ground, deeper groundwater within permeable lenses in glacial drift deposits and the presence of drainage ditches into nearby surface water courses (See Section 6). This sensitivity of the site environmental setting is indicated by the significant release of effluent into drainage ditches and subsequent discharge to the nearby surface water course in 1995 for which the site was prosecuted. It is understood the site has made changes to the drainage effluent system to prevent a reoccurrence of such an event

2.9 HISTORICAL MAP REVIEW

The following section outlines the historical development of the site and surrounding areas based on a review of Ordnance Survey Maps dated, 1875, 1885, 1900, 1919, 1940/1943, 1950/1953, 1961, 1964/1965, 1970/1972, 1976, 1984, 1987/1990 and 1993. Extracts of selected historical maps are presented as Figure 2A-2F.

The 1875 and 1885 Ordnance Survey map for the area shows the site and surrounding areas to be largely undeveloped. The site area is indicated to be rough grassland with a series of possible drainage ditches indicated to the east of the site. Another possible drainage ditch is shown along the northeastern boundary of the current site area. The southwesterly flowing Nant Dowlais is shown approximately 130 m to the southeast of the site. The Llantrisant & Taff Railway is shown immediately northwest of the site. A number of mine workings are shown in surrounding areas, the closest of which are indicated approximately 800 m to the west (Dyffryn Llantwit Colliery). Old mine workings (shafts and levels) and an old limekiln are shown present within 100m to the east of the site. The villages of Llantwit and Efail Isaf are shown approximately 250 m southwest and 1 km southeast of the site, respectively.

The 1900 map shows few significant changes in the area. The area of the site remains undeveloped. Dyffryn Llantwit Colliery is now shown as disused and Llest Llantwit Colliery is indicated approximately 500m southwest of the site. An old coal pit is labelled approximately 450m northwest of the site. Areas surrounding the site are shown as agricultural land, woods, residential (Church Village). A second railway line is shown at approximately 450m southeast of the site and approximately parallel to the Taff Vale Railway (Llantrisant Branch) line shown adjacent to the northwest.

The 1919 and 1921 edition of the maps show an iron foundry works 100m southwest of the site but other than this the area of the site remains relatively unchanged. The villages of Llantwit, Newtown and Church Village located within 1km of the site have developed further. Sewage filter beds, shown to be operated by the Llantrisant and Llantwit Fardre Regional District Council, are indicated approximately 250m northeast of the site and 420m southeast of the site. Llest Llantwit colliery is indicated as disused.

The 1940/1943 and 1947/1950/1953 maps again show the area of the site to be undeveloped and drainage ditches are indicated present to the northeast, east and south. The sewage beds are no longer shown. East Glamorgan County Hospital is now shown approximately 400m due north of the site and the majority of the surrounding area of the site is shown as agricultural land.

The 1961 and 1964/1965 maps show the iron foundry labelled as 'Works', whilst the site area itself remains undeveloped being rough grassland with drains into Nant Dowlais stream. Drainage networks are labelled 20m south of the site discharging into the Nant Dowlais stream.

The 1970/1972 and 1974/1976 maps show a car factory and an unnamed factory adjacent to the western boundary of the site. It also shows the railway to the northern boundary of the site to be dismantled and no longer present. The site itself remains undeveloped, while the villages of Llantwit (renamed Llantwit Fardre) and Church Village have grown in size considerably. A school is shown approximately 350m southwest of the site and there is a disused tip marked on the map approximately 960m east of the site.

The 1980/1984 and 1987/1990 maps show approximately two thirds of the site area labelled as 'Works'. Five buildings are shown present. A large building labelled 'Factory' is shown at the north of the site with four smaller buildings to the west and south. An electricity sub-station is shown in the northwest corner of the site and various undefined storage tanks are shown in the southern and western part of the works. The site area is bordered to the southwest by 'Factories' and 'Works' with associated 'Tanks', to the southeast and northeast by woodland, and to the north west by Llantrisant Road (A473). Beyond the road, a new residential area is shown. Beyond the 'Factories' and 'Works' to the southwest of the site, new residential developments, a playground and Maes-y-Bryn County Primary School are shown. Drains formerly shown to the south of the site are no longer present but a feature marked 'Issues' is labelled adjacent to the eastern boundary of the site.

The 1991 and 1993 maps show four buildings in the site area located in the south and west of the site. The building formerly shown along the southeastern boundary is no longer present. The 'Factories' and 'Works' to the southwest of the site are labelled as 'Newtown Industrial Estate'. The residential area directly north of the site has increased considerably in size.

The current edition of the map shows no significant changes in land use of the site or it's surrounding area.

3 CURRENT AND HISTORICAL OPERATIONS

3.1 CURRENT OPERATIONS

The NIPA site can be divided into two main areas:

- operational areas – approximately 5 acres occupied by an unpaved car park adjacent to the A473 road, and a terraced concrete and asphalt paved manufacturing area transected by an access road; and,

- non-operational areas – approximately 2.5 acres occupied by unpaved land in which the stormwater drainage ditch, effluent holding tank and effluent discharge control point (south corner) are located.

In broad terms, these areas occupy the northern to thirds and southern third of the site, respectively. The operational area comprises five terraces with access between them via steps or along the site access road that slopes to the southeast at a gradient of approximately 5%. A summary of the site layout is presented below (Figure 3).

Terrace Level	**Occupied By**	
Uppermost (adjacent to A473)	the site entrance at the northern corner of the site; the site access road; an unpaved car park for employees and visitors; and, a shower block.	
Second	**East/Southeast of Access Road**	**West/Northwest**
	Brick office accommodation and reception; employee canteen; showers/changing rooms; laboratories; pilot plant; and, packing and despatch.	transformers and switch gear; portacabin; boilerhouse; fuel oil ASTs; and, workshop;

Terrace Level	**Occupied By**	
Third	process building P1 (APS/fine chemicals); caustic scrubber; switch room; pumps; effluent sump; former sodium milling room; flammables and corrosives materials stores; toluene recovery unit; liquid production units; propylene glycol storage; and, waste materials drum storage.	process building P2 (parabens); pumps; subsidiary cooling tower; and, methanol/propanol bulk storage ASTs.
Fourth	disused waste methanol AST; waste acid AST; phenoxetol AST; and, waste and material drum/IBC storage area.	methyl paraben ASTs; and, process building P3 (gallates).
Fifth	Dry raw materials warehouse.	switch room; recovered methanol/propanol ASTs; distillation unit; diesel AST; methanol/propanol recovery columns; and, effluent treatment plant.

The operational area is separated from the non-operational area by a concrete wall that extends along the majority of the boundary between the two areas and along the boundary with the site's southern and western neighbour, the Creigau Union Tyres Company.

3.2 HISTORICAL OPERATIONS

Based on discussions with Mr Glyn Cox (ESHA Manager) and long serving employee, Mr Paul Jones (Technical Assistant) of Nipa, URS Dames & Moore understands the following with respect to the history of the site:

- buildings P1, P2 and P3 were constructed in numerical order within three to five years from occupying the site in 1970;

- the site is understood to have produced a wide range of products through its operational history including intermediates for the pharmaceutical and reprographics industries and preservatives for the food industry;

- building P1 is currently used for the manufacture of fine chemicals and operation of a pilot plant. The southeastern most part of the site and for milling of sodium hydroxide (up until 3 months ago). Historically, the northern part of building P1 has been used to manufacture a reprographic developer (AP5) and the southern part ethyl-3,5,-dichloro-4-hydroxybenzoic acid (EDHB). It is understood that the sodium room is to be demolished for the preparation of a new process plant;

- production of parabens is understood to have been undertaken in building P2 throughout its history. This building is reported to have had a quarry tile floor until approximately 4 years ago. It is understood that the parabens operation is to be shortly be re-located from P2 to the southern part of building P3;

- production of propyl and lauryl gallates is reported to have been undertaken in building P3 throughout the site's operational history;

- nitro-diol was reported to have been manufactured in this building between approximately 1993 and 1997. Fine chemicals including a reprographic sensitiser (BNE) are reported to have been manufactured in this area;

- the concrete wall adjacent to the non-operational area was reported to have been constructed in approximately 1996 and is keyed into the boulder clay beneath the site; and,

- a disused phenol tank is reported to have been buried in the vicinity of the bulk storage area (south of P1) approximately fifteen years ago. It is also understood that a waste phenolics tank was located to the south of building P3.

It is understood from site management that the site acquired the southern unpaved (non-operational) area of the site approximately three years ago.

3.3 HISTORY OF INCIDENTS

It was reported by site management that the site had been responsible for a fish kill as a result of a release of effluent into controlled waters in December 1995. It is understood this release resulted in a prosecution and a fine of £10,000. It is understood from site management that due to a pump failure, sodium hydroxide containing effluent overflowed from a sump located to the southwest of building P1. The effluent entered stormwater drain in the surrounding area and flowed to a second sump located close to the eastern site boundary. This pump was also reported to have failed and as a result, effluent discharged onto marshy land to the east of the site and flowed towards the Nant Dowlais to the southeast.

Site records also indicate a further four releases to controlled waters between 9th October 1994 and 11th October 1995, as follows:

- 9th October 1994: Release of approximately 10 litres of 2, 4-dichlorophenol and para-cresol from the pilot plant area;
- 1st February 1995: release of approximately 170 kg of propyl gallate (paraben), propanol and acid waste to a local stream related to damaged effluent pipe;
- 11th October 1995: release of purple coloured process effluent (containing gallate) to controlled waters (<400 litres); and,
- 12th August 1995: release of approximately 200 gallons of sodium hydroxide and hydrogen peroxide to controlled waters.

None of the four incidents above were identified by the third party database search.

A fire was reported to have occurred at the site on 29th April 1997. This reportedly resulted when toluene being recovered from a small tank within building P3 into an IBC ignited due to an electrostatic charge. The damage reported included the destruction of two to three chemical reactors and significant smoke damage to the building. The toluene lost during the incident was subsequently pumped to the effluent tank area, where it re-ignited. Fire-fighting fluid generated during incident is

reported to have been deep purple/black in colour. Site management reported that the EA sampled surface water and stormwater discharge immediately after the incident with no significant contamination being detected. The fire was reported to have generated approximately 400 kg of soot.

A study was undertaken by Hyder Consulting to assess the potential emissions arising from the fire. Analysis for dioxins, furans, PAHs and toluene was undertaken on the soot. The study reported no significant concentrations of dioxins or toluene. Individual PAH compounds were reported observed including fluoranthene, pyrene, benzo(g,h,i) fluoranthene, benzo(a)anthracene and benzo(a)pyrene at concentrations ranging between 30 and 230 μg/l.

The site now operates an incident reporting system (commenced October 1999). Since reporting started, a number of incidents are reported within system relating to small volume releases of alcohols and hydrocarbons involving either IBC handling, leaking valves, occasional overfilling of tanks and/or occasional small tank leaks. Volumes involved reported to be between a few litres and a few hundred litres.

A number of fires are reported to have occurred at the Creigau Union Tyres Company, located to the west of the site. One large fire is reported to have occurred on the 28th April 1994. Fires are understood to have typically generated thick black smoke from burning rubber.

A summary of historical operations and anectodal information is presented in Figure 4.

4 SITE WALKOVER

The following section of the report summarises the findings of the contaminative source audit undertaken as part of these works.

4.1 MATERIALS HANDLING AND STORAGE

The principal non-bulk storage location at the site is the concrete paved waste and material storage area that is split into bays, the contents of which are as follows.

- quarantine bay and empty drums;
- non-hazardous materials storage bay;
- acid and alkali storage bay, there is a three meter gap to separate the alkalis from the acids;
- liquid preservative storage bay;
- flammable storage bay e.g. butanol, ethanol and toluene;
- waste and residual waste oil storage bay; and,
- non-hazardous waste storage bay including a skip and compactor.

Storage of other non-hazardous materials was reported to be stored on site in the warehouse, located along the southern edge of the operational area, which is used for the storage of finished products and small quantities of intermediate products.

4.2 UNDERGROUND STORAGE TANKS

No underground storage tanks (USTs) were reported to be currently present on-site.

4.3 ABOVE-GROUND STORAGE TANKS

Eighteen above ground storage tanks (ASTs) were observed on site. The details of these are as follows.

- one aqueous methanol waste tank of reported 63 m^3 capacity. The bund capacity is reported as 52.92 m^3 and as such, the bund capacity does not meet the guidance of containing 110% spillage containment. Signs of leakage could be seen outside of the bund wall, however, this tank is reported to be empty and due to be decommissioned shortly;

- two phenoxetol tanks with reported approximate 20 m^3 capacity each. The tanks are separately bunded by a fibreglass face, brick lined bund. Each bund has a reported capacity of 18.52 m^3 and as such, the bund capacity does not meet the guidance of containing 110% spillage;

- one 'Premix 3' tank with reported approximate 30 m^3 capacity. The bund is constructed of rendered block and has a capacity of 39.98 m^3;

- one propylene glycol tank of reported 50m^3 capacity. The rendered block bund has a reported capacity of 38.56m^3 and as such, the bund capacity does not meet the guidance of containing 110% spillage;

- one propanol recovery tank with a reported capacity of 30m^3. The bund is constructed of rendered block and is reported to have a capacity of 24.67m^3 and as such, the bund capacity does not meet the guidance of containing 110% spillage;

- two fuel oil tanks for fuelling the site boiler when gas supply is disrupted. These tanks have reported capacities of 45.4m^3 and 22.7m^3. The bunds are constructed of breezeblock on a flat surface with reported containment capacities of 20.67m^3 and 17.53m^3 respectively, and as such, the bund capacity does not meet the guidance of containing 110% spillage;

- two propanol tanks with a reported capacity of 42.5m^3. The bund is constructed of bricks and has a capacity of 53.46m^3.

- two methanol tanks with a reported capacity of 40.5m^3. The bund is constructed of bricks and has a reported capacity of 89.70m^3. It was observed that the methanol tanks and propanol tanks are located in adjacent bunds with pipework running through a hole in the brickwork between the bund walls;

- one propanol recovery tank, the capacity of which was not known. The bund is constructed of concrete block with a capacity of 23.40 m^3. Although the capacity of the tank is unknown it is understood that the bund capacity does meet the guidance of containing 110% spillage.

- two methanol recovery tanks, each with reported capacities of 30 m^3. The bunds are constructed of rendered block (inside and out) with reported capacities of 24.18 m^3 and 26.91 m^3. Leakage from the bunds was apparent, however it was reported that these bunds to be refurbished in the near future;

- one diesel tank, used as fuel for the forklift trucks, with a reported capacity of 2 m^3. The bund is constructed of concrete blocks and has a reported capacity of 3.76 m^3;

- three new tanks for process building P2, containing sulphuric acid, ammonia and chiller water. These tanks have reported capacities of 15 m^3, 30 m^3 and 40 m^3, respectively. These tanks are not bunded as they are reported to be double skinned with automatic leak detectors; and,

- one effluent tank with an internal rendered bund with a reported capacity three times the capacity of the tank.

Many of the tank bunds were observed to contain water. It was reported that the tank bunds are inspected weekly and water within the bunds analysed for Chemical Oxygen Demand (COD). If the bund water exceeds 2,000 ppm COD it is discharged to the effluent tank for off-site disposal, and if less than 2,000 ppm COD it discharged to the sewer holding tank for release into the local authority sewer.

Site management reported that refurbishment of all of bunds is due to take place in the near future.

4.4 WATER MANAGEMENT

4.4.1 Water Supply

Water is reported to be obtained from Welsh Water town mains supply.

4.4.2 Wastewater Management

The principal wastewater streams at the site are reported as follows:

- contaminated effluent generated in the process plants;
- potentially contaminated stormwater from surface runoff around the site;
- uncontaminated stormwater from the site building roofs; and,
- sanitary wastewater.

Process Wastewater

Effluent generated in the process plants was reported to be estimated at approximately 70 m^3 per day, and is discharged via stainless steel drains to one of two tanks in the effluent treatment plant. The process effluent is tankered off-site to a nearby sewage works. It is understood that the stainless steel drainage system was installed following the effluent release incident in approximately 1995. It was reported by site management that the old redundant drains have been sealed, where known.

It is understood that the site also currently operates two solvent recovery operations for methanol/propanol (located to the west of the effluent treatment tank) and toluene (located to the east of the former Sodium Room). These substances are recovered in solution from site process operations with liquors transferred to appropriate solvent recovery system where water content is typically reduced to 1%. Concentrated recovered methanol and propanol solutions are transferred to bulk storage tanks located to the south of building P3. Recovered toluene is transferred into IBCs and stored in the waste and material storage area.

Stormwater

Stormwater generated on site, with the exception of roofwater, is reported to drain to one of two sumps located in the area of the effluent treatment plant. Water is sent to a 600 m^3 holding tank located in the southern corner of the undeveloped area of the site, which controls the discharge flow volume within the authorised discharge limit of 1.6 litres per second. The site holds a trade effluent discharge consent (ref: TE519) dated 4th October 1999 issued by Welsh Water. Review of the discharge consent indicated the site was authorised to discharge up to 138 m^3 per day. Discharge consent limits are indicated as follows:

- pH - between 6 and 11;
- COD – up to 2,000 mg/l;
- methanol – up to 200 mg/l;
- ethanol – up to 100 mg/l;
- propanol – up to 100 mg/l;
- parahydroxybenzoic acid (PHBA) – up to 100 mg/l;
- phenol up to 10 mg/l; and
- suspended solids – up to 400 mg/l.

The IPC authorisation for the parabens (P2) and gallates (P3) processes indicates a requirement for the site to undertake daily monitoring of stormwater for COD and pH prior to discharge to surface water and reporting to the EA on a quarterly basis. Records of the monitoring programme undertaken by the site for 2000 and 2001 were reviewed during the audit and appeared to be in accordance with the authorisation's requirements.

It is understood that stormwater from the site surface may be discharged to surface water rather than sewer on occasions where parameters are below roof water discharge consent parameters. Variation to authorisation AK5806, dated 24th January 2000, relates to this consent.

All discharges to river, sewer and the effluent tank are reported to be analysed daily. Water discharging to sewer is held in a sewage holding tank were it is automatically sampled to ensure that the 1.6 litre per second discharge rate and 2,000 ppm COD consent limit are not exceeded. If it exceeds the consent limit, the system automatically stops water from discharging until more

rainwater has been added to dilute the sewage. The EA and Welsh Water are reported to independently monitor the sites discharges to the river and sewer respectively.

Stormwater generated from the roofs of the majority of buildings on the site are understood to drain to a sump located to the south of the effluent treatment plant. This is undertaken via a french drain located along the western edge of the site. The stormwater from roofing is discharged to a drainage ditch that ultimately drains to the Nant Dowlais stream.

Sanitary Wastewater

Sanitary wastewater is reported to be generated from the toilets, showers and canteen and is discharged directly to the mains sewer at the top end of the site. It was reported by site management that the mains sewer runs parallel to the site's southern and western boundary and is located beyond the site boundary.

The site drainage layout is presented on Figure 5.

4.5 WASTE MANAGEMENT

The site is reported to generate the following controlled wastes:

- general waste - stored in a skip in the non-hazardous waste storage bay;
- office paper – sent for recycling by On Site Services, a licensed waste carrier. All transfer documents appeared to be complete;
- kitchen waste - stored in a closed skip close in the proximity of the canteen; and,
- shrink wrap and cardboard - stored in the non-hazardous waste storage bay and is compacted. Documents exist for the removal of compacted cardboard (One 3.5 yard skip every 3 months) by Cleanaway, which is a licensed waste carrier. The site is part of the Biffpack scheme.

The site is reported to produce the following special wastes:

- waste oils, stored in the waste and materials storage bay;

- empty used steel and plastic drums with residues. These are disposed of by a licensed waste carrier and all transfer documents appeared to be complete.

- sludge from the effluent interceptor tanks.

- contaminated floor sweepings. These are removed form site by Park Environmental, a licensed waste carrier and taken to landfill.

- various solid and aqueous chemical wastes are also removed from site by licensed waste carriers, Solrec and Solvent Resource Management Ltd. Examples of the types of chemicals removed include parabens, APS, toluene and acetone. All waste consignment notes appeared complete.

Waste transfer/consignment notes for all of these waste streams were provided for review. Documentation is held from 1993 until the present day and no significant non-compliance issues of the waste duty of care requirements were observed.

Duty of Care audits have been undertaken for a number of the waste management contractors used by the site. Not all such contractors had been audited at the time of the visit. Site management reported that additional audits are planned.

Assessment of the site's compliance with respect to the Producer Responsibility Obligations (Packaging Waste) Regulations 1997 is not included within the scope of this report.

4.6 ASBESTOS CONTAINING MATERIALS

Site management reported that chrysotile asbestos cement sheets were used at the site for roofing and cladding of buildings. It was reported by site management that no formal asbestos survey has been undertaken, although it is understood that Clariant has requested one. A review of waste disposal documentation indicated that 20 kg of asbestos cement roof sheets were removed from the site on 8 December 2000 by a licensed waste carrier, City Special Waste, and all documentation appeared complete.

4.7 POLYCHLORINATED BIPHENYLS

Several transformers and switchgear were observed at the site. Site management reported that PCB containing equipment had been identified and that PCBs had been removed from the site. URS-Dames & Moore observed documentation during the site visit for removal of PCB's from the site on 8 August 2000 by a licensed waste carrier, Shanks Chemical Services. The waste transfer documentation appeared complete.

4.8 OZONE DEPLETING SUBSTANCES

Site management reported that it was not aware of the presence or use of any ozone depleting substances at the site.

4.9 RADIOACTIVE SUBSTANCES

Site management reported that it was not aware of the presence of any presence or use of any radioactive substances at the site.

4.10 OTHER OBSERVATIONS

4.10.1 Visual Signs of Contamination

Signs of leaking could be seen outside of the bund wall of the aqueous methanol waste tank. It is understood that this tank is empty and due to be decommissioned.

Bunds for the methanol recovery tanks were observed to be leaking. Site management reported that they are to be refurbished in the near future.

4.10.2 Vegetation Distress

No signs of vegetation distress were noted at the site.

5 PRELIMINARY PHASE II SOIL AND GROUNDWATER INVESTIGATION

5.1 INTRODUCTION

This section provides a summary of the field works and methodologies carried out by URS Dames & Moore during collection of soil and groundwater samples from boreholes and groundwater monitoring wells completed at the site as part of the investigation. The approximate investigation locations are presented in Figure 6.

5.2 SCOPE OF WORKS

URS Dames & Moore completed the following scope of works during the site investigation programme:

- drilling of thirteen boreholes (BH101 to BH113) across the site using a combination of dynamic percussive and rotary techniques to depths up to 6.2 metres below ground level (mbgl). The boreholes were positioned across the site but not directly within active process areas to minimise disruption to site activities;

- installation of groundwater monitoring wells in the uppermost groundwater unit encountered in all thirteen boreholes (BH101s, BH102s, BH103s, BH104s, BH105s, BH106, BH07s, BH108s, BH109, BH110, BH111s, BH112s and BH113s), and in the second uppermost groundwater unit, where encountered, in 10 boreholes (BH101d, BH102d, BH103d, BH104d, BH105d, BH07d, BH108d, BH111d, BH112d and BH113d);

- collection of up to four soil samples from each borehole at nominal depth intervals of 0.5 mbgl, 1.0 mbgl, 1.5 mbgl and 2.5 mbgl, varied to reflect changes in lithology and evidence of contamination observed during the drilling programme, for field screening and laboratory analysis;

- laboratory analysis of 46 soil samples and 30 groundwater samples for a range of potential contaminants of concern (PCOC) which included volatile organic compounds (VOCs), total

petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAHs), total phenols, heavy metals and pH;

- selected soil samples were also analysed for total organic carbon (TOC) and particle size distribution (PSD), from which representative organic matter contents and representative percentage clay contents were calculated respectively;

- surveying of all investigation locations relative to Ordnance Datum (mAOD); and,

- report preparation and assessment.

5.3 DRILLING OF BOREHOLES AND INSTALLATION OF MONITORING WELLS

A total of thirteen boreholes (BH101 to BH113) were drilled using dynamic percussive and rotary water-flush techniques. Geotechnical Engineering Ltd of Gloucester was subcontracted to perform the drilling works under supervision of a URS Dames & Moore field engineer. The site investigation programme was undertaken between 9th July 2001 and 17th July 2001.

Boreholes were positioned across the site according to the following rationale:

Borehole	Location/Rationale
BH101	Adjacent to and hydraulically down gradient of a former effluent sump and the AP5 fine chemicals production area located in the central part of the site.
BH102	Hydraulically down gradient of a bulk storage area located in the central eastern part of the site.
BH103	Within a waste and materials storage area located in the central eastern part of the site.
BH104	Within a waste and materials storage area located in the central part of the site.
BH105	Hydraulically down gradient of a dry goods warehouse in the southern part of the site.
BH106	Adjacent to a holding tank and hydraulically down gradient of an effluent drainage ditch in the southern part of the site.
BH107	Adjacent to an effluent tank to in the southern part of the site.
BH108	Adjacent to a solvent recovery plant in the western part of the site.
BH109	Adjacent to a boiler house and AST in the northwestern part of the site.

Borehole	Location/Rationale
BH110	Hydraulically up gradient in the car parking area in the northern part of the site.
BH111	Hydraulically down gradient of an alcohols storage area and associated workshops located in the western part of the site.
BH112	Adjacent to an alcohols and solvent recovery plant located in the central northern part of the site.
BH113	Adjacent to a former sodium milling room located in the central eastern part of the site (to be demolished for new plant).

The boreholes varied in depth between 1.3mbgl (BH109) and 6.2mbgl (BH101), and were all completed within the natural boulder clay underlying the made ground. Downhole drilling equipment was cleaned using a pressure washer between borehole locations to minimise the potential for cross-contamination.

5.4 SOIL SAMPLING

Soil samples were collected at nominal depth intervals of surface to 0.5 mbgl, and at 0.5 m intervals thereafter. This was varied to reflect the subsurface conditions encountered. Samples were collected as grab samples from the lined or cored soils obtained from the percussive and rotary advanced boreholes. A clean pair of disposable nitrile gloves was worn between each soil sampling event in each borehole.

Soil samples were placed into sealed polythene bags for headspace analysis using a portable photoionisation detector (PID). The PID was calibrated against a 100 ppm isobutylene standard gas such that a relative assessment could be undertaken of VOCs present within the soils underlying the site.

Samples of soil retained for laboratory analysis were placed into sample containers supplied by the laboratory, labelled and placed into a chilled cooler box for storage prior to dispatch to the analysing laboratory. All chain-of-custody documentation was completed and submitted with the samples.

5.5 GROUNDWATER MONITORING AND SAMPLING

Thirteen boreholes (BH101 to BH113) were completed with either single, or dual installation monitoring wells using either 50 mm or 19 mm internal diameter HDPE casing, plastic end caps, silica gravel filter pack, bentonite pellets and lockable well covers mounted flush with the surface.

A groundwater monitoring and sampling round was undertaken on 18th and 19th July 2001. Monitoring wells were dipped with an air/oil/water interface probe to assess for the presence of light and dense non-aqueous phase liquids (LNAPLs and DNAPLs) within the water column, to determine groundwater levels and, to determine the volume of water within each well for development purging prior to sampling. Monitoring wells were developed by purging a minimum of three volumes of water from each monitoring well, or until dry, using a battery powered peristaltic pump with silicone and polyethylene tubing dedicated to each monitoring well. The temperature, pH and electrical conductivity (EC) were measured after each volume was purged. On completion of purging, groundwater samples were collected using the peristaltic pump with the well-dedicated tubing.

Groundwater samples collected for heavy metals analysis were filtered using an in-line field filter and stored in 1 litre plastic containers. Groundwater samples were also stored in 1 litre amber jars ((for diesel range organics (DRO), total phenols and polycyclic aromatic hydrocarbons (PAH) analysis)) and vials ((volatile organic compounds (VOCs) analysis)). Samples were placed into a chilled cooler box for storage prior to dispatch to the analysing laboratory. All chain-of-custody documentation was completed and submitted with the samples.

5.6 LABORATORY ANALYSIS

Soil and groundwater samples were submitted to Alcontrol Geochem Laboratories Ltd (Geochem) of Chester for analysis.

Soil samples were analysed for a range of the following analytes:

- VOCs;
- TPH – Diesel Range Organics (DRO);
- PAHs;
- total phenols
- metals;
- pH;

- total organic carbon (TOC); and,
- particle size distribution (PSD).

Groundwater samples were analysed for a range of contaminants including:

- VOCs;
- DRO;
- total phenols;
- PAHs and;
- metals.

The rationale for the analysis at each investigation location is presented as follows:

Location	Borehole	Soil Sample Depth (m)	Rationale/Observations	Contaminants Analysed
Adjacent effluent sump.	101	0.5	Slight odour reported during sampling.	VOCs, PAH, Phenols
Down gradient of bulk storage tanks.	102	0.9	Red staining observed on soil.	VOCs, Phenols
		1.6	Purple staining and acidic odour recorded.	VOCs, pH
Waste & materials store.	103	0.5	Black staining observed on soil.	VOCs, DRO, PAH, Heavy Metals, pH
		1.5	Vertical delineation.	Phenols
Waste & materials store.	104	0.5	Shallow soil beneath waste storage area.	VOCs, PAH, Phenols, Heavy Metals, pH, Asbestos
		1.5	Vertical delineation.	VOCs
Down gradient of Warehouse and Concrete Retaining Wall	105	0.3	Shallow soil immediately down gradient of operational part of site.	VOCs, Phenols, Asbestos
Down gradient boundary of site.	106	0.2	Shallow soil adjacent surface water holding tank.	DRO, PAH
		0.6	Ash and slag observed in soil.	VOCs, DRO, PAH, Heavy Metals, pH

Location	Borehole	Soil Sample Depth (m)	Rationale/Observations	Contaminants Analysed
Adjacent to effluent tanks.	107	0.5	Shallow soil adjacent effluent drainage tanks.	VOCs
		2	Acrid odour reported from soil.	pH
Down gradient of P3, Solvent Recovery Plant and Effluent Drain	108	0.5	Black staining observed in soil.	VOCs, DRO, PAH, Heavy Metals, pH
		2.1	Viscous purple to black staining observed on cobbles.	VOCs, Phenols
Adjacent boiler house.	109	0.5	Slight odour reported from soil.	VOCs, DRO, PAH, Heavy Metals
Up gradient boundary of site.	110	0.5	Up gradient boundary and ashy material observed in soil.	VOCs, DRO, PAH, Heavy Metals
Down gradient of P2	111	0.4	Shallow soil down gradient of P2 process building	VOCs, DRO, PAH, Phenols
		1	Deep soil down gradient of P2 process building.	VOCs
Down gradient of Toluene Recovery Plant	112	0.8	Odour reported from soil.	VOCs, Phenols, pH
		1.8	Vertical delineation.	VOCs
Adjacent Sodium Room.	113	0.8	Adjacent new process area.	DRO, PAH, Phenols, Heavy Metals, pH
		2.75	Adjacent new process area.	VOCs

Notes:

Alcohols reported as tentatively identified compounds (TICs) as part of VOC suite (GC/MS).

Individual phenolic compounds and cresols reported as TICs as part of PAH suite (GC/MS).

AMPS, PCPI, EDHB, propyl gallate, propylene glycol, trimethylpropyltriacrylate, hydrogen peroxide and dilauryl peroxide were reported not to be detectable by the laboratory within existing analytical suites.

Summaries of the soil and groundwater analytical schedules are presented in Tables 1 and 2 at the end of this report.

6 RESULTS OF THE FIELD INVESTIGATION

6.1 SITE GEOLOGY AND HYDROGEOLOGY

The following is a summary of the geological and hydrogeological conditions encountered at the site during completion of URS Dames & Moore's soil and groundwater investigation.

6.1.1 Site Geology

The results of the investigation are generally consistent with the geology anticipated beneath the area, which comprised made ground overlying naturally occurring drift deposits interpreted as glacial (boulder clay) as follows:

- Made Ground: comprising clays, silts, angular gravels and cobbles ranging in thickness from 0.3m (BH105) to 2.35m (BH106); overlying,

- Boulder Clay: generally firm, grey-brown, occasionally mottled orange, with varying amounts of clays, silts and sands with occasional organic materials (coal and plant materials), angular gravels and fractured cobbles of sandstone.

Borehole logs are included as Appendix A at the end of this report.

6.1.2 Site Hydrogeology

Perched groundwater was encountered in the made ground in twelve of the 13 locations at depths between 0.02 mbgl (BH105s) and 1.146 mbgl (BH106s). Based on the results of groundwater monitoring it is considered that perched groundwater flow present beneath the majority of the site is being controlled by the topography of the top of the underlying clay unit, the permeability of the made ground and hydraulic continuity between made ground and more permeable units within the boulder clay.

The presence of the concrete retaining wall at the down gradient boundary of the operational area of the site is considered likely to minimise the potential for perched groundwater within the made ground to migrate into the non-operational area and beyond. Perched groundwater in the non-operational area is considered likely to issue at surface at the downgradient side of the contact boundary between made ground and the underlying clay surface and/or may be collected by drainage ditches in the area discharging ultimately into the Nant Dowlais Stream.

Shallow groundwater in the underlying Boulder Clay deposits was encountered in four of ten deeper installations across the site at depths of between 1.252 mbgl (BH108d) and 4.682 mbgl (BH101d). Shallow groundwater in these deposits was generally observed to be present in horizons where a significant gravel and/or cobble content were encountered. In two locations in the southwestern part of the site (BH107 and BH108) shallow groundwater appeared to indicate a confining pressure within these deposits.

Shallow groundwater has been encountered within both made ground and locally, within the more permeable units of the underlying Boulder Clay deposits. Based upon the findings of these works and the terraced nature of site, however, groundwater within the made ground is not considered likely to be laterally continuous across the site, and may not represent a single continuous groundwater unit in hydraulic continuity with the Nant Dowlais stream. On the basis of the investigation findings, vertical groundwater migration to and lateral flow within the more permeable lenses of the underlying Boulder Clay is also considered possible, however, given the variability of these deposits, groundwater within these deposits may again not represent a single continuous groundwater unit beneath the site.

Groundwater monitoring data is presented in Table 3.

6.2 FIELD OBSERVATIONS

The following field observations were made during the completion of the soil and groundwater investigation programme:

Borehole	Location	Observations
101	Adjacent effluent sump.	Strong acrid odour at 0.5m and 3.5mbgl.
102	Down gradient of bulk storage tanks.	Red staining at 1 mbgl; Acrid odour at 1.6 to 2.4 mbgl; Purple stain at 1.8 mbgl, and Dark staining on fractured cobbles from 2.0 to 3.5mbgl with PID=2.2ppm.
103	Waste & materials store.	Black staining.
104		Slight acrid odour at 1.05mbgl to 1.8mbgl.
105	Down gradient of Warehouse.	No staining or odour observed.
106	Down gradient boundary of site.	Fill materials from 0.2mbgl to 2.35mbgl consisting ash, brick and slag gravels.
107	Adjacent to effluent tanks.	Dark ashy material within clay from 0.6mbgl to 1.1mbgl; Slight acrid odour from 1.3 to 2.8mbgl, PID=0.5ppm.
108	Down gradient of building P3 and solvent distillation unit	Sporadic black staining from 0.2mgl to 2.05mgl; Viscous purple black staining on cobbles at 2mbgl; Slight odour reported at 2.8mbgl.
109	Adjacent boiler house.	Slight odour and dark staining from 0.2mgl to 1.3mbgl, PID=0.2ppm to 0.3ppm.
110	Up gradient boundary of site.	Slight odour at 1mbgl, PID=3.2ppm (maximum recorded).
113	Adjacent Sodium Room.	Adjacent new process area.

No evidence of phase separated liquid was observed in either the shallow or deep monitoring wells.

6.3 ANALYTICAL RESULTS & SCREENING

A summary of the soil and groundwater analytical results is presented below, together with an initial screening of the data. The analytical results obtained during these works have been compared against conservative screening criteria, termed "Tier 1 levels". These levels are designed to identify sites

that are unlikely, on the basis of identified soil and groundwater contamination, to pose a significant risk to either human health or the environment. For the purposes of this assessment, Tier 1 screening criteria chosen are either drinking water standards (DWSs) or Dutch Intervention Values (DIVs). Dutch Intervention values have been adjusted on the basis of total organic matter and clay contents measured for site soils

If the adopted Tier 1 screening criteria are exceeded, further analysis may need to be carried out to establish whether potential identified risks from the contaminant concentrations are significant, and to establish the requirement for remedial actions. This further analysis can comprise either additional investigation works and/or the implementation of more sophisticated quantitative risk assessment techniques i.e. Tier 2 or 3.

A summary of the soil and groundwater analytical results is presented in Tables 4 to 13, which accompany this report. Schedules of analysis for soil and groundwater samples are presented as Tables 1 and 2. Copies of the laboratory reports are contained in Appendix B.

6.3.1 Soil Results

Volatile Organic Compounds (VOCs)

A total of 18 soil samples were analysed for VOCs. Of the suite of 60 volatile compounds analysed for, only 5 were identified above reported method reporting limits (0.001 mg/kg). A summary of these is presented as follows:

- chloroform was reported within one of the soil samples analysed, at a concentration of 0.04 mg/kg. This sample was collected at a depth of 2.8 m from borehole 113, located to the southeast of the former sodium room. No known operational use of chloroform has been identified during the current works;

- toluene was reported within soil samples collected from boreholes 102, to the south of the phenoxetol bulk storage tanks (0.013 mg/kg at 1.6-1.7 m) and 112, located to the south of the toluene recovery plant (0.027 mg/kg at 0.8 m);

- tetrachloroethene (PCE) was observed within soil samples collected from boreholes 107 and 108, located to the south of process building P3 and in the area of the effluent tank. Concentrations observed within shallow soil sample collected at these locations were 0.006 and 0.032 mg/kg, respectively; and

- ethylbenzene and xylenes were observed within one shallow soil sample collected from borehole 106, located along the downgradient site boundary, at concentrations of 0.003 and 0.005 mg/kg, respectively.

None of the observed concentrations exceed available screening criteria. Both PCE and toluene are understood to have been used as solvents in site operations. Observed VOC concentrations presented in Table 4.

Metals

A total of 7 soil samples were analysed for metals during these works. These samples were collected from depths of between 0.5 and 0.8 m and represent sample of made ground. Of the metals analysed for, mercury, cadmium and selenium were not reported at concentrations above their respective MRLs (1 mg/kg). Observed metals concentrations were as follows: arsenic (1-15 mg/kg), chromium (6-50 mg/kg), copper (13-99 mg/kg), nickel (3-19 mg/kg), lead (6-80 mg/kg) and zinc (23-117 mg/kg). A review of the results against available screening criteria indicated one exceedence: a concentration of copper within a shallow soil sample colleted from borehole 110 (99 mg/kg) located in the area of the car park. Metals results in soils are presented in Table 5.

Total Phenols

A total of 9 soil samples collected from locations within the central and southern areas of the site were analysed for total phenols content. Total phenols were reported above the MRL of 0.01 mg/kg within all samples at concentrations ranging between 0.03 and 1.11 mg/kg. These samples were collected at depths of between 0.5 and 2.1 m, and represent both made ground and underlying natural deposits. The highest concentrations were observed within samples collected from borehole 104, located within the storage compound area within made ground (1.11 mg/kg at 0.5 m depth) and underlying natural deposits (1.78 mg/kg at 1.5 m depth). No screening criteria available for total phenols. Adjusted DIVs for phenol for made ground and natural deposits are calculated to be 8 and

15, respectively. None of the observed concentrations exceed these criteria. Total phenol concentrations observed are presented in Table 5.

Asbestos

During the works, 2 soil samples were collected for analysis for asbestos content. No asbestos fibres were identified within either of the soil samples. The results of these analyses are presented within Table 5.

Hydrocarbons

A total of 8 shallow soil samples were analysed for hydrocarbon content. These samples were collected at depths ranging between 0.2 and 0.8 m and from made ground. Observed hydrocarbon concentrations within these samples ranged between 5 and 671 mg/kg. The highest hydrocarbon concentrations were observed within soils collected from locations 106, located along the downgradient site boundary: 671 mg/kg at 0.2 m depth and 523 mg/kg at 0.6 m depth. On review, none of the observed hydrocarbon concentrations exceed the relevant adjusted DIV for hydrocarbons of 1,000 mg/kg. Observed hydrocarbon concentrations presented in Table 6.

Polycyclic Aromatic Hydrocarbons (PAHs)

Widespread detection of PAHs above their respective MRLs (0.001 mg/kg) were reported within all 10 shallow soil samples analysed. Individual PAHs were reported at concentrations ranging between 0.008 and 8.839 mg/kg. Total PAH concentrations reported ranged between 0.745 and 46.459 mg/kg. No exceedences are indicated against available screening criteria for a sum of 10 of the PAHs. The highest total PAH concentrations reported were observed within soil samples collected from locations 106 (46.459 mg/kg) and 110 (23.738 mg/kg), located at the downgradient investigation location and car park, respectively. Made ground at both locations is recorded as having contained ashy material. Both locations are also noted to be unsurfaced. Observed PAH concentrations are presented in Table 7.

