APPENDIX A

GROUND CONDITIONS
DESK TOP STUDY ASSESSMENT

Site
Durham Road School and Housing, Newport

Client
Vinci Investments Ltd

VINCI

thinking beyond construction

GROUND CONDITIONS
DESK TOP STUDY ASSESSMENT

Site
Durham Road School and Housing, Newport

Client
Vinci Investments Ltd

Reference: E3803/PG/AUG03/GCIAV2				
Issue		**Prepared by**	**Reviewed by**	**Verified by**
V1	Mar 2001			
V2	Aug 2003			
		PAUL GREATOREX Principal Engineer	CHRIS PUGH Principal Engineer	COLIN PLUMB Regional Director
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0 0 EXECUTIVE SUMMARY SHEET

Current Site Status	The northern part of the site is currently used for recreational use and comprises all weather running track clay surface sports pitch club house changing rooms and model railway The southern part of the site is currently disused land and comprises a fenced generally level area of wild grasses and young trees A drainage ditch (reen) transects the site east to west and forms a natural boundary between the two current land uses The northern area of the site is approximately 1 5 to 2m higher that the southern area at an approximate level of 9 0 to 9 5m AOD The overall area of the site is approximately 7 hectares At the time of the site walkover open foot access could be gained to both areas of the site The site is located between a railway line to the east and the River Usk to the west Japanese knotweed has been identified on site
Site History	In summary the site is recorded as undeveloped greenfields until circa 1937 at which point **tipping**/up filling began over the northern part of the site No records of the type or quantity of material tipped are known to exist but it appears predominantly to be building rubble and soil arisings It is believed that tipping was undertaken to raise the site above flood levels Tipping ceased in the early 1960 s A **clothing factory** was built in the southern half of the site circa 1955 and was later demolished by 1994 The **sports stadium** and associated facilities located within the northern section of the site was constructed circa 1966 and remains to the present day
Geology	**Made Ground** typically between 2 5 to 3 5m in thickness in the northern area of the site reducing to approximately 1m south of the reen **Alluvium** underlies the Made Ground and typically comprises organic clays and silts which thicken east to west across the site Peat layers of increasing thickness occur beneath the west/south-west area of the site adjacent to the River Usk **Thin River Terrace Deposits** underlie the alluvium in the north and western areas of the site The **mudstones and siltstones** of the Lower Old Red Sandstone are encountered at depths of approximately 6mbgl increasing east to west/south-west to in excess of 10m adjacent to the River Usk The top of the Lower Old Red Sandstone is typically reworked/completely weathered to a residual soil comprising **stiff to very stiff silty gravelly clay** There is no record of coal mining activities in the vicinity of the site
Hydrogeology	The Lower Old Red Sandstone is classified as a **minor** aquifer with a worst case vulnerability of high leaching potential is assumed for the overlying soils due to its urban setting There are two licensed groundwater abstractions within 2000m of the site both for general industrial use Groundwater is generally recorded in the northern part of the site between 1 1 and 2 7mbgl (7 16 and 7 92m AOD) and in the southern part of the site between 0 3 and 2 25mbgl (6 95 and 6 26m AOD) Groundwater levels may fluctuate in response to the tidal regime operating within the neighbouring River Usk Groundwater flow direction is estimated to be in a west/south-westerly direction towards the River Usk
Hydrology	The tidally influenced River Usk located immediately to the west of the site is classified as Grade E Poor by the EA There are thirteen discharge consents into the river within 1km of the site for sewage (treated and crude) and storm effluent
Ecology	The River Usk is a candidate Special Areas of Conservation (cSAC) and the lower River Usk is a site of Special Scientific Interest Mature trees ditches and scrub land have been identified on site which may have ecological implications to any works on site Therefore prior to any site investigation works it is recommended that a Phase I habitat survey be undertaken and liaison with the Countryside Council for Wales (CCW) Some restrictions on groundworks have been specified by NCBC

Previous Site Investigations	Three previous ground contamination investigations by others have been made available to us - **Environmental Advisory Unit (EAU), 1994** comprising six cable percussive boreholes within the northern part of the site Tests results available for two groundwater samples Soil testing undertaken but no results published Land gas monitoring of borehole standpipes on two occasions plus spike survey **Integral Geotechnique** under the direction of RPT April **1995** comprising fifteen mechanically excavated trial pits within the southern part of the site Test results available for eleven soils samples five leachate samples and one groundwater Limited land gas monitoring from two trial pit installations **Exploration Associates** under the direction of Gwent Consultancy April **2000** comprising eleven cable percussive boreholes and twenty seven mechanically excavated trial pits over the entire site Test results available for forty seven soils samples ten leachate samples and eleven groundwater samples Limited gas monitoring undertaken during investigative works only
Test Result Summary	Soil contamination recorded in tests predominantly within Made Ground comprising elevated heavy metals (arsenic cadmium lead selenium) and phytotoxic metals (boron copper nickel and zinc) Asbestos identified within Made Ground at four locations comprising amosite and chrysotile fibres Some occurrences of slightly elevated Total PAH s Total phenols and mineral oils & grease but amount of hydrocarbon testing very limited Elevated sulphate levels within Made Ground at some locations No significant contamination was recorded to be potentially mobile from the leachability tests available Elevated levels of arsenic cadmium chromium lead mercury copper nickel zinc chloride ammoniacal nitrogen and iron within groundwater sampled from various levels across the site Variable land gas results with some elevated occurrences of methane and carbon dioxide detected up to 8% by volume and 15% by volume respectively Therefore soil and groundwater contamination exists but not at gross levels and elevated land gas concentrations are present
Outline Geotechnical Considerations	A minimum development level of 9 8m AOD has been set by the Local Planning Authority in reserve matter 11 (Flood protection) with floor slab levels 600mm above this However the Environment Agency considers a level of 8 84m AOD protective of flood protection with floor slabs 600mm above The final levels should be agreed with the EA and LPA and if necessary reapply to lower the agreed finished levels The Made Ground and the underlying Alluvium are not suitable bearing strata for the proposed structures Foundations should extend through these to the Lower Old Red Sandstone Conventional spread foundations are not viable for the proposed development and alternative foundation types such as piled foundations or ground improvement using vibro-concrete columns could be used subject to agreement (due to peat layers and permeability issues) with specialist contractors and the Environment Agency
Ground Contamination, Further Evaluation and Likely Remediation Scope	• Further site investigation is requested to include long term land gas monitoring and provide more detailed information for quantitative risk assessment (as planning conditions request) and geotechnical assessment of site in light of proposed development/end use • Outline remediation strategy is likely to incorporate excavation and

	disposal off-site of unacceptably high contaminant zones and/or capping of clean material and primarily impermeable surfacing Strategy to be developed following completion of additional investigation works quantitative risk assessment and discussion/approval from Local Authority and Environment Agency It is not practical to finalise it at this stage as risk and associated consultations require QRA prior to commitment • Buildings and external areas likely to require a slab gas impermeable membrane plus passive gas protection and dissipation measures Further assessment required
Risk Assessment	It is suggested that the overall risk rating of the site is **MEDIUM** The uncontrolled tipping of waste material over the northern part of the site has already been identified by investigations as a contaminant source primarily with respect to heavy and phytotoxic metals and land gases Remediation works will aim to control and reduce these risks to a low/medium level as it is perceived total risk reduction through tip removal is not likely to be justified or environmentally sustainable
This sheet is intended to provide a summary only of the initial assessment study of the site in relation to contamination It does not provide a definitive engineering analysis and is subject to the limitation of the agreed brief	

1 0 INTRODUCTION

1 1 Instruction

White Young Green Environmental (WYGE) were requested by Mr Richard Baker of Vinci Investments Limited, to carry out an initial assessment of ground contamination and likely geotechnical conditions of the site at Glebelands, Newport WYGE had original undertaken a preliminary desk top review for a previous bidder for the PFI contract in March 2001, which was used during the conceptual design stage of the development, although never issued

1 2 Brief

The brief was to provide a desk top study assessment of ground contamination and likely geotechnical parameters of the site based on a review of readily available information including a site walkover, the results of previous investigations (reviewed in good faith of their accuracy) and very preliminary consultations with regulatory authorities

In light of the initial assessment, in principle recommendations on foundation solutions for the proposed development, site investigation requirements and likely scope of remediation strategies, taking into account the end land use of proposed development, are presented The information is presented to allow initial views to be taken and requires detailed clarification through further research and investigation prior to commitment on the site

1 3 Proposed Development

The proposed redevelopment can be split into two areas, as shown on SK 13 It is proposed that a new primary school with associated all weather pitch, soft and hard play areas and parking will be constructed in the northern quadrant of the site (School Area) Residential housing is proposed for the southern quadrant of the site (Housing Area)

1 6 Information Accessed

WYGE were granted access to the 'data control room' at Newport County Borough Council Offices on 21st March 2001 from 14 00hrs to 17 00hrs Key relevant information was reviewed and a selection of information copied for further review as part of this assessment Further site investigation data has not become available for the site since this initial assessment was undertaken

Copied information reviewed as part of this assessment included the following -

- Report on Site Investigation at Glebelands Recreation Ground, Newport, Structural Soils Limited, June 1991, Ref Report No 10416
- Glebelands, Newport A Review of Existing Information – High-Point Rendel, July 1999 (Ref R/H968/01)
- Durham Road PFI – Glebelands Remediation Review – Gwent Consultancy, November 1999, (Ref 72516 Rep 01)
- Durham Road PFI Ordnance Survey Update – Gwent

Consultancy, February 2000, (DRG 4369/7)

- Durham Road PFI Topographical Survey – Gwent Consultancy, March 2000, (DRG 4369/1, 4369/2, 4369/3)
- Durham Road Schools PFI Project, Newport Borehole and Trial Pit Logs – Exploration Associates, April 2000
- Durham Road Schools PFI Project, Newport Contamination Investigation Interpretative Report – Gwent Consultancy, June 2000, (Ref GT/72615)
- The Glebelands/Herbert Road Draft Planning Brief – Newport County Borough Council, June 2000
- The Glebelands/Herbert Road Revised Planning Brief Text and Conditions attached to Outline Planning Consent - Newport County Borough Council, August 2000 (Ref 00/768/DC)
- Glebelands Development, Southern Access Geotechnical Site Investigation Interpretative Report – Gwent Consultancy, September 2000 (Ref GT/73293)

1 5 Conditions

This report is prepared in line with the accepted proposals outlined in the WYGE letter dated 20th August 2003 (ref CP/CBP/BC0342), and subject to our standard terms and conditions For further information on the practical limitations of this report, attention is drawn to the conditions stated in Appendix A

2 0 SITE STATUS

2 1 Site Location

The site is located between a railway line and the eastern bank of the River Usk approximately 200m south of the M4 motorway and 1km north of Newport Town, (see SK 01) The site occupies approximately 7 hectares, is roughly rectangular in shape and is centred at the approximate Ordnance Grid Reference of 331700 189500

2 2 Site Description and Boundaries

The site currently comprises two main areas, which are divided by a drainage ditch (reen) trending approximately east-west that outlets into the River Usk, (see SK 02)

- Sports Stadium and Recreation Ground (3 94hectares) located within the northern area of the site, comprising all-weather running track and gravel surface sports pitch, club house and changing rooms A model railway track is located adjacent the river bank, but at the time of the last site visit (August 2003), was in the process of being dismantled

- Compton Webb site and riverside embankment (2 64 hectares) located within the southern area of the site, comprising derelict grassed land with abundant trees

The topography of the whole site is generally flat with the two main areas being formed at different plateau levels The Sports Stadium and Recreation Ground is at a level of between 9 0 and 9 5m AOD, whilst the Compton Webb site generally lies at a level between 7 0 and 7 5m AOD

WYGE completed an initial site visit/walkover survey on 3 April 2001 A further site visit was undertaken on 18 August 2003 Vehicular access to the Sports Stadium is obtained via Bank Street bridge over the railway line A seven tonne axial weight limit has been imposed on the bridge by Railtrack and traffic lights control vehicular flow over the bridge Pedestrian access to the Sports Stadium area can also be obtained via the Charnwood Road underpass beneath the railway

The sports stadium comprises a grass pitch surrounded by all-weather running track No standing or seating areas exist, although a steel crowd barrier fence is present in places around the outside of the track Four, approximately 20m high floodlights are located on the east and west sides of the track Four, single storey pebble dashed buildings that are used as a club house and changing rooms, are located at the northern end of the running track adjacent to the main entrance At the southern end of the track is a hardcore/clay covered, all weather pitch with a further two floodlights The entire sports stadium area is surrounded by 2m high hedge on all sides with openings at various points

The area between the sports stadium and the river bank on the north-western side of the site is grassed surrounded by a double row of fully mature deciduous trees A miniature railway track is situated between the two rows of trees and forms an elongated loop along the length of the sports stadium However, at the time of the second site visit, the railway was being dismantled The area between the sports stadium and the allotments on the

north-eastern side of the site is largely overgrown, although a grassed footpath is present The site is approximately 1 5 to 2m higher than the adjacent allotments to the east A non-continuous line of conifer trees is present along the eastern side of the development

During the latest site visit, Japanese Knotweed was identified adjacent to the underpass on the eastern boundary The knotweed appeared to be well established, although it was not evident if it extended into the allotment area Further Japanese knotweed stands were observed along the riverside bank

Two lamppost type structures with vents at the top were identified on site, one either side of the sports stadium (east and west) Adjacent to the eastern stack was located a large concrete manhole cover The origin and apparent purpose of the vent stacks is not known, although it is thought to indicate the position of a deep sewer

Site levels fall approximately 1-1 5m, immediately south of the all weather pitch and a drainage ditch (reen) cuts across the site east to west at this point At the time of both site walkovers, surface water was present in the base of the reen with a slow flow towards the west (River Usk) The reen was noted to be overgrown by reeds and some fly tipped items were present within the reen A line of coniferous trees is present along the southern bank of the reen

The southern part of the site is at the lowest level, approximately between 7 0 to 7 5m AOD and comprises a derelict area of rough/wild grasses and young trees The area is surrounded by a 2m high concrete post and chain link fence with a single line of barbed wire at the top Breaks in the fence, probably caused by vandalism, were noted along the western boundary and in the north-eastern corner, with a worn path in the grass connecting the two breaks Vehicular entrance to the site can be obtained via locked gates at the south eastern corner of the site and lead onto Herbert Road Extensive fly tipping was noted at this entrance A small derelict and open brick building is located within the north-east corner of the site

During the latest site visit, a block built above ground fuel oil tank bund was observed in the vicinity of the Herbert Road entrance It is believe that this structure was built during works undertaken on behalf of Welsh Water to lay a sewer across the site

2 3 Adjoining Site Uses

The site is bounded to the north by the St Julian's Glebelands recreation ground/playing fields and beyond this by the M4 motorway The site area is bounded to the east by allotment gardens at the northern end and an operational railway line along the southern end Residential houses are located to the east, beyond the railway line A derelict works site is located immediately beyond the southern boundary (building and associated structures removed but slab and hardstandings remain The site is bounded to the west by the River Usk

2 4 Site History

Extracts of readily available historical Ordnance Survey (OS) maps were consulted in order to determine the recorded sequence of site development,

which may not be duly comprehensive A summary is presented below with further details beneath

In summary, the site remained undeveloped, greenfields until circa 1937, when tipping on the northern part of the site began No records on the quantity and type of material tipped are known to exist It is believed that tipping ceased in the early 1960's A clothing factory was built in the southern half of the site circa 1955 and was later demolished by 1994 The sports stadium located within the northern section of the site was constructed circa 1966 and remains to the present day

The area surrounding the site to the east of the railway line has been extensively developed as residential housing Uskside Saw Mill, paint factory and engineering works have been developed within the immediate vicinity of the southern part of the site during the past century

2 4 1 Review of Historical Maps

The earliest map of the area **1883** OS extract (SK03) shows the site as greenfield land split into approximately four fields The surrounding area is predominantly undeveloped apart from the railway line located adjacent to the eastern boundary of the site, which is shown in its current position 'Duckpool Cottage' is the nearest building located approximately 150m to the south-east of the site, beyond the railway line Marshes are indicated on the western bank of the River Usk immediately opposite the site

The **1886** OS extract (SK04) does not show any significant change in land use at the study site and immediate vicinity

The **1902** OS extract (SK05a and b) does not show any significant change in land use on the site A building appears to be located on the site adjacent to the eastern bank of the River Usk and immediately north of the parliamentary boundary Land to the east of the railway appears to have been developed for residential housing and schools are indicated on the extract The Marshes on the western river bank have been replaced by Shaftesbury Park

On the larger scale extract a clay pit and associated brick and tile works is located approximately 150m to the north-east of the site Further works including brick, glass and the Crindau Gas Works are located 300m west of the site, on the opposite side of the River Usk

The **1920** OS extract (SK06) does not show any significant change in land use on the site Allotments are indicted adjacent to the northern end of the eastern site boundary in their current position Terraced housing now extends to the eastern boundary of the railway line and a pedestrian underpass beneath the railway line is shown in its current position off Charnwood Road Uskside Saw Mills are located approximately 50-100m beyond the southern boundary of the site

The **1937** OS extract (SK07) shows an area of site up filling/tipping extending into the northern end of the site No significant change in land use is shown over the remainder of the site Further housing development has taken place to the east of the railway line and the Uskside saw mill to the south of the site has expanded

The **1955** OS extract (SK08) shows two unfilled areas within the northern part

of the site covering a combined area of approximately 80m^2 The unfilled areas are indicated to be surrounded by heath with a number of non-coniferous trees The reen is shown dissecting the site into two areas along the line of the former parliamentary boundary East Usk Farm is shown adjacent to the river bank, immediately north of the reen A clothing factory (Compton Webb) is shown within the southern area of the site Vehicular access to the factory is from the south via Herbert Road, which runs parallel to the western side of the railway line A light engineering works is shown to the immediate east of the railway line on Stafford Road

A review of the site history undertaken as part of the Glebelands Remediation Review by Gwent Consultancy in 1999 states that the northern section of the site was used as a refuse tip, including industrial waste and closed in the early 1960's The source of this information is not revealed

The **1966** OS extract (SK09) shows the Sports Stadium within the northern part of the site, although the northern most extent of the site is not shown Markings on the extract around the east, south and west boundaries of the north area would indicate that site levels have been raised Two lines of deciduous tress have been planted between the stadium and the River Usk bank The clothing factory is shown to be still present with a paint works shown immediately to the south of the clothing Factory/southern site boundary A pumping station is shown on the western bank of the River Usk, opposite the southern half of the site

The **1973** OS extract (SK10) does not show any significant change in land use on the site and within the immediate vicinity The northern most part of the site is shown and a recreation ground is indicated to the immediate north of the site with the M4 motorway further north Bank street overbridge is shown allowing vehicular access to the northern part of the site

The **1981** OS extract (SK11) does not show any significant change in land use at the study site and immediate vicinity

The **1994** OS extract (SK12) shows the clothing factory to have been demolished The miniature railway line is shown in its current position along the eastern bank of the River Usk in the northern part of the site No other significant changes in land use on the site or in the immediate area

3 0 PRELIMINARY CONSULTATIONS

3 1 General

The outcome of preliminary enquires made to relevant authorities for readily available information are given below Where obtained, correspondence has been appended (ref Appendix B)