6.3.2 Groundwater Results

Volatile Organic Compounds (VOCs)

Groundwater samples collected from 10 shallow and 2 deep monitoring wells were analysed for VOCs. VOCs were reported above their respective MRLs (1 µg/l) within 9 of the samples analysed. The results can be summarised as follows:

- vinyl chloride (chloroethene) was reported within samples collected from 4 of the shallow monitoring wells at concentrations ranging between 18 and 72 µg/l. The monitoring wells are located within the area of toluene recovery plant (112s), south of bulk storage tanks (102s), storage compound (103s and 104s) and effluent plant (107s). Vinyl chloride was also observed at a concentration of 208 µg/l within a sample collected from the one deeper monitoring well (108d), located to the south of process building P3. Exceedences of the DWS for vinyl chloride (1 µg/l) is observed to have been exceeded within all samples;

- dichloroethene ((DCE) in the form of trans-1,2-dichloroethene, 1,1-dichloroethene and/or cis-1,2,-dichloroethene) was reported within 5 of the shallow groundwater samples analysed at the following concentrations: 1,1 dichloroethene (4 and 7 µg/l), trans–1,2-dichloroethene (3 µg/l) and cis-1,2,-dichloroethene (3 and 2,632 µg/l). Exceedences of DWS for cis-1,2,-dichloroethene (61 µg/l) were observed within 5 of the samples analysed, including the deeper groundwater sampled collected from location 107d;

- trichloroethene (TCE) was reported within 4 of the samples analysed (collected from wells 102s, 107d, 108s and 112s) at concentrations ranging between 1 and 47 µg/l. Exceedence of the DWS for this compound (30 µg/l) is observed within 2 of the samples analysed, collected from 102s and 112s, located in the area of the bulk storage tank and toluene recovery plant;

- tetrachloroethene (PCE) was reported within groundwater samples collected from 3 locations at concentrations ranging between 2 and 11 µg/l (wells 102s, 108s and 112s). Exceedence of the DWS for this compound (10 µg/l) is observed within 1 of the sample analysed, collected from well 108s, to the south of process building P3;

TCE, DCE or vinyl chloride were not identified as being used on site during either current or historic operations. Widespread use of PCE as a solvent across the site has, however, been identified. It is considered possible therefore, that the presence of TCE, DCE and vinyl chloride within a number of groundwater samples may represent breakdown products of PCE.

- chloroform was reported within groundwater samples collected from 7 shallow and 1 deeper monitoring wells at concentrations ranging between 1 and 53 µg/l. Observed concentrations generally ranged between 1 and 3 µg/l. The highest chloroform concentration was reported within a groundwater sample collected from well 102s, located to the south of the bulk storage tanks. Exceedence of the DWS for chloroform (0.2 µg/l) was observed within all 8 samples. As indicated in the soil results, no use of chloroform has been identified during either current or historical site operations;

- toluene was reported observed above the MRL within 4 groundwater samples analysed (collected from wells 102s, 107d, 112s and 113s) at concentrations ranging between 3 and 5589 µg/l. Exceedence of the DWS for toluene (720 µg/l) was observed within 2 of the samples analysed: collected from wells 102s and 112s;

- BTEX (benzene, toluene, ethylbenzene and xylene) compounds were reported within groundwater sample collected from one monitoring well only (102s). Benzene, ethylbenzene and total xylene concentrations reported within this sample were 2, 20 and 5 µg/l. The concentration of benzene observed within this sample exceeds the DWS of 1 µg/l. Styrene and 1,4-dichlorobenzene were also reported within this sample at concentrations of 5 and 62 1 µg/l, both of which are below their respective DWSs.

Observed VOC concentrations in groundwater are reported in Table 8.

Metals

A total of 6 groundwater samples were analysed for metals. Of the metals analysed for, arsenic, zinc, selenium and lead were not reported at concentrations above their respective MRLs (2-50 µg/l). Observed metals concentrations were as follows: cadmium (3 µg/l at one location only), chromium

(3-74 µg/l), copper (12 and 14 µg/l) and nickel (11 and 39 µg/l). A review of these results against relevant screening criteria indicates exceedences as follows:

- one exceedence of the DWS for chromium (50 µg/l) was observed within a shallow groundwater sample collected from well 113s, located to the southeast of the former sodium room. The cadmium concentration reported within this sample was 74 µg/l; and,

- 2 exceedences of the DWS for nickel (20 µg/l) were observed within shallow groundwater samples collected from monitoring well 106s, located along the downgradient boundary and 108s, located to the south of process building P3 (concentrations of 39 and 22 µg/l, respectively).

Observed metals concentrations within groundwater samples analysed are presented in Table 9.

Total Phenols

A total of 6 groundwater samples were analysed for total phenols. Total phenols concentrations above the MRL (10 µg/l) were reported within all 6 samples analysed at concentrations ranging between 10 and 831,010 µg/l. The highest concentration was reported within a shallow groundwater sample collected from monitoring well 102s, located to the south of the bulk phenoxetol storage tanks and in the vicinity of a reported buried phenol tank. Phenol was reported within 2 of the groundwater samples (102s and 107d) as a tentatively identified compound (TICs) at concentrations of 8,745 and 3 µg/l, respectively. Observed total phenols concentrations in groundwater are presented in Table 9.

Hydrocarbons

A total of 6 groundwater samples were analysed for hydrocarbon content. Hydrocarbons above the MRL (10 µg/l) were observed within 5 of the samples at concentrations ranging between 171 and 1,234 µg/l. The highest hydrocarbon concentrations were observed within groundwater samples collected from shallow monitoring wells 108s, located to the south of process plant P3 (1,234 µg/l) and 113, located to the southeast of the sodium room (1,175 µg/l). Exceedences of the DWS for

hydrocarbons (90 µg/l) were observed for all 5 samples. Observed hydrocarbon concentrations in groundwater are presented in Table 10.

PAHs

Widespread detection of PAHs above their respective MRLs (0.01 µg/l) was observed within all 7 groundwater samples analysed. Individual PAHs were reported at concentrations ranging between 0.01 and 3.597 µg/l. Total PAH concentrations were reported to range between 0.252 and 6.894 µg/l. Exceedences of DWSs (for those compounds for which they are available) were observed as follows:

- one exceedence of the DWS for benzo(a)pyrene (0.01 µg/l) within groundwater samples collected from wells 106 and 107d. Monitoring well 106, is located along the downgradient site boundary; and,

- one exceedence of the DWS for dibenzo(ah)anthracene (0.0092 µg/l) within a groundwater sample collected from well 107d, located in the area of the effluent tanks.

Observed PAH concentrations are presented in Table 11.

Alcohols and TICs

During the works, all 12 groundwater samples collected were analysed for alcohols and screened for tentatively identified compounds (TICs) as part of the VOCs analysis. The following summarises the results:

- no alcohols were reported within any of the groundwater samples above the MRL of 10 µg/l;

- phenoxyethanol was reported within one groundwater sample collected from well 102s, located to the south of the phenoxetol tanks at a concentration of 80 µg/l; and,

- propanal, propanol, butanol and n-butyl ether were all observed within a groundwater sample collected from monitoring well 112s, located to the south of the toluene recovery plant at concentrations of 15, 645, 100 and 5 µg/l.

Observed alcohols and TIC concentrations are reported within Table 12.

7 CONCEPTUAL SITE MODEL

7.1 INTRODUCTION

In this section of the report, available geological, hydrogeological and hydrological data, contaminant distribution data and the environmental setting of the site are reviewed to identify potential contaminants of concern, potential contaminant source areas, potential contaminant migration pathways and potential receptors. This review forms the components of the conceptual site model (CSM) for the site, on the basis of which plausibly linked source-pathway-receptor series may be identified.

The three main elements of the CSM are:

- potential sources of contamination – that are already in, on or under the land which have the potential to cause harm or pollution of controlled waters due to past activities or substances which may be present due to migration from off-site sources;

- potential migration pathways for contamination – the means by which a substance may come into contact or affect a receptor on , under or through the site; and,

- potential receptors for the contamination – for example people (on or off site), animals, ground and surface water and vegetation/ecology.

7.2 POTENTIAL CONTAMINANT SOURCES

7.2.1 Historical Operations/Usage

Potential contamination resulting from historical site activities relates to the operation as a chemical manufacturing plant over the last thirty years. It is understood that a number of products have been generated on site, including a wide variety of speciality chemicals. Potential contaminant sources related to historical operations include spillage into drainage lines, leakage from process lines and storage and handling of materials and wastes at the site. Site management has indicated that a number of areas on site have not always been concrete-paved and that this has been developed in a piecemeal fashion.

Anecdotal evidence also indicated the presence of a buried phenol tank in the vicinity of the current bulk storage tanks down gradient of the sodium milling room. The site has also been prosecuted for a release of effluent into the Nant Dowlais. Potential contaminants associated with historical and current activities include volatile organic compounds (VOCs), including chlorinated solvents e.g. perchloroethene (PCE) and toluene, alcohols (methanol, ethanol), parahydroxy benzoic acid (PHBA), corrosives (acids and alkalis), hydrocarbons and phenolic compounds.

7.2.2 Current Operations

In general terms, little visual evidence of contamination was noted during the site investigation works. During the site walkover, however evidence of leakage was observed from bunds containing methanol ASTs, which were also reported to be inadequate in terms of containment capacity. Toluene, which is reported to have been used in site operations in recent years, has been identified within soil and groundwater samples collected on site, indicating a potential on-going source of contamination associated with either storage or handling.

7.2.3 Known Incidents

Several fires and releases of process effluent are reported to have occurred at the site during its operation history, with associated potential for soil and groundwater contamination at the site. Potential contaminants identified include:

- alcohols;
- toluene;
- PHBA;
- propyl gallate (paraben),
- propanol;
- acid waste;
- gallic acid;
- sodium hydroxide;
- hydrogen peroxide;
- PAHs; and,
- hydrocarbons.

Other than in-house analysis of soil samples collected from the east of the site, no previous soil and groundwater investigation works are reported to have been undertaken. The results of the soil sampling analysis programme are not known but were reported to be insignificant.

7.3 PATHWAYS

Based on the findings of the investigation works, the following potential migration pathways for site-derived contaminants have been identified:

- surface run-off of contaminants (free phase, dissolved phase or suspended in sediment) across surface hardstanding (limited across the site) and either infiltration into ground through gaps in hardstanding;
- potentially vertical migration of contaminants (free phase or dissolved phase within percolating rainwater) through areas of unsurfaced ground to shallow groundwater perched within made ground and present within more permeable lenses in the underlying glacial drift deposits;
- on reaching groundwater, potential lateral migration of free phase and dissolved phase contaminants within either perched groundwater and/or within more permeable horizons of underlying Boulder Clay. From the site, groundwater is inferred to flow principally southeasterly (based on topography) towards the Nant Dowlais stream;
- historic underground site drainage systems and associated backfill materials may act as preferential migration pathways for contaminants transporting them towards the down gradient part of the site;
- gases and vapours, if present, could migrate upwards through made ground into site buildings.

7.4 RECEPTORS

Potential contaminant receptors identified include:

- the Nant Dowlais stream, located to the southeast of the site;

- on-site staff and personnel could be subject to potential gases and vapours migrating from local sources; and,

- third party property between the site and the stream.

8 SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

8.1 SUMMARY OF FINDINGS

8.1.1 Soils

Relatively little significant soil contamination has been identified. In part this may be due to the affinity of many of the compounds of potential concern to water rather than soils. It may also reflect, however, that the wells have not been positioned directly on potential sources in a number of instances as these services may lie beneath buildings and that more significant soil and groundwater contamination would be reported from samples recovered from the primary sources of contamination.

Elevated PAH contamination has been identified in a number of wells, with the highest concentrations in BH106 and BH110. At both locations the logs report the presence of slag, ash and clinker, and these are assumed to be the source of this contamination.

The only metal reported at concentrations above its respective adjusted Dutch Intervention level was copper. This single exceedence is not considered of significance. Again the made ground is assumed to represent the source of elevated metals that may be present beneath the site.

8.1.2 Groundwater

The results of the investigation have identified potentially significant contamination beneath the site in groundwater. The wells at which the most elevated concentrations were noted were BH112 and BH102. Although these two wells are only approximately 30 metres apart, the location and results from BH113 suggest that contamination at BH102 and BH112 may not form part of a single plume. This may either because they represent two separate sources, or because a preferential pathway (e.g. drainage or service runs) has resulted in migration of contaminants between BH12 and BH102 without creating a significant impact on BH113.

The presence of TCE, DCE and VC, none of which are reported to have been used at the site are interpreted to represent breakdown products of PCE, which it is understood was used within the solvent recovery plant prior to toluene that is now used. It is noted however that the DCE

concentration in BH102 is significantly higher than that reported in BH112, adjacent to the presumed original source of the chlorinated solvent contamination. Concentrations of VC have been detected in a number of locations, with the highest concentrations reported to be within samples from BH107 and BH1108, located near to the site's western boundary.

Elevated concentrations of total phenols were reported in BH106, located in the open space at the down gradient boundary of the site. The apparent lack of phenol (as distinct from total phenols) in BH104 and BH105 suggests that the concentrations observed in BH106 do not form part of a single plume emanating from the inferred source in the vicinity of BH102. In the absence of identifying a more localised source, the hypothesis is developed that the contamination reported from this well either represents evidence of a localised (and unidentified source), or that a preferential migration pathway exists (eg drainage) that has resulted in the migration of phenolic compounds from the primary source identified to be near to BH102.

BH108 is located adjacent to the waste material tanks, and the groundwater sampled was reported to contain significant concentrations of DCE, VC and GRO. Although not analysed at this location, the report of purple staining may also be indicative of phenolic based compounds. Potentially viable sources for the contamination are the waste material tanks or Process building P3

The updated presence of total monohydric phenols detected in BH111 may be attributable to the nearby up gradient presence of Process building P2, reported to utilise PHBA as part of Paraben production.

The only contaminants identified in BH103 and BH107 above their respective drinking water standards (DWS) are chloroform, DCE and VC. It is presumed that the drum storage operations and the effluent treatment plant may represent the respective sources for the observed contamination.

8.2 CONCLUSIONS

The results indicate fairly widespread distribution of phenolic compounds, though this compound was not analysed at all locations. At present two key receptors have been identified: the Nant Dowlais some 130 m down gradient of the site, and the on-site employees. It is not apparent whether the observed contamination represents a number of discrete sources, part of a large plume, or part of single source for which preferential pathways have been identified to transport the contamination to

different areas of the site. A clear understanding of the mechanism to have created the distribution of the phenolic compounds observed at the site is required to help assess the potential for the contamination to represent a significant risk of harm off-site. It is evident that the 950 µg/l of phenolic compounds detected in the down gradient well BH106 could represent a significant risk to the Nant Dowlais. Similarly it is anticipated that a quantified risk assessment may conclude that the concentrations of phenolic compounds detected in BH102 would represent a potential risk to on-site workers from vapour inhalation.

From discussions with site personnel, it is understood that significant improvements have been made to the site over the last few years, particularly with regard to the drainage system. It is therefore concluded that the observed contamination may represent a legacy of historic operations, and that current practices provide less potential as a source for further contamination of soil and groundwater. Whilst there is a requirement to improve the knowledge of pathways for distribution of contamination around the site, the removal of the primary source of contamination, quantified risk assessment and a programme of soil and groundwater monitoring could support natural attenuation as the accepted remedial solution. This programme may need to be enhanced preferably by source treatment if access permits or by treatment to manage the quality of groundwater migrating off-site water by either air sparging or a pump and treat system to provide hydraulic containment. Alternatively, further review of the redundant drainage systems may identify a viable pathway by which the contamination in the inferred source areas has migrated to the down gradient boundary, and therefore suggest that the mobility of the phenolic compounds in groundwater is generally not as great as implied from the current distribution of contamination.

Significant concentrations of toluene (5008 µg/l and 5589µg/l) have been identified in groundwater in the areas around the solvent recover plant and in BH102. There is currently no evidence, however, to suggest that this is migrating from this source area. The distribution of potential breakdown products from PCE (understood to have originally been used in the solvent recovery area) is more widespread than toluene, with the concentrations of DCE and VC in BH107 and BH108 adjacent to the site's western boundary to be of potential concern. Further investigation and monitoring would be required to delineate the source areas and identify migration pathways. It is understood that chlorinated compounds are no longer utilised at the site. Reduction/containment of source areas and ongoing assessment and monitoring may mitigate potential risks to the Nant Dowlais.

Elevated concentrations of hydrocarbons have been identified in groundwater. These appear to be relatively isolated and located in areas at which more significant contamination from other compounds is implied. At this stage, no requirement for actions to address specifically petroleum hydrocarbons is anticipated.

The review of material storage at the site has identified inadequate bunding around a number of the storage tanks.

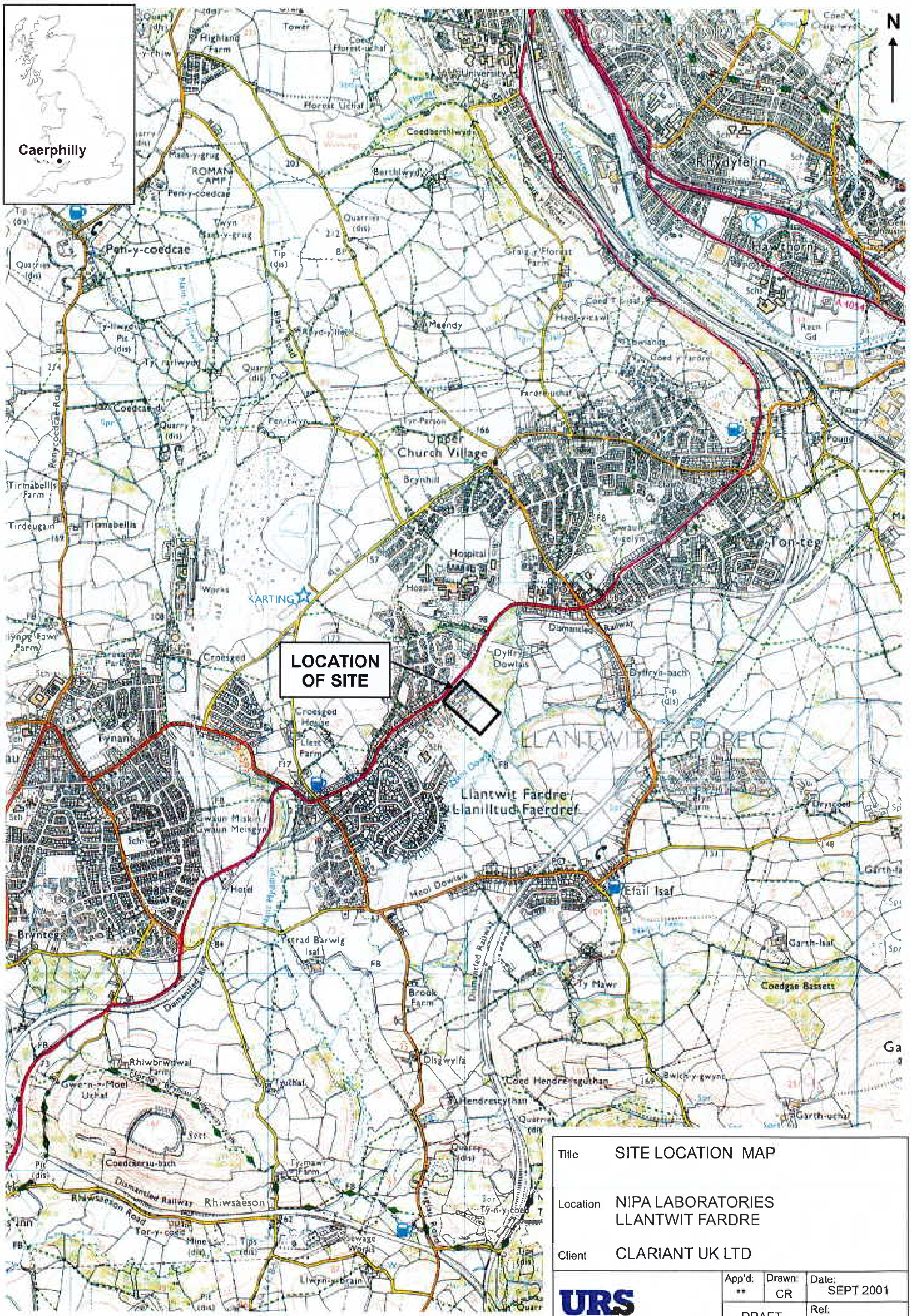
-oOo-

The following are attached and attached and complete this report: Tables, Figures and Appendices.

Respectfully submitted,
for DAMES & MOORE

Karen Madawee
Project Manager

David Pollok
Project Director



Title	SITE LOCATION MAP		
Location	NIPA LABORATORIES LLANTWIT FARDRE		
Client	CLARIANT UK LTD		
URS Dames & Moore O'Brien Kreitzberg Thorburn Colquhoun	App'd: **	Drawn: CR	Date: SEPT 2001
	DRAFT		Ref: KM/ARC/BRS
	Scale: 1:25,000		Job No: 49467/001/402
	Drg. Size: A4		FIGURE 1

0 0.25 0.5 0.75 1km

SCALE 1:25,000

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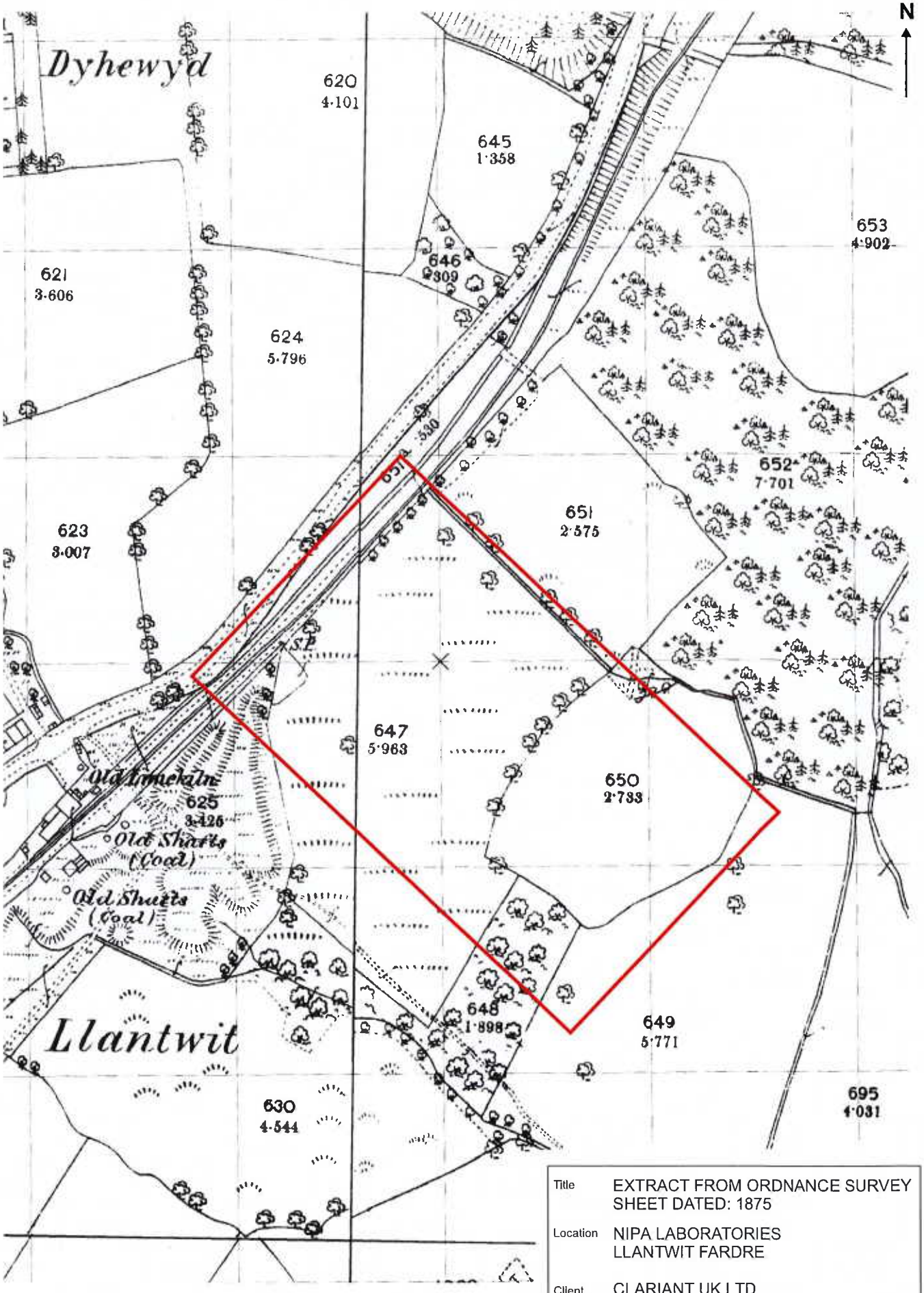

Approximate current site boundary

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0 25 50 75 100m

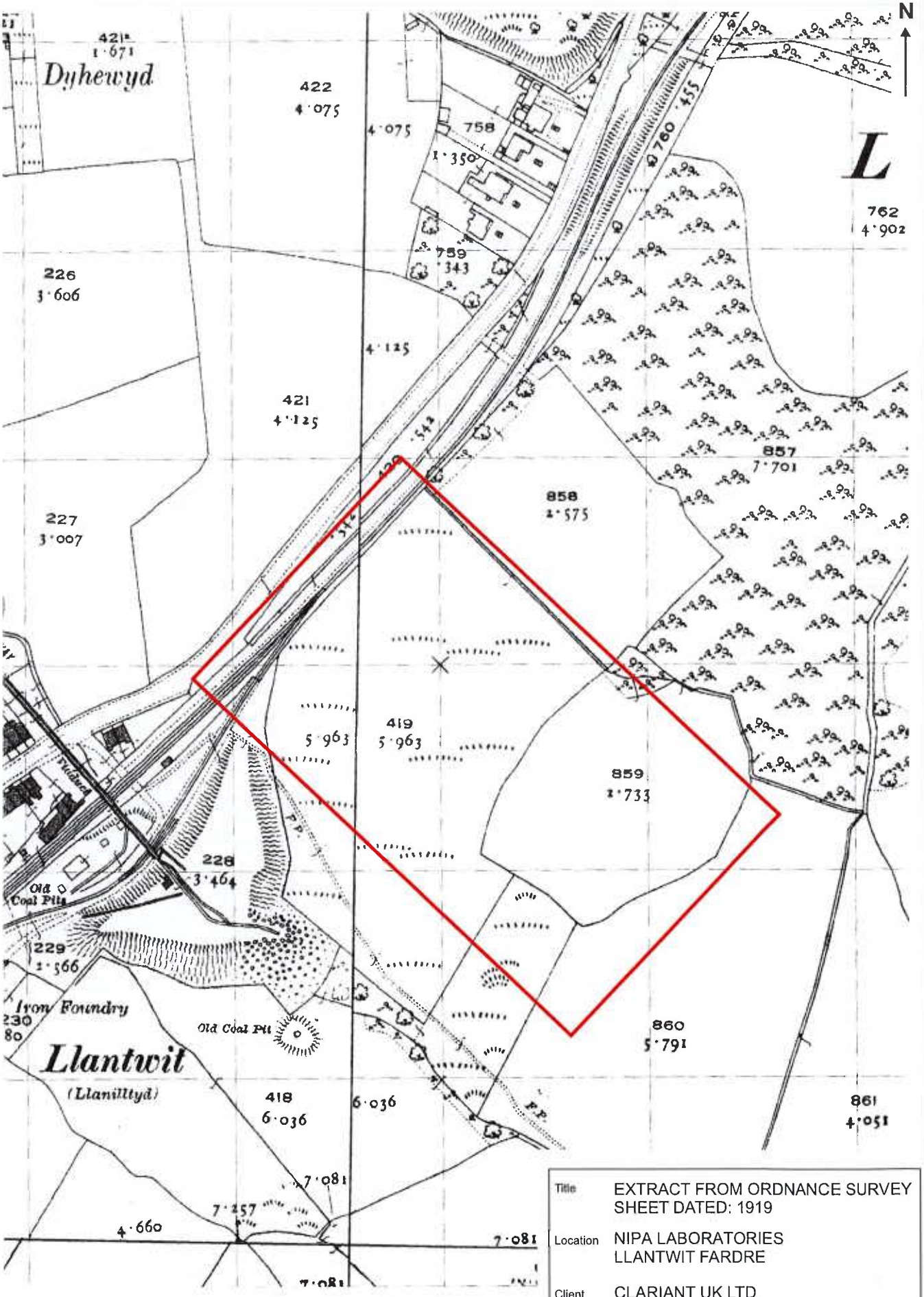
APPROXIMATE SCALE

Title	EXTRACT FROM ORDNANCE SURVEY SHEET DATED: 1875
Location	NIPA LABORATORIES LLANTWIT FARDRE
Client	CLARIANT UK LTD

URS

Dames & Moore
O'Brien Kreitzberg
Thorburn Colquhoun

App'd:	Drawn:	Date:
**	CR	SEPT 2001
DRAFT		Ref: KM/ARC/BRS
Reproduced at: 1:2,500		Job No: 49467/001/402
Drg. Size: A4		FIGURE 2A



Approximate current site boundary

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0 25 50 75 100m

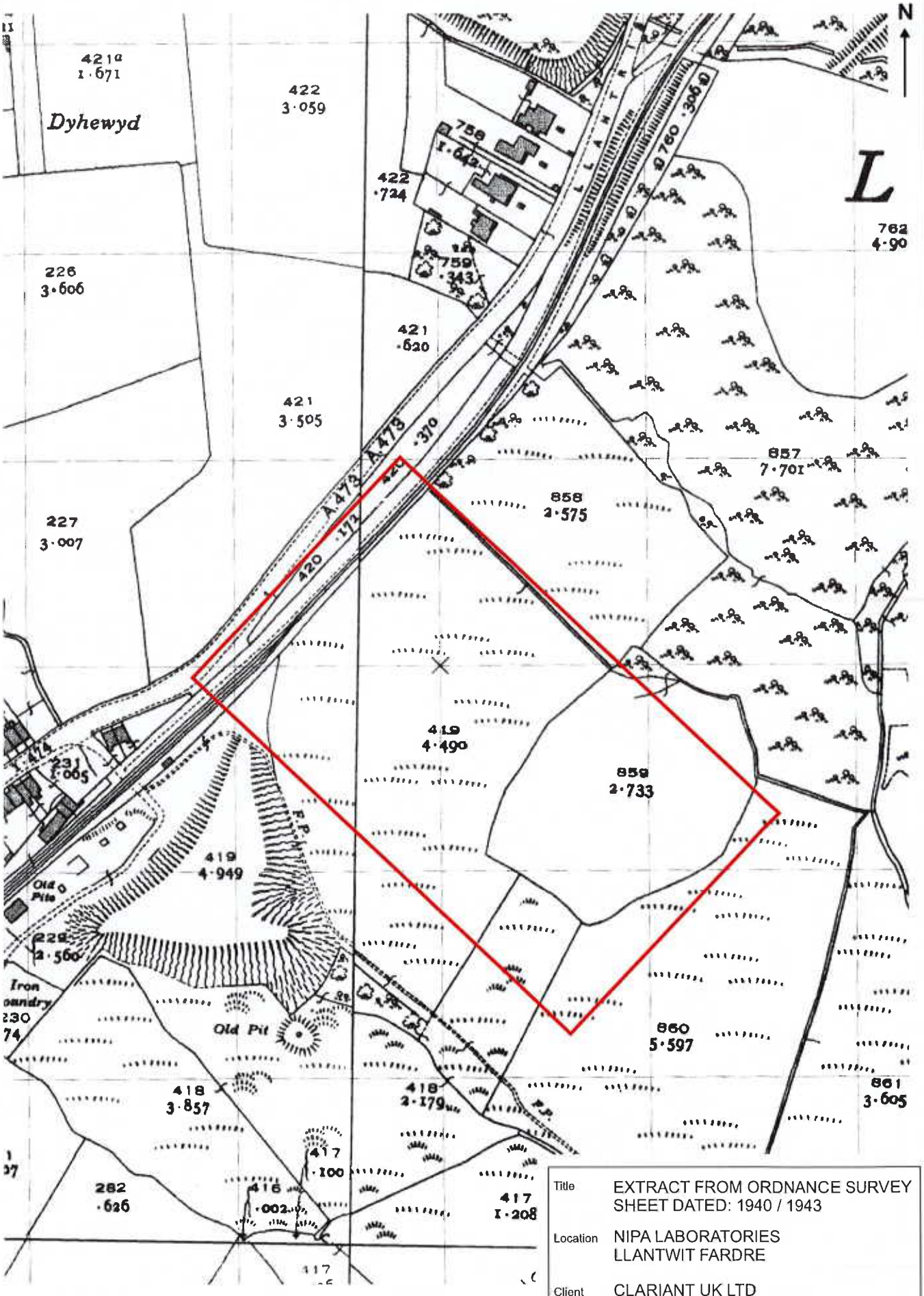
APPROXIMATE SCALE

Title	EXTRACT FROM ORDNANCE SURVEY SHEET DATED: 1919
Location	NIPA LABORATORIES LLANTWIT FARDRE
Client	CLARIANT UK LTD

URS

Dames & Moore
O'Brien Kreitzberg
Thorburn Colquhoun

App'd:	Drawn:	Date:
**	CR	SEPT 2001
DRAFT		Ref: KM/ARC/BRS
Reproduced at: 1:2,500		Job No: 49467/001/402
Drg. Size: A4		FIGURE 2B



Approximate current site boundary

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0 25 50 75 100m

APPROXIMATE SCALE

Title	EXTRACT FROM ORDNANCE SURVEY SHEET DATED: 1940 / 1943
Location	NIPA LABORATORIES LLANTWIT FARDRE
Client	CLARIANT UK LTD

URS

Dames & Moore
O'Brien Kreitzberg
Thorburn Colquhoun

App'd:	Drawn:	Date:
**	CR	SEPT 2001
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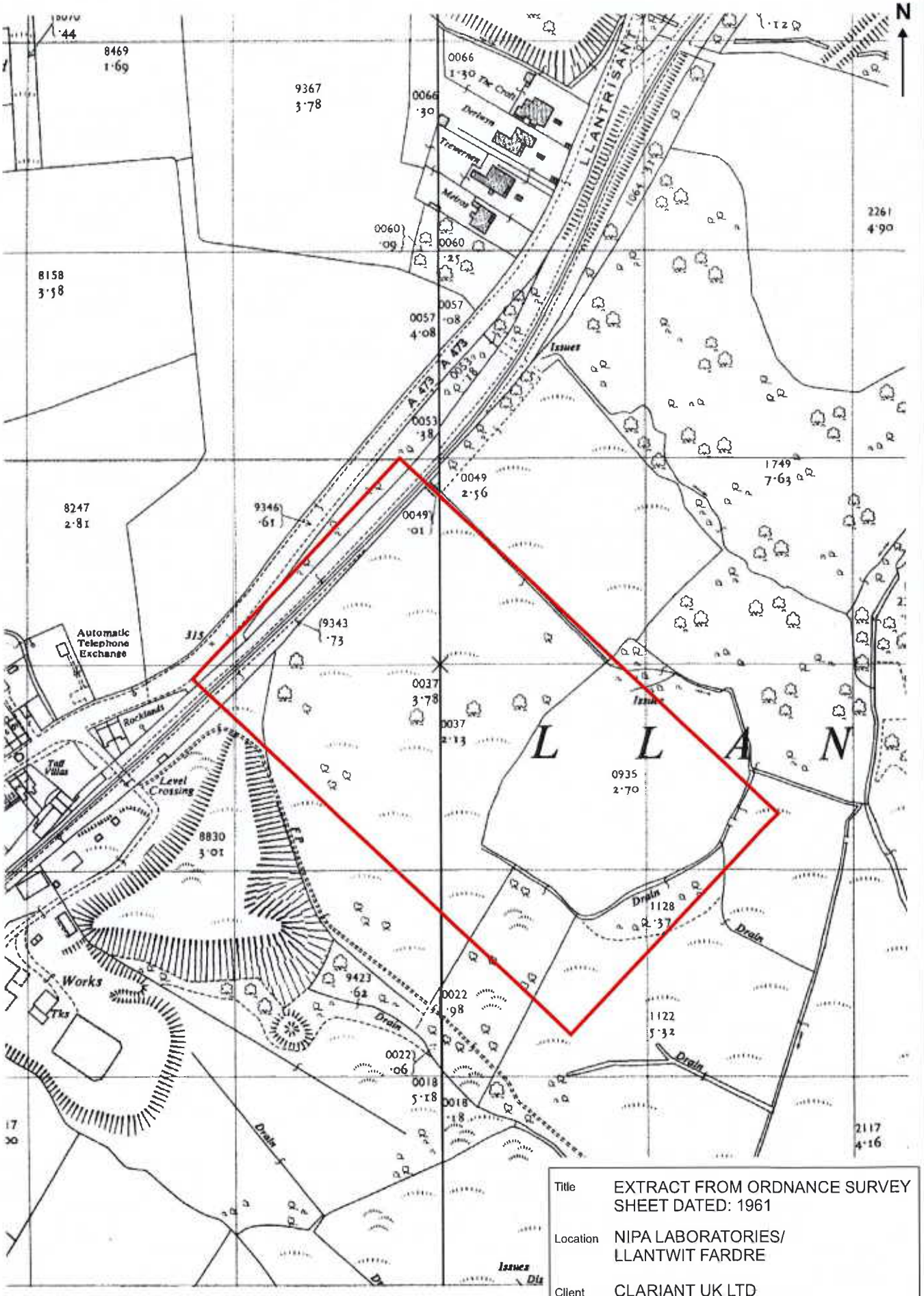
Reproduced at: 1:2,500		Job No: 49467/001/402
Drg. Size: A4		FIGURE 2C



Approximate current site boundary

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0 25 50 75 100m

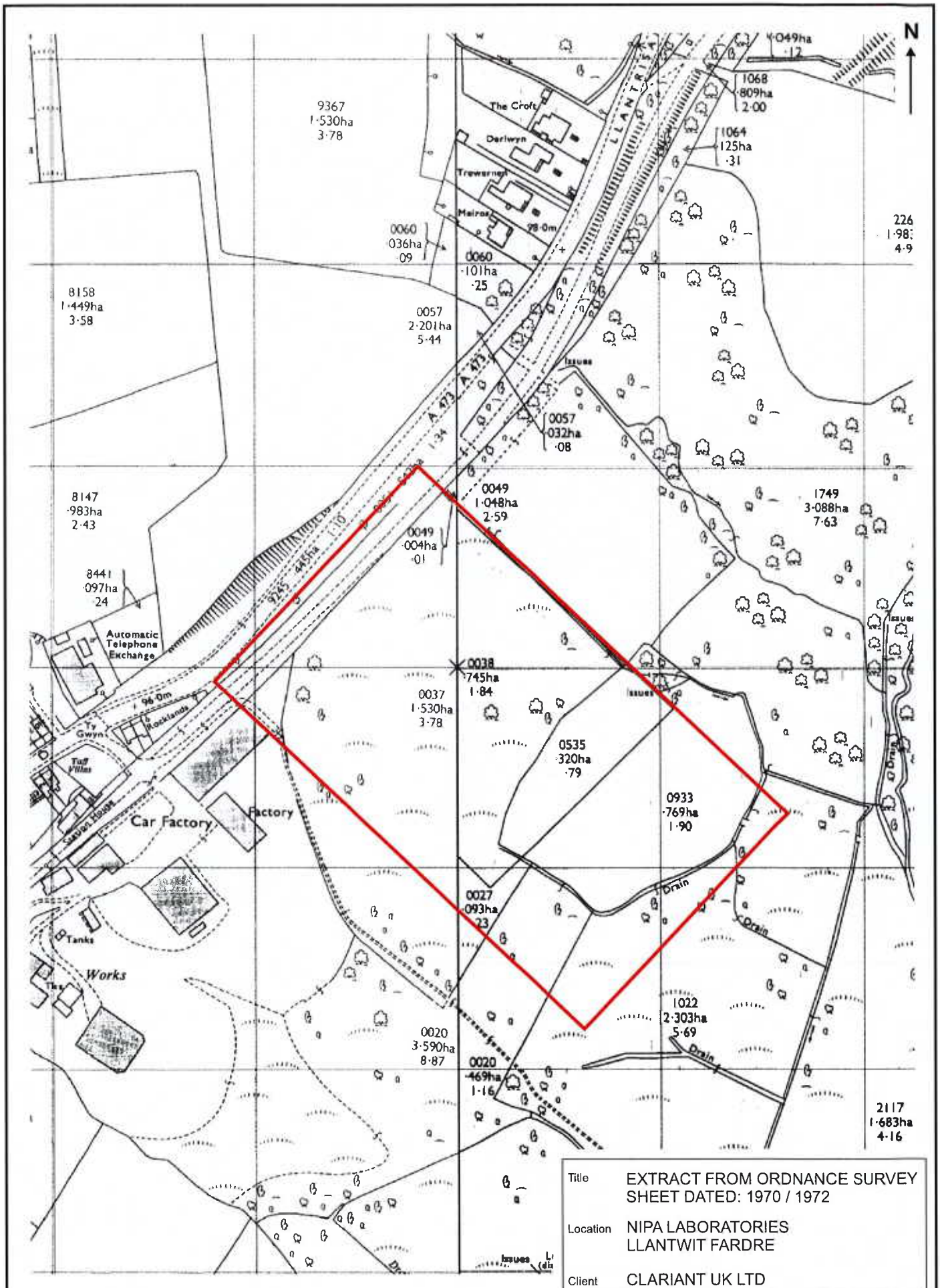
APPROXIMATE SCALE

Title	EXTRACT FROM ORDNANCE SURVEY SHEET DATED: 1961
Location	NIPA LABORATORIES/ LLANTWIT FARDRE
Client	CLARIANT UK LTD

URS

Dames & Moore
O'Brien Kreitzberg
Thorburn Colquhoun

App'd: **	Drawn: CR	Date: SEPT 2001
DRAFT		Ref. KM/ARC/BRS
Reproduced at: 1:2,500		Job No: 49467/001/402
Drg. Size: A4		FIGURE 2D