3 2 Environmental Database Search

A search was carried out of an environmental database containing information held by the Environmental Agency and other statutory and non-government agencies Key responses are summarised below -

- *Abstraction Licence Five licenses within 2km of the site, three from surface waters for irrigation and make-up or top-up water with yearly rates of between 5564 3 and 132727m^3 and two from groundwater for general industrial use*

- *Discharge Consents Thirteen exist within 1km of the site, of which three occur within 51 to 250m of the site These involve sewage effluent discharge-treated, crude and storm effluent primarily into the River Usk*

- *Pollution Incidents Thirteen pollution incidents reported within 1km of the site The incidents were a mix of Category 2 'Significant' and Category 1 'Minor' involving chemicals, light oil, farm effluent/slurry, crude sewage, industrial solid waste, coal solids and foam/soap suds*

- *Registered Waste Sites Two registered landfill sites within 1km of site authorised to accept hardcore and rubble/inert waste, both no longer operational One registered waste transfer station within 1km of site, authorised to accept bagged asbestos waste (very small, <10,000 tonnes/year), still operational as far as is known Four registered waste treatment or disposal sites within 1km of site, all categorised as scrap yards of very small input (<10,000 tonnes/year)*

- *Petrol and Fuel Sites No active fuel retailing sites were identified within 500m Although four are within 1km of the site, the closest being the Caerleon Service Station, 570m south of the site*

- *Sites of Special Scientific Interest One located approximately 100m to west of site (River Usk)*

- *Special Areas of Conservation One located approximately 100m west of site (River Usk)*

3 3 Newport County Borough Council, Planning and Economic Generation

Planning consent has been granted with conditions, for the development of a replacement primary school, all weather pitch, soft and hard play areas and residential development at the site The full planning conditions are presented in Appendix B and the key contamination conditions summarised as follows -

Prior to commencement of development on the site the following shall be conducted -

- A site investigation consisting of at least 3 months duration of monitoring to ascertain the presence of gas having regard to the end-use The subsequent assessment including results and recommendations regarding any structural precautions to be incorporated into the buildings shall be submitted for consideration and approval of the local planning authority

- A quantitative risk assessment of the ground conditions on the site having regard to the end use of the site The risk assessment must use both the results of the site investigation entitled "Durham Road Schools PFI Project Contamination Investigation Interpretative Report" (June 2000), any previous investigation in the area and any additional ground investigation required

On the basis of the assessments carried out for the above points a remediation strategy shall be formulated and approved in writing by the local planning authority and the agreed scheme shall be carried out prior to the commencement of any works on the site

An additional condition in relation to flood prevention is a requirement to raise site levels to a minimum of 9 8 metres above Ordnance Datum Current site levels north of the reen are currently of the order of 9 0 to 9 5m AOD, however, site levels to the south of the reen are typically 7 0 to 7 5m AOD and will therefore require significant up fill

The planning brief produced by the LPA (see Appendix B2), indicates that Glamorgan Gwent Archaeological Trust should be informed of the findings of the geotechnical investigation and has a watching brief over the works As such reserved matter 19 (archaeology) states that –

- The developer shall ensure that a suitably qualified archaeologist is present during the undertaking of any groundworks within the application site so that an archaeological watching brief can be conducted

3 4 Environment Agency Wales, Team Leader Planning Liaison, Anthony Wilkes, Tel 029 2077 0088

The Environment Agency were approached by Newport County Borough Council in relation to the application to redevelop the site and their response is attached within Appendix B The response further details the requirements of additional site investigation and subsequent risk assessment It is recommended that a buffer zone of at least 7m be maintained between the development and the river bank No trees or vegetation should be removed from this zone Additionally, adequate access to the watercourse for maintenance purposes should be maintained This will need to be agreed with the Environment Agency prior to issue of planning approval

3 5 Newport County Borough Council, Public Protection and Environmental Services (formerly Environmental Health), Mr Adam Osbaldeston, Tel 01633 244491

Tipping of waste materials on the northern part of the site started in the 1940's and was completed by the early 1960's Consequently, no records are held with respect to the type of material imported and quantity However, it is

understood that PCB and Phenolic waste was deposited at the Glebelands by Monsanto, although no records can currently be found Anecdotal evidence from local residents suggests a range of waste materials including domestic waste were tipped at the site, although Mr Osbaldeston stated this couldn't be confirmed

The only physical information available is from previous site investigations, which indicated little domestic waste, although Mr Osbaldeston stated that domestic waste could be present Whilst phenols have been tested for and been generally at levels that would not be of particular concern, testing for PCBs so far has been extremely limited

During the construction of the Malpas Relief Road, to the northern end of the Glebelands, material was excavated that was found to be heavily contaminated with PCB waste It was then decided to remove all arisings from these works and treat the lot as special waste and dispose of accordingly Unfortunately, archived information on this cannot be found in Council records

A complaint was received that the reen that runs through the allotments to the immediate east of the development site appeared to be contaminated, the council undertook a limited testing and screening exercise of the water and associated silts, and PCBs were included in the analysis After this brief and limited exercise, concentrations of PCBs were recorded that, although not posing a health risk, could have suggested that their was a more concentrated source of PCBs within the areas that the reen drains from The more mobile PCB congeners appeared to be lower in concentration suggesting the aged nature this contamination

No complaints had been received from site users or local residents, with respect to odorous gas emissions When questioned about any existing land gas control measures on the site, Mr Osbaldeston was unaware of any When asked about the possible 'lamppost style' venting stacks observed during the site walkover, Mr Osbaldeston did not know of their origin It is believed that they are related to the sewers beneath the site

4 0 GEOLOGY, HYDROGEOLOGY, HYDROLOGY AND ECOLOGY

4 1 Geology

Reference to the British Geological Survey 1 63360 Geological Map Sheet No 249 indicates the site to be underlain by superficial deposits comprising alluvium adjacent to the River Usk and River Terrace Deposits along the eastern quadrant of the site, overlying the St Maughan's Group of the Lower Red Sandstone Formation

Alluvium will have been derived during historical flooding of the adjacent River Usk and are mostly likely to comprise soft silty organic clays with some silty sands, silts and possibly peat layers/pockets The Alluvium will decrease in thickness eastwards across the site

River Terrace Deposits correlated with the Fourth (Kidderminster) Terrace of River Severn are likely to comprise sandy fine to coarse rounded gravels

The St Maughans Group of the Lower Old Red Sandstone comprise red, brown or purple mudstones with some siltstones and sandstones In general the upper surface of these deposits are completely weathered to stiff becoming very stiff red brown silty clay with lithorelics

The site area is not located in an area associated with coal mining

4 2 Hydrogeology

The site is located on a minor aquifer (Lower Old Red Sandstone) as classified by the Environment Agency on their groundwater Vulnerability Map No 36 'Mid Glamorgan' The overlying soils are indicated as 'Unclassified' with respect to leaching potential due to the urban location of the site and therefore in these instances a 'high' rating is assumed, until proved otherwise Lower permeability drift deposits are highlighted as occurring at surface Groundwater flow direction has not been confirmed but is likely to be in a west/south westerly direction towards the River Usk

The Environment Agency has granted two groundwater abstraction licences within 2km of the site, both to Pirelli Cables located approximately 1600m to the south-east of the site for general industrial use The source aquifer, daily and yearly rates were not available

4 3 Hydrology

The nearest surface watercourse is the River Usk located 50m parallel to the west boundary of the site At this point the River Usk is tidally influenced Two river quality survey points undertaken by the Environment Agency and located within 2km of the site indicated the River Usk as having Grade E 'Poor' chemical quality with no biological grading available An environmental database search identified a known domestic flood risk within the postcode area

4 4 Ecology

The Revised Planning Brief (see section B2), indicates that the River Usk is a Site of Special Scientific Interest (SSSI) as well as a candidate for a Special

Area of Conservation (cSAC) The River Usk has been designated a SSSI due to it's bird population, specifically the Allis Shad, Twaite Shad, Bullhead, River Lamprey and Brook Lamprey

The river also supports Otters and Salmon which are listed in Annex IV of the Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (Habitat Directive)

The planning brief attached the following conditions to the planning consent

- No stockpiling of material near the river's edge,
- Limiting hours of working,
- Provision of a buffer zone,
- Recording of contamination and submission of a remediation programme,
- Method statement to be submitted describing details of any necessary pollution prevention measures during construction phase,
- Control of works along the river bank

A number of potentially important ecological habitats were noted during the site visits and therefore we recommend that prior to the site investigation works commencing, a Phase 1 Habitat survey be undertaken Liaison with the Countryside Council for Wales (CCW) should also be undertaken

4 4 Radon

The site area is subject to a low risk from Radon, with less than 1% of homes affected

5 0 PREVIOUS SITE INVESTIGATION WORKS

5 1 Previous Works

A review of previous site investigations has been undertaken in order to provide an overall insight into the underlying ground conditions Three previous ground contamination site investigations have been undertaken on part or the whole of the site and are detailed in chronological order as follows

- Environmental Advisory Unit (EAU), 1994 comprising six cable percussive boreholes within the northern part of the site (WG15 to WG20)

- Integral Geotechnique, under the direction of RPT, April 1995 comprising fifteen mechanically excavated trial pits within the southern part of the site (TPC1 to TPC15)

- Exploration Associates, under the direction of Gwent Consultancy, April 2000 comprising eleven cable percussive boreholes and twenty seven mechanically excavated trial pits over the entire site (BH1 to BH11 and TP1 to TP27)

In light of the proposed development plans, the site can be split into two main areas, School Area in the north and Housing Area in the south, as indicated on drawing SK 13 This development split shall be adopted in the review of previous site investigation findings All factual information obtained from the previous investigations including logs and testing results are presented in Appendix C

5 2 School Area

Eleven cable percussive boreholes (Five by EAU in 1994 and Six by Exploration Associates in 2000) and eight mechanically excavated trial pits (Exploration Associates in 2000) have previously been undertaken within the School Site The approximately layout of the previous exploratory position are presented in Appendix C The encountered stratigraphic sequence is summarised in Table 1

Groundwater was encountered at the Made Ground/Alluvium interface in all boreholes during drilling Additional strikes were also recorded within the Alluvium, River Terrace Deposits, Reworked Marl and Old Red Sandstone Standpipes were installed within all previously drilled boreholes, with response zones covering the range of encountered soils The most recent groundwater monitoring visit undertaken on 18th April 2000, indicated standing water levels typically ranging between 1 1 and 2 7mbgl (7 16 to 7 92m AOD) This would suggest that hydraulic continuity probably exists between the encountered soils beneath the site No groundwater gradient is apparent across the site from the monitoring results obtained

Table 1 Summary of Encountered Ground – School Area

Strata	Thickness (m)	Depth to Base (mbgl)	Description
Made Ground	1 9-3 5 Typically 2 5 to 3 5m across the entire area	2 2 3 5	Variable typically dark grey black silty gravelly sands (ash) with gravel size fragments of clinker glass brick and to a lesser extent concrete timber pottery/ceramics asbestos steel drums
Alluvium	1 8 7 3 Thickness increases east to west across site towards River Usk	4 6 9 9 Depth to base increases east to west across site towards River Usk	Soft firm locally stiff grey organic clays Bands of peat and peaty clay near base of alluvium up to 1 5m along western boundary
River Terrace Deposits	0 4 1 0	5 2 10 3	Red grey fine to coarse sub angular to rounded gravels Band of cobbles from 10 to 10 3m in BH2
Reworked Marl (labelled as Boulder Clay on EAU logs)	0 5 1 2	6 1 9 1	Soft to stiff red brown silty clay/sand with some gravel of sandstone and quartzite
Lower Old Red Sandstone	+1 2	Not Proved	Completely to highly weathered stiff to very stiff red brown slightly sandy silty clay with over weak to moderately strong red purple brown slightly to moderately weathered siltstone/mudstone

Contamination Test Results -

No soil contamination test results were contained within the High-Point Rendel review of EAU's ground investigation However, reference within the text is made to elevated levels of heavy and phytotoxic metals within the Made Ground Nineteen soil samples were submitted for contamination testing during the most recent investigation, of which eighteen were from the Made Ground Elevated concentrations were reported above the relevant ICRCL threshold levels for the following determinants -

8no **Arsenic** (max 88mg/kg), 1no **Cadmium** (max 55mg/kg), 2no **Lead** (max 2810mg/kg), 1no **Selenium** (max 6mg/kg), 2no **Boron** (max 5 5mg/kg), 12no **Copper** (max 701mg/kg), 8no **Nickel** (max 108mg/kg), 13no **Zinc** (max 1400mg/kg), 2no **Sulphate** (max 5900mg/kg), 5no **Total PAH** (max 274 35mg/kg), 2no **Asbestos** (Chrysotile)

Three soils were submitted for leachate preparation and subsequent test as part of the most recent investigation All tests results were below the relevant reference values adopted (EA Interim Guidance – Disposal of Contaminated Soils (2nd Edition), Leachate Quality Threshold

Only two water contamination test results were contained within the High-Point Rendel review of EAU's ground investigation (boreholes WG17 and WG19) Six water samples were submitted for contamination testing during the most recent investigation Exceedences in arsenic, cadmium, chromium, lead, mercury, copper, nickel, zinc, chloride, ammoniacal nitrogen and iron were detected

Land Gases -

Land gas monitoring was undertaken during both phases of investigation

- EAU Investigation -

  Monitoring of land gases on two occasions within the head space of the first five boreholes installed (WG15-WG19) indicated one methane concentration above detection limits (1% by vol) at a maximum concentration of 8% by volume in WG19 and carbon dioxide concentrations typically ranging between 2 and 15% by volume A spike survey undertaken across the site detected no methane and carbon dioxide concentrations ranging between 0 and 13 5% by vol

- Exploration Associates (April 2000) -

  During the most recent ground investigation land gas monitoring was only undertaken during the works No methane was detected within the headspace of the six boreholes on either of the two monitoring occasions Carbon dioxide levels were recorded between 0 2 and 7 9% on the first occasion and 1 1 and 8 5% on the second occasion Hydrogen sulphide was detected within three boreholes (BH1, BH5 and BH6) at concentrations of 2 4 to 3 5% by vol Flow rates of between 0 2 and 1 4 litres per minute were recorded

5 3 Housing Area

Five cable percussive boreholes (Exploration Associates in 2000) and thirty mechanically excavated trial pits (Fifteen by Integral Geotechnique in April 1995 and fifteen by Exploration Associates in 2000) have previously been undertaken within the Housing Area The approximate layout of the previous exploratory position are shown in Appendix C The encountered stratigraphic sequence is summarised in Table 2

Groundwater ingresses were observed in the majority of trial pits at depths between 0 5 and 3 2, corresponding to the Made Ground and Made Ground/Alluvium interface Groundwater inflows varied from seepages to standing water within the trial pits Groundwater strikes were recorded within three of the boreholes within the Alluvium and underlying Lower Old Red Sandstone formation Standpipes were installed within all previously drilled boreholes, with response zones covering the range of encountered soils

The most recent groundwater monitoring visit (undertaken in April 2000), indicated standing water levels typically ranging between 0 3 and 2 25mbgl (6 95 to 6 26m AOD) This would suggest that a groundwater gradient exists across the site from east to west of approximately 0 3 to 0 7m and that hydraulic continuity probably exists between the encountered soils beneath the site Given the close proximity of the tidally influenced River Usk, the groundwater conditions are likely to be affected by the variations in the tidal cycle

The difference in recorded groundwater levels between the northern School Area and the southern Housing Area is in the order of 0 5 to 1 0m, indicating a southerly component to the local groundwater gradient

Table 2 Summary of Encountered Ground –Housing Area

Strata	Thickness (m)	Depth to Base (mbgl)	Description
Made Ground	0 1 7 over Compton Webb Site (Typically <1m) 1 8-+4 5 over Hardcore Pitch	0 1 7 1 8 +4 5	Variable Granular and cohesive soils with fragments of clinker brick concrete and ash pockets Buried former foundations Variable Dark grey black gravelly sands silts and clays with gravel size fragments of clinker glass brick and to a lesser extent concrete timber pottery/ceramics asbestos
Alluvium	3 7-12 Thickness increases east to south-west across site towards River Usk	4 3 13 4 Depth to base increases east to west across site towards River Usk	Soft firm locally stiff grey organic clays Peat layers ranging from 0 5m thick in north east corner to 3 4m in south west corner Red brown clayey silty sand layer as base of Alluvium
Reworked Marl	1 2 One location only	5 5	Stiff red brown slightly sandy slightly gravelly clay Gravel of sandstone
Highly Weathered Marl/Siltstone	1 4-2 7	7 5 10 2	Completely to highly weathered stiff to very stiff red brown slightly sandy silty clay
Lower Old Red Sandstone	+1 0	Not Proved	Weak to moderately strong red purple brown slightly to moderately weathered siltstone/mudstone

Contamination Test Results -

Eleven soil samples were submitted for contamination testing as part of Integral Geotechnique's Investigation (1995) and a further twenty-eight as part of Exploration Associates Investigation (2000) Elevated concentrations of heavy metals (arsenic, cadmium, lead and mercury) above relevant ICRCL threshold levels for residential housing were reported at a number of locations Asbestos fibres comprising amosite (brown) and chrysotile (white) asbestos were identified within the Made Ground at two locations Additionally, elevated concentrations of phytotoxic metals (boron, copper, nickel and zinc) were also recorded within the Made Ground and at the top of the Alluvium Of the limited hydrocarbon analysis undertaken and elevated concentrations of Total PAH was recorded at a single location, total Phenols at two locations and mineral oils and grease at three locations, all within the Made Ground

Five soils were submitted for leachate preparation and subsequent test as part of Integral Geotechnique's Investigation (1995) and a further six as part of Exploration Associates Investigation (2000) All tests results were below the relevant reference values adopted (EA Interim Guidance – Disposal of Contaminated Soils (2nd Edition), Leachate Quality Threshold)

One groundwater sample was submitted for contamination testing as part of Integral Geotechnique's Investigation (1995) and a further five as part of Exploration Associates Investigation (2000) Exceedences in arsenic, cadmium, chromium, lead, mercury, copper, nickel, zinc, chloride, ammoniacal nitrogen and iron were detected

Land Gases -

Land gas monitoring was undertaken during both phases of investigation

- Integral Geotechnique Investigation -

  Land gas monitoring standpipes were installed within two trial pits (TPC5 and TPC7) and monitored on six occasions No methane was detected during any of the monitoring visits Carbon dioxide was recorded during two visits up to a maximum concentration of 1 5% by vol

- Exploration Associates (April 2000) -

  During the most recent ground investigation land gas monitoring was only undertaken during the works Methane was detected within the headspace of three boreholes on one occasion only, at levels ranging between 0 5 to 6 4% by vol Carbon dioxide were recorded within three of the five boreholes at concentrations ranging between 0 3 and 2 6% Hydrogen sulphide was detected within four of the five boreholes at concentrations of 1 2 to 1 7% by vol Flow rates of between 0 1 and 1 7 litres per minute were recorded

6 0 GROUND CONTAMINATION RISK ASSESSMENT

6 1 General

Ground contamination is often present as a result of past and current site uses Many potential sources of ground contamination exist including onsite disposal of process wastes, open storage, leaks, tanks, pipes, site filling and poor operational practices, as well as migration from off site sources onto site Not withstanding the source of ground contamination the site owner can be subject to risks and long-term liability as a result of that contamination All qualitative risk assessments presented here relate to the proposed end use as stated in the brief