Approximate current site boundary

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0 25 50 75 100m

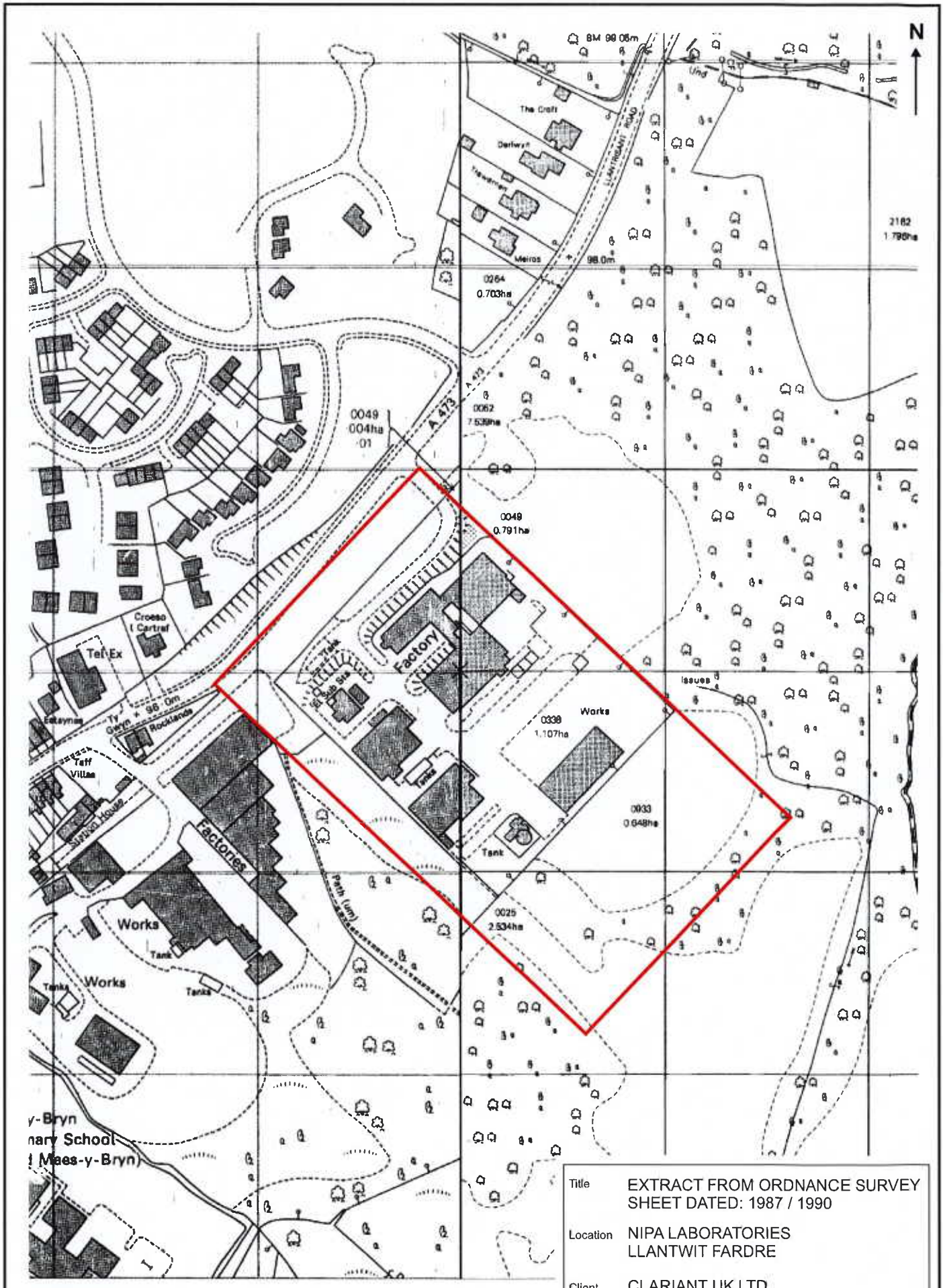
APPROXIMATE SCALE

Title	EXTRACT FROM ORDNANCE SURVEY SHEET DATED: 1970 / 1972
Location	NIPA LABORATORIES LLANTWIT FARDRE
Client	CLARIANT UK LTD

URS

Dames & Moore
O'Brien Kreitzberg
Thorburn Colquhoun

App'd:	Drawn:	Date:
**	CR	SEPT 2001
DRAFT		Ref: KM/ARC/BRS
Reproduced at: 1:2,500		Job No: 49467/001/402
Drg. Size: A4		FIGURE 2E



Approximate current site boundary

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0 25 50 75 100m

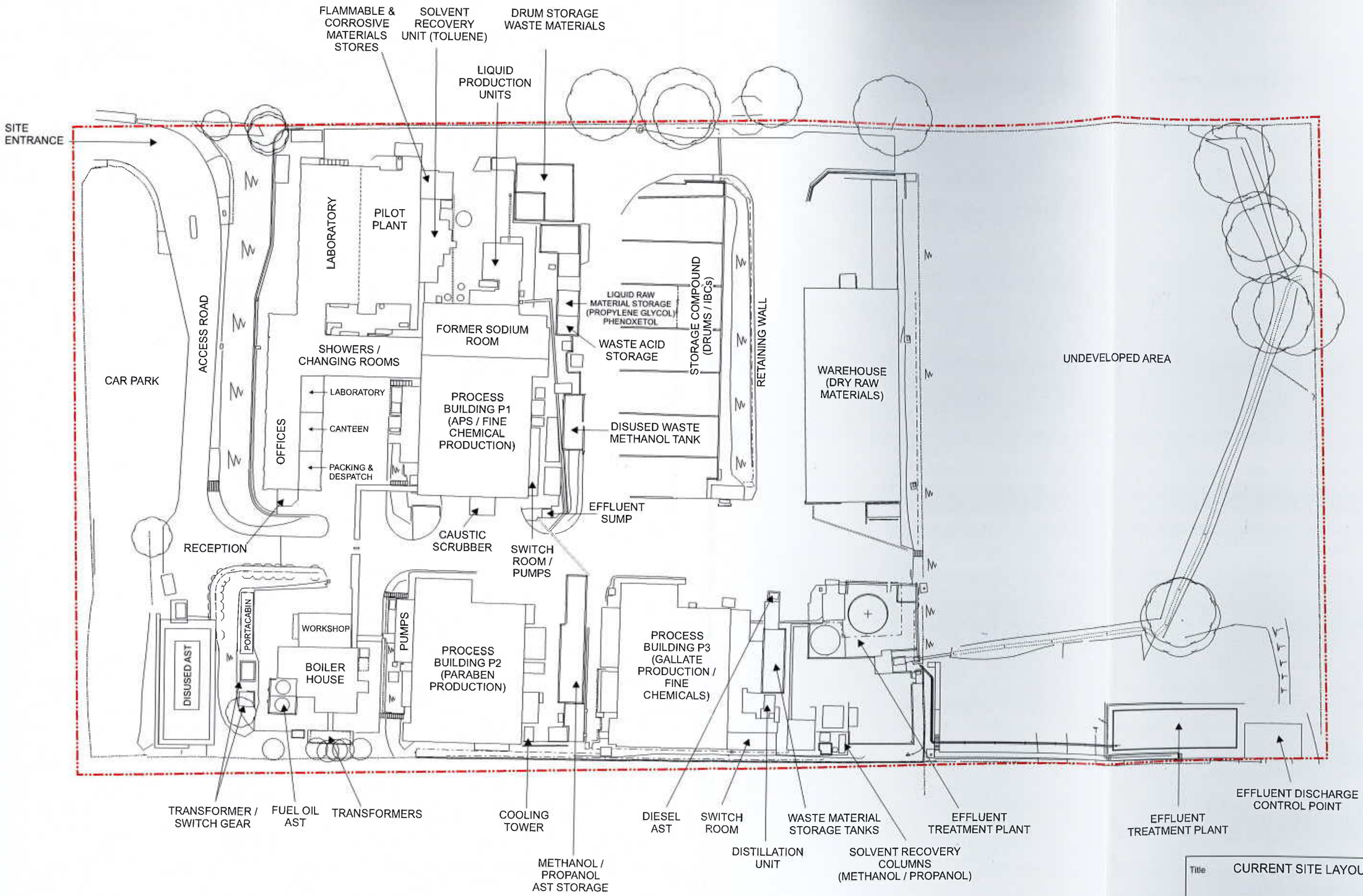
APPROXIMATE SCALE

Title	EXTRACT FROM ORDNANCE SURVEY SHEET DATED: 1987 / 1990
Location	NIPA LABORATORIES LLANTWIT FARDRE
Client	CLARIANT UK LTD

URS

Dames & Moore
O'Brien Kreitzberg
Thorburn Colquhoun

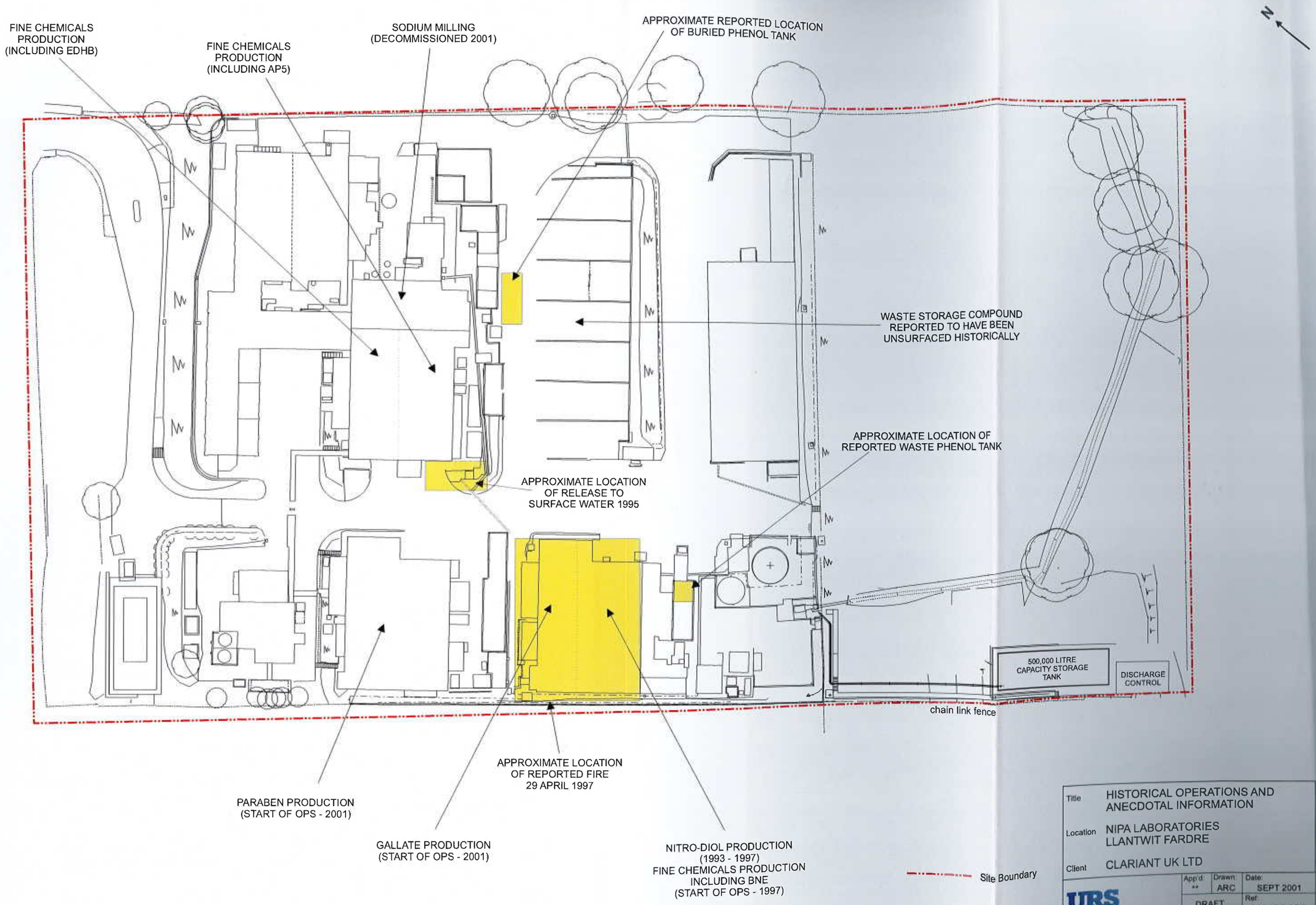
App'd:	Drawn:	Date:
**	CR	SEPT 2001
DRAFT		Ref: KM/ARC/BRS
Reproduced at: 1:2,500		Job No: 49467/001/402
Drg. Size: A4		FIGURE 2F



Title	CURRENT SITE LAYOUT PLAN
Location	NIPA LABORATORIES LLANTWIT FARDRE
Client	CLARIANT UK LTD

URS
Dames & Moore
O'Brien Kreitzberg
Thorburn Colquhoun

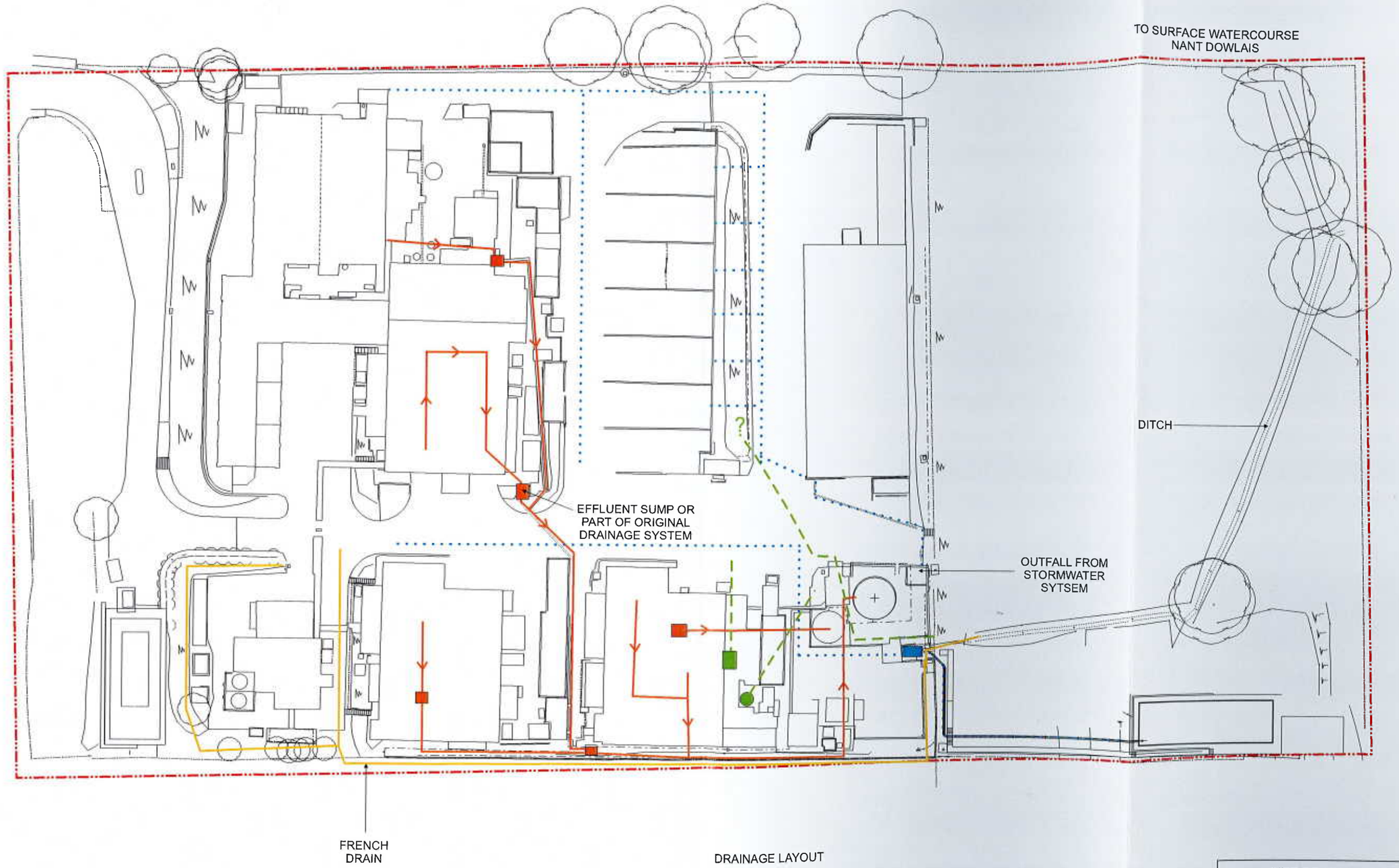
App'd:	Drawn:	Date:
**	CR	SEPT 2001
DRAFT		Ref: KM/ARC/BRS
Scale: 1:750		Job No: 49467/001/402
Drg. Size: A3		FIGURE 3



Title	HISTORICAL OPERATIONS AND ANECDOTAL INFORMATION
Location	NIPA LABORATORIES LLANTWIT FARDRE
Client	CLARIANT UK LTD

URS
Dames & Moore
O'Brien Kreitzberg
Thorburn Colquhoun

App'd:	Drawn:	Date:
**	ARC	SEPT 2001
DRAFT		Ref: KM/ARC/BRS
Scale: 1:750		Job No: 49467/001/402
Drg. Size: A3		FIGURE 4



NOTE:

No drainage layout plans available for review. Approximate routes only, based upon information obtained from site personnel.

DRAINAGE LAYOUT

- EFFLUENT SYSTEM
- ROOF WATER SYSTEM
- POSSIBLE REDUNDANT DRAINAGE ROUTE
- SUMP
- STORMWATER SYSTEM

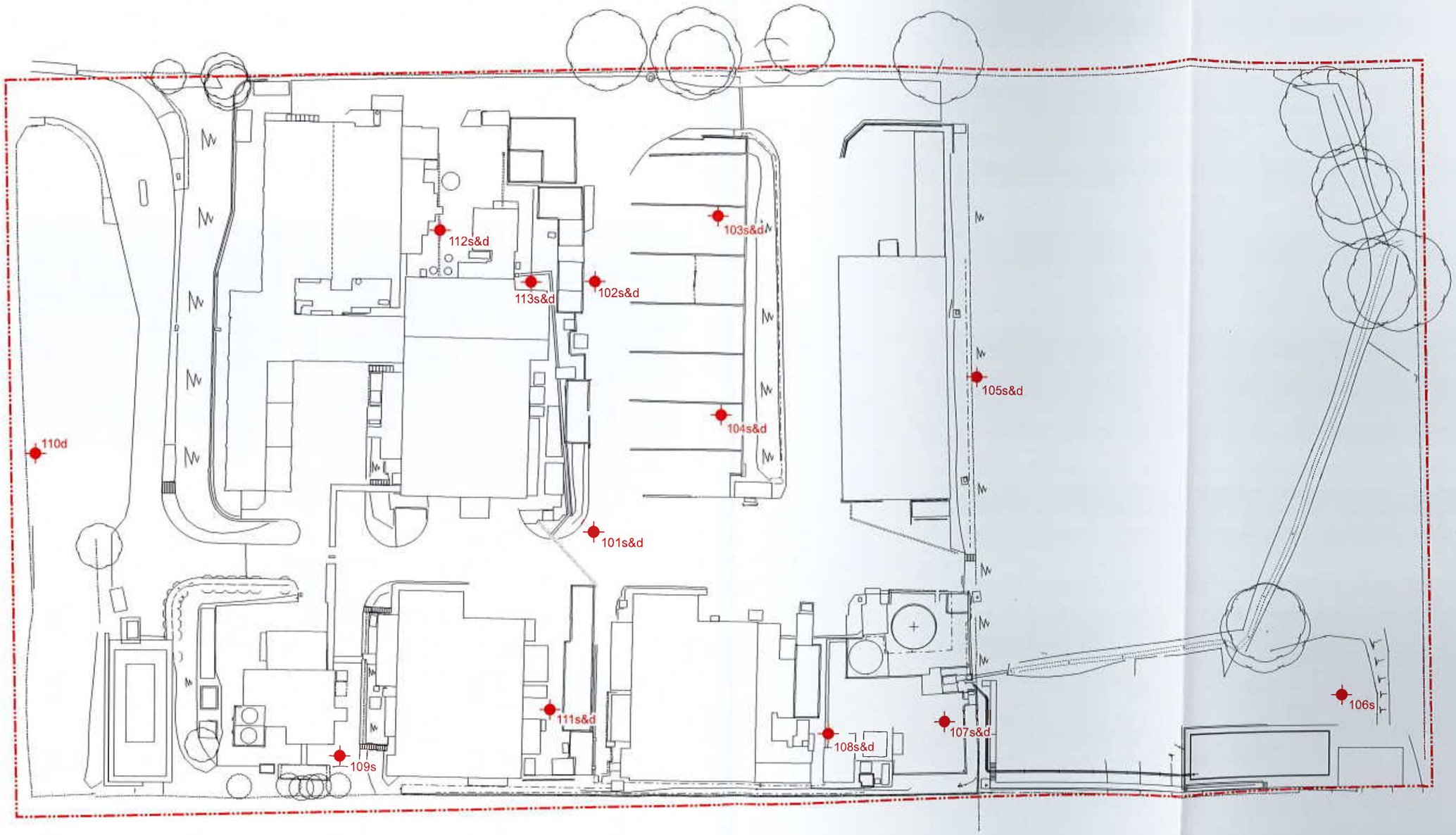
0 15 30m

APPROXIMATE SCALE

Title	SITE DRAINAGE LAYOUT
Location	NIPA LABORATORIES LLANTWIT FARDRE
Client	CLARIANT UK LTD

URS
Dames & Moore
O'Brien Kreitzberg
Thorburn Colquhoun

App'd: **	Drawn: CR	Date: SEPT 2001
DRAFT		Ref: KM/ARC/BRS
Scale: 1:750		Job No: 49467/001/402
Drg. Size: A3		FIGURE 5



KEY:

111s&d — Monitoring Well Installations where:

s = shallow well (made ground)
d = deeper well (natural deposits)

0 15 30m

APPROXIMATE SCALE

Title	INVESTIGATION LOCATIONS PLAN
Location	NIPA LABORATORIES LLANTWIT FARDRE
Client	CLARIANT UK LTD

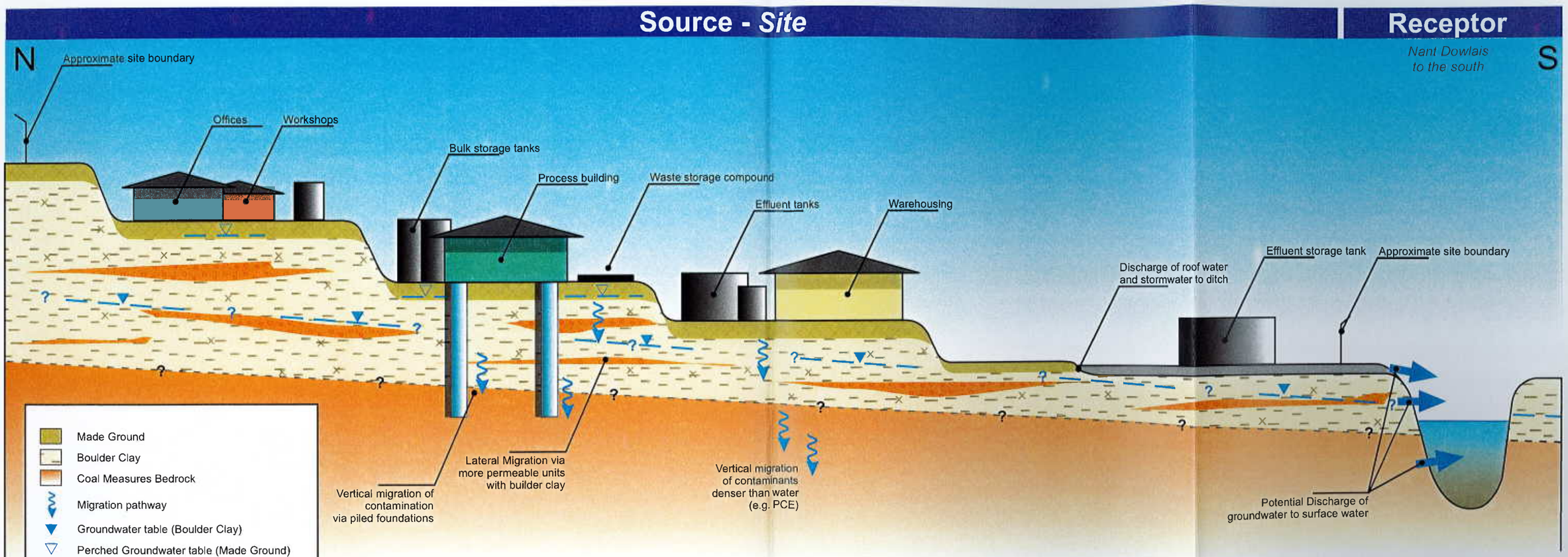
URS
Dames & Moore
O'Brien Kreitzberg
Thorburn Colquhoun

App'd:	Drawn:	Date:
**	CR	SEPT 2001
DRAFT		Ref: KM/ARC/BRS
Scale: 1:750		Job No: 49467/001/402
Drg. Size: A3		**FIGURE 6**

Source - *Site*

Receptor

Nant Dowlais to the south



Not to Scale

Title	CONCEPTUAL SITE MODEL
Location	NIPA LABORATORIES LLANTWIT FARDRE
Client	CLARIANT UK LIMITED

URS
Dames & Moore
O'Brien Kreitzberg
Thorburn Colquhoun

App'd:	Drawn: AJG	Date: SEPT 2001
DRAFT		Ref: KM/ARC/BRS
Scale:		Job No: 49467/001/402
Drg. Size: A3		FIGURE 7

Sample Location	Depth (m)	Volatile Organic Compounds	Metals	Total Phenols	pH	Asbestos	Polycyclic Aromatic Hydrocarbons	Diesel Range Organics	Particle Size Distribution	Total Organic Carbon
BH101	0.50	✓		✓			✓			
BH102	0.90	✓		✓						
BH102	1.60-1.70	✓			✓					✓
BH103	0.50	✓	✓		✓		✓	✓		✓
BH103	1.5								✓	
BH104	0.50	✓	✓	✓	✓	✓	✓			
BH104	1.50	✓		✓						✓
BH105	0.30	✓		✓		✓				
BH106	0.20						✓	✓		
BH106	0.60	✓	✓		✓		✓	✓		✓
BH107	0.50	✓							✓	
BH107	2.00				✓					
BH108	0.50	✓	✓		✓		✓	✓		✓
BH108	2.10	✓		✓						
BH109	0.50	✓	✓				✓	✓		
BH110	0.50	✓	✓				✓	✓		
BH111	0.40	✓		✓			✓	✓		
BH111	1.00	✓								
BH111	3.00								✓	
BH112	0.80	✓		✓	✓					
BH113	0.80		✓	✓	✓		✓	✓		
BH113	2.80	✓								

Table 1
Soil Analytical Schedule

NIPA Laboratories, Llantwit Fadre
on behalf of Clariant UK Ltd

Sample Location	Volatile Organic Compounds	Metals	Total Phenols	Polycyclic Aromatic Hydrocarbons	Diesel Range Organics
BH101S	✓	✓	✓	✓	
BH102	✓		✓		
BH103S	✓			✓	✓
BH104	✓				
BH105S	✓				
BH106	✓	✓	✓	✓	
BH107D	✓			✓	✓
BH108S	✓	✓		✓	✓
BH109					✓
BH110	✓	✓		✓	
BH111S	✓		✓		
BH112S	✓	✓	✓		✓
BH113S	✓	✓	✓	✓	✓

VOC analysis included tentatively identified compounds and alcohols

Table 2
Waters Analytical Schedule

NIPA Laboratories, Llantwit Fadre
on behalf of Clariant UK Ltd

Sample Location	Well Elevation (m AOD)	Depth to Product (mbgl)	Depth to Water (mbgl)	Groundwater Elevation (m AOD)	Temperature (°C)			pH (units)			Electrical Conductivity (mS/cm)		
					Start	Mid	End	Start	Mid	End	Start	Mid	End
BH101S	88.168	nd	0.32	87.848	20.8	20.5	20.2	8.02	7.88	7.77	5.5	5.4	5.5
BH101D	88.168	nd	4.682	83.486	ns	ns	ns	ns	ns	ns	ns	ns	ns
BH102S	87.930	nd	0.291	87.639	17.8	18.1	17.9	7.5	6.61	6.6	3.6	4.4	4.5
BH102D	87.930	nd	DRY	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
BH103S	87.824	nd	0.15	87.674	16.9	16.7	17.0	6.54	6.7	6.76	4.7	5.4	6.1
BH103D	87.824	nd	DRY	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
BH104S	87.913	nd	0.68	87.233	16.8	nr	nr	7.31	nr	nr	3.1	nr	nr
BH105S	83.512	nd	0.02	83.492	17.2	17.6	17.8	8.25	8.4	8.37	1.6	1.6	1.6
BH105D	83.512	nd	DRY	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
BH106	78.593	nd	1.146	77.447	16.8	16.6	16.8	10.09	10.28	10.17	0.7	0.4	0.3
BH107S	78.593	nd	DRY	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
BH107D	84.853	nd	1.569	83.284	18.9	18.3	18.1	8.81	8.96	8.91	1.5	1.4	1.4
BH108S	85.406	nd	0.769	84.637	17.8	17.7	17.5	8.86	8.47	8.34	2.4	2.3	2.4
BH108D	85.406	nd	1.252	84.154	18.7	16.5	16.4	9.82	9.77	9.69	4.9	4.7	4.8
BH109S	91.203	nd	0.104	91.099	18.8	17.4	17.3	11.8	10.48	10.48	1.2	1.7	2.4
BH109D	91.203	nd	DRY	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
BH110	95.483	nd	0.912	94.571	16.7	16.9	17.0	7.12	7.32	7.34	1.9	3.2	3.3
BH111S	89.258	nd	0.688	88.57	18.4	18.5	nr	7.7	7.81	nr	2.3	2.5	nr
BH111D	89.258	nd	DRY	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
BH112S	89.261	nd	0.421	88.84	18.5	17.9	17.8	8.73	8.39	8.42	5.5	5.6	5.6
BH112D	89.261	nd	2.544	86.717	16.5	16.3	16.2	9.26	8.99	9.02	6.4	6.3	6.3
BH113S	89.270	nd	0.629	88.641	18.9	18.5	18.5	10.61	11.16	11.33	6.4	4.7	4.3
BH113D	89.270	nd	DRY	-	ns	ns	ns	ns	ns	ns	ns	ns	ns

ns - not sampled

nr - not recorded

nd - not detected above instrument detection of 1mm thickness

mAOD - metres Above Ordnance Datum

mbgl - metres below ground level

Table 3
Groundwater Monitoring Data

NIPA Laboratories, Llantwit Fadre
on behalf of Clariant UK Ltd

Sample Location	DIV	aDIV		BH101	BH102	BH102	BH103	BH104	BH104	BH105	BH106
Depth		Made Ground	Natural Ground	0.5m	0.9m	1.6-1.7m	0.5m	0.5m	1.5m	0.3m	0.6m
Compound											
Dichlorodifluoromethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chloromethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Vinyl chloride	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bromomethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chloroethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Trichlorofluoromethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
trans-1,2-Dichloroethene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dichloromethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Carbon disulphide	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-Dichloroethene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-Dichloroethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
tert-butyl methyl ether	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
cis-1,2-Dichloroethene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bromochloromethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chloroform	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
2,2-Dichloropropane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-Dichloroethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,1-Trichloroethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-Dichloropropene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Benzene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Carbontetrachloride	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dibromomethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-Dichloropropane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bromodichloromethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Trichloroethene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
cis-1,3-Dichloropropene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
trans-1,3-Dichloropropene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,2-Trichloroethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	130	26	50	<0.001	<0.001	0.013	<0.001	<0.001	<0.001	<0.001	<0.001
1,3-Dichloropropane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dibromochloromethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-Dibromoethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Tetrachloroethene	4.00	0.80	1.54	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,1,2-Tetrachloroethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chlorobenzene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Ethylbenzene	50	10	19	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
p/m-Xylene	25	5	9	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003
Bromoform	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.005
Styrene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,2,2-Tetrachloroethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
o-Xylene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2,3-Trichloropropane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Isopropylbenzene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bromobenzene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
2-Chlorotoluene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Propylbenzene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
4-Chlorotoluene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2,4-Trimethylbenzene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
4-Isopropyltoluene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,3,5-Trimethylbenzene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-Dichlorobenzene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,4-Dichlorobenzene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
sec-Butylbenzene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
tert-Butylbenzene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,3-Dichlorobenzene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
n-Butylbenzene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-Dibromo-3-chloropropa	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2,4-Trichlorobenzene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Naphthalene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2,3-Trichlorobenzene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Hexachlorobutadiene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

VOC - Volatile Organic Compounds

All results in mg/kg

DIV - Dutch Intervention Value for a standard soil of set clay content and total organic carbon

aDIV - Adjusted Dutch Intervention Value, calculated using site specific clay contents and organic carbon values

Table 4
Soil Analytical Results: VOCs

NIPA Laboratories, Llantwit Fadre
on behalf of Clariant UK Ltd

Sample Location	DIV	aDIV		BH107	BH108	BH108	BH109	BH110	BH111	BH111	BH112
Depth		Made Ground	Natural Ground	0.5m	0.5m	2.1m	0.5m	0.5m	0.4m	1.0m	0.8m
Compound											
Dichlorodifluoromethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chloromethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Vinyl chloride	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bromomethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chloroethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Trichlorofluoromethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
trans-1,2-Dichloroethene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dichloromethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Carbon disulphide	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-Dichloroethene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-Dichloroethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
tert-butyl methyl ether	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
cis-1,2-Dichloroethene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bromochloromethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chloroform	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
2,2-Dichloropropane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-Dichloroethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,1-Trichloroethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1-Dichloropropene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Benzene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Carbontetrachloride	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dibromomethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-Dichloropropane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bromodichloromethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Trichloroethene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
cis-1,3-Dichloropropene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
trans-1,3-Dichloropropene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,2-Trichloroethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	130	26	50	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,3-Dichloropropane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.027
Dibromochloromethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-Dibromoethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Tetrachloroethene	4.00	0.80	1.54	0.006	0.032	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,1,2-Tetrachloroethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chlorobenzene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Ethylbenzene	50	10	19	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
p/m-Xylene	25	5	9	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bromoform	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Styrene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,1,2,2-Tetrachloroethane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
o-Xylene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2,3-Trichloropropane	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Isopropylbenzene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bromobenzene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
2-Chlorotoluene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Propylbenzene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
4-Chlorotoluene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2,4-Trimethylbenzene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
4-Isopropyltoluene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,3,5-Trimethylbenzene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-Dichlorobenzene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,4-Dichlorobenzene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
sec-Butylbenzene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
tert-Butylbenzene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,3-Dichlorobenzene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
n-Butylbenzene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2-Dibromo-3-chloropropa	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2,4-Trichlorobenzene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Naphthalene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
1,2,3-Trichlorobenzene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Hexachlorobutadiene	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

VOC - Volatile Organic Compounds

All results in mg/kg

DIV - Dutch Intervention Value for a standard soil of set clay content and total organic car

aDIV - Adjusted Dutch Intervention Value, calculated using site specific clay contents and

Table 4
Soil Analytical Results: VOCs

NIPA Laboratories, Llantwit Fadre
on behalf of Clariant UK Ltd

Sample Location	DIV	aDIV		BH112	BH113
Depth		Made Ground	Natural Ground	1.8m	2.8
Compound					
Dichlorodifluoromethane	-	-	-	<0.001	<0.001
Chloromethane	-	-	-	<0.001	<0.001
Vinyl chloride	-	-	-	<0.001	<0.001
Bromomethane	-	-	-	<0.001	<0.001
Chloroethane	-	-	-	<0.001	<0.001
Trichlorofluoromethane	-	-	-	<0.001	<0.001
trans-1,2-Dichloroethene	-	-	-	<0.001	<0.001
Dichloromethane	-	-	-	<0.001	<0.001
Carbon disulphide	-	-	-	<0.001	<0.001
1,1-Dichloroethene	-	-	-	<0.001	<0.001
1,1-Dichloroethane	-	-	-	<0.001	<0.001
tert-butyl methyl ether	-	-	-	<0.001	<0.001
cis-1,2-Dichloroethene	-	-	-	<0.001	<0.001
Bromochloromethane	-	-	-	<0.001	<0.001
Chloroform	-	-	-	<0.001	0.040
2,2-Dichloropropane	-	-	-	<0.001	<0.001
1,2-Dichloroethane	-	-	-	<0.001	<0.001
1,1,1-Trichloroethane	-	-	-	<0.001	<0.001
1,1-Dichloropropene	-	-	-	<0.001	<0.001
Benzene	-	-	-	<0.001	<0.001
Carbontetrachloride	-	-	-	<0.001	<0.001
Dibromomethane	-	-	-	<0.001	<0.001
1,2-Dichloropropane	-	-	-	<0.001	<0.001
Bromodichloromethane	-	-	-	<0.001	<0.001
Trichloroethene	-	-	-	<0.001	<0.001
cis-1,3-Dichloropropene	-	-	-	<0.001	<0.001
trans-1,3-Dichloropropene	-	-	-	<0.001	<0.001
1,1,2-Trichloroethane	-	-	-	<0.001	<0.001
Toluene	130	26	50	<0.001	<0.001
1,3-Dichloropropane	-	-	-	<0.001	<0.001
Dibromochloromethane	-	-	-	<0.001	<0.001
1,2-Dibromoethane	-	-	-	<0.001	<0.001
Tetrachloroethene	4.00	0.80	1.54	<0.001	<0.001
1,1,1,2-Tetrachloroethane	-	-	-	<0.001	<0.001
Chlorobenzene	-	-	-	<0.001	<0.001
Ethylbenzene	50	10	19	<0.001	<0.001
p/m-Xylene	25	5	9	<0.001	<0.001
Bromoform	-	-	-	<0.001	<0.001
Styrene	-	-	-	<0.001	<0.001
1,1,2,2-Tetrachloroethane	-	-	-	<0.001	<0.001
o-Xylene	-	-	-	<0.001	<0.001
1,2,3-Trichloropropane	-	-	-	<0.001	<0.001
Isopropylbenzene	-	-	-	<0.001	<0.001
Bromobenzene	-	-	-	<0.001	<0.001
2-Chlorotoluene	-	-	-	<0.001	<0.001
Propylbenzene	-	-	-	<0.001	<0.001
4-Chlorotoluene	-	-	-	<0.001	<0.001
1,2,4-Trimethylbenzene	-	-	-	<0.001	<0.001
4-Isopropyltoluene	-	-	-	<0.001	<0.001
1,3,5-Trimethylbenzene	-	-	-	<0.001	<0.001
1,2-Dichlorobenzene	-	-	-	<0.001	<0.001
1,4-Dichlorobenzene	-	-	-	<0.001	<0.001
sec-Butylbenzene	-	-	-	<0.001	<0.001
tert-Butylbenzene	-	-	-	<0.001	<0.001
1,3-Dichlorobenzene	-	-	-	<0.001	<0.001
n-Butylbenzene	-	-	-	<0.001	<0.001
1,2-Dibromo-3-chloroprop	-	-	-	<0.001	<0.001
1,2,4-Trichlorobenzene	-	-	-	<0.001	<0.001
Naphthalene	-	-	-	<0.001	<0.001
1,2,3-Trichlorobenzene	-	-	-	<0.001	<0.001
Hexachlorobutadiene	-	-	-	<0.001	<0.001

VOC - Volatile Organic Compounds

All results in mg/kg

DIV - Dutch Intervention Value for a standard soil of set clay content and total organic ca

aDIV - Adjusted Dutch Intervention Value, calculated using site specific clay contents and

Table 4
Soil Analytical Results: VOCs

NIPA Laboratories, Llantwit Fadre
on behalf of Clariant UK Ltd

Sample Location	Depth (m)	Arsenic	Boron (Water Soluble)	Cadmium	Chromium	Hexavalent Chrome	Copper	Mercury	Nickel	Lead	Selenium	Zinc	Total Phenols HPLC	pH Value In Soil	Asbestos
DIV		**55**	-	**12**	**380**	-	**190**	**10**	**210**	**530**	-	**720**	**40**	-	-
aDIV	**Made Ground**	**31**	-	**7**	**205**	-	**91**	**7**	**72**	**335**	-	**302**	**8**	-	-
	Natural Ground	**42**	-	**9**	**300**	-	**137**	**8**	**147**	**426**	-	**510**	**15**	-	-
BH101	0.50	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	0.07	nr	nr
BH102	0.90	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	0.08	nr	nr
BH102	1.60-1.70	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	7.03	nr
BH103	0.50	9	<1	<1	15	<0.1	13	<1	8	13	<1	36	nr	7.89	nr
BH104	0.50	5	<1	<1	14	<0.1	22	<1	18	9	<1	58	1.11	7.90	NFP
BH104	1.50	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	1.78	nr	nr
BH105	0.30	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	0.16	nr	NFP
BH106	0.60	8	2	<1	15	<0.1	18	<1	20	15	<1	65		8.09	nr
BH107	2.00	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	6.99	nr
BH108	0.50	1	<1	<1	6	<0.1	17	<1	3	6	<1	23	nr	8.49	nr
BH108	2.10	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	0.33	nr	nr
BH109	0.50	14	<1	<1	43	<0.1	88	<1	16	72	<1	104	nr	nr	nr
BH110	0.50	15	<1	<1	50	<0.1	**99**	<1	18	80	<1	117	nr	nr	nr
BH111	0.40	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	0.29	nr	nr
BH112	0.80	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	0.03	8.38	nr
BH113	0.80	6	<1	<1	14	<0.1	19	<1	19	8	<1	56	0.17	6.68	nr

All results in mg/kg unless otherwise stated

NFP- No fibres present

DIV - Dutch Intervention Value for a standard soil of set clay content and total organic carbon

a DIV - Adjusted Dutch Intervention Value, calculated using site specific clay contents and organic carbon values

Results shown in bold exceed the relevant aDIV

nr - analysis not requested

Table 5
Soil Analytical Results: Metals, Phenols, pH and Asbestos

Sample Location	Depth (m)	Diesel Range Hydrocarbons	Laboratory Interpretation *
DIV		**5000**	
a DIVs	**Made Ground**	**1000**	
	Natural Ground	**1935**	
BH103	0.5	36	Kerosene type residue/possible PAHs/possible lube oil
BH106	0.2	671	PAH'S/Lube oil
BH106	0.6	523	Lube oil
BH108	0.5	5	Kerosene type residue/possible PAHs/possible lube oil
BH109	0.5	22	Possible kerosene type Residue/possible weathered diesel/possible lube oil
BH110	0.5	201	PAH'S/Possible Lube oil
BH111	0.4	91	Possible kerosene type Residue/biodegraded diesel/lube oil
BH113	0.8	10	Possible kerosene type Residue

All results in mg/kg

DIV - Dutch Intervention Value for a standard soil of set clay content and total organic carbon

aDIV - Adjusted Dutch Intervention Value, calculated using site specific clay contents and organic carbon values

* Laboratory Interpretation provided by Alcontrol Geochem

Table 6
Soil Analytical Results: Diesel Range Organics

Sample Location	BH101	BH103	BH104	BH106	BH106	BH108	BH109	BH110	BH111	BH113
Depth	0.5	0.5	0.5	0.2	0.6	0.5	0.50	0.50	0.40	0.80
Compound										
DIV for Sum of 10	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**
aDIV (Made Ground)	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**
aDIV (Natural Ground)	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**
Naphthalene	0.262	1.208	0.681	0.228	0.135	0.306	0.293	0.464	0.329	0.263
Acenaphthylene	0.081	0.275	0.354	0.039	0.008	0.032	0.021	0.197	0.038	0.040
Acenaphthene	0.108	0.116	0.116	0.636	0.016	0.032	0.036	0.072	0.058	0.024
Fluorene	0.202	0.416	0.489	0.405	0.016	0.051	0.064	0.138	0.113	0.047
Phenanthrene	0.450	1.371	1.630	4.378	0.105	0.317	0.183	1.245	0.283	0.096
Anthracene	0.123	0.231	0.276	1.460	0.025	0.094	0.046	0.389	0.084	0.029
Fluoranthene	0.188	0.543	0.588	8.839	0.185	0.301	0.161	2.997	0.232	0.053
Pyrene	0.167	0.671	0.751	7.978	0.178	0.218	0.128	2.208	0.193	0.049
Benz(a)anthracene	0.088	0.182	0.183	8.382	0.089	0.087	0.094	2.161	0.119	0.026
Chrysene	0.079	0.182	0.170	0.908	0.139	0.106	0.170	2.763	0.191	0.038
Benzo(b)fluoranthene	0.094	0.126	0.133	2.920	0.104	0.077	0.118	2.528	0.147	0.014
Benzo(k)fluoranthene	0.066	0.120	0.113	2.513	0.053	0.069	0.093	2.309	0.111	0.012
Benzo(a)pyrene	0.063	0.138	0.133	4.085	0.070	0.045	0.097	1.957	0.105	0.016
Indeno(123cd)pyrene	0.063	0.093	0.074	1.792	0.060	0.048	0.077	1.672	0.080	0.016
Dibenzo(ah)anthracene	0.022	0.036	0.029	0.520	0.028	0.014	0.040	0.884	0.046	0.006
Benzo(ghi)perylene	0.066	0.092	0.092	1.377	0.061	0.048	0.086	1.754	0.086	0.016
Total 16 PAH	2.123	5.797	5.813	46.459	1.273	1.847	1.708	23.738	2.216	0.745
Sum of 10 PAH	1.5	4.0	3.8	25.5	0.8	1.2	1.2	14.9	1.5	0.6

All results in mg/kg

PAH - Polycyclic Aromatic Hydrocarbons

DIV - Dutch Intervention Value for a standard soil of set clay content and total organic carbon.

a DIV - Adjusted Dutch Intervention Value, calculated using site specific clay contents and organic carbon values

DIVs given are for a sum of 10 PAHs. These PAHs are shown in bold.