The Environment Act 1995 (Section 57) makes provisions for a risk based *framework for the identification assessment and management of* contaminated land within the UK The provisions of the Act came into effect in April 2000 and are aimed at ensuring that actions taken with respect to contaminated land are directed by a technically well founded assessment of actual significant risk that exists in the **source/pathway/receptor** scenario

The process of risk assessment is an evaluation of the probability of harm and comprises the identification of sources of contamination (toxic substances), receptors that may be affected by the contamination and pathways by which the receptors may be harmed following initial screening of values against commonly adopted UK guidance tables, the qualitative risk evaluation of these results are further assessed

6 2 Potential Hazard Sources

Potential hazards with regard to possible sources of contamination, may have been brought about by the following two main activities -

6 2 1 Ground Contamination Associated with the Former Uncontrolled Tipping

Uncontrolled tipping of waste materials on the northern half of the site (north of the reen) has been identified by a combination of historical maps, discussions with Newport County Borough Council and previous investigations It appears that little or no extraction of materials occurred prior to tipping on the site As a consequence site levels over the northern part of the site have been raised by approximately 2-3m to a level of between 9 0 and 9 5m AOD No records exist in relation to the type and quantity of waste materials tipped at the site Site investigation data obtained indicates that the tipped materials consist primarily of dark grey, black silty, gravelly sand with gravel and cobble size fragments of clinker, glass, brick and to a lesser extent concrete, timber, pottery/ceramics, asbestos, steel drums No evidence of putrescent domestic waste is recorded on the exploratory records from the previous investigations Notwithstanding this given the uncontrolled nature of the tipping the present of domestic waste and/or other hazardous/contaminated materials cannot be ruled out

It is also believed that the tipping continued northwards towards the M4 and as such, there is a potential for gas and contaminated groundwater to migrate onto the site from off-site

6 2 2 *Ground Contamination Associated with Former Site Usage*

Such activities, unless carefully managed and controlled, are likely to have resulted, often unintentionally, in contamination of the ground over a wide area If drainage and the surfacing of these properties had not been adequately maintained, this can increase the potential distribution of pollution further, into surface and groundwaters

Industrial usage of the site is limited to a Clothing Factory (Compton Webb) located within the southern part of the site, which has since been demolished Dyes and solvents might have been used within the factory However, no above or below ground storage tanks are recorded on available information to have been associated with site usage

Surrounding industrial land uses consist of the railway line, engineering works and a paint factory Historical plans show the railway line in its current location prior to the earliest historical plan (1883) Although no sidings or engineering yards are shown on historical plans the temporary storage of various products for railway maintenance, as well as wood preservatives, may have occurred within the site area In addition, hydrocarbons spilled on the railway and pesticides used to control vegetation growth may have leaked onto the site The paint factory located immediately to the south of the site has now been demolished to ground level, although floor slab and hardstanding remain Tanks associated with the site usage, probably containing solvents, are shown on historical plans approximately 10 – 15m from the southern boundary Inspection of the site during the walkover indicated that these were most likely to have been surface tanks that have now been removed An engineering works is located on the eastern side of the railway line and the use of hydrocarbon based products and solvents are commonly associated with such activities

6 2 3 Contamination Encountered

The soil and groundwater contamination, and landgas encountered onsite is discussed below

Soil contamination identified within the Made Ground over the entire site included heavy metals (arsenic, cadmium, lead, selenium), phytotoxic metals (boron, copper, nickel, zinc), slightly elevated Total Poly-aromatic Hydrocarbon levels and asbestos at a number of locations (and in both areas)

Leaching tests undertaken on the made ground indicated that the contaminants identified within the soil were not susceptible to leaching from these samples

Groundwater contamination testing observed elevated concentrations of heavy metals (arsenic, chromium, lead and mercury, iron), phytotoxic metals (copper, nickel, zinc) and greatly elevated levels of chloride and ammoniacal nitrogen commonly associated with landfill generated leachates

The elevated landgas levels recorded in previous site investigations are believed to be emanating from a combination of the fill material and the organic material, particularly the peat within the alluvium Methane was recorded locally with up to a maximum concentration of 8% However, results were erratic across the site and were typically below 1% by volume Carbon dioxide concentrations were generally recorded at levels ranging up to a maximum of 15% Flow rates up to 1 7 litres per hour were recorded during selected monitoring periods

6 3 Potential Migratory Pathways

Mobile contaminants may migrate in solution through the more permeable deposits that underlie the site, namely the Made Ground It appears from the information collected to date that the Made Ground, Alluvium and underlying Lower Old Red Sandstone are in hydraulic continuity However, given the likely variability in permeability, particular between the more granular, porous Made Ground and the underlying fine grained (cohesive) Alluvium, any contaminants leached from the Made Ground are likely to migrate horizontally along the interface between the two deposits and to a lesser degree vertically The frequently observed groundwater strikes at the Made Ground/Alluvium interface further confirms this assessment and may allow a degree of lateral migration off/on site

The leachate results obtained to date showed a low risk of potential mobility of the contaminants present within the Made Ground However, groundwater sampled from within the Made Ground, Alluvium and Lower Old Red sandstone deposits all generally show the same elevated contaminants present within the Made Ground soils Additionally, elevated concentrations of ammoniacal nitrogen and chloride were also recorded and are generally considered to be an indication of the leaching of putrescent waste Given the length of time since uncontrolled tipping ceased at the site (approximately 40 to 45 years) and given the lack of impermeable capping over the site, the leachate results obtained to date could indicate that nearly all mobile contaminants have been leached out of the soils Given the likely variability in permeability of the Made Ground, some residual pockets of leachable contaminants are likely to remain

From the monitoring of static groundwater levels undertaken as part of the previous investigations, the direction of flow of groundwater would appear to be in a west/south-westerly direction towards the River Usk

Migration of gases could potentially occur predominantly through the more granular deposits in the Made Ground In addition to migration through substrate, landgas may accumulate and migrate laterally within underground services

Other potential pathways, which may be present but have not been positively identified may include dermal and/or respiratory exposure during site works Airborne contamination may also occur from unsurfaced areas during groundworks when the surface will be disturbed

6 4 Potential Receptors at Risk

Current environmental legislation in respect of contaminated land includes Environment Act 1995, Water Resources Act 1994, Environment Protection

Act 1990, Health and Safety at Work Act 1994, Town and Country Planning Act 1990 and Building Regulations 1985

The potential environmental risk associated with the site can be addressed broadly within the following areas These risks relate to past and current uses of the whole site -

- Following redevelopment of the site, the risk to **future end users on the residential area** from ingestion of soil, soil on vegetables, vegetables and dust is assessed to be **low** This is because the residential area is over 1m below the finished site levels and it is anticipated that "clean" imported material will be used to raise the ground surface to the required level However, part of the residential development will be on the former landfilled area The risk to future end users in this part of the residential area is **medium** due to current site levels being at or above finished site levels

- Following redevelopment of the site, the risk to **future end users on the residential area** from ingestion of soil and inhalation of dust is assessed to be **medium** This is because the level of the school area will not be significantly changed although it may be lowered slightly and therefore heavy metal contamination in the landfilled area may be at the surface

- The contamination risk with respect to **shallow/perched groundwater** in the Made Ground is considered overall to be **medium** A number of contaminants have been identified within the Made Ground and shallow/perched water across the site However, limited leachate test results appear to show that the contaminants remaining in the soil are of a non-mobile nature It may be that given the length of time since uncontrolled tipping ceased on the site, the more mobile contaminants have already been leached out of the soil However, as the full extent of contamination within the Made Ground is not known and given the contamination found within the shallow perched water, a medium risk rating is considered appropriate especially as future construction will introduce inevitable disturbance

- The site is underlain by mudstones and siltstones of the Lower Old Red Sandstone, a minor aquifer, at depths ranging between 7 5 to 10 2mbgl Monitoring of groundwater at various levels across the site indicates that hydraulic continuity exists between groundwater within the various identified strata horizons However, given the vertically variability in permeability between soil horizons, the potential for vertical migration of contaminants is considered to be low Testing of groundwater from within the aquifer has shown a number of contaminants to be present, similar to those identified within the Made Ground This may reflect the relatively long time since uncontrolled tipping ceased at the site Groundwater abstraction from this minor aquifer is limited, with only two abstraction licences within 2km of the site both for general industrial use In the context of the site and contaminants identified to be present with groundwater samples obtained, the risk with respect to **deep groundwater** in the Lower Old Red Sandstone is considered to be **low to medium**

- The risk to **surface water** is considered to be **medium**, in respect to the close proximity of the River Usk, direction of groundwater flow from the site towards the river, identified pathway at the Made Ground/Alluvium interface and contaminants identified within the groundwater on the site The River Usk has been identified as Grade E indicating 'Poor' chemical qualities This is due to the industrial use of the river, particularly for discharge, which effectively can be considered to lower the risk of contamination from the site impacting on this water course at this present time The assessed risk will be higher during site works and the inevitable disturbance of near surface Made Ground This will be particularly relevant during wet weather seasons, and appropriate measures need to be taken

- Together with the previous investigations, the available "open" site surface has been subject to intrusive investigation Elevated heavy metals, phytotoxic metals and to a lesser extent organic compounds have been identified within the fill material Areas within the north of the site beneath the Sports Stadium remain un-investigated and may conceal further localised contamination Uncontrolled tipping of materials occurred within this area Therefore, the risk with respect to **further ground contamination** being identified is considered to be **medium**

- Presently the northern part of the site is used for recreational purposes The southern part of the site is fenced redundant ground and as such, the risk with respect to likely **ground contamination from current use** is considered to be **low**