Table 7
Soil Analytical Results: Polycyclic Aromatic Hydrocarbons

Sample Location	Depth (m)	PSD					TOC
		Cobbles	Gravels	Sands	Silts	Clays	
BH102	1.60-1.70	nr	nr	nr	nr	nr	0.34
BH103	0.50	nr	nr	nr	nr	nr	1.08
BH103	1.5	0	1	38	42	20	nr
BH104	1.50	nr	nr	nr	nr	nr	4.15
BH107	0.5	0	88	10	2		nr
BH106	0.60	nr	nr	nr	nr	nr	0.95
BH108	0.50	nr	nr	nr	nr	nr	0.83
BH111	3.0	0	17	27	47	9	nr

All results expressed as a %
PSD - Particle Size Distribution
TOC - Total Organic Carbon
nr - analysis not requested

Table 8
Soil Analytical Results: TOC and PSD

Sample Location	DWS	BH101S	BH102S	BH103S	BH104	BH105S	BH106	BH107D	BH108S	BH110	BH111S	BH112S	BH113S
Compound													
Dichlorodifluoromethane	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Chloromethane	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vinyl chloride	**1**	<1	**72**	**21**	<1	<1	<1	**208**	**84**	<1	<1	<1	<1
Bromomethane	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	**18**	<1
Chloroethane	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichlorofluoromethane	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dichloromethane	-	<1	<1	<1	<1	<1	<1	3	<1	<1	<1	<1	<1
Carbon disulphide	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	**0.05**	<1	**7**	<1	<1	<1	<1	<1	<1	<1	<1	**9**	<1
1,1-Dichloroethane	-	<1	<1	<1	<1	<1	<1	<1	**4**	<1	<1	<1	<1
tert-butyl methyl ether	-	<1	21	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	**61**	<1	**2632**	**65**	3	<1	<1	**247**	**324**	<1	<1	**479**	<1
Bromochloromethane	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	**0.2**	<1	**53**	**3**	**2**	<1	**1**	**3**	<1	<1	**1**	**1**	**2**
2,2-Dichloropropane	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1-Trichloroethane	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benzene	**1**	<1	**2**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbontetrachloride	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dibromomethane	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloropropane	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	**30**	<1	**47**	<1	<1	<1	<1	1	24	<1	<1	**82**	<1
cis-1,3-Dichloropropene	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	**720**	<1	**5589**	<1	<1	<1	<1	**7**	<1	<1	<1	**5008**	3
1,3-Dichloropropane	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dibromochloromethane	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromoethane	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	**10**	<1	4	<1	<1	<1	<1	<1	**11**	<1	<1	2	<1
1,1,1,2-Tetrachloroethane	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	**1300**	<1	20	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
p/m-Xylene	**1400**	<1	5	<1	<1	<1	<1	<1	<1	<1	<1	1	<1

Table 9
Groundwater Analytical Results: VOCs
Page 1 of 2

Sample Location	DWS	BH101S	BH102S	BH103S	BH104	BH105S	BH106	BH107D	BH108S	BH110	BH111S	BH112S	BH113S
Bromoform	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Styrene	20	<1	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
o-Xylene	30	<1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Isopropylbenzene	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromobenzene	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Propylbenzene	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
4-Chlorotoluene	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
4-Isopropyltoluene	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	90	<1	62	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Naphthalene	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

VOC - Volatile Organic Compound

All results in µg/l

DWS - UK Drinking Water Standard

Results in bold exceed the relevant DWS

Table 9
Groundwater Analytical Results: VOCs
Page 2 of 2

Sample Location	Arsenic Low Level by AA	Cadmium by ICP-USN	Chromium by ICP-USN	Copper by ICP-USN	Nickel by ICP-USN	Lead by ICP-USN	Boron	Selenium	Zinc	Mercury Low Dutch Target AA	Total Phenols HPLC
DWS	**10**	**5.0**	**50**	**2000**	**20**	**25**	**1000**	**10**	**5000**	**1.0**	**0.5***
BH101S	<2	<0.4	9	<5	12	<5	60	<50	<50	<0.05	**10**
BH102S	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	**831010**
BH106	<2	**3**	3	14	**39**	<5	<50	<50	<50	<0.05	**950**
BH108S	<2	<0.4	26	<5	**22**	<5	<50	<50	<50	<0.05	nr
BH110	<2	<0.4	18	<5	<10	<5	<50	<50	<50	<0.05	nr
BH111S	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	**370**
BH112S	<2	<0.4	18	<5	18	<5	<50	<50	<50	<0.05	**7070**
BH113S	<2	<0.4	**74**	12	11	<5	<50	<50	<50	<0.05	**80**

All results in µg/l

DWS - UK Drinking Water Standard

Results in bold exceed the relevant DWS

* UK DWS for phenol

nr - analysis not requested

Table 10
Groundwater Analytical Results: Metals and Phenol

Sample Location	Diesel Range Hydrocarbons	Laboratory Interpretation*
DWS	**90**	
BH103S	**171**	1 Discrete Peak at C12/1 discrete peak at C14
BH107D	**440**	Gasolene Residues/1 discrete peak at C12/1 discrete peak at C14/1 discrete peak at C32 to C34
BH108S	**1234**	possible gasolene Residue/unknown cluster at C16-C17
BH109	<10	-
BH112S	**724**	Possible gasolene Residue/1 discrete peak at C12/1 discrete peak at C16/1 discrete peak at C25
BH113S	**1175**	Unknown pattern detected

All results in µg/l

DWS - UK Drinking Water Standard

* Laboratory Interpretation provided by Alcontrol Geochem

Results in bold exceed the relevant DWS

Table 11
Groundwater Analytical Results: Diesel Range Organics

Sample Location:	DWS	BH101S	BH103S	BH106	BH107D	BH108S	BH110	BH113S
Compound								
Naphthalene	6.2	0.129	0.051	0.04	0.115	0.087	0.016	0.085
Acenaphthylene	6.2	<0.01	0.071	0.518	0.010	0.013	0.011	0.011
Acenaphthene	370	0.027	0.016	1.791	0.087	0.104	0.020	0.020
Fluorene	200	0.064	0.014	1.822	0.128	0.104	0.033	0.030
Phenanthrene	6.2	0.137	0.043	1.587	0.340	0.321	0.641	0.123
Anthracene	1800	<0.01	<0.01	0.574	3.597	0.065	0.226	<0.01
Fluoranthene	1500	0.114	0.027	0.221	1.094	0.202	0.516	0.054
Pyrene	180	0.090	0.030	0.208	1.005	0.168	0.367	0.049
Benz(a)anthracene	0.092	0.027	<0.01	0.07	0.084	0.053	0.051	<0.01
Chrysene	9.2	0.024	<0.01	0.032	0.096	0.053	0.022	<0.01
Benzo(b)fluoranthene	0.1	<0.01	<0.01	0.018	0.039	0.020	<0.01	<0.01
Benzo(k)fluoranthene	0.1	<0.01	<0.01	<0.01	0.061	<0.01	<0.01	<0.01
Benzo(a)pyrene	0.01	<0.01	<0.01	**0.013**	**0.053**	<0.01	<0.01	<0.01
Indeno(123cd)pyrene	0.1	<0.01	<0.01	<0.01	0.031	<0.01	<0.01	<0.01
Dibenzo(ah)anthracene	0.0092	<0.01	<0.01	<0.01	**0.015**	<0.01	<0.01	<0.01
Benzo(ghi)perylene	0.1	<0.01	<0.01	<0.01	0.024	<0.01	<0.01	<0.01
Total 16 PAH	-	0.611	0.252	6.894	6.779	1.19	1.903	0.372

All results in µg/l

PAH - Polycyclic Aromatic Hydrocarbons

DWS - UK Drinking Water Standard

Results in bold exceed the relevant DWS

Table 12
Water Analytical Results: Polycyclic Aromatic Hydrocarbons

Sample Location	DWS	BH101S	BH102S	BH103S	BH104	BH105S	BH106	BH107D	BH108S	BH110	BH111	BH112S	BH113S
Compound													
Alcohols	-	<10	ni	<10	<10	<10	<10	ni	<10	<10	<10	ni	<10
Thiobismethane	-	ni	25	ni	ni	ni	ni	ni	ni	ni	ni	60	ni
Phenol	**0.5**	ni	**8745**	ni	ni	ni	ni	**3**	ni	ni	ni	ni	ni
Ethylphenol	-	ni	10	ni	ni	ni	ni	ni	ni	ni	ni	ni	ni
2-phenoxyethanol	-	ni	80	ni	ni	ni	ni	ni	ni	ni	ni	ni	ni
Ethyl ether	-	ni	ni	30	ni	ni	ni	3	ni	ni	ni	ni	ni
Propyl ether	-	ni	ni	ni	ni	ni	ni	ni	10	ni	ni	ni	ni
Unknown	-	ni	ni	ni	ni	ni	ni	ni	10	ni	ni	ni	ni
Propanal	-	ni	ni	ni	ni	ni	ni	ni	ni	ni	ni	15	ni
Propanol	-	ni	ni	ni	ni	ni	ni	ni	ni	ni	ni	645	ni
Butanol	-	ni	ni	ni	ni	ni	ni	ni	ni	ni	ni	100	ni
n-Butyl ether	-	ni	ni	ni	ni	ni	ni	ni	ni	ni	ni	65	ni

TIC - Tentatively Identified Compounds

All results in µg/l

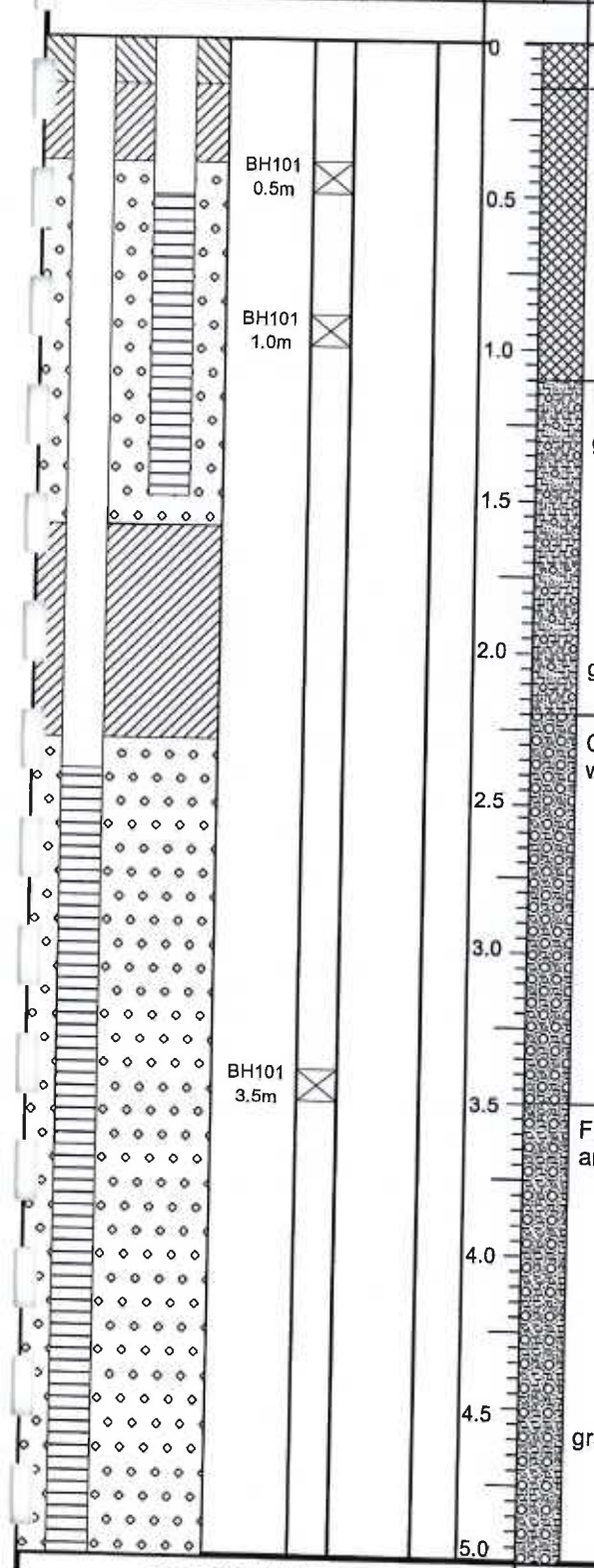
DWS - UK Drinking Water Standard

Results in bold exceed the relevant DWS

ni - compound not identified in analysis

Table 13
Groundwater Analytical Results: Alcohols and TICs

BOREHOLE NUMBER: **BH101**		PAGE 1 of 2
START DATE: 09/07/01	DRILLING METHOD: Percussion / Rotary	
FINISH DATE: 10/07/01	BOREHOLE DIAMETER: 126 mm	
DRILLER: GEOTECHNICAL	SCREEN TYPE & DIAMETER: HDPE 50/19 mm	
LOGGED BY: SS APPR'D BY:	SCREEN SLOT SIZE: 1 mm	



DEPTH (m)	GEOLOGY	DESCRIPTION	COMMENTS
0		CONCRETE (MADE GROUND)	
		Firm, grey-brown-black, gravelly, silty CLAY with frequent angular cobbles (MADE GROUND)	Slight odour at 0.5m
1.0			Wet at 1.0m
		Firm, grey (mottled orange), sandy CLAY with occasional gravel	
2.0		gravel content increases from 2m	Refusal of percussive at 2.2m
		Coarse, sandstone and limestone GRAVEL and COBBLES with sandy clay	
3.5		Firm, brown-grey, gravelly, sandy CLAY with frequent sub-angular to sub-rounded gravel and cobbles	Slight odour at 3.5m
4.5		gravel and cobbles become very frequent at 4.5m	Damp
5.0			

LOCATION / NOTES:

1. All measurements in m below ground level (mbgl)

LEGEND

- Disturbed Sample
- Undisturbed Sample
- * Headspace Analysis
- † Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title	**PHASE 1b ASSESSMENT**
Location	**NIPA, LLANTWIT FARDRE**
Client	**CLARIANT UK LTD**

URS
Dames & Moore
O'Brien Kreitzberg
Thorburn Colquhoun

App'd	DRAFT
Ref.	KM/CR/BRS
Date	SEP 2001
Job No.	49443/001/420

BOREHOLE NUMBER: **BH101**	PAGE 2 of 2
START DATE: 09/07/01	DRILLING METHOD: Percussion / Rotary
FINISH DATE: 10/07/01	BOREHOLE DIAMETER: 126 mm
DRILLER: GEOTECHNICAL	SCREEN TYPE & DIAMETER: HDPE 50/19 mm
LOGGED BY: SS APPR'D BY:	SCREEN SLOT SIZE: 1 mm

BOREHOLE CONSTRUCTION	SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	DESCRIPTION	COMMENTS
					5.0		Silty, cobbly, gravelly, CLAY with frequent sub-rounded cobbles	
					6.0		Borehole terminated at 6.2 mbgl	

5.5 6.5 7.0 7.5 8.0 8.5 9.0 9.5 10

LOCATION / NOTES:

1. All measurements in m below ground level (mbgl)

LEGEND

- Disturbed Sample
- Undisturbed Sample
- * Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title: **PHASE 1b ASSESSMENT**

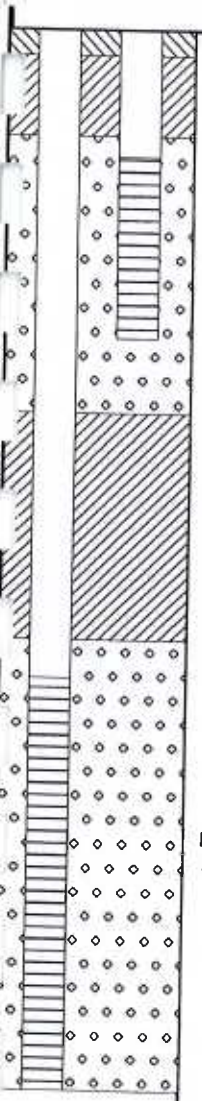
Location: **NIPA, LLANTWIT FARDRE**

Client: **CLARIANT UK LTD**

URS
Dames & Moore
O'Brien Kreitzberg
Thorburn Colquhoun

App'd	DRAFT
Ref.	KM/CR/BRS
Date	SEP 2001
Job No.	49443/001/420

BOREHOLE NUMBER: **BH102**		PAGE 1 of 1
START DATE: 10/07/01	DRILLING METHOD: Percussion / Rotary	
FINISH DATE: 10/07/01	BOREHOLE DIAMETER: 126 mm	
DRILLER: GEOTECHNICAL	SCREEN TYPE & DIAMETER: HDPE 50/19 mm	
LOGGED BY: SS APPR'D BY:	SCREEN SLOT SIZE: 1 mm	



DEPTH (m)	GEOLOGY	DESCRIPTION	COMMENTS
0		CONCRETE (MADE GROUND)	
0.5		Firm, coarse sandstone and limestone GRAVEL and COBBLES with clay (MADE GROUND)	Poor returns No odour
1.0		Firm, mottled grey-brown, gravelly, silty CLAY with frequent angular cobbles	Red staining at 1m. Damp
1.5		becomes sandy at 1.6m	Acidic odour at 1.6-2.4m Purple staining at 1.8m
2.0			dark staining on fractured cobbles
2.5		boulder from 2.4-2.56m	Damp at 2.45m
3.0			
3.5		Borehole terminated at 3.5 mbgl	
4.0			
4.5			
5.0			

LOCATION / NOTES:

1. All measurements in m below ground level (mbgl)

LEGEND

- Disturbed Sample
- Undisturbed Sample
- * Headspace Analysis
- † Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title	**PHASE 1b ASSESSMENT**
Location	**NIPA, LLANTWIT FARDRE**
Client	**CLARIANT UK LTD**

URS
Dames & Moore
O'Brien Kreitzberg
Thorburn Colquhoun

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Date	SEP 2001
Job No.	49443/001/420

BOREHOLE NUMBER: **BH103**	PAGE 1 of 1
START DATE: 11/07/01	DRILLING METHOD: Percussion / Rotary
FINISH DATE: 11/07/01	BOREHOLE DIAMETER: 126 mm
DRILLER: GEOTECHNICAL	SCREEN TYPE & DIAMETER: HDPE 50/19 mm
LOGGED BY: SS APPR'D BY:	SCREEN SLOT SIZE: 1 mm

SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	DEPTH (m)	DESCRIPTION	COMMENTS
			0	CONCRETE (MADE GROUND)	
BH103 0.5m	☒	*2.2	0.5	Firm, brown-grey, gravelly, clayey SILT with frequent, angular gravel and cobbles	Wet. Some black staining
BH103 1.0m	☒	*0	1.0	Grey-brown CLAY with occasional gravel and sandstone cobbles	
BH103 1.5m	☒	*0	1.5		
		*0	2.0	Firm to soft, grey-brown, (mottled in places), CLAY with very frequent fractured sandstone cobbles and some organic gravel	No odour Damp
BH103 2.5m	☒	*0	2.5		
		*0	3.0	Borehole terminated at 3.0 mbgl	
			3.5		
			4.0		
			4.5		
			5.0		

LOCATION / NOTES:

1. All measurements in m below ground level (mbgl)

LEGEND

- ☒ Disturbed Sample
- ■ Undisturbed Sample
- * Headspace Analysis
- † Down Borehole Analysis
- ▼ Groundwater Table
- ▽ Perched Water Table

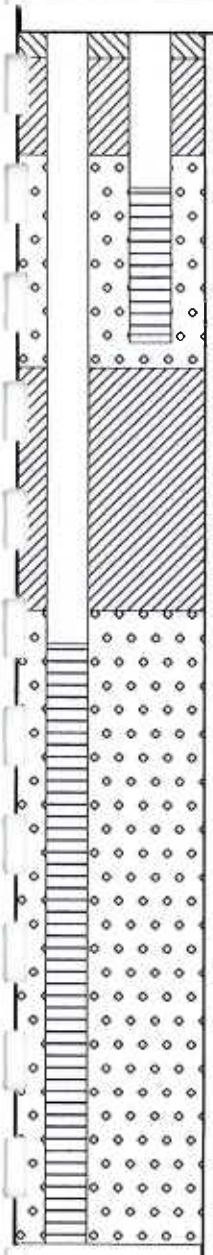
BOREHOLE LOG

Job Title	**PHASE 1b ASSESSMENT**
Location	**NIPA, LLANTWIT FARDRE**
Client	**CLARIANT UK LTD**

URS
Dames & Moore
O'Brien Kreitzberg
Thorburn Colquhoun

App'd	DRAFT
Ref.	KM/CR/BRS
Date	SEP 2001
Job No.	49443/001/420

BOREHOLE NUMBER: **BH104**	PAGE 1 of 1
START DATE: 11/07/01	DRILLING METHOD: Percussion / Rotary
FINISH DATE: 11/07/01	BOREHOLE DIAMETER: 126 mm
DRILLER: GEOTECHNICAL	SCREEN TYPE & DIAMETER: HDPE 50/19 mm
LOGGED BY: SS APPR'D BY:	SCREEN SLOT SIZE: 1 mm



SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	DEPTH (m)	DESCRIPTION	COMMENTS
			0	CONCRETE (MADE GROUND)	
BH104 0.5m	☒	*0	0.5	Firm, brown-grey, gravelly CLAY with occasional heavily fractured sandstone cobbles	No odour or staining Wet at 0.8m
BH104 1.0m	☒	*0	1.0		
BH104 1.5m	☒	*0	1.5	Firm, dark grey-orange, sandy CLAY with frequent angular gravel and occasional cobbles and wood fragments	Dry. Slight odour
		*0	2.0	Firm, brown-orange, cobbly, gravelly CLAY with very frequent angular to sub-rounded gravel, cobbles and occasional wood fragments.	Wet at 1.9m
BH104 2.5m	☒	*0	2.5	becoming sandier at 2.4m Wood fragments cease	No odour or staining
		*0	3.0		Dry
		*0	3.5		Damp
		*0	4.0	Borehole terminated at 4.0 mbgl	
			4.5		
			5.0		

LOCATION / NOTES:

1. All measurements in m below ground level (mbgl)

LEGEND

- ☒ Disturbed Sample
- ■ Undisturbed Sample
- * Headspace Analysis
- † Down Borehole Analysis
- ▼ Groundwater Table
- ▽ Perched Water Table

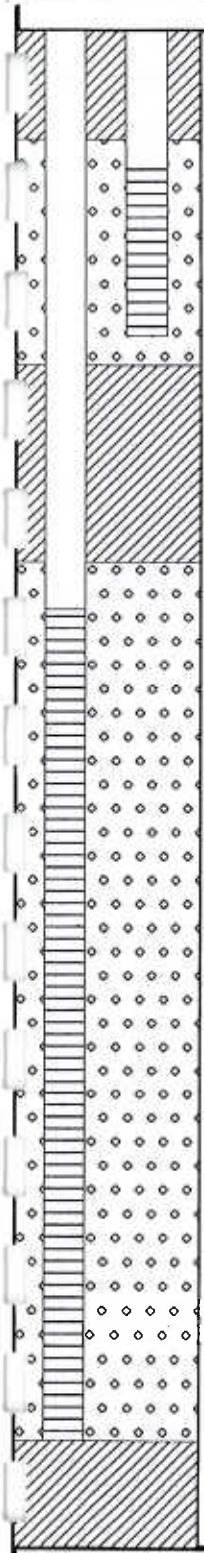
BOREHOLE LOG

Job Title	**PHASE 1b ASSESSMENT**
Location	**NIPA, LLANTWIT FARDRE**
Client	**CLARIANT UK LTD**

URS
Dames & Moore
O'Brien Kreitzberg
Thorburn Colquhoun

App'd	DRAFT
Ref.	KM/CR/BRS
Date	SEP 2001
Job No.	49443/001/420

BOREHOLE NUMBER: **BH105**	PAGE 1 of 2
START DATE: 12/07/01	DRILLING METHOD: Percussion / Rotary
FINISH DATE: 12/07/01	BOREHOLE DIAMETER: 126 mm
DRILLER: GEOTECHNICAL	SCREEN TYPE & DIAMETER: HDPE 50/19 mm
LOGGED BY: JC APPR'D BY:	SCREEN SLOT SIZE: 1 mm



BOREHOLE CONSTRUCTION	SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	DESCRIPTION	COMMENTS
	BH105 0.3m		*0.7		0		Loose, dark brown, very silty, very gravelly SAND	No odour or staining
	BH105 0.75m		*0		0.5		Firm, mottled grey, red and brown, very silty, clayey SAND with frequent sandstone gravel	Damp No odour or staining
	BH105 1.25m		*0		1.0		sandstone cobbles from 1.0m increase in silt and clay content at 1.2m	Dry
			*0		1.5		Loose, coarse sandstone GRAVEL and fractured COBBLES	
			*0		2.0		with clayey, sandy silt from 2.1m	Damp No odour or staining
					2.5		Coarse sandstone GRAVEL and COBBLES	
			*0		3.0		Loose, brown, silty fine to coarse SAND	
					3.5		Loose, fine to medium GRAVEL with sand and silt and occasional cobbles	
	BH105 4.3m		*0.5		4.0		Loose, very sandy, silty GRAVEL with occasional cobbles and some silt and coal	
					4.5			
					5.0			

LOCATION / NOTES:

1. All measurements in m below ground level (mbgl)

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title: **PHASE 1b ASSESSMENT**

Location: **NIPA, LLANTWIT FARDRE**

Client: **CLARIANT UK LTD**

URS
Dames & Moore
O'Brien Kreitzberg
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Date	SEP 2001
Job No.	49443/001/420

BOREHOLE NUMBER: **BH105**	PAGE 2 of 2
START DATE: 12/07/01	DRILLING METHOD: Percussion / Rotary
FINISH DATE: 12/07/01	BOREHOLE DIAMETER: 126 mm
DRILLER: GEOTECHNICAL	SCREEN TYPE & DIAMETER: HDPE 50/19 mm
LOGGED BY: JC APPR'D BY:	SCREEN SLOT SIZE: 1 mm

BOREHOLE CONSTRUCTION	SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	GROUNDWATER	DEPTH (m)	GEOLOGY	DESCRIPTION	COMMENTS
					5.0		Loose, very sandy, silty GRAVEL with occasional cobbles and some silt and coal	
					5.4		Borehole terminated at 5.4 mbgl	

LOCATION / NOTES:

1. All measurements in m below ground level (mbgl)

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title: **PHASE 1b ASSESSMENT**

Location: **NIPA, LLANTWIT FARDRE**

Client: **CLARIANT UK LTD**

URS
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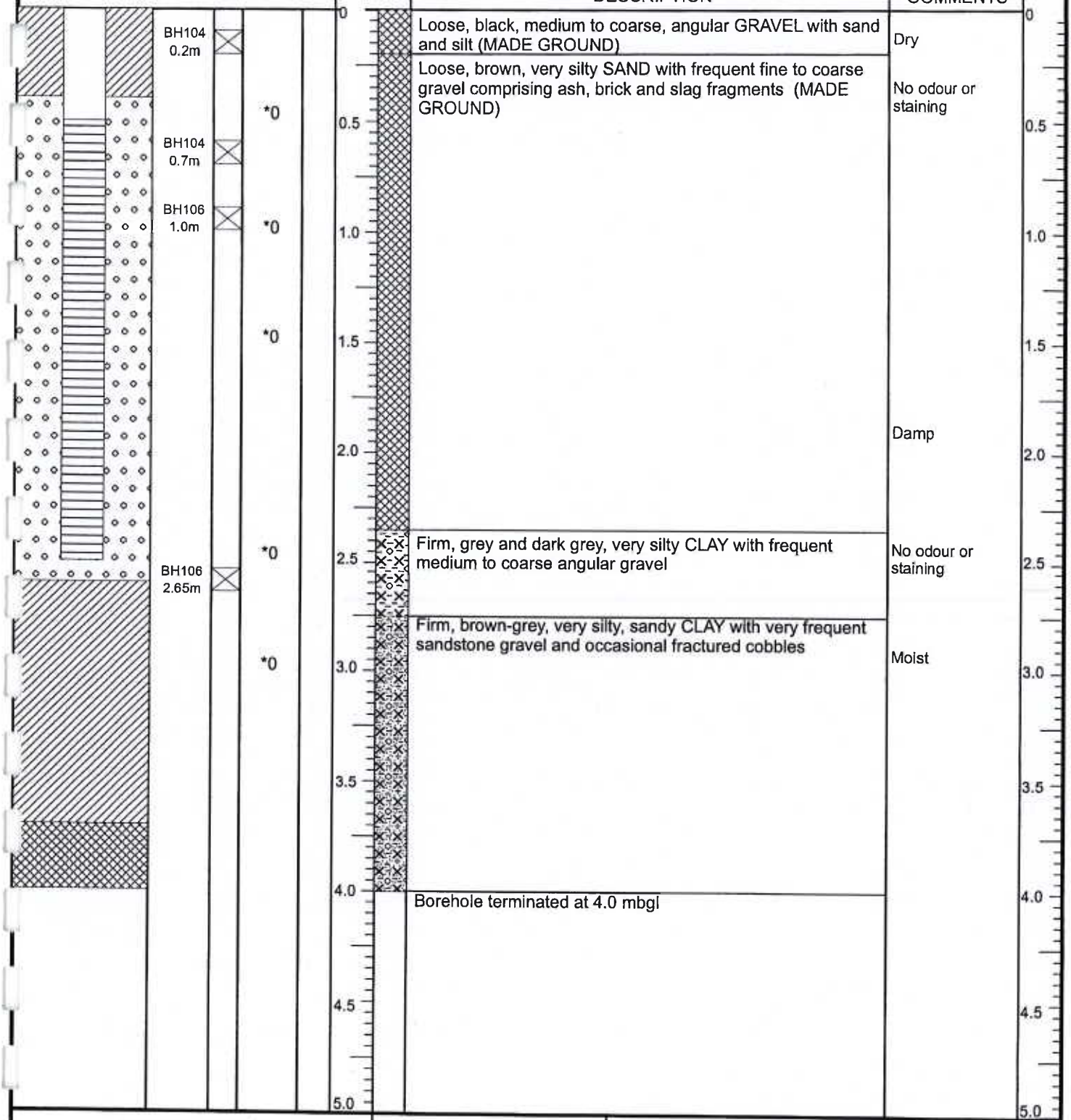
Date	SEP 2001
Job No.	49443/001/420

BOREHOLE NUMBER: **BH106**			PAGE 1 of 1
START DATE: 12/07/01		DRILLING METHOD: Percussion / Rotary	
FINISH DATE: 12/07/01		BOREHOLE DIAMETER: 126 mm	
DRILLER: GEOTECHNICAL		SCREEN TYPE & DIAMETER: HDPE 50 mm	
LOGGED BY: SS	APPR'D BY:	SCREEN SLOT SIZE: 1 mm	



DESCRIPTION	COMMENTS
Loose, black, medium to coarse, angular GRAVEL with sand and silt (MADE GROUND)	Dry
Loose, brown, very silty SAND with frequent fine to coarse gravel comprising ash, brick and slag fragments (MADE GROUND)	No odour or staining
	Damp
Firm, grey and dark grey, very silty CLAY with frequent medium to coarse angular gravel	No odour or staining
Firm, brown-grey, very silty, sandy CLAY with very frequent sandstone gravel and occasional fractured cobbles	Moist
Borehole terminated at 4.0 mbgl	

LOCATION / NOTES:

1. All measurements in m below ground level (mbgl)

LEGEND

- Disturbed Sample
- Undisturbed Sample
- * Headspace Analysis
- † Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title: **PHASE 1b ASSESSMENT**

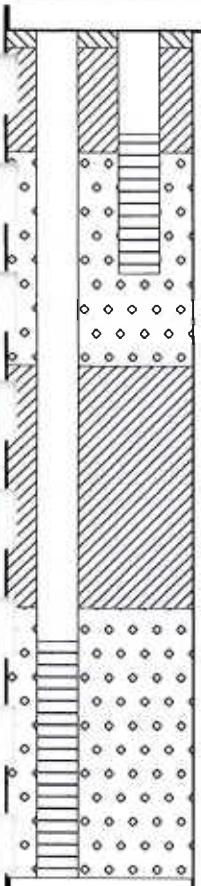
Location: **NIPA, LLANTWIT FARDRE**

Client: **CLARIANT UK LTD**

URS
Dames & Moore
O'Brien Kreitzberg
Thorburn Colquhoun

App'd	DRAFT
Ref.	KM/CR/BRS
Date	SEP 2001
Job No.	49443/001/420

BOREHOLE NUMBER: **BH107**			PAGE 1 of 1
START DATE: 13/07/01		DRILLING METHOD: Percussion / Rotary	
FINISH DATE: 13/07/01		BOREHOLE DIAMETER: 126 mm	
DRILLER: GEOTECHNICAL		SCREEN TYPE & DIAMETER: HDPE 50/19 mm	
LOGGED BY: SS	APPR'D BY:	SCREEN SLOT SIZE: 1 mm	



SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	DEPTH (m)	DESCRIPTION	COMMENTS
			0	CONCRETE (MADE GROUND)	
BH107 0.5m		*0	0.5	Loose, brown-grey, silty GRAVEL	Wet No odour or staining
BH107 1.0m		*0	1.0	Firm, brown-grey, gravelly, cobbly CLAY with frequent angular gravel and cobbles	Some dark ashy staining Poor returns
		*0	1.5	Firm, orange-grey (mottled) sandy CLAY with frequent coarse gravel and occasional cobbles	
BH107 1.5m		*0.5	2.0	becoming very firm and less sandy at 2.2m	slight 'acrid' odour
		*0	2.5		
			2.8	Borehole terminated at 2.8 mbgl	
			3.0		
			3.5		
			4.0		
			4.5		
			5.0		

LOCATION / NOTES:

1. All measurements in m below ground level (mbgl)

LEGEND

- Disturbed Sample
- Undisturbed Sample
- * Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

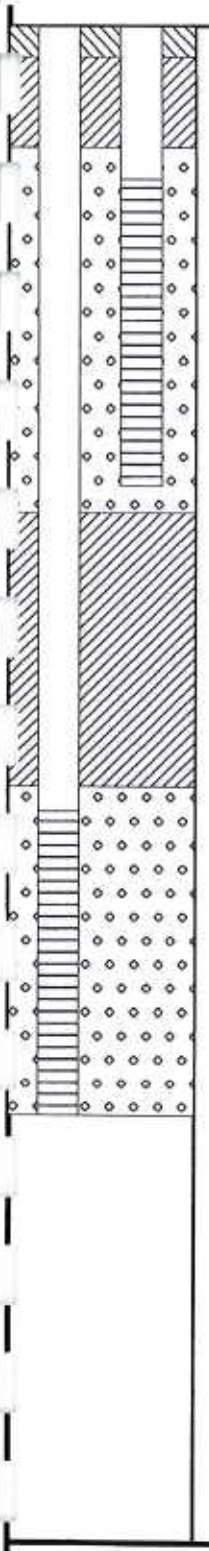
BOREHOLE LOG

Job Title	**PHASE 1b ASSESSMENT**
Location	**NIPA, LLANTWIT FARDRE**
Client	**CLARIANT UK LTD**

URS
Dames & Moore
O'Brien Kreitzberg
Thorburn Colquhoun

App'd	DRAFT
Ref.	KM/CR/BRS
Date	SEP 2001
Job No.	49443/001/420

BOREHOLE NUMBER: **BH108**	PAGE 1 of 1
START DATE: 11/07/01	DRILLING METHOD: Percussion / Rotary
FINISH DATE: 11/07/01	BOREHOLE DIAMETER: 126 mm
DRILLER: GEOTECHNICAL	SCREEN TYPE & DIAMETER: HDPE 50/19 mm
LOGGED BY: SS APPR'D BY:	SCREEN SLOT SIZE: 1 mm



SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	DEPTH (m)	DESCRIPTION	COMMENTS
			0	CONCRETE (MADE GROUND)	
BH108 0.5m		*0	0.5	Firm, grey-brown, silty GRAVEL with frequent angular cobbles and gravel	Wet Black staining
		*0	1.0		Poor returns
		*0	1.5		
BH108 2.0m		*0	2.0		Viscous purple-black staining on cobbles
		*0	2.5	Firm, brown-grey, sandy, gravelly CLAY with frequent angular sandstone and mudstone cobbles	
BH108 2.9m		*0	3.0		odour at 2.8m
		*0	3.5		
			3.6	Borehole terminated at 3.6 mbgl	
			4.0		
			4.5		
			5.0		

LOCATION / NOTES:

1. All measurements in m below ground level (mbgl)

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

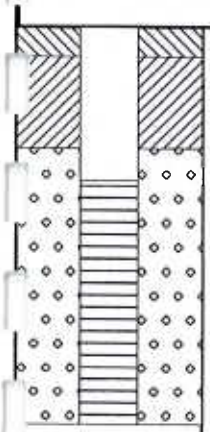
BOREHOLE LOG

Job Title	**PHASE 1b ASSESSMENT**
Location	**NIPA, LLANTWIT FARDRE**
Client	**CLARIANT UK LTD**

URS
Dames & Moore
O'Brien Kreitzberg
Thorburn Colquhoun

App'd	DRAFT
Ref.	KM/CR/BRS
Date	SEP 2001
Job No.	49443/001/420

BOREHOLE NUMBER: **BH109**	PAGE 1 of 1
START DATE: 16/07/01	DRILLING METHOD: Percussion / Rotary
FINISH DATE: 16/07/01	BOREHOLE DIAMETER: 126 mm
DRILLER: GEOTECHNICAL	SCREEN TYPE & DIAMETER: HDPE 50mm
LOGGED BY: SS APPR'D BY:	SCREEN SLOT SIZE: 1 mm



SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	DEPTH (m)	DESCRIPTION	COMMENTS
			0	CONCRETE (MADE GROUND)	
BH109 0.5m	☒	*0.2	0.5	Soft, grey-brown, gravelly, silty CLAY with occasional angular cobbles	Wet Slight odour
		*0.3	1.0	Soft to firm, brown-dark grey, silty, sandy CLAY with frequent wood fragments and sporadic mottling	Dark staining Damp
BH109 1.25m	☒				
			1.3	Borehole terminated at 1.3 mbgl	
			1.5		
			2.0		
			2.5		
			3.0		
			3.5		
			4.0		
			4.5		
			5.0		

LOCATION / NOTES:

1. All measurements in m below ground level (mbgl)

LEGEND

- ☒ Disturbed Sample
- ■ Undisturbed Sample
- * Headspace Analysis
- † Down Borehole Analysis
- ▼ Groundwater Table
- ▽ Perched Water Table

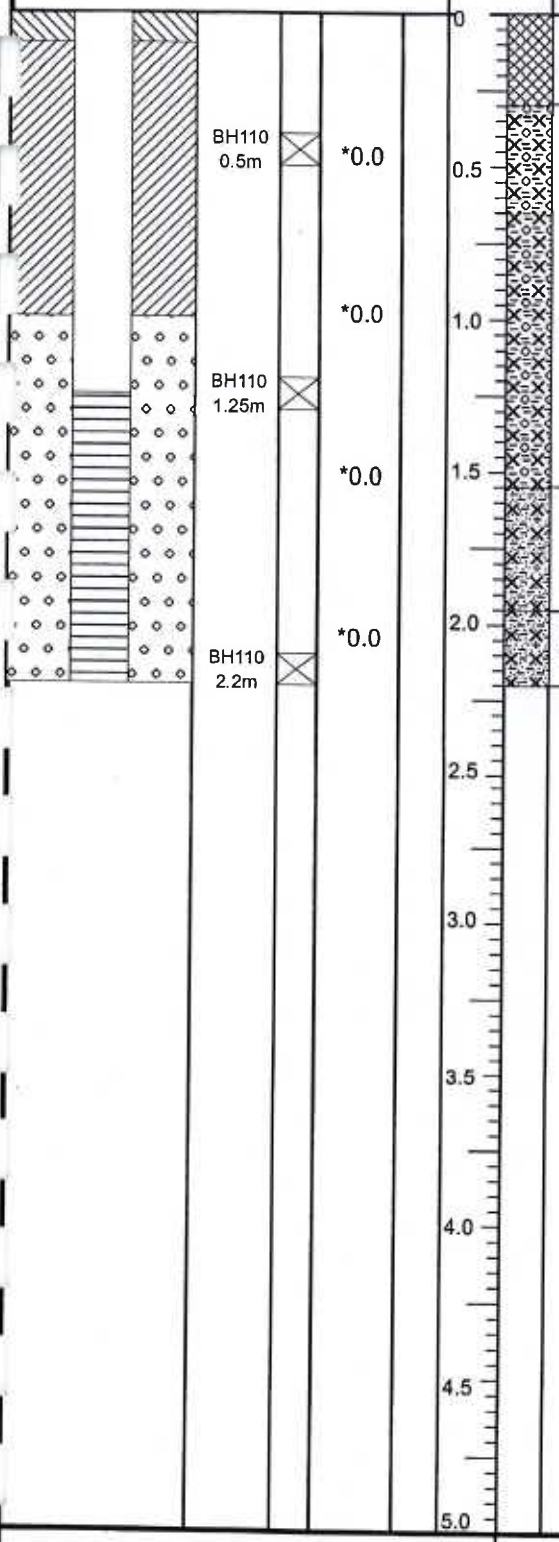
BOREHOLE LOG

Job Title	**PHASE 1b ASSESSMENT**
Location	**NIPA, LLANTWIT FARDRE**
Client	**CLARIANT UK LTD**

URS
Dames & Moore
O'Brien Kreitzberg
Thorburn Colquhoun

App'd	DRAFT
Ref.	KM/CR/BRS
Date	SEP 2001
Job No.	49443/001/420

BOREHOLE NUMBER: **BH110**	PAGE 1 of 1
START DATE: 16/07/01	DRILLING METHOD: Percussion / Rotary
FINISH DATE: 16/07/01	BOREHOLE DIAMETER: 126 mm
DRILLER: GEOTECHNICAL	SCREEN TYPE & DIAMETER: HDPE 50mm
LOGGED BY: ss APPR'D BY:	SCREEN SLOT SIZE: 1 mm



DESCRIPTION	COMMENTS
Soft, brown, gravelly SAND with frequent angular gravel (MADE GROUND)	
Firm, black-brown, silty CLAY with frequent angular coal and sandstone fragments (MADE GROUND)	Black ashy material noted
becoming soft at 1m	No odour Dry
Firm to soft, orange and grey mottled, sandy CLAY	Damp
Firm, brown and grey mottled, gravelly, sandy CLAY with frequent angular to sub-angular gravel and cobbles	
Borehole terminated at 2.2 mbgl	

LOCATION / NOTES:

1. All measurements in m below ground level (mbgl)

LEGEND

- Disturbed Sample
- Undisturbed Sample
- * Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

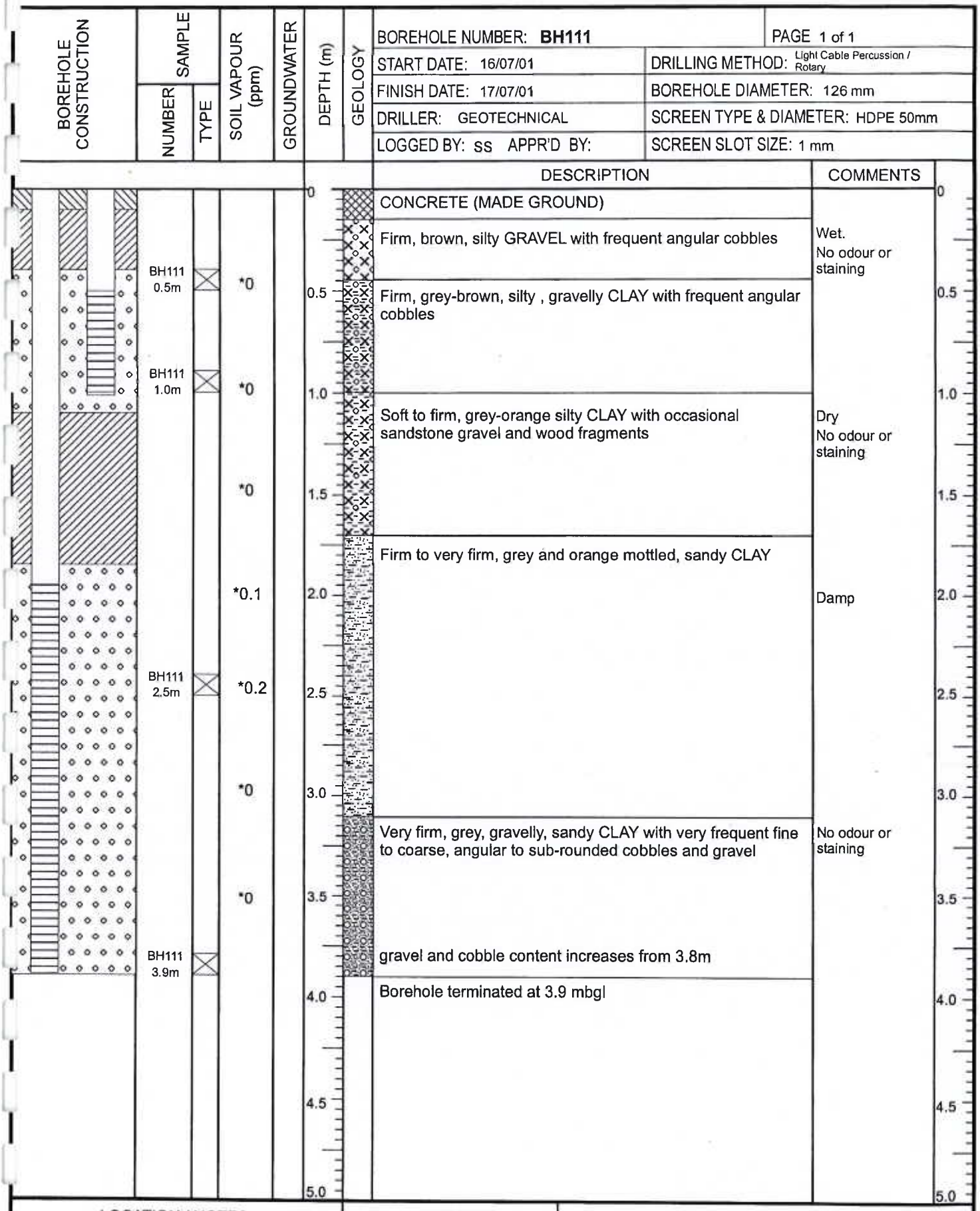
Job Title: **PHASE 1b ASSESSMENT**

Location: **NIPA, LLANTWIT FARDRE**

Client: **CLARIANT UK LTD**

URS
Dames & Moore
O'Brien Kreitzberg
Thorburn Colquhoun

App'd	DRAFT
Ref.	KM/CR/BRS
Date	SEP 2001
Job No.	49443/001/420



BOREHOLE NUMBER: **BH111** | PAGE 1 of 1

START DATE: 16/07/01 | DRILLING METHOD: Light Cable Percussion / Rotary

FINISH DATE: 17/07/01 | BOREHOLE DIAMETER: 126 mm

DRILLER: GEOTECHNICAL | SCREEN TYPE & DIAMETER: HDPE 50mm

LOGGED BY: SS APPR'D BY: | SCREEN SLOT SIZE: 1 mm

DESCRIPTION	COMMENTS
CONCRETE (MADE GROUND)	
Firm, brown, silty GRAVEL with frequent angular cobbles	Wet. No odour or staining
Firm, grey-brown, silty , gravelly CLAY with frequent angular cobbles	
Soft to firm, grey-orange silty CLAY with occasional sandstone gravel and wood fragments	Dry No odour or staining
Firm to very firm, grey and orange mottled, sandy CLAY	Damp
Very firm, grey, gravelly, sandy CLAY with very frequent fine to coarse, angular to sub-rounded cobbles and gravel	No odour or staining
gravel and cobble content increases from 3.8m	
Borehole terminated at 3.9 mbgl	

LOCATION / NOTES:

1. All measurements in m below ground level (mbgl)

LEGEND

- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title: **PHASE 1b ASSESSMENT**

Location: **NIPA, LLANTWIT FARDRE**

Client: **CLARIANT UK LTD**

URS
Dames & Moore
O'Brien Kreitzberg
Thorburn Colquhoun

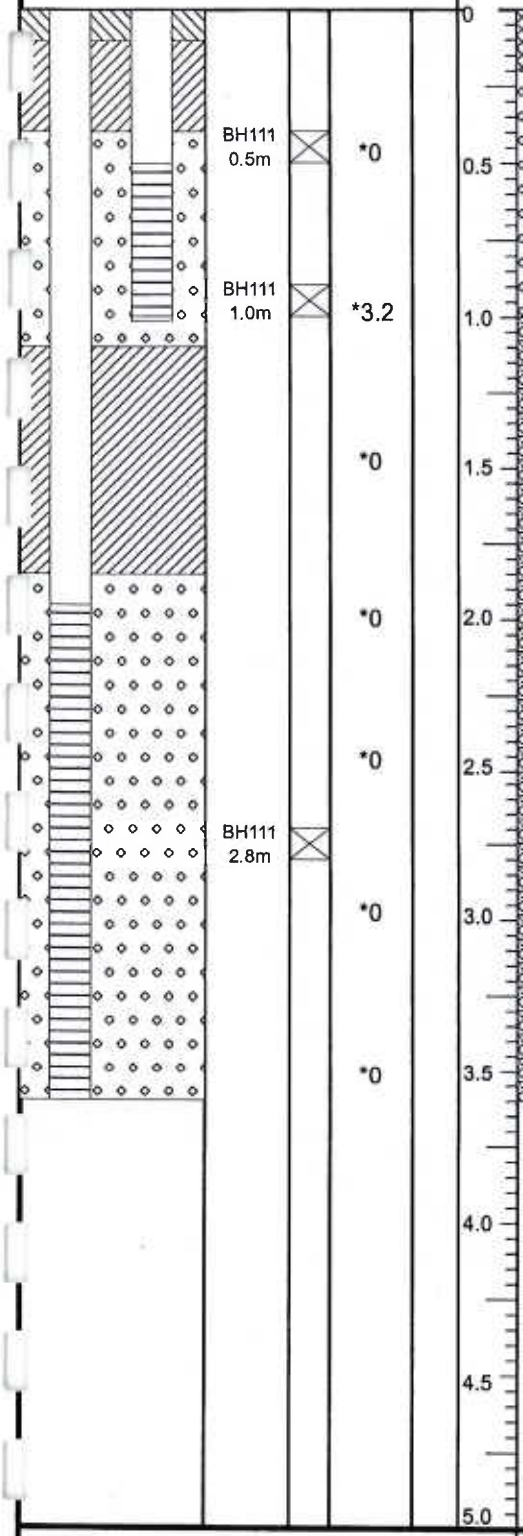
App'd | DRAFT

Ref. KM/CR/BRS

Date SEP 2001

Job No. 49443/001/420

BOREHOLE NUMBER: **BH112**	PAGE 1 of 1
START DATE: 16/07/01	DRILLING METHOD: Percussion / Rotary
FINISH DATE: 17/07/01	BOREHOLE DIAMETER: 126 mm
DRILLER: GEOTECHNICAL	SCREEN TYPE & DIAMETER: HDPE 50/19 mm
LOGGED BY: SS APPR'D BY:	SCREEN SLOT SIZE: 1 mm



SAMPLE NUMBER	SAMPLE TYPE	SOIL VAPOUR (ppm)	DEPTH (m)	DESCRIPTION	COMMENTS
			0	CONCRETE (MADE GROUND)	
BH111 0.5m		*0	0.5	Angular sandstone and mudstone COBBLES and GRAVEL with occasional boulders	Poor returns Odour at 1m
BH111 1.0m		*3.2	1.0	Firm, orange-brown, gravelly, sandy CLAY with frequent sandstone cobbles and gravel	
		*0	1.5		No odour or staining
		*0	2.0	cobbles becoming more frequent with depth	
		*0	2.5		Damp at 2.6
BH111 2.8m					
		*0	3.0		
		*0	3.5	Borehole terminated at 3.6 mbgl	
			4.0		
			4.5		
			5.0		

LOCATION / NOTES:

1. All measurements in m below ground level (mbgl)

LEGEND

- Disturbed Sample
- Undisturbed Sample
- * Headspace Analysis
- † Down Borehole Analysis
- Groundwater Table
- Perched Water Table

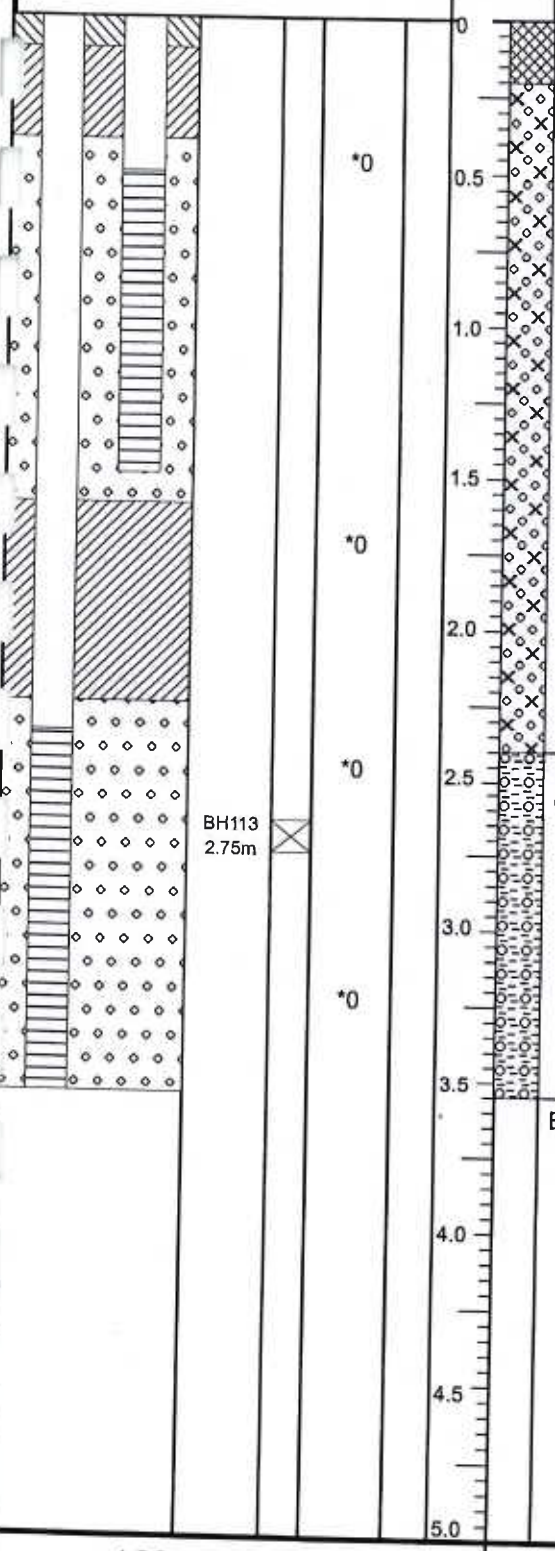
BOREHOLE LOG

Job Title	**PHASE 1b ASSESSMENT**
Location	**NIPA, LLANTWIT FARDRE**
Client	**CLARIANT UK LTD**

URS
Dames & Moore
O'Brien Kreitzberg
Thorburn Colquhoun

App'd	DRAFT
Ref.	KM/CR/BRS
Date	SEP 2001
Job No.	49443/001/420

BOREHOLE NUMBER: **BH113**	PAGE 1 of 1
START DATE: 17/07/01	DRILLING METHOD: Percussion / Rotary
FINISH DATE: 17/07/01	BOREHOLE DIAMETER: 126 mm
DRILLER: GEOTECHNICAL	SCREEN TYPE & DIAMETER: HDPE 50/19 mm
LOGGED BY: SS APPR'D BY:	SCREEN SLOT SIZE: 1 mm



DEPTH (m)	GEOLOGY	DESCRIPTION	COMMENTS
0		CONCRETE (MADE GROUND)	
0.5		Firm, brown-grey, cobbly GRAVEL with frequent angular to sub-angular sandstone and mudstone cobbles and occasional boulders with interstitial silt	No odour or staining
1.0			
1.5			Poor returns
2.0			No odour or staining
2.5		Firm, brown-orange, gravelly CLAY with frequent angular cobbles and gravel	Damp
3.0			No odour or staining
3.5		Borehole terminated at 3.5 mbgl	
4.0			
4.5			
5.0			

LOCATION / NOTES:

1. All measurements in m below ground level (mbgl)

LEGEND

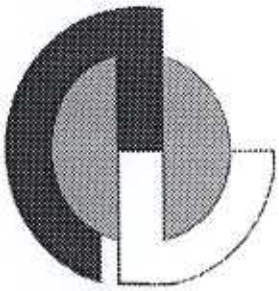
- Disturbed Sample
- Undisturbed Sample
- Headspace Analysis
- Down Borehole Analysis
- Groundwater Table
- Perched Water Table

BOREHOLE LOG

Job Title	**PHASE 1b ASSESSMENT**
Location	**NIPA, LLANTWIT FARDRE**
Client	**CLARIANT UK LTD**

URS
Dames & Moore
O'Brien Kreitzberg
Thorburn Colquhoun

App'd	DRAFT
Ref.	KM/CR/BRS
Date	SEP 2001
Job No.	49443/001/420



ALCONTROL GEOCHEM

REPORT 01/06499/02/01

ANALYSIS OF SOIL AND WATER SAMPLES FROM NIPA

Prepared for

URS DAMES AND MOORE

AUGUST 2001

CONTENTS

ALcontrol Geochem

Chester Street,
Chester CH4 8RD
tel: (01244) 671121
fax: (01244) 683306
email: mkt@geochem.com

CERTIFICATE OF ANALYSIS

Client: URS Dames & Moore

1 Drake Walk
Brigantine Place
Cardiff

CF10 4AN

Attention: Karen Madawee

Date: 18 August, 2001

Our Reference: 01/06499/02/01

Your Reference:

Location: NIPA

A total of 139 samples were received for analysis on Thursday, 12 July 2001. Accredited laboratory tests are defined in the log sheet, but opinions, interpretations and on-site data expressed herein are outside the scope of UKAS accreditation. We are pleased to enclose our final report, it was a pleasure to be of service to you, and we look forward to our continuing association.

Signed

Hazel Davidson
Deputy General Manager
Analytical Services

Compiled By *Phill Reay*

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Registered Office: Templeborough House, Mill Close, Rotherham S60 1BZ. Registered in England and Wales No. 4057291

UKAS TESTING
1291

ALcontrol Geochem
TEST SCHEDULE

JOB NUMBER : 01/6499/02
CLIENT : URS Dames & Moore
CONTACT : Karen Madawee
DATE OF RECEIPT : 12/07/01
LOCATION : NIPA

BATCH NUMBER : 1
CLIENT REF/CODE :
ORDER NUMBER :
TURNAROUND : 10 days

Numeric values indicate additional scheduling

* indicates test subcontracted

		UKAS Accredited ?			✓ Volatiles (MSD)	✓ PAH by MS	Phenol prep	✓ Tot Phen HPLC	✓ Diesel rng orgs	✓ ICP ICRCL (9)	✓ B (H2O Sol)	Cr VI	✓ pH (soil)	✓ T.O.C. in soil	P S D *	Asbestos Screen	Take Vol
Sample Number	Sample Identity	P / V	Depth	Sample Type													
1	BH101	250g	0.50	SOIL		X	X	X									
2	BH101	250g	0.50	SOIL	Sample on Hold												
3	BH101	Vial	0.50	SOIL	X												
4	BH101	250g	1.00	SOIL	Sample on Hold												
5	BH101	250g	1.00	SOIL	Sample on Hold												
6	BH101	250g	3.50	SOIL	Sample on Hold												
7	BH101	250g	3.50	SOIL	Sample on Hold												
8	BH101	250g	4.50	SOIL	Sample on Hold												
9	BH101	250g	4.50	SOIL	Sample on Hold												
10	BH102	250g	0.90	SOIL			X	X									
11	BH102	250g	0.90	SOIL	X												X
12	BH102	250g	1.60-1.70	SOIL									X	X			
13	BH102	250g	1.60-1.70	SOIL	X												X
14	BH102	250g	2.20	SOIL	Sample on Hold												
15	BH102	250g	2.20	SOIL	Sample on Hold												
16	BH103	250g	0.50	SOIL		X			X	X	X	X	X	X			
17	BH103	250g	0.50	SOIL	X												X
18	BH103	250g	0.90-1.10	SOIL	Sample on Hold												
19	BH103	250g	0.90-1.10	SOIL	Sample on Hold												
20	BH103	TUB	1.50	SOIL											X		
21	BH103	250g	1.50	SOIL	Sample on Hold												
22	BH103	250g	1.50	SOIL	Sample on Hold												

Checked By _____ Name : Sheila Clayton

Printed : 16/07/01 16:27:29

ALcontrol Geochem
TEST SCHEDULE

JOB NUMBER : 01/6499/02
CLIENT : URS Dames & Moore
CONTACT : Karen Madawee
DATE OF RECEIPT : 12/07/01
LOCATION : NIPA

BATCH NUMBER : 1
CLIENT REF/CODE :
ORDER NUMBER :
TURNAROUND : 10 days

Numeric values indicate additional scheduling

* indicates test subcontracted

Sample Number	Sample Identity	P / V	Depth	Sample Type	Volatiles (MSD)	PAH by MS	Phenol prep	Tot Phen HPLC	Diesel rng orgs	ICP ICRCL (9)	B (H2O Sol)	Cr VI	pH (soil)	T.O.C. in soil	P S D *	Asbestos Screen	Take Vol
	UKAS Accredited ?				✓	✓		✓	✓	✓	✓		✓	✓			
23	BH103	250g	2.50	SOIL	Sample on Hold												
24	BH103	250g	2.50	SOIL	Sample on Hold												
25	BH104	250g	0.50	SOIL		X	X	X		X	X	X	X			X	
26	BH104	250g	0.50	SOIL	X												X
27	BH104	250g	1.10-1.20	SOIL	Sample on Hold												
28	BH104	250g	1.10-1.20	SOIL	Sample on Hold												
29	BH104	250g	1.50	SOIL			X	X						X			
30	BH104	250g	1.50	SOIL	X												X
31	BH104	250g	2.50	SOIL	Sample on Hold												
32	BH104	250g	2.50	SOIL	Sample on Hold												
	Total Number of Tests				6	3	4	4	1	2	2	2	3	3	1	1	5

Checked By _____ Name : Sheila Clayton

Printed : 16/07/01 16:27:29

ALcontrol Geochem
TEST SCHEDULE

JOB NUMBER : 01/6499/02
CLIENT : URS Dames & Moore
CONTACT : Karen Madawee
DATE OF RECEIPT : 14/07/01
LOCATION : NIPA

BATCH NUMBER : 2
CLIENT REF/CODE :
ORDER NUMBER :
TURNAROUND : 10 days

Numeric values indicate additional scheduling

* indicates test subcontracted

		UKAS Accredited ?			✓ Volatiles (MSD)	✓ PAH by MS	Phenol prep	✓ Tot Phen HPLC	✓ Diesel rng orgs	✓ ICP ICRCL (9)	✓ B (H2O Sol)	Cr VI	✓ pH (soil)	✓ T.O.C. In soil	P S D *	Asbestos Screen	Take Vol	Dry Crush
Sample Number	Sample Identity	P / V	Depth	Sample Type														
33	BH105	250g	0.30	SOIL			3	3								X		
34	BH105	250g	0.30	SOIL	Sample on Hold													
35	BH105	Vial	0.30	SOIL	3													
36	BH105	250g	0.75	SOIL	Sample on Hold													
37	BH105	Vial	0.75	SOIL	Sample on Hold													
38	BH105	250g	1.30	SOIL	Sample on Hold													
39	BH105	250g	1.30	SOIL	Sample on Hold													
40	BH105	Vial	1.30	SOIL	Sample on Hold													
41	BH105	Vial	4.40	SOIL	Sample on Hold													
42	BH106	250g	0.20	SOIL	Sample on Hold				X	X	X	X	X	X				
43	BH106	Vial	0.20	SOIL	Sample on Hold													
44	BH106	250g	0.60	SOIL	2	2			2	2	2	2	2	2			2	2
45	BH106	250g	1.00	SOIL	Sample on Hold													
46	BH106	Vial	1.00	SOIL	Sample on Hold													
47	BH106	250g	2.50	SOIL	Sample on Hold													
48	BH106	Vial	2.50	SOIL	Sample on Hold													
49	BH107	TUB	0.50	SOIL											X			
50	BH107	250g	0.50	SOIL	X												X	
51	BH107	250g	0.50	SOIL	Sample on Hold													
52	BH107	250g	1.00	SOIL	Sample on Hold													
53	BH107	250g	1.00	SOIL	Sample on Hold													
54	BH107	250g	2.00	SOIL									X					

Checked By _____ Name : Sheila Clayton

Printed : 24/07/01 13:17:14

ALcontrol Geochem
TEST SCHEDULE

JOB NUMBER : 01/6499/02
CLIENT : URS Dames & Moore
CONTACT : Karen Madawee
DATE OF RECEIPT : 14/07/01
LOCATION : NIPA

BATCH NUMBER : 2
CLIENT REF/CODE :
ORDER NUMBER :
TURNAROUND : 10 days

Numeric values indicate additional scheduling

* indicates test subcontracted

Sample Number	Sample Identity	P / V	Depth	Sample Type	Volatiles (MSD)	PAH by MS	Phenol prep	Tot Phen HPLC	Diesel rng orgs	ICP ICRCL (9)	B (H2O Sol)	Cr VI	pH (soil)	T.O.C. in soil	P S D *	Asbestos Screen	Take Vol	Dry Crush
	UKAS Accredited ?				✓	✓		✓	✓	✓	✓		✓	✓				
55	BH107	250g	2.00	SOIL	Sample on Hold													
56	BH108	250g	0.50	SOIL		X			X	X	X	X	X	X				
57	BH108	250g	0.50	SOIL	X												X	
58	BH108	250g	2.10	SOIL			X	X										
59	BH108	250g	2.10	SOIL	X												X	
60	BH108	250g	2.90	SOIL	Sample on Hold													
61	BH108	250g	2.90	SOIL	Sample on Hold													
	Total Number of Tests				6	3	2	2	3	3	3	3	4	3	1	1	4	1

Checked By _____ Name : Sheila Clayton

Printed : 24/07/01 13:17:14

ALcontrol Geochem
TEST SCHEDULE

JOB NUMBER : 01/6499/02
CLIENT : URS Dames & Moore
CONTACT : Karen Madawee
DATE OF RECEIPT : 18/07/01
LOCATION : NIPA

BATCH NUMBER : 3
CLIENT REF/CODE :
ORDER NUMBER :
TURNAROUND : 10 days

Numeric values indicate additional scheduling

* indicates test subcontracted

Sample Number	Sample Identity	P / V	Depth	Sample Type	Volatiles (MSD)	Take Vol	PAH by MS	Phenol prep	Tot Phen HPLC	Diesel rng orgs	ICP ICRCL (9)	B (H2O Sol)	Cr VI	pH (soil)	P S D *
				UKAS Accredited ?	✓		✓		✓	✓	✓	✓		✓	
62	BH 109	250g	0.50	SOIL	X	X	X			X	X	X	X		
63	BH 109	250g	0.50	SOIL	Sample on Hold										
64	BH 109	250g	1.30	SOIL	Sample on Hold										
65	BH 109	250g	1.30	SOIL	Sample on Hold										
66	BH 110	250g	0.50	SOIL	X	X	X			X	X	X	X		
67	BH 110	250g	0.50	SOIL	Sample on Hold										
68	BH 110	250g	1.30	SOIL	Sample on Hold										
69	BH 110	250g	1.30	SOIL	Sample on Hold										
70	BH 110	250g	2.20	SOIL	Sample on Hold										
71	BH 110	250g	2.20	SOIL	Sample on Hold										
72	BH 111	250g	0.40	SOIL	X	X	X	X	X						
73	BH 111	250g	0.40	SOIL	Sample on Hold										
74	BH 111	250g	1.00	SOIL	X	X									
75	BH 111	250g	1.00	SOIL	Sample on Hold										
76	BH 111	250g	2.50	SOIL	Sample on Hold										
77	BH 111	250g	2.50	SOIL	Sample on Hold										
78	BH 111	TUB	3.00	SOIL											X
79	BH 111	250g	3.90	SOIL	Sample on Hold										
80	BH 111	250g	3.90	SOIL	Sample on Hold										
81	BH 112	250g	0.80	SOIL	X	X		X	X	X				X	
82	BH 112	250g	0.80	SOIL	Sample on Hold										
83	BH 112	250g	1.80	SOIL	X	X									

Checked By

Name : Sheila Clayton

Printed : 24/07/01 13:30:08

ALcontrol Geochem
TEST SCHEDULE

JOB NUMBER : 01/6499/02
CLIENT : URS Dames & Moore
CONTACT : Karen Madawee
DATE OF RECEIPT : 18/07/01
LOCATION : NIPA

BATCH NUMBER : 3
CLIENT REF/CODE :
ORDER NUMBER :
TURNAROUND : 10 days

Numeric values indicate additional scheduling

* indicates test subcontracted

Sample Number	Sample Identity	P / V	Depth	Sample Type	Volatiles (MSD)	Take Vol	PAH by MS	Phenol prep	Tot Phen HPLC	Diesel rng orgs	ICP ICRCL (9)	B (H2O Sol)	Cr VI	pH (soil)	P S D *
		UKAS Accredited ?			✓		✓		✓	✓	✓	✓		✓	
84	BH 112	250g	1.80	SOIL	Sample on Hold										
85	BH 112	250g	2.80	SOIL	Sample on Hold										
86	BH 112	250g	2.80	SOIL	Sample on Hold										
87	BH 113	250g	2.80	SOIL	X	X	X	X	X	X	X	X	X	X	
88	BH 113	250g	2.80	SOIL	Sample on Hold										
		Total Number of Tests			7	7	4	3	3	4	3	3	3	2	1

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ALcontrol Geochem
TEST SCHEDULE

JOB NUMBER : 01/6499/02
CLIENT : URS Dames & Moore
CONTACT : Karen Madawee
DATE OF RECEIPT : 20/07/01
LOCATION : NIPA

BATCH NUMBER : 4
CLIENT REF/CODE :
ORDER NUMBER :
TURNAROUND : 10 days

Numeric values indicate additional scheduling

* indicates test subcontracted

		UKAS Accredited ?			✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓												
Sample Number	Sample Identity	P / V	Depth	Sample Type	Volatiles (MSD)	Take Vol	PAH by MS	Tot Phen HPLC	Diesel rng orgs	Boron	Selenium	Zinc	Cd by ICP-USN	Cr by ICP-USN	Cu by ICP-USN	Pb by ICP-USN	Ni by ICP-USN	As low level AA	Hg Low Dutch T AA										
89	BH101S	1lglass	UNKNOWN	WATER			X	X											X										
90	BH101S	1lglass	UNKNOWN	WATER	Sample on Hold																								
91	BH101S	1lplastic	UNKNOWN	WATER						X	X	X	X	X	X	X	X	X											
92	BH101S	Vial	UNKNOWN	WATER	X																								
93	BH102S	1lglass	UNKNOWN	WATER				X																					
94	BH102S	1lglass	UNKNOWN	WATER	Sample on Hold																								
95	BH102S	1lplastic	UNKNOWN	WATER	Sample on Hold																								
96	BH102S	Vial	UNKNOWN	WATER	X																								
97	BH103S	1lglass	UNKNOWN	WATER	X	X	X		X																				
98	BH104	Vial	UNKNOWN	WATER	X																								
99	BH105S	1lglass	UNKNOWN	WATER	Sample on Hold																								
100	BH105S	1lglass	UNKNOWN	WATER	Sample on Hold																								
101	BH105S	1lplastic	UNKNOWN	WATER	Sample on Hold																								
102	BH105S	Vial	UNKNOWN	WATER	X																								
103	BH106	1lglass	UNKNOWN	WATER			X	X											X										
104	BH106	1lglass	UNKNOWN	WATER	Sample on Hold																								
105	BH106	1lplastic	UNKNOWN	WATER						X	X	X	X	X	X	X	X	X											
106	BH106	Vial	UNKNOWN	WATER	X																								
107	BH107D	1lglass	UNKNOWN	WATER			X		X																				
108	BH107D	1lglass	UNKNOWN	WATER	Sample on Hold																								
109	BH107D	Vial	UNKNOWN	WATER	X																								
110	BH108D	1lglass	UNKNOWN	WATER	Sample on Hold																								

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ALcontrol Geochem
TEST SCHEDULE

JOB NUMBER : 01/6499/02
CLIENT : URS Dames & Moore
CONTACT : Karen Madawee
DATE OF RECEIPT : 20/07/01
LOCATION : NIPA

BATCH NUMBER : 4
CLIENT REF/CODE :
ORDER NUMBER :
TURNAROUND : 10 days

Numeric values indicate additional scheduling

* indicates test subcontracted

		UKAS Accredited ?			✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓													
Sample Number	Sample Identity	P / V	Depth	Sample Type	Volatiles (MSD)	Take Vol	PAH by MS	Tot Phen HPLC	Diesel rng orgs	Boron	Selenium	Zinc	Cd by ICP-USN	Cr by ICP-USN	Cu by ICP-USN	Pb by ICP-USN	Ni by ICP-USN	As low level AA	Hg Low Dutch T AA											
111	BH108D	1lglass	UNKNOWN	WATER	Sample on Hold																									
112	BH108D	1lplastic	UNKNOWN	WATER	Sample on Hold																									
113	BH108D	Vial	UNKNOWN	WATER	Sample on Hold																									
114	BH108S	1lglass	UNKNOWN	WATER			X		X										X											
115	BH108S	1lglass	UNKNOWN	WATER	Sample on Hold																									
116	BH108S	1lplastic	UNKNOWN	WATER						X	X	X	X	X	X	X	X	X												
117	BH108S	Vial	UNKNOWN	WATER	X																									
118	BH109	1lglass	UNKNOWN	WATER					X																					
119	BH109	1lglass	UNKNOWN	WATER	Sample on Hold																									
120	BH109	Vial	UNKNOWN	WATER	Sample on Hold																									
121	BH110	1lglass	UNKNOWN	WATER			X												X											
122	BH110	1lglass	UNKNOWN	WATER	Sample on Hold																									
123	BH110	1lplastic	UNKNOWN	WATER						X	X	X	X	X	X	X	X	X												
124	BH110	Vial	UNKNOWN	WATER	X																									
125	BH111	1lglass	UNKNOWN	WATER				X																						
126	BH111	Vial	UNKNOWN	WATER	X																									
127	BH112D	1lglass	UNKNOWN	WATER	Sample on Hold																									
128	BH112D	1lglass	UNKNOWN	WATER	Sample on Hold																									
129	BH112D	1lplastic	UNKNOWN	WATER	Sample on Hold																									
130	BH112D	Vial	UNKNOWN	WATER	Sample on Hold																									
131	BH112S	1lglass	UNKNOWN	WATER				X	X										X											
132	BH112S	1lglass	UNKNOWN	WATER	Sample on Hold																									

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Printed : 24/07/01 13:43:32

ALcontrol Geochem
TEST SCHEDULE

JOB NUMBER : 01/6499/02
CLIENT : URS Dames & Moore
CONTACT : Karen Madawee
DATE OF RECEIPT : 20/07/01
LOCATION : NIPA

BATCH NUMBER : 4
CLIENT REF/CODE :
ORDER NUMBER :
TURNAROUND : 10 days

Numeric values indicate additional scheduling

* indicates test subcontracted

Sample Number	Sample Identity	P / V	Depth	Sample Type	Volatiles (MSD)	Take Vol	PAH by MS	Tot Phen HPLC	Diesel rng orgs	Boron	Selenium	Zinc	Cd by ICP-USN	Cr by ICP-USN	Cu by ICP-USN	Pb by ICP-USN	Ni by ICP-USN	As low level AA	Hg Low Dutch T AA
			UKAS Accredited ?		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
133	BH112S	1lplastic	UNKNOWN	WATER						X	X	X	X	X	X	X	X	X	
134	BH112S	Vial	UNKNOWN	WATER	X														
135	BH113S	1lglass	UNKNOWN	WATER			X	X	X										X
136	BH113S	1lglass	UNKNOWN	WATER	Sample on Hold														
137	BH113S	1lplastic	UNKNOWN	WATER						X	X	X	X	X	X	X	X	X	
138	BH113S	Vial	UNKNOWN	WATER	X														
139	BH103S	Vial	UNKNOWN	WATER	Sample Broken														
			Total Number of Tests		12	1	7	6	6	6	6	6	6	6	6	6	6	6	6

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☐ eliminary

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Table Of Results

☐ UKAS Accredited

Job Number: 01/06499/02/01
Client: URS Dames & Moore
Date of Receipt: 12/07/01
(of first sample)

Sample Type: SOIL
Location: NIPA
Client Contact: Karen Madawee
Client Ref. No.:

	Units		ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%			
	Detection Method		ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	Spectro	HPLC	Leco	Meter	.
	Method Detection Limit		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1	<0.01	<0.01	<1.00	
Sample Number	Sample Identity	Depth (m)	Arsenic	Boron (Water Soluble)	Cadmium	Chromium	Copper	Mercury	Nickel	Lead	Selenium	Zinc	Hexavalent Chrome	Total Phenols HPLC	Tot. Org Carbon In Soil	pH Value in Soil	Asbestos Presence Screen	
1	BH101	0.50	-	-	-	-	-	-	-	-	-	-	-	0.07	-	-	-	
10	BH102	0.90	-	-	-	-	-	-	-	-	-	-	-	0.08	-	-	-	
12	BH102	1.60-1.70	-	-	-	-	-	-	-	-	-	-	-	-	0.34	7.03	-	
16	BH103	0.50	9	<1	<1	15	13	<1	8	13	<1	36	<0.1	-	1.08	7.89	-	
25	BH104	0.50	5	<1	<1	14	22	<1	18	9	<1	58	<0.1	1.11	-	7.90	NFP	
29	BH104	1.50	-	-	-	-	-	-	-	-	-	-	-	1.78	4.15	-	-	
33	BH105	0.30	-	-	-	-	-	-	-	-	-	-	-	0.16	-	-	NFP	
44	BH106	0.60	8	2	<1	15	18	<1	20	15	<1	65	<0.1	-	0.95	8.09	-	
54	BH107	2.00	-	-	-	-	-	-	-	-	-	-	-	-	-	6.99	-	
56	BH108	0.50	1	<1	<1	6	17	<1	3	6	<1	23	<0.1	-	0.83	8.49	-	
58	BH108	2.10	-	-	-	-	-	-	-	-	-	-	-	0.33	-	-	-	
62	BH 109	0.50	14	<1	<1	43	88	<1	16	72	<1	104	<0.1	-	-	-	-	
66	BH 110	0.50	15	<1	<1	50	99	<1	18	80	<1	117	<0.1	-	-	-	-	
72	BH 111	0.40	-	-	-	-	-	-	-	-	-	-	-	0.29	-	-	-	
81	BH 112	0.80	-	-	-	-	-	-	-	-	-	-	-	0.03	-	8.38	-	
87	BH 113	0.80	6	<1	<1	14	19	<1	19	8	<1	56	<0.1	0.17	-	6.68	-	

Note: METHOD DETECTION LIMITS ARE NOT ALWAYS ACHIEVABLE DUE TO VARIOUS CIRCUMSTANCES BEYOND OUR CONTROL.