- Elevated readings of methane, carbon dioxide and associated oxygen depletion indicative of reducing conditions have been detected on site Two possible sources exist on the site, namely the uncontrolled tipped material (Made Ground) and the peat and organic material within the underlying alluvium The landgas regime across the site has not been well defined and is reflected in the requirement for further site investigation and a three month monitoring period within the planning conditions The possibility of localised "hotspots" of gassing material particularly within the Made Ground is high The risk from **landgas** is considered to be **medium** with respect to the proposed development but may be effectively mitigated to a low to medium risk with suitable precautions incorporated into the development

- The risk with respect to potential **off-site migration** of **landgas** is considered to be potentially **medium** due to the presence of source material on site and the proposed capping and hardsurfacing, which will tend to increase the potential for lateral gas migration The close proximity of residential properties to the east is identified as a potential receptor However, given the elevation of the site above the surrounding area and therefore the natural venting that can occur on all site boundaries, the risk from source material within the Made Ground is considered to be low The high organic content and peat contained within the alluvium could generate landgases, particular during and immediately following groundworks Monitoring of landgases throughout and on completion of construction is recommended

- The risk associated with **on-site migration** of contamination is considered to be **medium** in respect to the current and past uses of the adjacent sites This is primarily because it is believed that tipping may have continued northwards and therefore there is a risk of off-site migration of contaminants onto site

- Subject to satisfactory measures being incorporated into the management and operation of the site, normally accepted as good engineering practice, **health and safety** risk to ground workers on the site is judged to be **medium** It is strongly recommended that methane and carbon dioxide is monitored during any groundwork, particularly on the northern side of the site, and full consideration given to the presence of potentially explosive gas and vapours over the site The long term users are unlikely to be exposed to significant risks

- Due to the "capped" nature of significant areas of the site the risk of **airborne contamination** is assessed to be **low** after redevelopment This risk is likely to be higher during construction activities due to the inevitable disturbance of the site surface, and appropriate measures need to be taken

6 5 Environmental Risk Assessment Summary

Description of Receptor or Source	Risk Rating
Residential end users	**Low or medium**
School end users	**Medium**
Shallow groundwater	**Medium**
Deep groundwater	**Low to Medium**
Surface water	**Medium**
Further ground contamination being found	**Medium**
Ground contamination from current land use	**Low**
Buildings and site users from landgasses	**Medium**
Off-site migration of landgasses	**Medium**
On-site migration of contamination	**Low to Medium**
Health and Safety of ground workers	**Medium**
Airborne contamination	**Low**
OVERALL GROUND CONTAMINATION RISK RATING	**MEDIUM**

In summary, it is suggested that the overall risk rating of the site is **MEDIUM** The uncontrolled tipping of waste material over the northern part of the site has already been identified by investigations as a possible contaminant source, primarily with respect to heavy and phytotoxic metals and landgases The need for further site investigation, long term gas monitoring and a quantitative risk assessment with respect to the site and sensitive proposed end use of the site (School and residential development) is identified within the planning conditions and are considered in light of this preliminary assessment to be highly valid Remediation of the site will be required to protect buildings and end users of the site

7 0 OUTLINE GEOTECHNICAL CONSIDERATIONS

7 1 General

It is understood that the proposed development will consist of -

- Two-storey portal framed school with associated hard and soft play areas and all weather pitch within the northern part of the site
- Residential houses within the southern part of the site

The proposed development layout of the school and residential areas is indicated in SK 13

The site is located within an area at high risk from flooding As a consequence a minimum development level of 9 8m AOD has been set within the planning conditions following consultation with the Environment Agency, although the EA have recently indicated that this level may be lowered to 8 84m AOD Current site levels range from between 9 0 to 9 5m AOD over the northern part of the site to 7 0 to 7 5m AOD over the southern half of the site It is therefore apparent that considerable levels of up fill will be required for the residential development within the southern part of the site

No geotechnical testing or assessments have been undertaken during the three, identified, previous site investigations undertaken across the site Two geotechnical site investigations have been undertaken on adjacent sites, and have been reviewed as part of this assessment and are summarised as follows -

- *Report on Site Investigation at Glebelands Recreation Ground, Newport, Structural Soils Limited, June 1991, Ref Report No 10416*

  Investigation undertaken for new Bowling Club located approximately 200m to north-east of site Seven boreholes to a maximum of eight metres below ground level Ground profile of topsoil/Made Ground (up to 3 4m thick) over gravelly clay (reworked/completely weathered mudstone) over mudstone, typically encountered at depths of 3 to 6mbgl Eight metre long bored piled foundations adopted and undertaken by Cementation Limited Sealed membrane and passive venting system adopted within final structure to reduce risk from land gases

- *Glebelands Development – Southern Access Geotechnical Site Investigation Interpretative Report, Gwent Consultancy, September 2000, Ref GT/73293*

  Investigation carried out along River Usk east and west banks to the south of the site Three cable percussive boreholes to 15mbgl and four number trial pits Ground profile encountered comprised 3 to 5m of Made Ground overlying Alluvium with peat bands to the base of the investigation Based on geotechnical testing undertaken on the Alluvium the following design parameters were recommended -

Material	Angle of Friction Ø	Cu (kN/m^2)	C' (kN/m^2)	Bulk Density (Mg/m^3)
Alluvium	20	20	5	19 5

No geotechnical information was obtained on the Lower Old Red Sandstone

7 2 Fill

In order to achieve the minimum development level of 9 8m AOD, between 2 - 3m of fill will need to be placed across the southern half of the site Current site levels are such that little or no materials will be won from other areas of the site Therefore, uncontaminated fill materials in the order of 50,000m^3 will need to be imported to site The logistical difficulties of importing such a quantity of fill materials are compounded by the current limited access to the site through predominantly residential areas

The effects of loading the existing ground by 50 to 60kN/m^2 with imported fill material should also be considered On the basis of the engineering descriptions of the soils, testing undertaken as part of a geotechnical investigation on an adjacent site and engineering experience, the underlying Alluvium is considered to be of low strength and medium to high compressibility (peat layers are particularly compressible) Any loading placed on such soils is likely to result in high settlements (both instantaneous and long term), which are likely to have a significant effect on future development of the site To mitigate the effect of settlement upon the development it maybe prudent to consider a carefully controlled filling sequence, which allows for the surcharging of strategic zones of the site whilst allowing for the insertion of vertical drains This will accelerate settlement, thus achieving sensible programming targets

Additionally, increased pressures exerted onto the peat layers are likely to result in significant land gas generation should migratory pathways exist A full assessment of the effect of up filling on the site should be undertaken in order to minimise the effects on the future development of the site and surrounding areas

7 3 Foundations

7 3 1 Conventional Spread Foundations

The Made Ground and the underlying Alluvium encountered across the site during the recent ground investigation are not considered as being suitable bearing strata for the proposed development due to their soft / weak nature in conjunction with variation in thickness and consistency which could lead to unpredictable and / or potentially damaging foundation settlements

As a consequence of the significant combined thickness of the Made Ground and Alluvium, conventional spread foundations are not considered appropriate for the proposed development It is therefore recommended that deep foundations such as piles or alternatively ground improvement be considered

7 3 2 Piled Foundations

In order to obtain suitable foundation capacity for the proposed redevelopment, structural loads need to be transferred through the

variable and low strength Made Ground and Alluvium and into the underlying Lower Old Red Sandstone It is therefore considered that piled foundations should be adopted

In consideration of the type of piling technique, both environmental and geotechnical issues need to be addressed Given the contamination identified within the Made Ground, displacement piling techniques would be preferable in order to reduce the generation of arisings, which are likely to attract landfill disposal premiums Furthermore, the piling technique adopted should keep to a minimum the risk of generating a vertical preferential pathway for mobile contaminants It is considered that driven or driven cast-in-situ piles would be acceptable on both these environmental issues However, the use of either driven of driven-cast in-situ is dependent on penetrating the bearing strata by at least 1 5m in order to achieve adequate lateral support at the base of the pile and suitable end bearing capacity This equates to pile lengths of approximately 8m within the footprint of the proposed school

Following consultations with a local piling contractor who has experience in using driven piles in the Newport area, it is believed that driven piles could be adopted on the site, however, a geotechnical site investigation and assessment should be undertaken to confirm the suitability of driven piles In light of the marginal suitability of driven and driven-cast in-situ piles, the use of bored or continuous flight auger (CFA) piles cannot be ruled out at this stage

Preliminary calculations indicate that a 380mm by 380mm square concrete driven pile that penetrates the Lower Old Red Sandstone deposits by a minimum of 1 5m, should obtain an allowable bearing capacity in the order of 350-400kN, limiting settlements to tolerable levels

In addition to the above pile capacity, due allowance should be made for additional pile loadings resulting from negative skin friction forces imposed by settlement of the overlying cohesive Alluvial deposits Such additional forces on the piles are anticipated in the event of any surcharging of the Made Ground and Alluvium and are therefore are likely to be of greater magnitude within the southern half of the site Consequently, all foundations should be adequately protected from such measures by the use of permanent pile linings and / or the increasing in pile lengths being considered The latter solution, however, is likely to necessitate the use of bored piling techniques

Given the lack of information relating to the material tipped at the site, the presence of obstructions within the Made Ground across the site cannot be ruled out Additionally, it is not clear whether the foundations of the former clothing factory located within the southern part of the site still remain in-situ Foundations were encountered during the most recent investigation and further work should be undertaken to determine the extent of any foundations present It would be beneficial to grub out any known foundations prior to up filling the site

7 3 3 Ground Improvement

Ground improvement through the use of stone columns is not considered to be viable in light of the ground conditions present over the site It is believed that the very soft/soft Alluvium would generate insufficient lateral pressure to support stone columns Additionally, the presence of peat layers would further discount the use of stone columns From an environmental perspective stone columns would generate a vertical preferential pathway for mobile contaminants (both liquids and gases) and would therefore be unacceptable in light of the site conditions