NDP = NO DETERMINATION POSSIBLE

NFP = NO FIBRES PRESENT

Checked By _____ Phill Reay

Printed at 12:32 on 18/08/01

☐ eliminary

☑ Validated

Al ontrol Geochem Analytical ervices

Table Of Results

☐ UKAS Accredited

Job Number: 01/06499/02/01 **Sample Type:** WATER

Client: URS Dames & Moore Location: NIPA

Date of Receipt: (of first sample) 12/07/01 Client Contact: Karen Madawee

Client Ref. No.:

	Units		ppm	ppm	ppm	ppb	ppm	ppm	ppb	ppb	ppb	ppb	ppb					
	Detection Method		ICP	ICP	ICP	CVAAS	GFAAS	HPLC	ICP-USN	ICP-USN	ICP-USN	ICP-USN	ICP-USN					
	Method Detection Limit		<0.05	<0.05	<0.05	<0.05	<0.002	<0.01	<0.4	<1	<5	<10	<5					
Sample Number	Sample Identity	Depth (m)	Boron	Selenium	Zinc	Mercury Low Dutch Target AA	Arsenic Low Level by AA	Total Phenols HPLC	Cadmium by ICP-USN	Chromium by ICP-USN	Copper by ICP-USN	Nickel by ICP-USN	Lead by ICP-USN					
89	BH101S	UNKNOWN	-	-	-	<0.05	-	0.01	-	-	-	-	-					
91	BH101S	UNKNOWN	0.06	<0.05	<0.05	-	<0.002	-	<0.4	9	<5	12	<5					
93	BH102S	UNKNOWN	-	-	-	-	-	831.01	-	-	-	-	-					
103	BH106	UNKNOWN	-	-	-	<0.05	-	0.95	-	-	-	-	-					
105	BH106	UNKNOWN	<0.05	<0.05	<0.05	-	<0.002	-	3	3	14	39	<5					
114	BH108S	UNKNOWN	-	-	-	<0.05	-	-	-	-	-	-	-					
116	BH108S	UNKNOWN	<0.05	<0.05	<0.05	-	<0.002	-	<0.4	26	<5	22	<5					
121	BH110	UNKNOWN	-	-	-	<0.05	-	-	-	-	-	-	-					
123	BH110	UNKNOWN	<0.05	<0.05	<0.05	-	<0.002	-	<0.4	18	<5	<10	<5					
125	BH111	UNKNOWN	-	-	-	-	-	0.37	-	-	-	-	-					
131	BH112S	UNKNOWN	-	-	-	<0.05	-	7.07	-	-	-	-	-					
133	BH112S	UNKNOWN	<0.05	<0.05	<0.05	-	<0.002	-	<0.4	18	<5	18	<5					
135	BH113S	UNKNOWN	-	-	-	<0.05	-	0.08	-	-	-	-	-					
137	BH113S	UNKNOWN	<0.05	<0.05	<0.05	-	<0.002	-	<0.4	74	12	11	<5					

Note: METHOD DETECTION LIMITS ARE NOT ALWAYS ACHIEVABLE DUE TO VARIOUS CIRCUMSTANCES BEYOND OUR CONTROL.

NDP = NO DETERMINATION POSSIBLE

NFP = NO FIBRES PRESENT

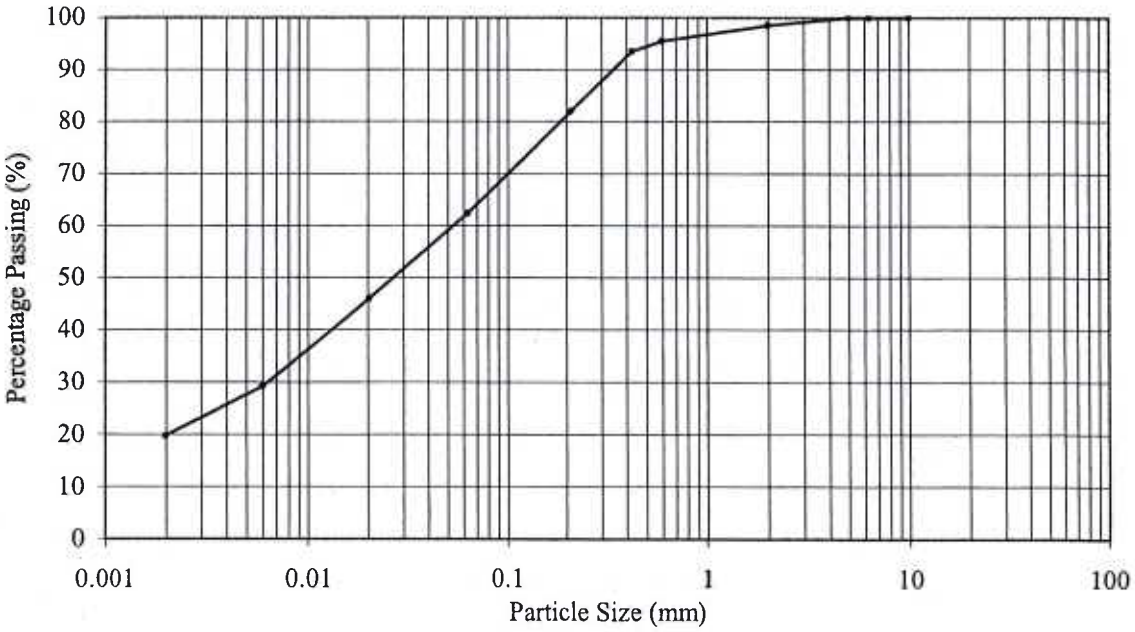
Checked By _____ Phill Reay

Printed at 12:32 on 18/08/01

HARRISON & COMPANY	Particle Size Analysis	Job No. : L7596/5731
Client : Alcontrol Geochem	Date : July 2001	Hole No. :
Location : Job No 6499 BH103 @ 1.50m		Sample No. : 20
Sample Description : Brown slightly gravelly sandy CLAY		Sample Depth (m) :

Test Method : BS : 1377 : Part 2 : 9.2 / 9.4 (Pipette)

Particle Size (mm)	Percentage Passing		Particle Size (mm)	Percentage Passing
10.0	100			
6.3	100			
5.0	100			
2.0	99			
0.600	96			
0.425	93			
0.212	82			
0.063	62			
0.020	46			
0.006	29			
0.002	20			

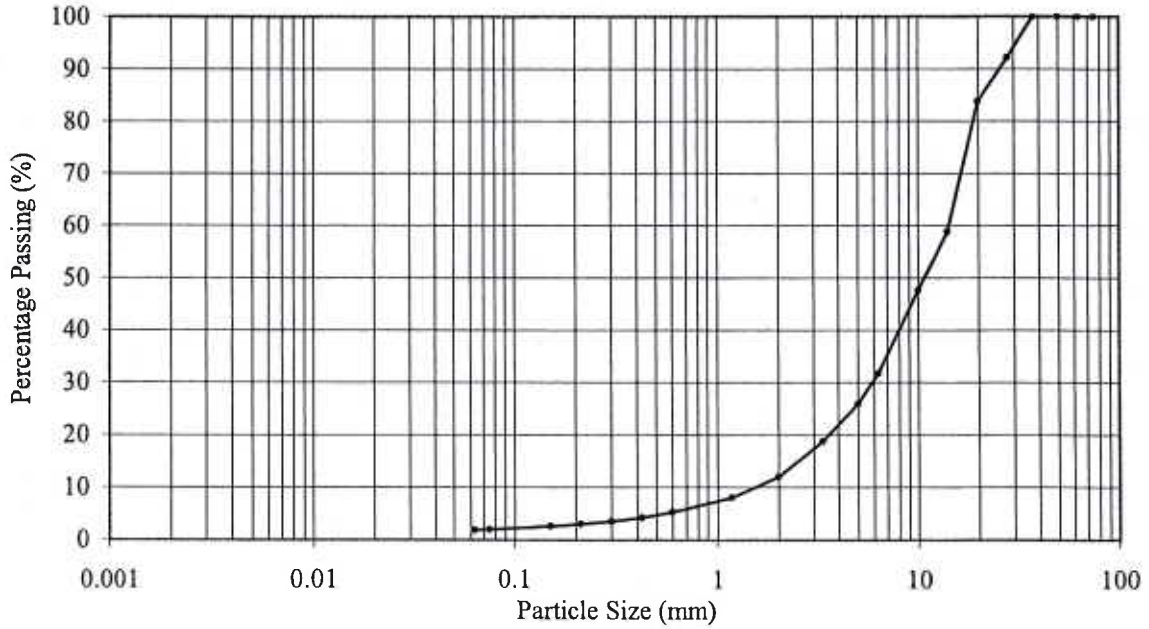


CLAY	FINE	MED	COARSE	FINE	MED	COARSE	FINE	MED	COARSE	COBBLE
	SILT			SAND			GRAVEL			

HARRISON & COMPANY	Particle Size Analysis	Job No : L7596/5731
Client : Alcontrol Geochem	Date : July 2001	Hole No. :
Location : Job No 6499 BH 107 @ 0.50m		Sample No. : 49
Sample Description : MADE GROUND (Reddish brown slightly silty sandy GRAVEL. Gravel is of limestone, slag and concrete)		Sample Depth (m) :

Test Method : BS : 1377 : Part 2 : 9.2 / 9.4 (Wet Sieve)

Particle Size (mm)	Percentage Passing		Particle Size (mm)	Percentage Passing
75.0	100		1.18	8
63.0	100		0.600	5
50.0	100		0.425	4
37.5	100		0.300	3
28.0	92		0.212	3
20.0	84		0.150	3
14.0	59		0.075	2
10.0	48		0.063	2
6.3	32			
5.0	26			
3.35	19			
2.00	12			

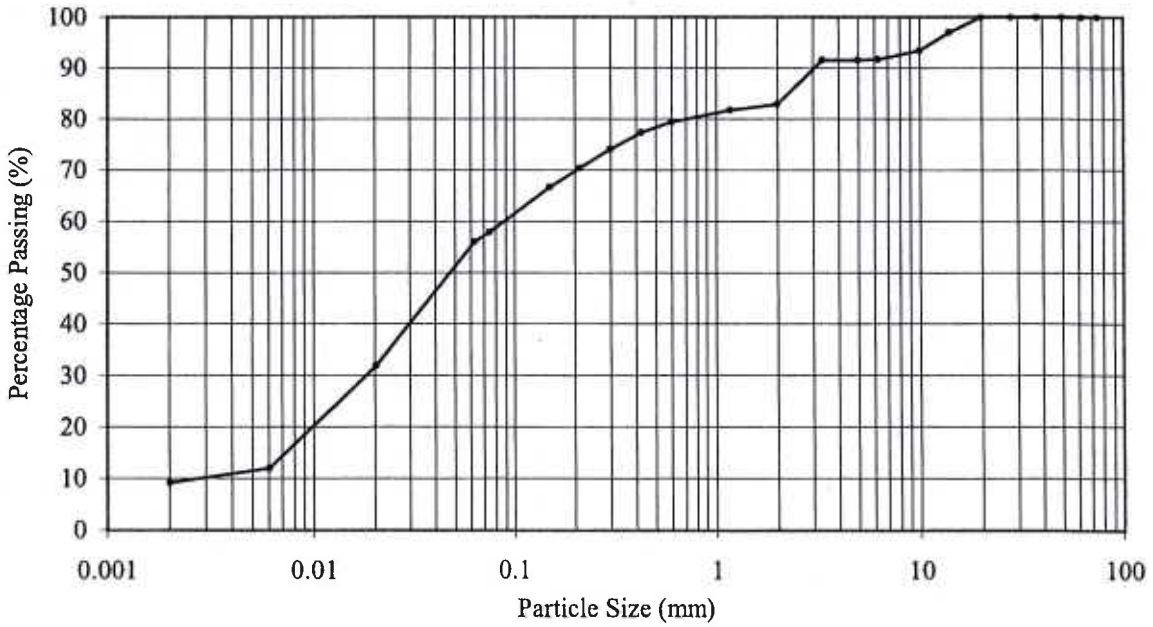


CLAY	FINE	MED	COARSE	FINE	MED	COARSE	FINE	MED	COARSE	COBBLE
	SILT			SAND			GRAVEL			

HARRISON & COMPANY	Particle Size Analysis	Job No: L7596/5739
Client : Alcontrol Geochem	Date : August 2001	Hole No. :
Location : Job No 6499 BH 111 @ 3.00m		Sample No. : 78
Sample Description : Grey brown mottled brown and blue grey slightly gravelly sandy clayey SILT		Sample Depth (m) :

Test Method : BS : 1377 : Part 2 : 9.2 / 9.4 (Wet Sieve/Pipette)

Particle Size (mm)	Percentage Passing		Particle Size (mm)	Percentage Passing
75.0	100		1.18	82
63.0	100		0.600	79
50.0	100		0.425	77
37.5	100		0.300	74
28.0	100		0.212	70
20.0	100		0.150	67
14.0	97		0.075	58
10.0	93		0.063	56
6.3	92		0.020	32
5.0	92		0.006	12
3.35	91		0.002	9
2.00	83			



CLAY	FINE	MED	COARSE	FINE	MED	COARSE	FINE	MED	COARSE	COBBLE
	SILT			SAND			GRAVEL			

ALcontrol Geochem

Diesel Range Organics by GC

Job Number : 01/06499/02/01
Client : URS Dames & Moore
Ref :
Sample Type : SOIL
Units : mg/kg

Sample No	Sample Identity	Depth	Diesel Range Hydrocarbons	Interpretation
16	BH103	0.5	36	Kerosene type Residue/Possible PAHs/possible lube oil
42	BH106	0.2	671	PAH'S/Lube oil
44	BH106	0.6	523	Lube oil
56	BH108	0.5	5	Kerosene type Residue/Possible PAHs/possible lube oil
62	BH 109	0.5	22	Possible kerosene type Residue/possible weathered diesel/possible lube oil
66	BH 110	0.5	201	PAH'S/Possible Lube oil
72	BH 111	0.4	91	Possible kerosene type Residue/biodegraded diesel/lube oil
87	BH 113	0.8	10	Possible kerosene type Residue

ALcontrol Geochem

Diesel Range Organics by GC

Job Number : 01/06499/02/01
Client : URS Dames & Moore
Ref :
Sample Type : WATER
Units : µg/l

Sample No	Sample Identity	Depth	Diesel Range Hydrocarbons	Interpretation
97	BH103S		171	1 Discrete Peak at C12/1 discrete peak at C14
107	BH107D		440	Gasolene Residues/1 Discrete peak at C12/1 discrete peak at C14/1 discrete peak at C32 to C34
114	BH108S		1234	possible gasolene Residue/unknown cluster at C16-C17
118	BH109		< 10	No identfication possible
131	BH112S		724	possible gasolene Residue/1 discrete peak at C12/1 discrete peak at C16/1 discrete peak at C25
135	BH113S		1175	unknown pattern detected

ALcontrol Geochem

Job Number : 01/06499/02/01 **Client : URS Dames & Moore**

Ref :

	Method :	PAH by GCMS					
	Sample Type :	SOIL	SOIL	SOIL	SOILS	SOIL	SOILS
	Units :	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
	Depth :	0.5	0.5	0.5	0.2	0.6	0.5
	Sample Identity :	BH101	BH103	BH104	BH106	BH106	BH108
	Sample Number :	1	16	25	42	44	56
CAS N°	Compound	Conc	Conc	Conc	Conc	Conc	Conc
91-20-3	Naphthalene	262	1208	681	228	135	306
208-96-8	Acenaphthylene	81	275	354	39	8	32
83-32-9	Acenaphthene	108	116	116	636	16	32
86-73-7	Fluorene	202	416	489	405	16	51
85-01-8	Phenanthrene	450	1371	1630	4378	105	317
120-12-7	Anthracene	123	231	276	1460	25	94
206-44-0	Fluoranthene	188	543	588	8839	185	301
129-00-0	Pyrene	167	671	751	7978	178	218
56-55-3	Benz(a)anthracene	88	182	183	8382	89	87
218-01-9	Chrysene	79	182	170	908	139	106
205-99-2	Benzo(b)fluoranthene	94	126	133	2920	104	77
207-08-9	Benzo(k)fluoranthene	66	120	113	2513	53	69
50-32-8	Benzo(a)pyrene	63	138	133	4085	70	45
193-39-5	Indeno(123cd)pyrene	63	93	74	1792	60	48
53-70-3	Dibenzo(ah)anthracene	22	36	29	520	28	14
191-24-2	Benzo(ghi)perylene	66	92	92	1377	61	48
	Total 16 PAH	2123	5797	5813	46459	1273	1847

ALcontrol Geochem

Job Number : 01/06499/02/01 **Client : URS Dames & Moore**

Ref :

	Method :	PAH by GCMS					
	Sample Type :	SOIL	SOIL	SOIL	SOIL	WATER	WATER
	Units :	µg/kg	µg/kg	µg/kg	µg/kg	ng/l	ng/l
	Depth :	0.5	0.5	0.4	0.8		
	Sample Identity :	BH 109	BH 110	BH 111	BH 113	BH101S	BH103S
	Sample Number :	62	66	72	87	89	97
CAS N°	Compound	Conc	Conc	Conc	Conc	Conc	Conc
20-3	Naphthalene	293	464	329	263	129	51
96-8	Acenaphthylene	21	197	38	40	<10	71
83-32-9	Acenaphthene	36	72	58	24	27	16
86-73-7	Fluorene	64	138	113	47	64	14
85-01-8	Phenanthrene	183	1245	283	96	137	43
120-12-7	Anthracene	46	389	84	29	<10	<10
206-44-0	Fluoranthene	161	2997	232	53	114	27
129-00-0	Pyrene	128	2208	193	49	90	30
56-55-3	Benz(a)anthracene	94	2161	119	26	27	<10
218-01-9	Chrysene	170	2763	191	38	24	<10
205-99-2	Benzo(b)fluoranthene	118	2528	147	14	<10	<10
207-08-9	Benzo(k)fluoranthene	93	2309	111	12	<10	<10
50-32-8	Benzo(a)pyrene	97	1957	105	16	<10	<10
193-39-5	Indeno(123cd)pyrene	77	1672	80	16	<10	<10
53-70-3	Dibenzo(ah)anthracene	40	884	46	6	<10	<10
191-24-2	Benzo(ghi)perylene	86	1754	86	16	<10	<10
	Total 16 PAH	1708	23738	2216	745	611	252

ALcontrol Geochem

Job Number : 01/06499/02/01 **Client : URS Dames & Moore**

Ref :

	Method :	PAH by GCMS					
	Sample Type :	WATER	WATER	WATER	WATER	WATER	
	Units :	ng/l	ng/l	ng/l	ng/l	ng/l	
	Depth :						
	Sample Identity :	BH106	BH107D	BH108S	BH110	BH113S	
	Sample Number :	103	107	114	121	135	
CAS N°	Compound	Conc	Conc	Conc	Conc	Conc	Conc
20-3	Naphthalene	40	115	87	16	85	
-96-8	Acenaphthylene	518	10	13	11	11	
83-32-9	Acenaphthene	1791	87	104	20	20	
86-73-7	Fluorene	1822	128	104	33	30	
85-01-8	Phenanthrene	1587	340	321	641	123	
120-12-7	Anthracene	574	3597	65	226	<10	
206-44-0	Fluoranthene	221	1094	202	516	54	
129-00-0	Pyrene	208	1005	168	367	49	
56-55-3	Benz(a)anthracene	70	84	53	51	<10	
218-01-9	Chrysene	32	96	53	22	<10	
205-99-2	Benzo(b)fluoranthene	18	39	20	<10	<10	
207-08-9	Benzo(k)fluoranthene	<10	61	<10	<10	<10	
50-32-8	Benzo(a)pyrene	13	53	<10	<10	<10	
193-39-5	Indeno(123cd)pyrene	<10	31	<10	<10	<10	
53-70-3	Dibenzo(ah)anthracene	<10	15	<10	<10	<10	
191-24-2	Benzo(ghi)perylene	<10	24	<10	<10	<10	
	Total 16 PAH	6896	6780	1190	1903	372	

ALcontrol Geochem

Volatile Organic Compounds (EPA 624/8260)

Sample Identity - 6499-003 BH101 0.5m
Client / Sample matrix - URS Dames & Moore/Soil
Units - µg/kg
Date Acquired - 27 Jul 01 16:37
Instrument Name - 5972MSD

CAS No.	Compound	Conc.
75-71-8	Dichlorodifluoromethane	<1
74-87-3	Chloromethane	<1
75-01-4	Vinyl chloride	<1
74-83-9	Bromomethane	<1
75-00-3	Chloroethane	<1
75-69-4	Trichlorofluoromethane	<1
156-60-5	trans-1,2-Dichloroethene	<1
75-09-2	Dichloromethane	<1
75-15-0	Carbon disulphide	<1
75-35-4	1,1-Dichloroethene	<1
75-34-3	1,1-Dichloroethane	<1
1634-04-4	tert-butyl methyl ether	<1
156-59-2	cis-1,2-Dichloroethene	<1
74-97-5	Bromochloromethane	<1
67-66-3	Chloroform	<1
594-20-7	2,2-Dichloropropane	<1
107-06-2	1,2-Dichloroethane	<1
71-55-6	1,1,1-Trichloroethane	<1
563-58-6	1,1-Dichloropropene	<1
71-43-2	Benzene	<1
56-23-5	Carbontetrachloride	<1
74-95-3	Dibromomethane	<1
78-87-5	1,2-Dichloropropane	<1
75-27-4	Bromodichloromethane	<1
79-01-6	Trichloroethene	<1
10061-01-5	cis-1,3-Dichloropropene	<1
10061-02-6	trans-1,3-Dichloropropene	<1
79-00-5	1,1,2-Trichloroethane	<1
108-88-3	Toluene	<1
142-28-9	1,3-Dichloropropane	<1
124-48-1	Dibromochloromethane	<1

CAS No.	Compound	Conc.
106-93-4	1,2-Dibromoethane	<1
127-18-4	Tetrachloroethene	<1
630-20-6	1,1,1,2-Tetrachloroethane	<1
108-90-7	Chlorobenzene	<1
100-41-4	Ethylbenzene	<1
108-38-3*	p/m-Xylene	<1
75-25-2	Bromoform	<1
100-42-5	Styrene	<1
79-34-5	1,1,2,2-Tetrachloroethane	<1
95-47-6	o-Xylene	<1
96-18-4	1,2,3-Trichloropropane	<1
98-82-8	Isopropylbenzene	<1
108-86-1	Bromobenzene	<1
95-49-8	2-Chlorotoluene	<1
103-65-1	Propylbenzene	<1
106-43-4	4-Chlorotoluene	<1
95-63-6	1,2,4-Trimethylbenzene	<1
99-87-6	4-Isopropyltoluene	<1
108-67-8	1,3,5-Trimethylbenzene	<1
95-50-1	1,2-Dichlorobenzene	<1
106-46-7	1,4-Dichlorobenzene	<1
135-98-8	sec-Butylbenzene	<1
98-06-6	tert-Butylbenzene	<1
541-73-1	1,3-Dichlorobenzene	<1
104-51-8	n-Butylbenzene	<1
96-12-8	1,2-Dibromo-3-chloropropane	<1
120-82-1	1,2,4-Trichlorobenzene	<1
91-20-3	Naphthalene	<1
87-61-6	1,2,3-Trichlorobenzene	<1
87-68-3	Hexachlorobutadiene	<1

N.B. * also CAS No. 106-42-3 ** Water blank subtracted

ALcontrol Geochem

Volatile Organic Compounds (EPA 624/8260)

Sample Identity - 6499-011 BH102 0.9m
Client / Sample matrix - URS Dames & Moore/Soil
Units - µg/kg
Date Acquired - 27 Jul 01 17:12
Instrument Name - 5972MSD

CAS No.	Compound	Conc.
75-71-8	Dichlorodifluoromethane	<1
74-87-3	Chloromethane	<1
75-01-4	Vinyl chloride	<1
74-83-9	Bromomethane	<1
75-00-3	Chloroethane	<1
75-69-4	Trichlorofluoromethane	<1
156-60-5	trans-1,2-Dichloroethene	<1
75-09-2	Dichloromethane	<1
75-15-0	Carbon disulphide	<1
75-35-4	1,1-Dichloroethene	<1
75-34-3	1,1-Dichloroethane	<1
1634-04-4	tert-butyl methyl ether	<1
156-59-2	cis-1,2-Dichloroethene	<1
74-97-5	Bromochloromethane	<1
67-66-3	Chloroform	<1
594-20-7	2,2-Dichloropropane	<1
107-06-2	1,2-Dichloroethane	<1
71-55-6	1,1,1-Trichloroethane	<1
563-58-6	1,1-Dichloropropene	<1
71-43-2	Benzene	<1
56-23-5	Carbontetrachloride	<1
74-95-3	Dibromomethane	<1
78-87-5	1,2-Dichloropropane	<1
75-27-4	Bromodichloromethane	<1
79-01-6	Trichloroethene	<1
10061-01-5	cis-1,3-Dichloropropene	<1
10061-02-6	trans-1,3-Dichloropropene	<1
79-00-5	1,1,2-Trichloroethane	<1
108-88-3	Toluene	<1
142-28-9	1,3-Dichloropropane	<1
124-48-1	Dibromochloromethane	<1

CAS No.	Compound	Conc.
106-93-4	1,2-Dibromoethane	<1
127-18-4	Tetrachloroethene	<1
630-20-6	1,1,1,2-Tetrachloroethane	<1
108-90-7	Chlorobenzene	<1
100-41-4	Ethylbenzene	<1
108-38-3*	p/m-Xylene	<1
75-25-2	Bromoform	<1
100-42-5	Styrene	<1
79-34-5	1,1,2,2-Tetrachloroethane	<1
95-47-6	o-Xylene	<1
96-18-4	1,2,3-Trichloropropane	<1
98-82-8	Isopropylbenzene	<1
108-86-1	Bromobenzene	<1
95-49-8	2-Chlorotoluene	<1
103-65-1	Propylbenzene	<1
106-43-4	4-Chlorotoluene	<1
95-63-6	1,2,4-Trimethylbenzene	<1
99-87-6	4-Isopropyltoluene	<1
108-67-8	1,3,5-Trimethylbenzene	<1
95-50-1	1,2-Dichlorobenzene	<1
106-46-7	1,4-Dichlorobenzene	<1
135-98-8	sec-Butylbenzene	<1
98-06-6	tert-Butylbenzene	<1
541-73-1	1,3-Dichlorobenzene	<1
104-51-8	n-Butylbenzene	<1
96-12-8	1,2-Dibromo-3-chloropropane	<1
120-82-1	1,2,4-Trichlorobenzene	<1
91-20-3	Naphthalene	<1
87-61-6	1,2,3-Trichlorobenzene	<1
87-68-3	Hexachlorobutadiene	<1

N.B. * also CAS No. 106-42-3 ** Water blank subtracted

ALcontrol Geochem

Volatile Organic Compounds (EPA 624/8260)

Sample Identity - 6499-013 BH102 1.6-1.7m
Client / Sample matrix - URS Dames & Moore/Soil
Units - µg/kg
Date Acquired - 27 Jul 01 17:48
Instrument Name - 5972MSD

CAS No.	Compound	Conc.
75-71-8	Dichlorodifluoromethane	<1
74-87-3	Chloromethane	<1
75-01-4	Vinyl chloride	<1
74-83-9	Bromomethane	<1
75-00-3	Chloroethane	<1
75-69-4	Trichlorofluoromethane	<1
156-60-5	trans-1,2-Dichloroethene	<1
75-09-2	Dichloromethane	<1
75-15-0	Carbon disulphide	<1
75-35-4	1,1-Dichloroethene	<1
75-34-3	1,1-Dichloroethane	<1
1634-04-4	tert-butyl methyl ether	<1
156-59-2	cis-1,2-Dichloroethene	<1
74-97-5	Bromochloromethane	<1
67-66-3	Chloroform	<1
594-20-7	2,2-Dichloropropane	<1
107-06-2	1,2-Dichloroethane	<1
71-55-6	1,1,1-Trichloroethane	<1
563-58-6	1,1-Dichloropropene	<1
71-43-2	Benzene	<1
56-23-5	Carbontetrachloride	<1
74-95-3	Dibromomethane	<1
78-87-5	1,2-Dichloropropane	<1
75-27-4	Bromodichloromethane	<1
79-01-6	Trichloroethene	<1
10061-01-5	cis-1,3-Dichloropropene	<1
10061-02-6	trans-1,3-Dichloropropene	<1
79-00-5	1,1,2-Trichloroethane	<1
108-88-3	Toluene	13
142-28-9	1,3-Dichloropropane	<1
124-48-1	Dibromochloromethane	<1

CAS No.	Compound	Conc.
106-93-4	1,2-Dibromoethane	<1
127-18-4	Tetrachloroethene	<1
630-20-6	1,1,1,2-Tetrachloroethane	<1
108-90-7	Chlorobenzene	<1
100-41-4	Ethylbenzene	<1
108-38-3*	p/m-Xylene	<1
75-25-2	Bromoform	<1
100-42-5	Styrene	<1
79-34-5	1,1,2,2-Tetrachloroethane	<1
95-47-6	o-Xylene	<1
96-18-4	1,2,3-Trichloropropane	<1
98-82-8	Isopropylbenzene	<1
108-86-1	Bromobenzene	<1
95-49-8	2-Chlorotoluene	<1
103-65-1	Propylbenzene	<1
106-43-4	4-Chlorotoluene	<1
95-63-6	1,2,4-Trimethylbenzene	<1
99-87-6	4-Isopropyltoluene	<1
108-67-8	1,3,5-Trimethylbenzene	<1
95-50-1	1,2-Dichlorobenzene	<1
106-46-7	1,4-Dichlorobenzene	<1
135-98-8	sec-Butylbenzene	<1
98-06-6	tert-Butylbenzene	<1
541-73-1	1,3-Dichlorobenzene	<1
104-51-8	n-Butylbenzene	<1
96-12-8	1,2-Dibromo-3-chloropropane	<1
120-82-1	1,2,4-Trichlorobenzene	<1
91-20-3	Naphthalene	<1
87-61-6	1,2,3-Trichlorobenzene	<1
87-68-3	Hexachlorobutadiene	<1

N.B. * also CAS No. 106-42-3 ** Water blank subtracted

ALcontrol Geochem

Volatile Organic Compounds (EPA 624/8260)

Sample Identity - 6499-017 BH103 0.5m
Client / Sample matrix - URS Dames & Moore/Soil
Units - µg/kg
Date Acquired - 27 Jul 01 18:23
Instrument Name - 5972MSD

CAS No.	Compound	Conc.	CAS No.	Compound	Conc.
75-71-8	Dichlorodifluoromethane	<1	106-93-4	1,2-Dibromoethane	<1
74-87-3	Chloromethane	<1	127-18-4	Tetrachloroethene	<1
75-01-4	Vinyl chloride	<1	630-20-6	1,1,1,2-Tetrachloroethane	<1
74-83-9	Bromomethane	<1	108-90-7	Chlorobenzene	<1
75-00-3	Chloroethane	<1	100-41-4	Ethylbenzene	<1
75-69-4	Trichlorofluoromethane	<1	108-38-3*	p/m-Xylene	<1
156-60-5	trans-1,2-Dichloroethene	<1	75-25-2	Bromoform	<1
75-09-2	Dichloromethane	<1	100-42-5	Styrene	<1
75-15-0	Carbon disulphide	<1	79-34-5	1,1,2,2-Tetrachloroethane	<1
75-35-4	1,1-Dichloroethene	<1	95-47-6	o-Xylene	<1
75-34-3	1,1-Dichloroethane	<1	96-18-4	1,2,3-Trichloropropane	<1
1634-04-4	tert-butyl methyl ether	<1	98-82-8	Isopropylbenzene	<1
156-59-2	cis-1,2-Dichloroethene	36	108-86-1	Bromobenzene	<1
74-97-5	Bromochloromethane	<1	95-49-8	2-Chlorotoluene	<1
67-66-3	Chloroform	<1	103-65-1	Propylbenzene	<1
594-20-7	2,2-Dichloropropane	<1	106-43-4	4-Chlorotoluene	<1
107-06-2	1,2-Dichloroethane	<1	95-63-6	1,2,4-Trimethylbenzene	<1
71-55-6	1,1,1-Trichloroethane	<1	99-87-6	4-Isopropyltoluene	<1
563-58-6	1,1-Dichloropropene	<1	108-67-8	1,3,5-Trimethylbenzene	<1
71-43-2	Benzene	<1	95-50-1	1,2-Dichlorobenzene	<1
56-23-5	Carbontetrachloride	<1	106-46-7	1,4-Dichlorobenzene	<1
74-95-3	Dibromomethane	<1	135-98-8	sec-Butylbenzene	<1
78-87-5	1,2-Dichloropropane	<1	98-06-6	tert-Butylbenzene	<1
75-27-4	Bromodichloromethane	<1	541-73-1	1,3-Dichlorobenzene	<1
79-01-6	Trichloroethene	<1	104-51-8	n-Butylbenzene	<1
10061-01-5	cis-1,3-Dichloropropene	<1	96-12-8	1,2-Dibromo-3-chloropropane	<1
10061-02-6	trans-1,3-Dichloropropene	<1	120-82-1	1,2,4-Trichlorobenzene	<1
79-00-5	1,1,2-Trichloroethane	<1	91-20-3	Naphthalene	<1
108-88-3	Toluene	<1	87-61-6	1,2,3-Trichlorobenzene	<1
142-28-9	1,3-Dichloropropane	<1	87-68-3	Hexachlorobutadiene	<1
124-48-1	Dibromochloromethane	<1			

N.B. * also CAS No. 106-42-3 ** Water blank subtracted

ALcontrol Geochem

Volatile Organic Compounds (EPA 624/8260)

Sample Identity - 6499-026 BH104 0.5m
Client / Sample matrix - URS Dames & Moore/Soil
Units - µg/kg
Date Acquired - 27 Jul 01 18:58
Instrument Name - 5972MSD

CAS No.	Compound	Conc.
75-71-8	Dichlorodifluoromethane	<1
74-87-3	Chloromethane	<1
75-01-4	Vinyl chloride	<1
74-83-9	Bromomethane	<1
75-00-3	Chloroethane	<1
75-69-4	Trichlorofluoromethane	<1
156-60-5	trans-1,2-Dichloroethene	<1
75-09-2	Dichloromethane	<1
75-15-0	Carbon disulphide	<1
75-35-4	1,1-Dichloroethene	<1
75-34-3	1,1-Dichloroethane	<1
1634-04-4	tert-butyl methyl ether	<1
156-59-2	cis-1,2-Dichloroethene	<1
74-97-5	Bromochloromethane	<1
67-66-3	Chloroform	<1
594-20-7	2,2-Dichloropropane	<1
107-06-2	1,2-Dichloroethane	<1
71-55-6	1,1,1-Trichloroethane	<1
563-58-6	1,1-Dichloropropene	<1
71-43-2	Benzene	<1
56-23-5	Carbontetrachloride	<1
74-95-3	Dibromomethane	<1
78-87-5	1,2-Dichloropropane	<1
75-27-4	Bromodichloromethane	<1
79-01-6	Trichloroethene	<1
10061-01-5	cis-1,3-Dichloropropene	<1
10061-02-6	trans-1,3-Dichloropropene	<1
79-00-5	1,1,2-Trichloroethane	<1
108-88-3	Toluene	<1
142-28-9	1,3-Dichloropropane	<1
124-48-1	Dibromochloromethane	<1

CAS No.	Compound	Conc.
106-93-4	1,2-Dibromoethane	<1
127-18-4	Tetrachloroethene	<1
630-20-6	1,1,1,2-Tetrachloroethane	<1
108-90-7	Chlorobenzene	<1
100-41-4	Ethylbenzene	<1
108-38-3*	p/m-Xylene	<1
75-25-2	Bromoform	<1
100-42-5	Styrene	<1
79-34-5	1,1,2,2-Tetrachloroethane	<1
95-47-6	o-Xylene	<1
96-18-4	1,2,3-Trichloropropane	<1
98-82-8	Isopropylbenzene	<1
108-86-1	Bromobenzene	<1
95-49-8	2-Chlorotoluene	<1
103-65-1	Propylbenzene	<1
106-43-4	4-Chlorotoluene	<1
95-63-6	1,2,4-Trimethylbenzene	<1
99-87-6	4-Isopropyltoluene	<1
108-67-8	1,3,5-Trimethylbenzene	<1
95-50-1	1,2-Dichlorobenzene	<1
106-46-7	1,4-Dichlorobenzene	<1
135-98-8	sec-Butylbenzene	<1
98-06-6	tert-Butylbenzene	<1
541-73-1	1,3-Dichlorobenzene	<1
104-51-8	n-Butylbenzene	<1
96-12-8	1,2-Dibromo-3-chloropropane	<1
120-82-1	1,2,4-Trichlorobenzene	<1
91-20-3	Naphthalene	<1
87-61-6	1,2,3-Trichlorobenzene	<1
87-68-3	Hexachlorobutadiene	<1

N.B. * also CAS No. 106-42-3 ** Water blank subtracted

ALcontrol Geochem

Volatile Organic Compounds (EPA 624/8260)

Sample Identity - 6499-030 BH104 1.5m
Client / Sample matrix - URS Dames & Moore/Soil
Units - µg/kg
Date Acquired - 27 Jul 01 19:33
Instrument Name - 5972MSD

CAS No.	Compound	Conc.
75-71-8	Dichlorodifluoromethane	<1
74-87-3	Chloromethane	<1
75-01-4	Vinyl chloride	<1
74-83-9	Bromomethane	<1
75-00-3	Chloroethane	<1
75-69-4	Trichlorofluoromethane	<1
156-60-5	trans-1,2-Dichloroethene	<1
75-09-2	Dichloromethane	<1
75-15-0	Carbon disulphide	<1
75-35-4	1,1-Dichloroethene	<1
75-34-3	1,1-Dichloroethane	<1
1634-04-4	tert-butyl methyl ether	<1
156-59-2	cis-1,2-Dichloroethene	<1
74-97-5	Bromochloromethane	<1
67-66-3	Chloroform	<1
594-20-7	2,2-Dichloropropane	<1
107-06-2	1,2-Dichloroethane	<1
71-55-6	1,1,1-Trichloroethane	<1
563-58-6	1,1-Dichloropropene	<1
71-43-2	Benzene	<1
56-23-5	Carbontetrachloride	<1
74-95-3	Dibromomethane	<1
78-87-5	1,2-Dichloropropane	<1
75-27-4	Bromodichloromethane	<1
79-01-6	Trichloroethene	<1
10061-01-5	cis-1,3-Dichloropropene	<1
10061-02-6	trans-1,3-Dichloropropene	<1
79-00-5	1,1,2-Trichloroethane	<1
108-88-3	Toluene	<1
142-28-9	1,3-Dichloropropane	<1
124-48-1	Dibromochloromethane	<1

CAS No.	Compound	Conc.
106-93-4	1,2-Dibromoethane	<1
127-18-4	Tetrachloroethene	<1
630-20-6	1,1,1,2-Tetrachloroethane	<1
108-90-7	Chlorobenzene	<1
100-41-4	Ethylbenzene	<1
108-38-3*	p/m-Xylene	<1
75-25-2	Bromoform	<1
100-42-5	Styrene	<1
79-34-5	1,1,2,2-Tetrachloroethane	<1
95-47-6	o-Xylene	<1
96-18-4	1,2,3-Trichloropropane	<1
98-82-8	Isopropylbenzene	<1
108-86-1	Bromobenzene	<1
95-49-8	2-Chlorotoluene	<1
103-65-1	Propylbenzene	<1
106-43-4	4-Chlorotoluene	<1
95-63-6	1,2,4-Trimethylbenzene	<1
99-87-6	4-Isopropyltoluene	<1
108-67-8	1,3,5-Trimethylbenzene	<1
95-50-1	1,2-Dichlorobenzene	<1
106-46-7	1,4-Dichlorobenzene	<1
135-98-8	sec-Butylbenzene	<1
98-06-6	tert-Butylbenzene	<1
541-73-1	1,3-Dichlorobenzene	<1
104-51-8	n-Butylbenzene	<1
96-12-8	1,2-Dibromo-3-chloropropane	<1
120-82-1	1,2,4-Trichlorobenzene	<1
91-20-3	Naphthalene	<1
87-61-6	1,2,3-Trichlorobenzene	<1
87-68-3	Hexachlorobutadiene	<1

N.B. * also CAS No. 106-42-3 ** Water blank subtracted

ALcontrol Geochem

Volatile Organic Compounds (EPA 624/8260)

Sample Identity - 6499-035 BH105 0.3m
Client / Sample matrix - URS Dames & Moore/Soil
Units - µg/kg
Date Acquired - 4 Aug 2001 17:37
Instrument Name - Instrumen