Vibro concrete columns (VCCs) could feasibly be undertaken on the site In our experience vibro concrete columns typically refuse in fine grained (cohesive) soils at shear strengths in the order to 70 to 100kN/m^2 and are therefore likely to refuse within the reworked/weathered Lower Old Red Sandstone deposits (Stiff clays) at depths of approximately 5-6mbgl in the area of the school A specialist contractor should be consulted to obtain assurances regarding allowable bearing capacities and settlements However, preliminary calculations would indicate that an allowable capacity of 150kN should be obtainable for a 0 6m diameter VCC, limiting settlements to within permissible tolerances No allowance has been made for additional loadings resulting from negative skin friction forces imposed by settlement of the overlying cohesive alluvial deposits

7 4 Floor Slabs

Due to the variable Made Ground and underlying soft, potentially highly compressible Alluvium, it is considered likely that ground bearing floor slabs for the proposed development would undergo unacceptable total and differential settlements and that other design options such as suspended floor slabs or ground improvement using vibro-concrete columns, VCCs, should be considered, as discussed in section 7 3 3

7 5 Earthworks

The Made Ground and underlying granular Alluvium generally showed variable short-term stability during excavation, and it is anticipated that shoring will be required during foundation construction through these strata or that excavations are battered back to a safe working angle (space permitting) In line with good working practice, man entry into excavations greater than 1 0m deep should only be carried out in shored pits

Groundwater strikes were generally encountered at depths ranging between 0 5 and 3 0mbgl and particularly at the Made Ground/Alluvium interface It is considered unlikely that significant dewatering will be required during earthworks

7 6 Roads and Pavements

Near surface soils comprised of Made Ground deposits of variable composition As an indication, based on information provided within the DoT Design Manual Volume 7, Pavement Design and Maintenance, an equilibrium CBR design value of no greater than 2% should be used

Prior to placement of pavement materials the sub-grade should be proof rolled and any soft areas replaced with a compacted granular material Likewise, there is potential for coarse granular material within the Made Ground and it may prove necessary to locally remove or re-grade such materials so as to avoid localised hard spots

7 7 Buried Concrete

Chemical tests undertaken during previous investigations on the site indicate that sulphate levels within the groundwater generally correspond to Class 1 in accordance with BRE Digest 363 However, some localised elevated water soluble sulphate levels recorded within the Made Ground and underlying Alluvium and correspond to Class 3, 4 and 5 in accordance with BRE Digest 363 We would advise that all cements used for sub-surface concrete should conform to the advice given in this publication

8 0 RECOMMENDATIONS

8 1 Remediation

The site investigations undertaken to date have identified contamination, metals, asbestos and limited organic compounds (but based on limited tests), primarily within the Made Ground Although, leachability results indicate the identified contaminants are not highly mobile, the presence of the same contaminants within the groundwater would indicate some leaching has/is taking place

In light of the sensitive end-use of the site the following remediation options should be considered likely at this stage -

- Excavation and removal off site of unacceptably contaminated zones areas followed by replacement with an imported clean backfill material

- Leave all materials in place and cover the site area with a suitable thickness of capping material alongside further risk assessment of the groundwater and land gas environments

In light of the requirement to import fill to raise site levels, particularly in the southern part of the site where 2 0 to 2 5m of up fill is required, capping would seem the more practical and viable option at this stage This is however subject to the Quantitative Risk Assessment (QRA) The northern area of the site is close to the minimum required development level of 9 8m AOD and will typically require less than 1m of up fill A combination of zoned removal and reduced capping thickness may introduce economies However, the current proposal to extend the housing development onto the landfilled part of the site will result in a more stringent remediation strategy and/or a more managed type of housing with no gardens but designated landscaped areas

It should be noted that contaminated material will only be suitable to be left on site if it does not pose a risk to groundwater or surface water (taken into account in the QRA) In addition, if contaminated materials remain on the site, they will present the owner or operator with a continuing environmental liability under current legislation

A remediation strategy can only be developed and firmed up following further investigation and assessment as required by the planning conditions The remediation strategy will need to be discussed and agreed with the Environment Agency and Local Authority before any development works can be begin on site

8 2 Land Gas Protection

The limited land gas monitoring information collected to data would suggest that some form of landgas protection will be required for the proposed development This can only be formalised and approved with the Local Authority following completion of further monitoring and assessment, as required by the planning conditions We would therefore recommend that cost provisions for the minimum protection consisting of a sealed gas impermeable membrane in ground floor slab is made at this stage, alongside a passive venting system

8 3 Further Investigation

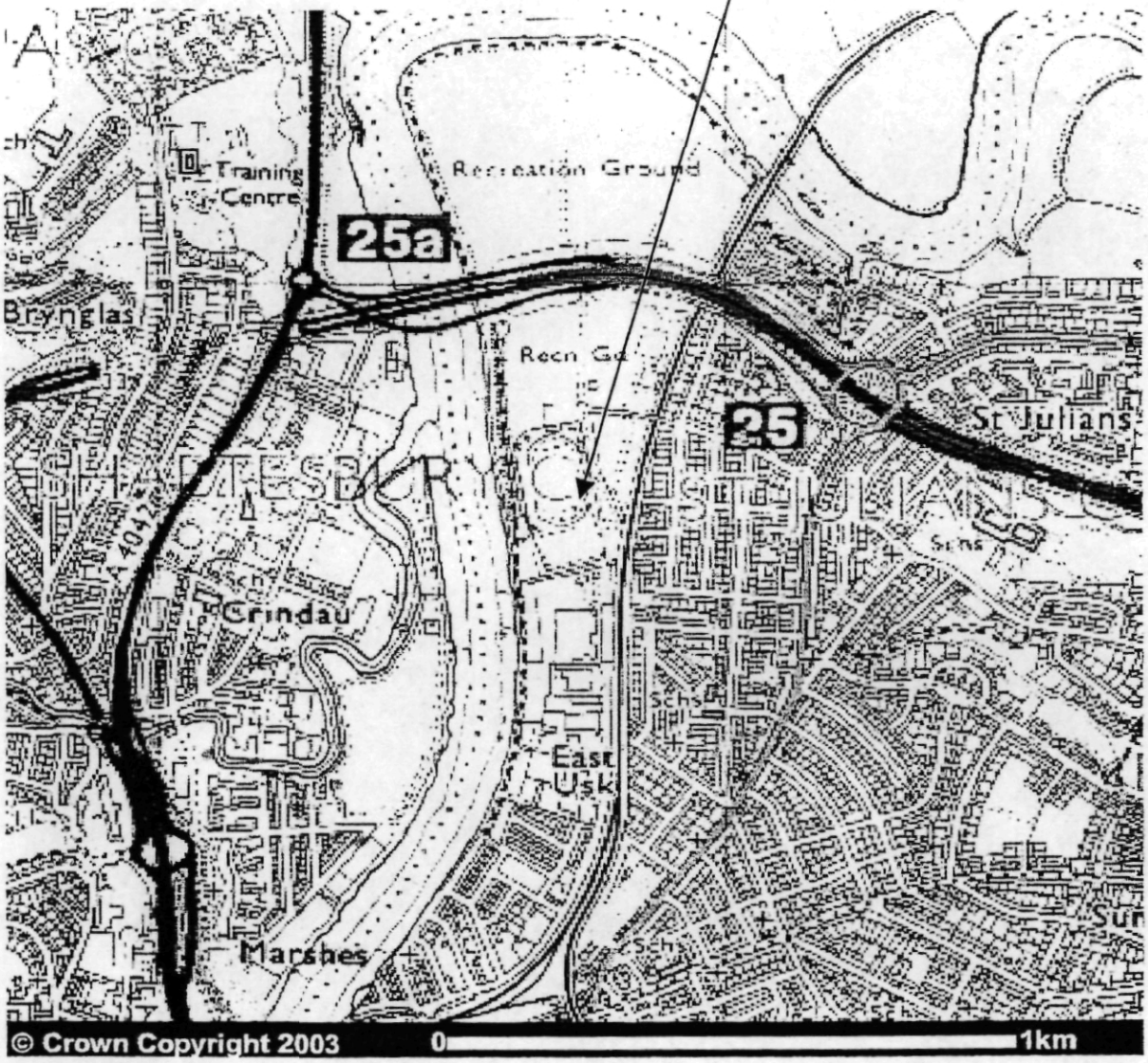
Further more comprehensive site investigation and subsequent assessment will be required to satisfy the planning conditions Physical investigation is proposed to improve coverage across the site and previously unavailable areas, but in particular to establish the land gas and groundwater regime across the site and critically provide sufficient data for the quantitative risk modelling assessment Further investigation would allow the potential risk to the identified receptors, namely the River Usk, underlying minor aquifer and site end uses to be properly assessed It is also recommended that a geotechnical investigation should be carried out at the same time to assess and provide suitable design parameters for the proposed development

The site investigation is recommended to include the following -

- 12no Cable Percussive Boreholes to 8-12m bgl with groundwater and/or gas monitoring standpipes installed on completion in the alluvial deposits,
- 8no Rotary Boreholes to 15-20m bgl with groundwater monitoring standpipes sealed within the underlying Lower Old Red Sandstone,
- 4no Rotary cores of the Lower Old Red Sandstone,
- 10no Window Sample Boreholes up to 6m bgl with perched groundwater and gas monitoring standpipes installed on completion in the made ground,
- Trial pitting on a 25m grid pattern across the School and residential areas,
- In-situ permeability testing in each aquifer unit,
- Laboratory permeability testing of the alluvial clays,
- Chemical testing of soils, leachates and groundwaters
- Geotechnical testing of soils
- Long term Monitoring for land gases (3 months)