CAS No	Compound	Conc.
75-71-8	Dichlorodifluoromethane	<1
74-87-3	Chloromethane	<1
75-01-4	Vinyl Chloride	<1
74-83-9	Bromomethane	<1
75-00-3	Chloroethane	<1
75-69-4	Trichlorofluoromethane	<1
156-60-5	trans-1,2-Dichloroethene	<1
75-09-2	Dichloromethane	<1
75-15-0	Carbon disulphide	<1
75-35-4	1,1-Dichloroethene	<1
75-34-3	1,1-Dichloroethane	<1
1634-04-4	tert-butyl methyl ether	<1
156-59-2	cis-1,2-Dichloroethene	<1
74-97-5	Bromochloromethane	<1
67-66-3	Chloroform	<1
594-20-7	2,2-Dichloropropane	<1
107-06-2	1,2-Dichloroethane	<1
71-55-6	1,1,1-Trichloroethane	<1
563-58-6	1,1-Dichloropropene	<1
71-43-2	Benzene	<1
56-23-5	Carbontetrachloride	<1
74-95-3	Dibromomethane	<1
78-87-5	1,2-Dichloropropane	<1
75-27-4	Bromodichloromethane	<1
79-01-6	Trichloroethene	<1
10061-01-5	cis-1,3-Dichloropropene	<1
10061-02-6	trans-1,3-Dichloropropene	<1
79-00-5	1,1,2-Trichloroethane	<1
108-88-3	Toluene	<1
142-28-9	1,3-Dichloropropane	<1
124-48-1	Dibromochloromethane	<1

CAS No	Compound	Conc.
106-93-4	1,2-Dibromoethane	<1
127-18-4	Tetrachloroethene	<1
630-20-6	1,1,1,2-Tetrachloroethane	<1
108-90-7	Chlorobenzene	<1
100-41-4	Ethylbenzene	<1
108-38-3*	p/m-Xylene	<1
75-25-2	Bromoform	<1
100-42-5	Styrene	<1
79-34-5	1,1,2,2-Tetrachloroethane	<1
95-47-6	o-Xylene	<1
96-18-4	1,2,3-Trichloropropane	<1
98-82-8	Isopropylbenzene	<1
108-86-1	Bromobenzene	<1
95-49-8	2-Chlorotoluene	<1
103-65-1	Propylbenzene	<1
106-43-4	4-Chlorotoluene	<1
95-63-6	1,2,4-Trimethylbenzene	<1
99-87-6	4-Isopropyltoluene	<1
108-67-8	1,3,5-Trimethylbenzene	<1
95-50-1	1,2-Dichlorobenzene	<1
106-46-7	1,4-Dichlorobenzene	<1
135-98-8	sec-Butylbenzene	<1
98-06-6	tert-Buylbenzene	<1
541-73-1	1,3-Dichlorobenzene	<1
104-51-8	n-Butylbenzene	<1
96-12-8	1,2-Dibromo-3-chloropropane	<1
120-82-1	1,2,4-Trichlorobenzene	<1
91-20-3	Naphthalene	<1
87-61-6	1,2,3-Trichlorobenzene	<1
87-68-3	Hexachlorobutadiene	<1

N.B. * also CAS No. 106-42-3

** Water blank subtracted

ALcontrol Geochem

Volatile Organic Compounds (EPA 624/8260)

Sample Identity - 6499-044 BH106 0.6m
Client / Sample matrix - URS Dames & Moore/Soil
Units - µg/kg
Date Acquired - 28 Jul 01 6:10
Instrument Name - 5972MSD

CAS No.	Compound	Conc.
75-71-8	Dichlorodifluoromethane	<1
74-87-3	Chloromethane	<1
75-01-4	Vinyl chloride	<1
74-83-9	Bromomethane	<1
75-00-3	Chloroethane	<1
75-69-4	Trichlorofluoromethane	<1
156-60-5	trans-1,2-Dichloroethene	<1
75-09-2	Dichloromethane	<1
75-15-0	Carbon disulphide	<1
75-35-4	1,1-Dichloroethene	<1
75-34-3	1,1-Dichloroethane	<1
1634-04-4	tert-butyl methyl ether	<1
156-59-2	cis-1,2-Dichloroethene	<1
74-97-5	Bromochloromethane	<1
67-66-3	Chloroform	<1
594-20-7	2,2-Dichloropropane	<1
107-06-2	1,2-Dichloroethane	<1
71-55-6	1,1,1-Trichloroethane	<1
563-58-6	1,1-Dichloropropene	<1
71-43-2	Benzene	<1
56-23-5	Carbontetrachloride	<1
74-95-3	Dibromomethane	<1
78-87-5	1,2-Dichloropropane	<1
75-27-4	Bromodichloromethane	<1
79-01-6	Trichloroethene	<1
10061-01-5	cis-1,3-Dichloropropene	<1
10061-02-6	trans-1,3-Dichloropropene	<1
79-00-5	1,1,2-Trichloroethane	<1
108-88-3	Toluene	<1
142-28-9	1,3-Dichloropropane	<1
124-48-1	Dibromochloromethane	<1

CAS No.	Compound	Conc.
106-93-4	1,2-Dibromoethane	<1
127-18-4	Tetrachloroethene	<1
630-20-6	1,1,1,2-Tetrachloroethane	<1
108-90-7	Chlorobenzene	<1
100-41-4	Ethylbenzene	3
108-38-3*	p/m-Xylene	5
75-25-2	Bromoform	<1
100-42-5	Styrene	<1
79-34-5	1,1,2,2-Tetrachloroethane	<1
95-47-6	o-Xylene	<1
96-18-4	1,2,3-Trichloropropane	<1
98-82-8	Isopropylbenzene	<1
108-86-1	Bromobenzene	<1
95-49-8	2-Chlorotoluene	<1
103-65-1	Propylbenzene	<1
106-43-4	4-Chlorotoluene	<1
95-63-6	1,2,4-Trimethylbenzene	<1
99-87-6	4-Isopropyltoluene	<1
108-67-8	1,3,5-Trimethylbenzene	<1
95-50-1	1,2-Dichlorobenzene	<1
106-46-7	1,4-Dichlorobenzene	<1
135-98-8	sec-Butylbenzene	<1
98-06-6	tert-Butylbenzene	<1
541-73-1	1,3-Dichlorobenzene	<1
104-51-8	n-Butylbenzene	<1
96-12-8	1,2-Dibromo-3-chloropropane	<1
120-82-1	1,2,4-Trichlorobenzene	<1
91-20-3	Naphthalene	<1
87-61-6	1,2,3-Trichlorobenzene	<1
87-68-3	Hexachlorobutadiene	<1

N.B. * also CAS No. 106-42-3 ** Water blank subtracted

ALcontrol Geochem

Volatile Organic Compounds (EPA 624/8260)

Sample Identity - 6499-050 BH107 0.5m
Client / Sample matrix - URS Dames & Moore/Soil
Units - µg/kg
Date Acquired - 27 Jul 01 20:09
Instrument Name - 5972MSD

CAS No.	Compound	Conc.	CAS No.	Compound	Conc.
75-71-8	Dichlorodifluoromethane	<1	106-93-4	1,2-Dibromoethane	<1
74-87-3	Chloromethane	<1	127-18-4	Tetrachloroethene	6
75-01-4	Vinyl chloride	<1	630-20-6	1,1,1,2-Tetrachloroethane	<1
74-83-9	Bromomethane	<1	108-90-7	Chlorobenzene	<1
75-00-3	Chloroethane	<1	100-41-4	Ethylbenzene	<1
75-69-4	Trichlorofluoromethane	<1	108-38-3*	p/m-Xylene	<1
156-60-5	trans-1,2-Dichloroethene	<1	75-25-2	Bromoform	<1
75-09-2	Dichloromethane	<1	100-42-5	Styrene	<1
75-15-0	Carbon disulphide	<1	79-34-5	1,1,2,2-Tetrachloroethane	<1
75-35-4	1,1-Dichloroethene	<1	95-47-6	o-Xylene	<1
75-34-3	1,1-Dichloroethane	<1	96-18-4	1,2,3-Trichloropropane	<1
1634-04-4	tert-butyl methyl ether	<1	98-82-8	Isopropylbenzene	<1
156-59-2	cis-1,2-Dichloroethene	<1	108-86-1	Bromobenzene	<1
74-97-5	Bromochloromethane	<1	95-49-8	2-Chlorotoluene	<1
67-66-3	Chloroform	<1	103-65-1	Propylbenzene	<1
594-20-7	2,2-Dichloropropane	<1	106-43-4	4-Chlorotoluene	<1
107-06-2	1,2-Dichloroethane	<1	95-63-6	1,2,4-Trimethylbenzene	<1
71-55-6	1,1,1-Trichloroethane	<1	99-87-6	4-Isopropyltoluene	<1
563-58-6	1,1-Dichloropropene	<1	108-67-8	1,3,5-Trimethylbenzene	<1
71-43-2	Benzene	<1	95-50-1	1,2-Dichlorobenzene	<1
56-23-5	Carbontetrachloride	<1	106-46-7	1,4-Dichlorobenzene	<1
74-95-3	Dibromomethane	<1	135-98-8	sec-Butylbenzene	<1
78-87-5	1,2-Dichloropropane	<1	98-06-6	tert-Butylbenzene	<1
75-27-4	Bromodichloromethane	<1	541-73-1	1,3-Dichlorobenzene	<1
79-01-6	Trichloroethene	<1	104-51-8	n-Butylbenzene	<1
10061-01-5	cis-1,3-Dichloropropene	<1	96-12-8	1,2-Dibromo-3-chloropropane	<1
10061-02-6	trans-1,3-Dichloropropene	<1	120-82-1	1,2,4-Trichlorobenzene	<1
79-00-5	1,1,2-Trichloroethane	<1	91-20-3	Naphthalene	<1
108-88-3	Toluene	<1	87-61-6	1,2,3-Trichlorobenzene	<1
142-28-9	1,3-Dichloropropane	<1	87-68-3	Hexachlorobutadiene	<1
124-48-1	Dibromochloromethane	<1			

N.B. * also CAS No. 106-42-3 ** Water blank subtracted

ALcontrol Geochem

Volatile Organic Compounds (EPA 624/8260)

Sample Identity - 6499-057 BH108 0.5m
Client / Sample matrix - URS Dames & Moore/Soil
Units - µg/kg
Date Acquired - 27 Jul 01 20:44
Instrument Name - 5972MSD

CAS No.	Compound	Conc.
75-71-8	Dichlorodifluoromethane	<1
74-87-3	Chloromethane	<1
75-01-4	Vinyl chloride	<1
74-83-9	Bromomethane	<1
75-00-3	Chloroethane	<1
75-69-4	Trichlorofluoromethane	<1
156-60-5	trans-1,2-Dichloroethene	<1
75-09-2	Dichloromethane	<1
75-15-0	Carbon disulphide	<1
75-35-4	1,1-Dichloroethene	<1
75-34-3	1,1-Dichloroethane	<1
1634-04-4	tert-butyl methyl ether	<1
156-59-2	cis-1,2-Dichloroethene	<1
74-97-5	Bromochloromethane	<1
67-66-3	Chloroform	<1
594-20-7	2,2-Dichloropropane	<1
107-06-2	1,2-Dichloroethane	<1
71-55-6	1,1,1-Trichloroethane	<1
563-58-6	1,1-Dichloropropene	<1
71-43-2	Benzene	<1
56-23-5	Carbontetrachloride	<1
74-95-3	Dibromomethane	<1
78-87-5	1,2-Dichloropropane	<1
75-27-4	Bromodichloromethane	<1
79-01-6	Trichloroethene	<1
10061-01-5	cis-1,3-Dichloropropene	<1
10061-02-6	trans-1,3-Dichloropropene	<1
79-00-5	1,1,2-Trichloroethane	<1
108-88-3	Toluene	<1
142-28-9	1,3-Dichloropropane	<1
124-48-1	Dibromochloromethane	<1

CAS No.	Compound	Conc.
106-93-4	1,2-Dibromoethane	<1
127-18-4	Tetrachloroethene	32
630-20-6	1,1,1,2-Tetrachloroethane	<1
108-90-7	Chlorobenzene	<1
100-41-4	Ethylbenzene	<1
108-38-3*	p/m-Xylene	<1
75-25-2	Bromoform	<1
100-42-5	Styrene	<1
79-34-5	1,1,2,2-Tetrachloroethane	<1
95-47-6	o-Xylene	<1
96-18-4	1,2,3-Trichloropropane	<1
98-82-8	Isopropylbenzene	<1
108-86-1	Bromobenzene	<1
95-49-8	2-Chlorotoluene	<1
103-65-1	Propylbenzene	<1
106-43-4	4-Chlorotoluene	<1
95-63-6	1,2,4-Trimethylbenzene	<1
99-87-6	4-Isopropyltoluene	<1
108-67-8	1,3,5-Trimethylbenzene	<1
95-50-1	1,2-Dichlorobenzene	<1
106-46-7	1,4-Dichlorobenzene	<1
135-98-8	sec-Butylbenzene	<1
98-06-6	tert-Butylbenzene	<1
541-73-1	1,3-Dichlorobenzene	<1
104-51-8	n-Butylbenzene	<1
96-12-8	1,2-Dibromo-3-chloropropane	<1
120-82-1	1,2,4-Trichlorobenzene	<1
91-20-3	Naphthalene	<1
87-61-6	1,2,3-Trichlorobenzene	<1
87-68-3	Hexachlorobutadiene	<1

N.B. * also CAS No. 106-42-3 ** Water blank subtracted

ALcontrol Geochem

Volatile Organic Compounds (EPA 624/8260)

Sample Identity - 6499-059 BH108 2.1m
Client / Sample matrix - URS Dames & Moore/Soil
Units - µg/kg
Date Acquired - 27 Jul 01 21:19
Instrument Name - 5972MSD

CAS No.	Compound	Conc.
75-71-8	Dichlorodifluoromethane	<1
74-87-3	Chloromethane	<1
75-01-4	Vinyl chloride	<1
74-83-9	Bromomethane	<1
75-00-3	Chloroethane	<1
75-69-4	Trichlorofluoromethane	<1
156-60-5	trans-1,2-Dichloroethene	<1
75-09-2	Dichloromethane	<1
75-15-0	Carbon disulphide	<1
75-35-4	1,1-Dichloroethene	<1
75-34-3	1,1-Dichloroethane	<1
1634-04-4	tert-butyl methyl ether	<1
156-59-2	cis-1,2-Dichloroethene	<1
74-97-5	Bromochloromethane	<1
67-66-3	Chloroform	<1
594-20-7	2,2-Dichloropropane	<1
107-06-2	1,2-Dichloroethane	<1
71-55-6	1,1,1-Trichloroethane	<1
563-58-6	1,1-Dichloropropene	<1
71-43-2	Benzene	<1
56-23-5	Carbontetrachloride	<1
74-95-3	Dibromomethane	<1
78-87-5	1,2-Dichloropropane	<1
75-27-4	Bromodichloromethane	<1
79-01-6	Trichloroethene	<1
10061-01-5	cis-1,3-Dichloropropene	<1
10061-02-6	trans-1,3-Dichloropropene	<1
79-00-5	1,1,2-Trichloroethane	<1
108-88-3	Toluene	<1
142-28-9	1,3-Dichloropropane	<1
124-48-1	Dibromochloromethane	<1

CAS No.	Compound	Conc.
106-93-4	1,2-Dibromoethane	<1
127-18-4	Tetrachloroethene	<1
630-20-6	1,1,1,2-Tetrachloroethane	<1
108-90-7	Chlorobenzene	<1
100-41-4	Ethylbenzene	<1
108-38-3*	p/m-Xylene	<1
75-25-2	Bromoform	<1
100-42-5	Styrene	<1
79-34-5	1,1,2,2-Tetrachloroethane	<1
95-47-6	o-Xylene	<1
96-18-4	1,2,3-Trichloropropane	<1
98-82-8	Isopropylbenzene	<1
108-86-1	Bromobenzene	<1
95-49-8	2-Chlorotoluene	<1
103-65-1	Propylbenzene	<1
106-43-4	4-Chlorotoluene	<1
95-63-6	1,2,4-Trimethylbenzene	<1
99-87-6	4-Isopropyltoluene	<1
108-67-8	1,3,5-Trimethylbenzene	<1
95-50-1	1,2-Dichlorobenzene	<1
106-46-7	1,4-Dichlorobenzene	<1
135-98-8	sec-Butylbenzene	<1
98-06-6	tert-Butylbenzene	<1
541-73-1	1,3-Dichlorobenzene	<1
104-51-8	n-Butylbenzene	<1
96-12-8	1,2-Dibromo-3-chloropropane	<1
120-82-1	1,2,4-Trichlorobenzene	<1
91-20-3	Naphthalene	<1
87-61-6	1,2,3-Trichlorobenzene	<1
87-68-3	Hexachlorobutadiene	<1

N.B. * also CAS No. 106-42-3 ** Water blank subtracted

ALcontrol Geochem

Volatile Organic Compounds (EPA 624/8260)

Sample Identity - 6499-062 BH109 0.5m
Client / Sample matrix - URS Dames & Moore/Soil
Units - µg/kg
Date Acquired - 7 Aug 01 00:21
Instrument Name - 5972MSD

CAS No.	Compound	Conc.	CAS No.	Compound	Conc.
75-71-8	Dichlorodifluoromethane	<1	106-93-4	1,2-Dibromoethane	<1
74-87-3	Chloromethane	<1	127-18-4	Tetrachloroethene	<1
75-01-4	Vinyl chloride	<1	630-20-6	1,1,1,2-Tetrachloroethane	<1
74-83-9	Bromomethane	<1	108-90-7	Chlorobenzene	<1
75-00-3	Chloroethane	<1	100-41-4	Ethylbenzene	<1
75-69-4	Trichlorofluoromethane	<1	108-38-3*	p/m-Xylene	<1
156-60-5	trans-1,2-Dichloroethene	<1	75-25-2	Bromoform	<1
75-09-2	Dichloromethane	<1	100-42-5	Styrene	<1
75-15-0	Carbon disulphide	<1	79-34-5	1,1,2,2-Tetrachloroethane	<1
75-35-4	1,1-Dichloroethene	<1	95-47-6	o-Xylene	<1
75-34-3	1,1-Dichloroethane	<1	96-18-4	1,2,3-Trichloropropane	<1
1634-04-4	tert-butyl methyl ether	<1	98-82-8	Isopropylbenzene	<1
156-59-2	cis-1,2-Dichloroethene	<1	108-86-1	Bromobenzene	<1
74-97-5	Bromochloromethane	<1	95-49-8	2-Chlorotoluene	<1
67-66-3	Chloroform	<1	103-65-1	Propylbenzene	<1
594-20-7	2,2-Dichloropropane	<1	106-43-4	4-Chlorotoluene	<1
107-06-2	1,2-Dichloroethane	<1	95-63-6	1,2,4-Trimethylbenzene	<1
71-55-6	1,1,1-Trichloroethane	<1	99-87-6	4-Isopropyltoluene	<1
563-58-6	1,1-Dichloropropene	<1	108-67-8	1,3,5-Trimethylbenzene	<1
71-43-2	Benzene	<1	95-50-1	1,2-Dichlorobenzene	<1
56-23-5	Carbontetrachloride	<1	106-46-7	1,4-Dichlorobenzene	<1
74-95-3	Dibromomethane	<1	135-98-8	sec-Butylbenzene	<1
78-87-5	1,2-Dichloropropane	<1	98-06-6	tert-Butylbenzene	<1
75-27-4	Bromodichloromethane	<1	541-73-1	1,3-Dichlorobenzene	<1
79-01-6	Trichloroethene	<1	104-51-8	n-Butylbenzene	<1
10061-01-5	cis-1,3-Dichloropropene	<1	96-12-8	1,2-Dibromo-3-chloropropane	<1
10061-02-6	trans-1,3-Dichloropropene	<1	120-82-1	1,2,4-Trichlorobenzene	<1
79-00-5	1,1,2-Trichloroethane	<1	91-20-3	Naphthalene	<1
108-88-3	Toluene	<1	87-61-6	1,2,3-Trichlorobenzene	<1
142-28-9	1,3-Dichloropropane	<1	87-68-3	Hexachlorobutadiene	<1
124-48-1	Dibromochloromethane	<1			

N.B. * also CAS No. 106-42-3 ** Water blank subtracted

ALcontrol Geochem

Volatile Organic Compounds (EPA 624/8260)

Sample Identity - 6499-066 BH110 0.5m
Client / Sample matrix - URS Dames & Moore/Soil
Units - µg/kg
Date Acquired - 7 Aug 01 00:56
Instrument Name - 5972MSD

CAS No.	Compound	Conc.	CAS No.	Compound	Conc.
75-71-8	Dichlorodifluoromethane	<1	106-93-4	1,2-Dibromoethane	<1
74-87-3	Chloromethane	<1	127-18-4	Tetrachloroethene	<1
75-01-4	Vinyl chloride	<1	630-20-6	1,1,1,2-Tetrachloroethane	<1
74-83-9	Bromomethane	<1	108-90-7	Chlorobenzene	<1
75-00-3	Chloroethane	<1	100-41-4	Ethylbenzene	<1
75-69-4	Trichlorofluoromethane	<1	108-38-3*	p/m-Xylene	<1
156-60-5	trans-1,2-Dichloroethene	<1	75-25-2	Bromoform	<1
75-09-2	Dichloromethane	<1	100-42-5	Styrene	<1
75-15-0	Carbon disulphide	<1	79-34-5	1,1,2,2-Tetrachloroethane	<1
75-35-4	1,1-Dichloroethene	<1	95-47-6	o-Xylene	<1
75-34-3	1,1-Dichloroethane	<1	96-18-4	1,2,3-Trichloropropane	<1
1634-04-4	tert-butyl methyl ether	<1	98-82-8	Isopropylbenzene	<1
156-59-2	cis-1,2-Dichloroethene	<1	108-86-1	Bromobenzene	<1
74-97-5	Bromochloromethane	<1	95-49-8	2-Chlorotoluene	<1
67-66-3	Chloroform	<1	103-65-1	Propylbenzene	<1
594-20-7	2,2-Dichloropropane	<1	106-43-4	4-Chlorotoluene	<1
107-06-2	1,2-Dichloroethane	<1	95-63-6	1,2,4-Trimethylbenzene	<1
71-55-6	1,1,1-Trichloroethane	<1	99-87-6	4-Isopropyltoluene	<1
563-58-6	1,1-Dichloropropene	<1	108-67-8	1,3,5-Trimethylbenzene	<1
71-43-2	Benzene	<1	95-50-1	1,2-Dichlorobenzene	<1
56-23-5	Carbontetrachloride	<1	106-46-7	1,4-Dichlorobenzene	<1
74-95-3	Dibromomethane	<1	135-98-8	sec-Butylbenzene	<1
78-87-5	1,2-Dichloropropane	<1	98-06-6	tert-Butylbenzene	<1
75-27-4	Bromodichloromethane	<1	541-73-1	1,3-Dichlorobenzene	<1
79-01-6	Trichloroethene	<1	104-51-8	n-Butylbenzene	<1
10061-01-5	cis-1,3-Dichloropropene	<1	96-12-8	1,2-Dibromo-3-chloropropane	<1
10061-02-6	trans-1,3-Dichloropropene	<1	120-82-1	1,2,4-Trichlorobenzene	<1
79-00-5	1,1,2-Trichloroethane	<1	91-20-3	Naphthalene	<1
108-88-3	Toluene	<1	87-61-6	1,2,3-Trichlorobenzene	<1
142-28-9	1,3-Dichloropropane	<1	87-68-3	Hexachlorobutadiene	<1
124-48-1	Dibromochloromethane	<1			

N.B. * also CAS No. 106-42-3 ** Water blank subtracted

ALcontrol Geochem

Volatile Organic Compounds (EPA 624/8260)

Sample Identity - 6499-072 BH111 0.4m
Client / Sample matrix - URS Dames & Moore/Soil
Units - µg/kg
Date Acquired - 7 Aug 01 1:32
Instrument Name - 5972MSD

CAS No.	Compound	Conc.
75-71-8	Dichlorodifluoromethane	<1
74-87-3	Chloromethane	<1
75-01-4	Vinyl chloride	<1
74-83-9	Bromomethane	<1
75-00-3	Chloroethane	<1
75-69-4	Trichlorofluoromethane	<1
156-60-5	trans-1,2-Dichloroethene	<1
75-09-2	Dichloromethane	<1
75-15-0	Carbon disulphide	<1
75-35-4	1,1-Dichloroethene	<1
75-34-3	1,1-Dichloroethane	<1
1634-04-4	tert-butyl methyl ether	<1
156-59-2	cis-1,2-Dichloroethene	<1
74-97-5	Bromochloromethane	<1
67-66-3	Chloroform	<1
594-20-7	2,2-Dichloropropane	<1
107-06-2	1,2-Dichloroethane	<1
71-55-6	1,1,1-Trichloroethane	<1
563-58-6	1,1-Dichloropropene	<1
71-43-2	Benzene	<1
56-23-5	Carbontetrachloride	<1
74-95-3	Dibromomethane	<1
78-87-5	1,2-Dichloropropane	<1
75-27-4	Bromodichloromethane	<1
79-01-6	Trichloroethene	<1
10061-01-5	cis-1,3-Dichloropropene	<1
10061-02-6	trans-1,3-Dichloropropene	<1
79-00-5	1,1,2-Trichloroethane	<1
108-88-3	Toluene	<1
142-28-9	1,3-Dichloropropane	<1
124-48-1	Dibromochloromethane	<1

CAS No.	Compound	Conc.
106-93-4	1,2-Dibromoethane	<1
127-18-4	Tetrachloroethene	<1
630-20-6	1,1,1,2-Tetrachloroethane	<1
108-90-7	Chlorobenzene	<1
100-41-4	Ethylbenzene	<1
108-38-3*	p/m-Xylene	<1
75-25-2	Bromoform	<1
100-42-5	Styrene	<1
79-34-5	1,1,2,2-Tetrachloroethane	<1
95-47-6	o-Xylene	<1
96-18-4	1,2,3-Trichloropropane	<1
98-82-8	Isopropylbenzene	<1
108-86-1	Bromobenzene	<1
95-49-8	2-Chlorotoluene	<1
103-65-1	Propylbenzene	<1
106-43-4	4-Chlorotoluene	<1
95-63-6	1,2,4-Trimethylbenzene	<1
99-87-6	4-Isopropyltoluene	<1
108-67-8	1,3,5-Trimethylbenzene	<1
95-50-1	1,2-Dichlorobenzene	<1
106-46-7	1,4-Dichlorobenzene	<1
135-98-8	sec-Butylbenzene	<1
98-06-6	tert-Butylbenzene	<1
541-73-1	1,3-Dichlorobenzene	<1
104-51-8	n-Butylbenzene	<1
96-12-8	1,2-Dibromo-3-chloropropane	<1
120-82-1	1,2,4-Trichlorobenzene	<1
91-20-3	Naphthalene	<1
87-61-6	1,2,3-Trichlorobenzene	<1
87-68-3	Hexachlorobutadiene	<1

N.B. * also CAS No. 106-42-3 ** Water blank subtracted

ALcontrol Geochem

Volatile Organic Compounds (EPA 624/8260)

Sample Identity - 6499-074 BH111 1.0m
Client / Sample matrix - URS Dames & Moore/Soil
Units - µg/kg
Date Acquired - 7 Aug 01 2:07
Instrument Name - 5972MSD

CAS No.	Compound	Conc.
75-71-8	Dichlorodifluoromethane	<1
74-87-3	Chloromethane	<1
75-01-4	Vinyl chloride	<1
74-83-9	Bromomethane	<1
75-00-3	Chloroethane	<1
75-69-4	Trichlorofluoromethane	<1
156-60-5	trans-1,2-Dichloroethene	<1
75-09-2	Dichloromethane	<1
75-15-0	Carbon disulphide	<1
75-35-4	1,1-Dichloroethene	<1
75-34-3	1,1-Dichloroethane	<1
1634-04-4	tert-butyl methyl ether	<1
156-59-2	cis-1,2-Dichloroethene	<1
74-97-5	Bromochloromethane	<1
67-66-3	Chloroform	<1
594-20-7	2,2-Dichloropropane	<1
107-06-2	1,2-Dichloroethane	<1
71-55-6	1,1,1-Trichloroethane	<1
563-58-6	1,1-Dichloropropene	<1
71-43-2	Benzene	<1
56-23-5	Carbontetrachloride	<1
74-95-3	Dibromomethane	<1
78-87-5	1,2-Dichloropropane	<1
75-27-4	Bromodichloromethane	<1
79-01-6	Trichloroethene	<1
10061-01-5	cis-1,3-Dichloropropene	<1
10061-02-6	trans-1,3-Dichloropropene	<1
79-00-5	1,1,2-Trichloroethane	<1
108-88-3	Toluene	<1
142-28-9	1,3-Dichloropropane	<1
124-48-1	Dibromochloromethane	<1

CAS No.	Compound	Conc.
106-93-4	1,2-Dibromoethane	<1
127-18-4	Tetrachloroethene	<1
630-20-6	1,1,1,2-Tetrachloroethane	<1
108-90-7	Chlorobenzene	<1
100-41-4	Ethylbenzene	<1
108-38-3*	p/m-Xylene	<1
75-25-2	Bromoform	<1
100-42-5	Styrene	<1
79-34-5	1,1,2,2-Tetrachloroethane	<1
95-47-6	o-Xylene	<1
96-18-4	1,2,3-Trichloropropane	<1
98-82-8	Isopropylbenzene	<1
108-86-1	Bromobenzene	<1
95-49-8	2-Chlorotoluene	<1
103-65-1	Propylbenzene	<1
106-43-4	4-Chlorotoluene	<1
95-63-6	1,2,4-Trimethylbenzene	<1
99-87-6	4-Isopropyltoluene	<1
108-67-8	1,3,5-Trimethylbenzene	<1
95-50-1	1,2-Dichlorobenzene	<1
106-46-7	1,4-Dichlorobenzene	<1
135-98-8	sec-Butylbenzene	<1
98-06-6	tert-Butylbenzene	<1
541-73-1	1,3-Dichlorobenzene	<1
104-51-8	n-Butylbenzene	<1
96-12-8	1,2-Dibromo-3-chloropropane	<1
120-82-1	1,2,4-Trichlorobenzene	<1
91-20-3	Naphthalene	<1
87-61-6	1,2,3-Trichlorobenzene	<1
87-68-3	Hexachlorobutadiene	<1

N.B. * also CAS No. 106-42-3 ** Water blank subtracted

ALcontrol Geochem

Volatile Organic Compounds (EPA 624/8260)

Sample Identity - 6499-081 BH112 0.8m
Client / Sample matrix - URS Dames & Moore/Soil
Units - µg/kg
Date Acquired - 7 Aug 01 2:42
Instrument Name - 5972MSD

CAS No.	Compound	Conc.	CAS No.	Compound	Conc.
75-71-8	Dichlorodifluoromethane	<1	106-93-4	1,2-Dibromoethane	<1
74-87-3	Chloromethane	<1	127-18-4	Tetrachloroethene	<1
75-01-4	Vinyl chloride	<1	630-20-6	1,1,1,2-Tetrachloroethane	<1
74-83-9	Bromomethane	<1	108-90-7	Chlorobenzene	<1
75-00-3	Chloroethane	<1	100-41-4	Ethylbenzene	<1
75-69-4	Trichlorofluoromethane	<1	108-38-3*	p/m-Xylene	<1
156-60-5	trans-1,2-Dichloroethene	<1	75-25-2	Bromoform	<1
75-09-2	Dichloromethane	<1	100-42-5	Styrene	<1
75-15-0	Carbon disulphide	<1	79-34-5	1,1,2,2-Tetrachloroethane	<1
75-35-4	1,1-Dichloroethene	<1	95-47-6	o-Xylene	<1
75-34-3	1,1-Dichloroethane	<1	96-18-4	1,2,3-Trichloropropane	<1
1634-04-4	tert-butyl methyl ether	<1	98-82-8	Isopropylbenzene	<1
156-59-2	cis-1,2-Dichloroethene	<1	108-86-1	Bromobenzene	<1
74-97-5	Bromochloromethane	<1	95-49-8	2-Chlorotoluene	<1
67-66-3	Chloroform	<1	103-65-1	Propylbenzene	<1
594-20-7	2,2-Dichloropropane	<1	106-43-4	4-Chlorotoluene	<1
107-06-2	1,2-Dichloroethane	<1	95-63-6	1,2,4-Trimethylbenzene	<1
71-55-6	1,1,1-Trichloroethane	<1	99-87-6	4-Isopropyltoluene	<1
563-58-6	1,1-Dichloropropene	<1	108-67-8	1,3,5-Trimethylbenzene	<1
71-43-2	Benzene	<1	95-50-1	1,2-Dichlorobenzene	<1
56-23-5	Carbontetrachloride	<1	106-46-7	1,4-Dichlorobenzene	<1
74-95-3	Dibromomethane	<1	135-98-8	sec-Butylbenzene	<1
78-87-5	1,2-Dichloropropane	<1	98-06-6	tert-Butylbenzene	<1
75-27-4	Bromodichloromethane	<1	541-73-1	1,3-Dichlorobenzene	<1
79-01-6	Trichloroethene	<1	104-51-8	n-Butylbenzene	<1
10061-01-5	cis-1,3-Dichloropropene	<1	96-12-8	1,2-Dibromo-3-chloropropane	<1
10061-02-6	trans-1,3-Dichloropropene	<1	120-82-1	1,2,4-Trichlorobenzene	<1
79-00-5	1,1,2-Trichloroethane	<1	91-20-3	Naphthalene	<1
108-88-3	Toluene	27	87-61-6	1,2,3-Trichlorobenzene	<1
142-28-9	1,3-Dichloropropane	<1	87-68-3	Hexachlorobutadiene	<1
124-48-1	Dibromochloromethane	<1			

N.B. * also CAS No. 106-42-3 ** Water blank subtracted

ALcontrol Geochem

Volatile Organic Compounds (EPA 624/8260)

Sample Identity - 6499-083 BH112 1.8m
Client / Sample matrix - URS Dames & Moore/Soil
Units - µg/kg
Date Acquired - 7 Aug 01 3:17
Instrument Name - 5972MSD

CAS No.	Compound	Conc.	CAS No.	Compound	Conc.
75-71-8	Dichlorodifluoromethane	<1	106-93-4	1,2-Dibromoethane	<1
74-87-3	Chloromethane	<1	127-18-4	Tetrachloroethene	<1
75-01-4	Vinyl chloride	<1	630-20-6	1,1,1,2-Tetrachloroethane	<1
74-83-9	Bromomethane	<1	108-90-7	Chlorobenzene	<1
75-00-3	Chloroethane	<1	100-41-4	Ethylbenzene	<1
75-69-4	Trichlorofluoromethane	<1	108-38-3*	p/m-Xylene	<1
156-60-5	trans-1,2-Dichloroethene	<1	75-25-2	Bromoform	<1
75-09-2	Dichloromethane	<1	100-42-5	Styrene	<1
75-15-0	Carbon disulphide	<1	79-34-5	1,1,2,2-Tetrachloroethane	<1
75-35-4	1,1-Dichloroethene	<1	95-47-6	o-Xylene	<1
75-34-3	1,1-Dichloroethane	<1	96-18-4	1,2,3-Trichloropropane	<1
1634-04-4	tert-butyl methyl ether	<1	98-82-8	Isopropylbenzene	<1
156-59-2	cis-1,2-Dichloroethene	<1	108-86-1	Bromobenzene	<1
74-97-5	Bromochloromethane	<1	95-49-8	2-Chlorotoluene	<1
67-66-3	Chloroform	<1	103-65-1	Propylbenzene	<1
594-20-7	2,2-Dichloropropane	<1	106-43-4	4-Chlorotoluene	<1
107-06-2	1,2-Dichloroethane	<1	95-63-6	1,2,4-Trimethylbenzene	<1
71-55-6	1,1,1-Trichloroethane	<1	99-87-6	4-Isopropyltoluene	<1
563-58-6	1,1-Dichloropropene	<1	108-67-8	1,3,5-Trimethylbenzene	<1
71-43-2	Benzene	<1	95-50-1	1,2-Dichlorobenzene	<1
56-23-5	Carbontetrachloride	<1	106-46-7	1,4-Dichlorobenzene	<1
74-95-3	Dibromomethane	<1	135-98-8	sec-Butylbenzene	<1
78-87-5	1,2-Dichloropropane	<1	98-06-6	tert-Butylbenzene	<1
75-27-4	Bromodichloromethane	<1	541-73-1	1,3-Dichlorobenzene	<1
79-01-6	Trichloroethene	<1	104-51-8	n-Butylbenzene	<1
10061-01-5	cis-1,3-Dichloropropene	<1	96-12-8	1,2-Dibromo-3-chloropropane	<1
10061-02-6	trans-1,3-Dichloropropene	<1	120-82-1	1,2,4-Trichlorobenzene	<1
79-00-5	1,1,2-Trichloroethane	<1	91-20-3	Naphthalene	<1
108-88-3	Toluene	<1	87-61-6	1,2,3-Trichlorobenzene	<1
142-28-9	1,3-Dichloropropane	<1	87-68-3	Hexachlorobutadiene	<1
124-48-1	Dibromochloromethane	<1			

N.B. * also CAS No. 106-42-3 ** Water blank subtracted

ALcontrol Geochem

Volatile Organic Compounds (EPA 624/8260)

Sample Identity - 6499-087 BH113 2.8m
Client / Sample matrix - URS Dames & Moore/Soil
Units - µg/kg
Date Acquired - 7 Aug 01 3:53
Instrument Name - 5972MSD

CAS No.	Compound	Conc.
75-71-8	Dichlorodifluoromethane	<1
74-87-3	Chloromethane	<1
75-01-4	Vinyl chloride	<1
74-83-9	Bromomethane	<1
75-00-3	Chloroethane	<1
75-69-4	Trichlorofluoromethane	<1
156-60-5	trans-1,2-Dichloroethene	<1
75-09-2	Dichloromethane	<1
75-15-0	Carbon disulphide	<1
75-35-4	1,1-Dichloroethene	<1
75-34-3	1,1-Dichloroethane	<1
1634-04-4	tert-butyl methyl ether	<1
156-59-2	cis-1,2-Dichloroethene	<1
74-97-5	Bromochloromethane	<1
67-66-3	Chloroform	40
594-20-7	2,2-Dichloropropane	<1
107-06-2	1,2-Dichloroethane	<1
71-55-6	1,1,1-Trichloroethane	<1
563-58-6	1,1-Dichloropropene	<1
71-43-2	Benzene	<1
56-23-5	Carbontetrachloride	<1
74-95-3	Dibromomethane	<1
78-87-5	1,2-Dichloropropane	<1
75-27-4	Bromodichloromethane	<1
79-01-6	Trichloroethene	<1
10061-01-5	cis-1,3-Dichloropropene	<1
10061-02-6	trans-1,3-Dichloropropene	<1
79-00-5	1,1,2-Trichloroethane	<1
108-88-3	Toluene	<1
142-28-9	1,3-Dichloropropane	<1
124-48-1	Dibromochloromethane	<1

CAS No.	Compound	Conc.
106-93-4	1,2-Dibromoethane	<1
127-18-4	Tetrachloroethene	<1
630-20-6	1,1,1,2-Tetrachloroethane	<1
108-90-7	Chlorobenzene	<1
100-41-4	Ethylbenzene	<1
108-38-3*	p/m-Xylene	<1
75-25-2	Bromoform	<1
100-42-5	Styrene	<1
79-34-5	1,1,2,2-Tetrachloroethane	<1
95-47-6	o-Xylene	<1
96-18-4	1,2,3-Trichloropropane	<1
98-82-8	Isopropylbenzene	<1
108-86-1	Bromobenzene	<1
95-49-8	2-Chlorotoluene	<1
103-65-1	Propylbenzene	<1
106-43-4	4-Chlorotoluene	<1
95-63-6	1,2,4-Trimethylbenzene	<1
99-87-6	4-Isopropyltoluene	<1
108-67-8	1,3,5-Trimethylbenzene	<1
95-50-1	1,2-Dichlorobenzene	<1
106-46-7	1,4-Dichlorobenzene	<1
135-98-8	sec-Butylbenzene	<1
98-06-6	tert-Butylbenzene	<1
541-73-1	1,3-Dichlorobenzene	<1
104-51-8	n-Butylbenzene	<1
96-12-8	1,2-Dibromo-3-chloropropane	<1
120-82-1	1,2,4-Trichlorobenzene	<1
91-20-3	Naphthalene	<1
87-61-6	1,2,3-Trichlorobenzene	<1
87-68-3	Hexachlorobutadiene	<1

N.B. * also CAS No. 106-42-3 ** Water blank subtracted

ALcontrol Geochem

Volatile Organic Compounds (EPA 624/8260)

Sample Identity - 6499-092 BH101S
Client / Sample matrix - URS Dames & Moore/Water
Units - µg/l
Date Acquired - 4 Aug 2001 00:00
Instrument Name - Instrumen

CAS No	Compound	Conc.
75-71-8	Dichlorodifluoromethane	<1
74-87-3	Chloromethane	<1
75-01-4	Vinyl Chloride	<1
74-83-9	Bromomethane	<1
75-00-3	Chloroethane	<1
75-69-4	Trichlorofluoromethane	<1
156-60-5	trans-1,2-Dichloroethene	<1
75-09-2	Dichloromethane	<1
75-15-0	Carbon disulphide	<1
75-35-4	1,1-Dichloroethene	<1
75-34-3	1,1-Dichloroethane	<1
1634-04-4	tert-butyl methyl ether	<1
156-59-2	cis-1,2-Dichloroethene	<1
74-97-5	Bromochloromethane	<1
67-66-3	Chloroform	<1
594-20-7	2,2-Dichloropropane	<1
107-06-2	1,2-Dichloroethane	<1
71-55-6	1,1,1-Trichloroethane	<1
563-58-6	1,1-Dichloropropene	<1
71-43-2	Benzene	<1
56-23-5	Carbontetrachloride	<1
74-95-3	Dibromomethane	<1
78-87-5	1,2-Dichloropropane	<1
75-27-4	Bromodichloromethane	<1
79-01-6	Trichloroethene	<1
10061-01-5	cis-1,3-Dichloropropene	<1
10061-02-6	trans-1,3-Dichloropropene	<1
79-00-5	1,1,2-Trichloroethane	<1
108-88-3	Toluene	<1
142-28-9	1,3-Dichloropropane	<1
124-48-1	Dibromochloromethane	<1

CAS No	Compound	Conc.
106-93-4	1,2-Dibromoethane	<1
127-18-4	Tetrachloroethene	<1
630-20-6	1,1,1,2-Tetrachloroethane	<1
108-90-7	Chlorobenzene	<1
100-41-4	Ethylbenzene	<1
108-38-3*	p/m-Xylene	<1
75-25-2	Bromoform	<1
100-42-5	Styrene	<1
79-34-5	1,1,2,2-Tetrachloroethane	<1
95-47-6	o-Xylene	<1
96-18-4	1,2,3-Trichloropropane	<1
98-82-8	Isopropylbenzene	<1
108-86-1	Bromobenzene	<1
95-49-8	2-Chlorotoluene	<1
103-65-1	Propylbenzene	<1
106-43-4	4-Chlorotoluene	<1
95-63-6	1,2,4-Trimethylbenzene	<1
99-87-6	4-Isopropyltoluene	<1
108-67-8	1,3,5-Trimethylbenzene	<1
95-50-1	1,2-Dichlorobenzene	<1
106-46-7	1,4-Dichlorobenzene	<1
135-98-8	sec-Butylbenzene	<1
98-06-6	tert-Buylbenzene	<1
541-73-1	1,3-Dichlorobenzene	<1
104-51-8	n-Butylbenzene	<1
96-12-8	1,2-Dibromo-3-chloropropane	<1
120-82-1	1,2,4-Trichlorobenzene	<1
91-20-3	Naphthalene	<1
87-61-6	1,2,3-Trichlorobenzene	<1
87-68-3	Hexachlorobutadiene	<1

N.B. * also CAS No. 106-42-3

** Water blank subtracted

ALcontrol Geochem

Volatile Organic Compounds (EPA 624/8260)

Sample Identity - 6499-096 BH102S
Client / Sample matrix - URS Dames & Moore/Water
Units - µg/l
Date Acquired - 4 Aug 2001 2:21
Instrument Name - Instrumen

CAS No	Compound	Conc.
75-71-8	Dichlorodifluoromethane	<1
74-87-3	Chloromethane	<1
75-01-4	Vinyl Chloride	72
74-83-9	Bromomethane	<1
75-00-3	Chloroethane	<1
75-69-4	Trichlorofluoromethane	<1
156-60-5	trans-1,2-Dichloroethene	<1
75-09-2	Dichloromethane	<1
75-15-0	Carbon disulphide	<1
75-35-4	1,1-Dichloroethene	7
75-34-3	1,1-Dichloroethane	<1
1634-04-4	tert-butyl methyl ether	21
156-59-2	cis-1,2-Dichloroethene	2632
74-97-5	Bromochloromethane	<1
67-66-3	Chloroform	53
594-20-7	2,2-Dichloropropane	<1
107-06-2	1,2-Dichloroethane	<1
71-55-6	1,1,1-Trichloroethane	<1
563-58-6	1,1-Dichloropropene	<1
71-43-2	Benzene	2
56-23-5	Carbontetrachloride	<1
74-95-3	Dibromomethane	<1
78-87-5	1,2-Dichloropropane	<1
75-27-4	Bromodichloromethane	<1
79-01-6	Trichloroethene	47
10061-01-5	cis-1,3-Dichloropropene	<1
10061-02-6	trans-1,3-Dichloropropene	<1
79-00-5	1,1,2-Trichloroethane	<1
108-88-3	Toluene	5589
142-28-9	1,3-Dichloropropane	<1
124-48-1	Dibromochloromethane	<1

CAS No	Compound	Conc.
106-93-4	1,2-Dibromoethane	<1
127-18-4	Tetrachloroethene	4
630-20-6	1,1,1,2-Tetrachloroethane	<1
108-90-7	Chlorobenzene	<1
100-41-4	Ethylbenzene	20
108-38-3*	p/m-Xylene	5
75-25-2	Bromoform	<1
100-42-5	Styrene	5
79-34-5	1,1,2,2-Tetrachloroethane	<1
95-47-6	o-Xylene	1
96-18-4	1,2,3-Trichloropropane	<1
98-82-8	Isopropylbenzene	<1
108-86-1	Bromobenzene	<1
95-49-8	2-Chlorotoluene	<1
103-65-1	Propylbenzene	<1
106-43-4	4-Chlorotoluene	<1
95-63-6	1,2,4-Trimethylbenzene	<1
99-87-6	4-Isopropyltoluene	<1
108-67-8	1,3,5-Trimethylbenzene	<1
95-50-1	1,2-Dichlorobenzene	<1
106-46-7	1,4-Dichlorobenzene	62
135-98-8	sec-Butylbenzene	<1
98-06-6	tert-Buylbenzene	<1
541-73-1	1,3-Dichlorobenzene	<1
104-51-8	n-Butylbenzene	<1
96-12-8	1,2-Dibromo-3-chloropropane	<1
120-82-1	1,2,4-Trichlorobenzene	<1
91-20-3	Naphthalene	<1
87-61-6	1,2,3-Trichlorobenzene	<1
87-68-3	Hexachlorobutadiene	<1

N.B. * also CAS No. 106-42-3

** Water blank subtracted

Alcontrol Geochem

Tentatively Identified Compounds

Sample Identity 6499-096 BH102S
Client / Sample matrix URS Dames & Moore/Water
Units µg/l

Compound	RetentionTime min	Concentration µg/l
Thiobismethane	4.23	25
Phenol	13.77	8745
Ethylphenol	18.29	10
2-phenoxyethanol	19.77	80

please note: the identification and semi-quantification of these tentatively identified compounds is outside the scope of the UKAS accreditation for this method

ALcontrol Geochem

Volatile Organic Compounds (EPA 624/8260)

Sample Identity - 6499-097 BH103S
Client / Sample matrix - URS Dames & Moore/Water
Units - µg/l
Date Acquired - 3 Aug 2001 19:54
Instrument Name - Instrumen

CAS No	Compound	Conc.
75-71-8	Dichlorodifluoromethane	<1
74-87-3	Chloromethane	<1
75-01-4	Vinyl Chloride	21
74-83-9	Bromomethane	<1
75-00-3	Chloroethane	<1
75-69-4	Trichlorofluoromethane	<1
156-60-5	trans-1,2-Dichloroethene	<1
75-09-2	Dichloromethane	<1
75-15-0	Carbon disulphide	<1
75-35-4	1,1-Dichloroethene	<1
75-34-3	1,1-Dichloroethane	<1
1634-04-4	tert-butyl methyl ether	<1
156-59-2	cis-1,2-Dichloroethene	65
74-97-5	Bromochloromethane	<1
67-66-3	Chloroform	3
594-20-7	2,2-Dichloropropane	<1
107-06-2	1,2-Dichloroethane	<1
71-55-6	1,1,1-Trichloroethane	<1
563-58-6	1,1-Dichloropropene	<1
71-43-2	Benzene	<1
56-23-5	Carbontetrachloride	<1
74-95-3	Dibromomethane	<1
78-87-5	1,2-Dichloropropane	<1
75-27-4	Bromodichloromethane	<1
79-01-6	Trichloroethene	<1
10061-01-5	cis-1,3-Dichloropropene	<1
10061-02-6	trans-1,3-Dichloropropene	<1
79-00-5	1,1,2-Trichloroethane	<1
108-88-3	Toluene	<1
142-28-9	1,3-Dichloropropane	<1
124-48-1	Dibromochloromethane	<1

CAS No	Compound	Conc.
106-93-4	1,2-Dibromoethane	<1
127-18-4	Tetrachloroethene	<1
630-20-6	1,1,1,2-Tetrachloroethane	<1
108-90-7	Chlorobenzene	<1
100-41-4	Ethylbenzene	<1
108-38-3*	p/m-Xylene	<1
75-25-2	Bromoform	<1
100-42-5	Styrene	<1
79-34-5	1,1,2,2-Tetrachloroethane	<1
95-47-6	o-Xylene	<1
96-18-4	1,2,3-Trichloropropane	<1
98-82-8	Isopropylbenzene	<1
108-86-1	Bromobenzene	<1
95-49-8	2-Chlorotoluene	<1
103-65-1	Propylbenzene	<1
106-43-4	4-Chlorotoluene	<1
95-63-6	1,2,4-Trimethylbenzene	<1
99-87-6	4-Isopropyltoluene	<1
108-67-8	1,3,5-Trimethylbenzene	<1
95-50-1	1,2-Dichlorobenzene	<1
106-46-7	1,4-Dichlorobenzene	<1
135-98-8	sec-Butylbenzene	<1
98-06-6	tert-Buylbenzene	<1
541-73-1	1,3-Dichlorobenzene	<1
104-51-8	n-Butylbenzene	<1
96-12-8	1,2-Dibromo-3-chloropropane	<1
120-82-1	1,2,4-Trichlorobenzene	<1
91-20-3	Naphthalene	<1
87-61-6	1,2,3-Trichlorobenzene	<1
87-68-3	Hexachlorobutadiene	<1

N.B. * also CAS No. 106-42-3

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Alcontrol Geochem

Tentatively Identified Compounds

Sample Identity **6499-097 BH103S**
Client / Sample matrix **URS Dames & Moore/Water**
Units **µg/l**

Compound	RetentionTime min	Concentration µg/l
Alcohols	-	<10
Ethyl ether	4.13	30

please note: the identification and semi-quantification of these tentatively identified compounds is outside the scope of the UKAS accreditation for this method

ALcontrol Geochem

Volatile Organic Compounds (EPA 624/8260)

Sample Identity - 6499-098 BH104
Client / Sample matrix - URS Dames & Moore/Water
Units - µg/l
Date Acquired - 3 Aug 2001 20:29
Instrument Name - Instrumen

CAS No	Compound	Conc.
75-71-8	Dichlorodifluoromethane	<1
74-87-3	Chloromethane	<1
75-01-4	Vinyl Chloride	<1
74-83-9	Bromomethane	<1
75-00-3	Chloroethane	<1
75-69-4	Trichlorofluoromethane	<1
156-60-5	trans-1,2-Dichloroethene	<1
75-09-2	Dichloromethane	<1
75-15-0	Carbon disulphide	<1
75-35-4	1,1-Dichloroethene	<1
75-34-3	1,1-Dichloroethane	<1
1634-04-4	tert-butyl methyl ether	<1
156-59-2	cis-1,2-Dichloroethene	3
74-97-5	Bromochloromethane	<1
67-66-3	Chloroform	2
594-20-7	2,2-Dichloropropane	<1
107-06-2	1,2-Dichloroethane	<1
71-55-6	1,1,1-Trichloroethane	<1
563-58-6	1,1-Dichloropropene	<1
71-43-2	Benzene	<1
56-23-5	Carbontetrachloride	<1
74-95-3	Dibromomethane	<1
78-87-5	1,2-Dichloropropane	<1
75-27-4	Bromodichloromethane	<1
79-01-6	Trichloroethene	<1
10061-01-5	cis-1,3-Dichloropropene	<1
10061-02-6	trans-1,3-Dichloropropene	<1
79-00-5	1,1,2-Trichloroethane	<1
108-88-3	Toluene	<1
142-28-9	1,3-Dichloropropane	<1
124-48-1	Dibromochloromethane	<1

CAS No	Compound	Conc.
106-93-4	1,2-Dibromoethane	<1
127-18-4	Tetrachloroethene	<1
630-20-6	1,1,1,2-Tetrachloroethane	<1
108-90-7	Chlorobenzene	<1
100-41-4	Ethylbenzene	<1
108-38-3*	p/m-Xylene	<1
75-25-2	Bromoform	<1
100-42-5	Styrene	<1
79-34-5	1,1,2,2-Tetrachloroethane	<1
95-47-6	o-Xylene	<1
96-18-4	1,2,3-Trichloropropane	<1
98-82-8	Isopropylbenzene	<1
108-86-1	Bromobenzene	<1
95-49-8	2-Chlorotoluene	<1
103-65-1	Propylbenzene	<1
106-43-4	4-Chlorotoluene	<1
95-63-6	1,2,4-Trimethylbenzene	<1
99-87-6	4-Isopropyltoluene	<1
108-67-8	1,3,5-Trimethylbenzene	<1
95-50-1	1,2-Dichlorobenzene	<1
106-46-7	1,4-Dichlorobenzene	<1
135-98-8	sec-Butylbenzene	<1
98-06-6	tert-Buylbenzene	<1
541-73-1	1,3-Dichlorobenzene	<1
104-51-8	n-Butylbenzene	<1
96-12-8	1,2-Dibromo-3-chloropropane	<1
120-82-1	1,2,4-Trichlorobenzene	<1
91-20-3	Naphthalene	<1
87-61-6	1,2,3-Trichlorobenzene	<1
87-68-3	Hexachlorobutadiene	<1

N.B. * also CAS No. 106-42-3

** Water blank subtracted

ALcontrol Geochem

Volatile Organic Compounds (EPA 624/8260)

Sample Identity - 6499-102 BH105S
Client / Sample matrix - URS Dames & Moore/Water
Units - µg/l
Date Acquired - 3 Aug 2001 21:04
Instrument Name - Instrumen

CAS No	Compound	Conc.
75-71-8	Dichlorodifluoromethane	<1
74-87-3	Chloromethane	<1
75-01-4	Vinyl Chloride	<1
74-83-9	Bromomethane	<1
75-00-3	Chloroethane	<1
75-69-4	Trichlorofluoromethane	<1
156-60-5	trans-1,2-Dichloroethene	<1
75-09-2	Dichloromethane	<1
75-15-0	Carbon disulphide	<1
75-35-4	1,1-Dichloroethene	<1
75-34-3	1,1-Dichloroethane	<1
1634-04-4	tert-butyl methyl ether	<1
156-59-2	cis-1,2-Dichloroethene	<1
74-97-5	Bromochloromethane	<1
67-66-3	Chloroform	<1
594-20-7	2,2-Dichloropropane	<1
107-06-2	1,2-Dichloroethane	<1
71-55-6	1,1,1-Trichloroethane	<1
563-58-6	1,1-Dichloropropene	<1
71-43-2	Benzene	<1
56-23-5	Carbontetrachloride	<1
74-95-3	Dibromomethane	<1
78-87-5	1,2-Dichloropropane	<1
75-27-4	Bromodichloromethane	<1
79-01-6	Trichloroethene	<1
10061-01-5	cis-1,3-Dichloropropene	<1
10061-02-6	trans-1,3-Dichloropropene	<1
79-00-5	1,1,2-Trichloroethane	<1
108-88-3	Toluene	<1
142-28-9	1,3-Dichloropropane	<1
124-48-1	Dibromochloromethane	<1

CAS No	Compound	Conc.
106-93-4	1,2-Dibromoethane	<1
127-18-4	Tetrachloroethene	<1
630-20-6	1,1,1,2-Tetrachloroethane	<1
108-90-7	Chlorobenzene	<1
100-41-4	Ethylbenzene	<1
108-38-3*	p/m-Xylene	<1
75-25-2	Bromoform	<1
100-42-5	Styrene	<1
79-34-5	1,1,2,2-Tetrachloroethane	<1
95-47-6	o-Xylene	<1
96-18-4	1,2,3-Trichloropropane	<1
98-82-8	Isopropylbenzene	<1
108-86-1	Bromobenzene	<1
95-49-8	2-Chlorotoluene	<1
103-65-1	Propylbenzene	<1
106-43-4	4-Chlorotoluene	<1
95-63-6	1,2,4-Trimethylbenzene	<1
99-87-6	4-Isopropyltoluene	<1
108-67-8	1,3,5-Trimethylbenzene	<1
95-50-1	1,2-Dichlorobenzene	<1
106-46-7	1,4-Dichlorobenzene	<1
135-98-8	sec-Butylbenzene	<1
98-06-6	tert-Buylbenzene	<1
541-73-1	1,3-Dichlorobenzene	<1
104-51-8	n-Butylbenzene	<1
96-12-8	1,2-Dibromo-3-chloropropane	<1
120-82-1	1,2,4-Trichlorobenzene	<1
91-20-3	Naphthalene	<1
87-61-6	1,2,3-Trichlorobenzene	<1
87-68-3	Hexachlorobutadiene	<1

N.B. * also CAS No. 106-42-3

** Water blank subtracted

ALcontrol Geochem

Volatile Organic Compounds (EPA 624/8260)

Sample Identity - 6499-106 BH106
Client / Sample matrix - URS Dames & Moore/Water
Units - µg/l
Date Acquired - 3 Aug 2001 21:40
Instrument Name - Instrumen

CAS No	Compound	Conc.
75-71-8	Dichlorodifluoromethane	<1
74-87-3	Chloromethane	<1
75-01-4	Vinyl Chloride	<1
74-83-9	Bromomethane	<1
75-00-3	Chloroethane	<1
75-69-4	Trichlorofluoromethane	<1
156-60-5	trans-1,2-Dichloroethene	<1
75-09-2	Dichloromethane	<1
75-15-0	Carbon disulphide	<1
75-35-4	1,1-Dichloroethene	<1
75-34-3	1,1-Dichloroethane	<1
1634-04-4	tert-butyl methyl ether	<1
156-59-2	cis-1,2-Dichloroethene	<1
74-97-5	Bromochloromethane	<1
67-66-3	Chloroform	1
594-20-7	2,2-Dichloropropane	<1
107-06-2	1,2-Dichloroethane	<1
71-55-6	1,1,1-Trichloroethane	<1
563-58-6	1,1-Dichloropropene	<1
71-43-2	Benzene	<1
56-23-5	Carbontetrachloride	<1
74-95-3	Dibromomethane	<1
78-87-5	1,2-Dichloropropane	<1
75-27-4	Bromodichloromethane	<1
79-01-6	Trichloroethene	<1
10061-01-5	cis-1,3-Dichloropropene	<1
10061-02-6	trans-1,3-Dichloropropene	<1
79-00-5	1,1,2-Trichloroethane	<1
108-88-3	Toluene	<1
142-28-9	1,3-Dichloropropane	<1
124-48-1	Dibromochloromethane	<1

CAS No	Compound	Conc.
106-93-4	1,2-Dibromoethane	<1
127-18-4	Tetrachloroethene	<1
630-20-6	1,1,1,2-Tetrachloroethane	<1
108-90-7	Chlorobenzene	<1
100-41-4	Ethylbenzene	<1
108-38-3*	p/m-Xylene	<1
75-25-2	Bromoform	<1
100-42-5	Styrene	<1
79-34-5	1,1,2,2-Tetrachloroethane	<1
95-47-6	o-Xylene	<1
96-18-4	1,2,3-Trichloropropane	<1
98-82-8	Isopropylbenzene	<1
108-86-1	Bromobenzene	<1
95-49-8	2-Chlorotoluene	<1
103-65-1	Propylbenzene	<1
106-43-4	4-Chlorotoluene	<1
95-63-6	1,2,4-Trimethylbenzene	<1
99-87-6	4-Isopropyltoluene	<1
108-67-8	1,3,5-Trimethylbenzene	<1
95-50-1	1,2-Dichlorobenzene	<1
106-46-7	1,4-Dichlorobenzene	<1
135-98-8	sec-Butylbenzene	<1
98-06-6	tert-Buylbenzene	<1
541-73-1	1,3-Dichlorobenzene	<1
104-51-8	n-Butylbenzene	<1
96-12-8	1,2-Dibromo-3-chloropropane	<1
120-82-1	1,2,4-Trichlorobenzene	<1
91-20-3	Naphthalene	<1
87-61-6	1,2,3-Trichlorobenzene	<1
87-68-3	Hexachlorobutadiene	<1

N.B. * also CAS No. 106-42-3

** Water blank subtracted

ALcontrol Geochem

Volatile Organic Compounds (EPA 624/8260)

Sample Identity - 6499-109 BH107D
Client / Sample matrix - URS Dames & Moore/Water
Units - µg/l
Date Acquired - 3 Aug 2001 22:15
Instrument Name - Instrumen

CAS No	Compound	Conc.
75-71-8	Dichlorodifluoromethane	<1
74-87-3	Chloromethane	<1
75-01-4	Vinyl Chloride	208
74-83-9	Bromomethane	<1
75-00-3	Chloroethane	<1
75-69-4	Trichlorofluoromethane	<1
156-60-5	trans-1,2-Dichloroethene	3
75-09-2	Dichloromethane	<1
75-15-0	Carbon disulphide	<1
75-35-4	1,1-Dichloroethene	<1
75-34-3	1,1-Dichloroethane	<1
1634-04-4	tert-butyl methyl ether	<1
156-59-2	cis-1,2-Dichloroethene	247
74-97-5	Bromochloromethane	<1
67-66-3	Chloroform	3
594-20-7	2,2-Dichloropropane	<1
107-06-2	1,2-Dichloroethane	<1
71-55-6	1,1,1-Trichloroethane	<1
563-58-6	1,1-Dichloropropene	<1
71-43-2	Benzene	<1
56-23-5	Carbontetrachloride	<1
74-95-3	Dibromomethane	<1
78-87-5	1,2-Dichloropropane	<1
75-27-4	Bromodichloromethane	<1
79-01-6	Trichloroethene	1
10061-01-5	cis-1,3-Dichloropropene	<1
10061-02-6	trans-1,3-Dichloropropene	<1
79-00-5	1,1,2-Trichloroethane	<1
108-88-3	Toluene	7
142-28-9	1,3-Dichloropropane	<1
124-48-1	Dibromochloromethane	<1

CAS No	Compound	Conc.
106-93-4	1,2-Dibromoethane	<1
127-18-4	Tetrachloroethene	<1
630-20-6	1,1,1,2-Tetrachloroethane	<1
108-90-7	Chlorobenzene	<1
100-41-4	Ethylbenzene	<1
108-38-3*	p/m-Xylene	<1
75-25-2	Bromoform	<1
100-42-5	Styrene	<1
79-34-5	1,1,2,2-Tetrachloroethane	<1
95-47-6	o-Xylene	<1
96-18-4	1,2,3-Trichloropropane	<1
98-82-8	Isopropylbenzene	<1
108-86-1	Bromobenzene	<1
95-49-8	2-Chlorotoluene	<1
103-65-1	Propylbenzene	<1
106-43-4	4-Chlorotoluene	<1
95-63-6	1,2,4-Trimethylbenzene	<1
99-87-6	4-Isopropyltoluene	<1
108-67-8	1,3,5-Trimethylbenzene	<1
95-50-1	1,2-Dichlorobenzene	<1
106-46-7	1,4-Dichlorobenzene	<1
135-98-8	sec-Butylbenzene	<1
98-06-6	tert-Buylbenzene	<1
541-73-1	1,3-Dichlorobenzene	<1
104-51-8	n-Butylbenzene	<1
96-12-8	1,2-Dibromo-3-chloropropane	<1
120-82-1	1,2,4-Trichlorobenzene	<1
91-20-3	Naphthalene	<1
87-61-6	1,2,3-Trichlorobenzene	<1
87-68-3	Hexachlorobutadiene	<1

N.B. * also CAS No. 106-42-3

** Water blank subtracted

Alcontrol Geochem

Tentatively Identified Compounds

Sample Identity **6499-109 BH107D**
Client / Sample matrix **URS Dames & Moore/Water**
Units **µg/l**

Compound	RetentionTime min	Concentration µg/l
Ethyl ether	4.14	3
Phenol	13.74	3

please note: the identification and semi-quantification of these tentatively identified compounds is outside the scope of the UKAS accreditation for this method

ALcontrol Geochem

Volatile Organic Compounds (EPA 624/8260)

Sample Identity - 6499-117 BH108S
Client / Sample matrix - URS Dames & Moore/Water
Units - µg/l
Date Acquired - 3 Aug 2001 22:50
Instrument Name - Instrumen

CAS No	Compound	Conc.	CAS No	Compound	Conc.
75-71-8	Dichlorodifluoromethane	<1	106-93-4	1,2-Dibromoethane	<1
74-87-3	Chloromethane	<1	127-18-4	Tetrachloroethene	11
75-01-4	Vinyl Chloride	84	630-20-6	1,1,1,2-Tetrachloroethane	<1
74-83-9	Bromomethane	<1	108-90-7	Chlorobenzene	<1
75-00-3	Chloroethane	<1	100-41-4	Ethylbenzene	<1
75-69-4	Trichlorofluoromethane	<1	108-38-3*	p/m-Xylene	<1
156-60-5	trans-1,2-Dichloroethene	<1	75-25-2	Bromoform	<1
75-09-2	Dichloromethane	<1	100-42-5	Styrene	<1
75-15-0	Carbon disulphide	<1	79-34-5	1,1,2,2-Tetrachloroethane	<1
75-35-4	1,1-Dichloroethene	4	95-47-6	o-Xylene	<1
75-34-3	1,1-Dichloroethane	<1	96-18-4	1,2,3-Trichloropropane	<1
1634-04-4	tert-butyl methyl ether	<1	98-82-8	Isopropylbenzene	<1
156-59-2	cis-1,2-Dichloroethene	324	108-86-1	Bromobenzene	<1
74-97-5	Bromochloromethane	<1	95-49-8	2-Chlorotoluene	<1
67-66-3	Chloroform	<1	103-65-1	Propylbenzene	<1
594-20-7	2,2-Dichloropropane	<1	106-43-4	4-Chlorotoluene	<1
107-06-2	1,2-Dichloroethane	<1	95-63-6	1,2,4-Trimethylbenzene	<1
71-55-6	1,1,1-Trichloroethane	<1	99-87-6	4-Isopropyltoluene	<1
563-58-6	1,1-Dichloropropene	<1	108-67-8	1,3,5-Trimethylbenzene	<1
71-43-2	Benzene	<1	95-50-1	1,2-Dichlorobenzene	<1
56-23-5	Carbontetrachloride	<1	106-46-7	1,4-Dichlorobenzene	<1
74-95-3	Dibromomethane	<1	135-98-8	sec-Butylbenzene	<1
78-87-5	1,2-Dichloropropane	<1	98-06-6	tert-Buylbenzene	<1
75-27-4	Bromodichloromethane	<1	541-73-1	1,3-Dichlorobenzene	<1
79-01-6	Trichloroethene	24	104-51-8	n-Butylbenzene	<1
10061-01-5	cis-1,3-Dichloropropene	<1	96-12-8	1,2-Dibromo-3-chloropropane	<1
10061-02-6	trans-1,3-Dichloropropene	<1	120-82-1	1,2,4-Trichlorobenzene	<1
79-00-5	1,1,2-Trichloroethane	<1	91-20-3	Naphthalene	<1
108-88-3	Toluene	<1	87-61-6	1,2,3-Trichlorobenzene	<1
142-28-9	1,3-Dichloropropane	<1	87-68-3	Hexachlorobutadiene	<1
124-48-1	Dibromochloromethane	<1			

N.B. * also CAS No. 106-42-3

** Water blank subtracted

Alcontrol Geochem

Tentatively Identified Compounds

Sample Identity **6499-117 BH108S**
Client / Sample matrix **URS Dames & Moore/Water**
Units **µg/l**

Compound	RetentionTime min	Concentration µg/l
Propyl ether	6.76	10
Unknown	7.51	10
Alcohols	-	<10

please note: the identification and semi-quantification of these tentatively identified compounds is outside the scope of the UKAS accreditation for this method

ALcontrol Geochem

Volatile Organic Compounds (EPA 624/8260)

Sample Identity - 6499-124 BH110
Client / Sample matrix - URS Dames & Moore/Water
Units - µg/l
Date Acquired - 3 Aug 2001 23:25
Instrument Name - Instrumen

CAS No	Compound	Conc.
75-71-8	Dichlorodifluoromethane	<1
74-87-3	Chloromethane	<1
75-01-4	Vinyl Chloride	<1
74-83-9	Bromomethane	<1
75-00-3	Chloroethane	<1
75-69-4	Trichlorofluoromethane	<1
156-60-5	trans-1,2-Dichloroethene	<1
75-09-2	Dichloromethane	<1
75-15-0	Carbon disulphide	<1
75-35-4	1,1-Dichloroethene	<1
75-34-3	1,1-Dichloroethane	<1
1634-04-4	tert-butyl methyl ether	<1
156-59-2	cis-1,2-Dichloroethene	<1
74-97-5	Bromochloromethane	<1
67-66-3	Chloroform	<1
594-20-7	2,2-Dichloropropane	<1
107-06-2	1,2-Dichloroethane	<1
71-55-6	1,1,1-Trichloroethane	<1
563-58-6	1,1-Dichloropropene	<1
71-43-2	Benzene	<1
56-23-5	Carbontetrachloride	<1
74-95-3	Dibromomethane	<1
78-87-5	1,2-Dichloropropane	<1
75-27-4	Bromodichloromethane	<1
79-01-6	Trichloroethene	<1
10061-01-5	cis-1,3-Dichloropropene	<1
10061-02-6	trans-1,3-Dichloropropene	<1
79-00-5	1,1,2-Trichloroethane	<1
108-88-3	Toluene	<1
142-28-9	1,3-Dichloropropane	<1
124-48-1	Dibromochloromethane	<1

CAS No	Compound	Conc.
106-93-4	1,2-Dibromoethane	<1
127-18-4	Tetrachloroethene	<1
630-20-6	1,1,1,2-Tetrachloroethane	<1
108-90-7	Chlorobenzene	<1
100-41-4	Ethylbenzene	<1
108-38-3*	p/m-Xylene	<1
75-25-2	Bromoform	<1
100-42-5	Styrene	<1
79-34-5	1,1,2,2-Tetrachloroethane	<1
95-47-6	o-Xylene	<1
96-18-4	1,2,3-Trichloropropane	<1
98-82-8	Isopropylbenzene	<1
108-86-1	Bromobenzene	<1
95-49-8	2-Chlorotoluene	<1
103-65-1	Propylbenzene	<1
106-43-4	4-Chlorotoluene	<1
95-63-6	1,2,4-Trimethylbenzene	<1
99-87-6	4-Isopropyltoluene	<1
108-67-8	1,3,5-Trimethylbenzene	<1
95-50-1	1,2-Dichlorobenzene	<1
106-46-7	1,4-Dichlorobenzene	<1
135-98-8	sec-Butylbenzene	<1
98-06-6	tert-Buylbenzene	<1
541-73-1	1,3-Dichlorobenzene	<1
104-51-8	n-Butylbenzene	<1
96-12-8	1,2-Dibromo-3-chloropropane	<1
120-82-1	1,2,4-Trichlorobenzene	<1
91-20-3	Naphthalene	<1
87-61-6	1,2,3-Trichlorobenzene	<1
87-68-3	Hexachlorobutadiene	<1

N.B. * also CAS No. 106-42-3

** Water blank subtracted

ALcontrol Geochem

Volatile Organic Compounds (EPA 624/8260)

Sample Identity - 6499-126 BH111
Client / Sample matrix - URS Dames & Moore/Water
Units - µg/l
Date Acquired - 4 Aug 2001 00:36
Instrument Name - Instrumen

CAS No	Compound	Conc.
75-71-8	Dichlorodifluoromethane	<1
74-87-3	Chloromethane	<1
75-01-4	Vinyl Chloride	<1
74-83-9	Bromomethane	<1
75-00-3	Chloroethane	<1
75-69-4	Trichlorofluoromethane	<1
156-60-5	trans-1,2-Dichloroethene	<1
75-09-2	Dichloromethane	<1
75-15-0	Carbon disulphide	<1
75-35-4	1,1-Dichloroethene	<1
75-34-3	1,1-Dichloroethane	<1
1634-04-4	tert-butyl methyl ether	<1
156-59-2	cis-1,2-Dichloroethene	<1
74-97-5	Bromochloromethane	<1
67-66-3	Chloroform	1
594-20-7	2,2-Dichloropropane	<1
107-06-2	1,2-Dichloroethane	<1
71-55-6	1,1,1-Trichloroethane	<1
563-58-6	1,1-Dichloropropene	<1
71-43-2	Benzene	<1
56-23-5	Carbontetrachloride	<1
74-95-3	Dibromomethane	<1
78-87-5	1,2-Dichloropropane	<1
75-27-4	Bromodichloromethane	<1
79-01-6	Trichloroethene	<1
10061-01-5	cis-1,3-Dichloropropene	<1
10061-02-6	trans-1,3-Dichloropropene	<1
79-00-5	1,1,2-Trichloroethane	<1
108-88-3	Toluene	<1
142-28-9	1,3-Dichloropropane	<1
124-48-1	Dibromochloromethane	<1

CAS No	Compound	Conc.
106-93-4	1,2-Dibromoethane	<1
127-18-4	Tetrachloroethene	<1
630-20-6	1,1,1,2-Tetrachloroethane	<1
108-90-7	Chlorobenzene	<1
100-41-4	Ethylbenzene	<1
108-38-3*	p/m-Xylene	<1
75-25-2	Bromoform	<1
100-42-5	Styrene	<1
79-34-5	1,1,2,2-Tetrachloroethane	<1
95-47-6	o-Xylene	<1
96-18-4	1,2,3-Trichloropropane	<1
98-82-8	Isopropylbenzene	<1
108-86-1	Bromobenzene	<1
95-49-8	2-Chlorotoluene	<1
103-65-1	Propylbenzene	<1
106-43-4	4-Chlorotoluene	<1
95-63-6	1,2,4-Trimethylbenzene	<1
99-87-6	4-Isopropyltoluene	<1
108-67-8	1,3,5-Trimethylbenzene	<1
95-50-1	1,2-Dichlorobenzene	<1
106-46-7	1,4-Dichlorobenzene	<1
135-98-8	sec-Butylbenzene	<1
98-06-6	tert-Buylbenzene	<1
541-73-1	1,3-Dichlorobenzene	<1
104-51-8	n-Butylbenzene	<1
96-12-8	1,2-Dibromo-3-chloropropane	<1
120-82-1	1,2,4-Trichlorobenzene	<1
91-20-3	Naphthalene	<1
87-61-6	1,2,3-Trichlorobenzene	<1
87-68-3	Hexachlorobutadiene	<1

N.B. * also CAS No. 106-42-3

** Water blank subtracted

ALcontrol Geochem

Volatile Organic Compounds (EPA 624/8260)

Sample Identity - 6499-134 BH112S
Client / Sample matrix - URS Dames & Moore/Water
Units - µg/l
Date Acquired - 4 Aug 2001 1:46
Instrument Name - Instrumen

CAS No	Compound	Conc.
75-71-8	Dichlorodifluoromethane	<1
74-87-3	Chloromethane	<1
75-01-4	Vinyl Chloride	18
74-83-9	Bromomethane	<1
75-00-3	Chloroethane	<1
75-69-4	Trichlorofluoromethane	<1
156-60-5	trans-1,2-Dichloroethene	<1
75-09-2	Dichloromethane	<1
75-15-0	Carbon disulphide	9
75-35-4	1,1-Dichloroethene	<1
75-34-3	1,1-Dichloroethane	<1
1634-04-4	tert-butyl methyl ether	<1
156-59-2	cis-1,2-Dichloroethene	479
74-97-5	Bromochloromethane	<1
67-66-3	Chloroform	1
594-20-7	2,2-Dichloropropane	<1
107-06-2	1,2-Dichloroethane	<1
71-55-6	1,1,1-Trichloroethane	<1
563-58-6	1,1-Dichloropropene	<1
71-43-2	Benzene	<1
56-23-5	Carbontetrachloride	<1
74-95-3	Dibromomethane	<1
78-87-5	1,2-Dichloropropane	<1
75-27-4	Bromodichloromethane	<1
79-01-6	Trichloroethene	82
10061-01-5	cis-1,3-Dichloropropene	<1
10061-02-6	trans-1,3-Dichloropropene	<1
79-00-5	1,1,2-Trichloroethane	<1
108-88-3	Toluene	5008
142-28-9	1,3-Dichloropropane	<1
124-48-1	Dibromochloromethane	<1

CAS No	Compound	Conc.
106-93-4	1,2-Dibromoethane	<1
127-18-4	Tetrachloroethene	2
630-20-6	1,1,1,2-Tetrachloroethane	<1
108-90-7	Chlorobenzene	<1
100-41-4	Ethylbenzene	<1
108-38-3*	p/m-Xylene	1
75-25-2	Bromoform	<1
100-42-5	Styrene	<1
79-34-5	1,1,2,2-Tetrachloroethane	<1
95-47-6	o-Xylene	<1
96-18-4	1,2,3-Trichloropropane	<1
98-82-8	Isopropylbenzene	<1
108-86-1	Bromobenzene	<1
95-49-8	2-Chlorotoluene	<1
103-65-1	Propylbenzene	<1
106-43-4	4-Chlorotoluene	<1
95-63-6	1,2,4-Trimethylbenzene	<1
99-87-6	4-Isopropyltoluene	<1
108-67-8	1,3,5-Trimethylbenzene	<1
95-50-1	1,2-Dichlorobenzene	<1
106-46-7	1,4-Dichlorobenzene	<1
135-98-8	sec-Butylbenzene	<1
98-06-6	tert-Buylbenzene	<1
541-73-1	1,3-Dichlorobenzene	<1
104-51-8	n-Butylbenzene	<1
96-12-8	1,2-Dibromo-3-chloropropane	<1
120-82-1	1,2,4-Trichlorobenzene	<1
91-20-3	Naphthalene	<1
87-61-6	1,2,3-Trichlorobenzene	<1
87-68-3	Hexachlorobutadiene	<1

N.B. * also CAS No. 106-42-3

** Water blank subtracted

Alcontrol Geochem

Tentatively Identified Compounds

Sample Identity **6499-134 BH112S**
Client / Sample matrix **URS Dames & Moore/Water**
Units **µg/l**

Compound	RetentionTime min	Concentration µg/l
Propanal	3.95	15
Thiobismethane	4.23	60
Propanol	4.53	645
Butanol	6.07	100
n-Butyl ether	11.66	65

please note: the identification and semi-quantification of these tentatively identified compounds is outside the scope of the UKAS accreditation for this method

ALcontrol Geochem

Volatile Organic Compounds (EPA 624/8260)

Sample Identity - 6499-138 BH113S
Client / Sample matrix - URS Dames & Moore/Water
Units - µg/l
Date Acquired - 4 Aug 2001 1:11
Instrument Name - Instrumen

CAS No	Compound	Conc.
75-71-8	Dichlorodifluoromethane	<1
74-87-3	Chloromethane	<1
75-01-4	Vinyl Chloride	<1
74-83-9	Bromomethane	<1
75-00-3	Chloroethane	<1
75-69-4	Trichlorofluoromethane	<1
156-60-5	trans-1,2-Dichloroethene	<1
75-09-2	Dichloromethane	<1
75-15-0	Carbon disulphide	<1
75-35-4	1,1-Dichloroethene	<1
75-34-3	1,1-Dichloroethane	<1
1634-04-4	tert-butyl methyl ether	<1
156-59-2	cis-1,2-Dichloroethene	<1
74-97-5	Bromochloromethane	<1
67-66-3	Chloroform	2
594-20-7	2,2-Dichloropropane	<1
107-06-2	1,2-Dichloroethane	<1
71-55-6	1,1,1-Trichloroethane	<1
563-58-6	1,1-Dichloropropene	<1
71-43-2	Benzene	<1
56-23-5	Carbontetrachloride	<1
74-95-3	Dibromomethane	<1
78-87-5	1,2-Dichloropropane	<1
75-27-4	Bromodichloromethane	<1
79-01-6	Trichloroethene	<1
10061-01-5	cis-1,3-Dichloropropene	<1
10061-02-6	trans-1,3-Dichloropropene	<1
79-00-5	1,1,2-Trichloroethane	<1
108-88-3	Toluene	3
142-28-9	1,3-Dichloropropane	<1
124-48-1	Dibromochloromethane	<1

CAS No	Compound	Conc.
106-93-4	1,2-Dibromoethane	<1
127-18-4	Tetrachloroethene	<1
630-20-6	1,1,1,2-Tetrachloroethane	<1
108-90-7	Chlorobenzene	<1
100-41-4	Ethylbenzene	<1
108-38-3*	p/m-Xylene	<1
75-25-2	Bromoform	<1
100-42-5	Styrene	<1
79-34-5	1,1,2,2-Tetrachloroethane	<1
95-47-6	o-Xylene	<1
96-18-4	1,2,3-Trichloropropane	<1
98-82-8	Isopropylbenzene	<1
108-86-1	Bromobenzene	<1
95-49-8	2-Chlorotoluene	<1
103-65-1	Propylbenzene	<1
106-43-4	4-Chlorotoluene	<1
95-63-6	1,2,4-Trimethylbenzene	<1
99-87-6	4-Isopropyltoluene	<1
108-67-8	1,3,5-Trimethylbenzene	<1
95-50-1	1,2-Dichlorobenzene	<1
106-46-7	1,4-Dichlorobenzene	<1
135-98-8	sec-Butylbenzene	<1
98-06-6	tert-Buylbenzene	<1
541-73-1	1,3-Dichlorobenzene	<1
104-51-8	n-Butylbenzene	<1
96-12-8	1,2-Dibromo-3-chloropropane	<1
120-82-1	1,2,4-Trichlorobenzene	<1
91-20-3	Naphthalene	<1
87-61-6	1,2,3-Trichlorobenzene	<1
87-68-3	Hexachlorobutadiene	<1

N.B. * also CAS No. 106-42-3

** Water blank subtracted