SKETCHES

SK01	SITE LOCATION PLAN
SK02	SITE INVESTIGATION LOCATION PLAN
SK03	1883 ORDNANCE SURVEY EXTRACT
SK04	1886 ORDNANCE SURVEY EXTRACT
SK05a	1902 ORDNANCE SURVEY EXTRACT
SK05b	1902 ORDNANCE SURVEY EXTRACT
SK06	1920 ORDNANCE SURVEY EXTRACT
SK07	1937 ORDNANCE SURVEY EXTRACT
SK08	1955 ORDNANCE SURVEY EXTRACT
SK09	1966 ORDNANCE SURVEY EXTRACT
SK10	1973 ORDNANCE SURVEY EXTRACT
SK11	1981 ORDNANCE SURVEY EXTRACT
SK12	1994 ORDNANCE SURVEY EXTRACT
SK13	PROPOSED DEVELOPMENT PLAN



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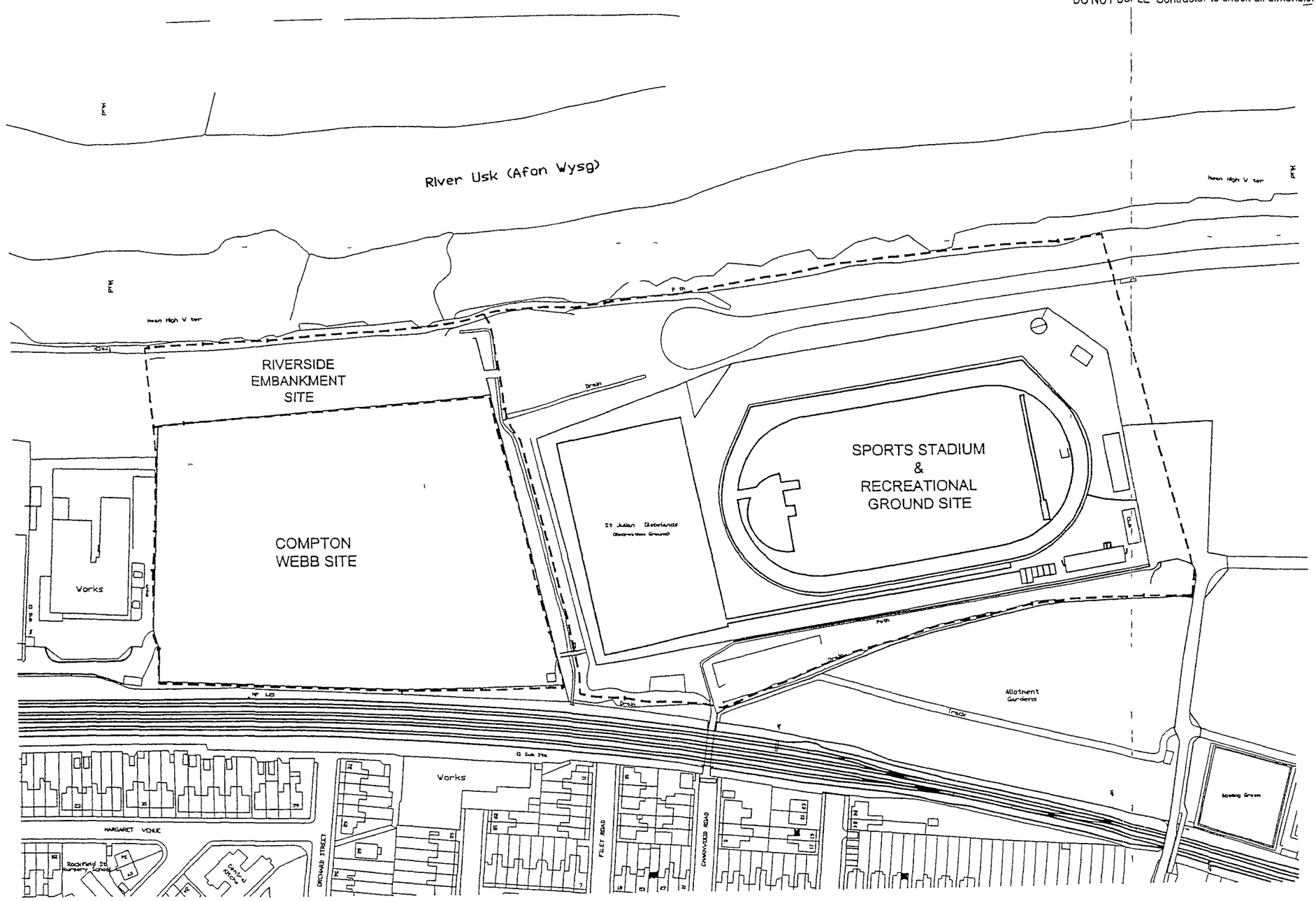
White Young Green Environmental Ltd 12 St Andrews Crescent Cardiff CF10 3DD Tel: 029 2023 1141 Fax: 029 2038 2771 Environmental Consultancy Ground Technologies and Investigations	Project **Durham Road School and Housing**	Drawing Title **Site Location Data**
	Client **Vinci Investments Ltd**	Drawing No. **FIGURE 1**

DO NOT SCALE Contractor to check all dimensions and report any omissions or errors



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Environmental Engineers

Civil Structural Mechanical Electrical Process Rail Traffic Environmental Project Management

Project:
DURHAM ROAD SCHOOL AND HOUSING
NEWPORT

Client
VINCI INVESTMENTS LTD

Rev	Description	By	Chk	App	Date

Drawing Title
EXISTING SITE LAYOUT PLAN

Scale	Drawn By	Date	Checked By	Date	Approved By	Date
NTS	CBP	APRIL 2001	D.M.F	APRIL 2001	CP	APRIL 2001

Project No	Office	Type	Drawing No	Revision
E3808	4406	ENV	SK02	X

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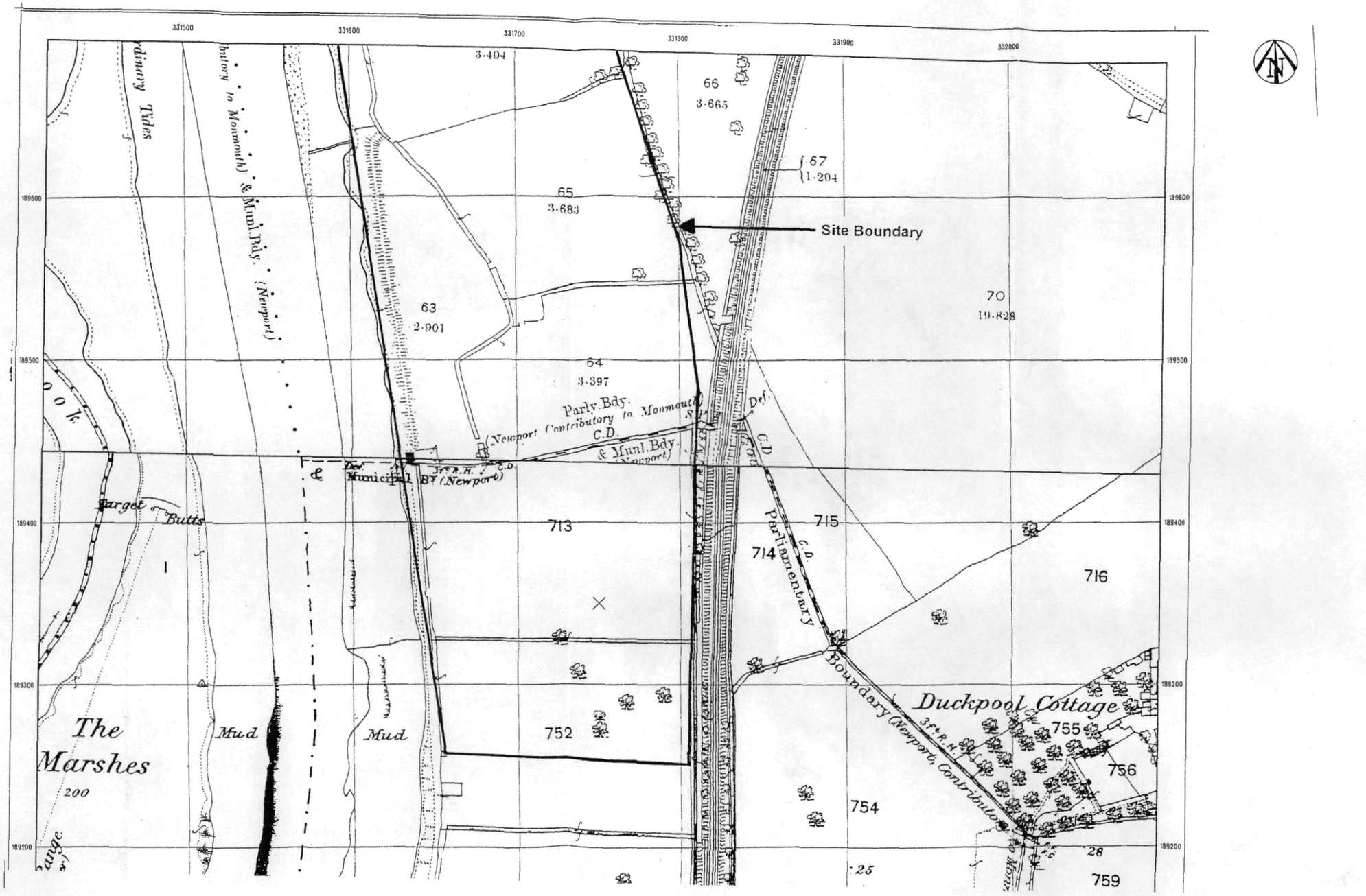

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Rev	Description	By	Chk	App	Date

Drawing Title:
1883 ORDNANCE SURVEY EXTRACT

Scale	Drawn By	Date	Checked By	Date	Approved By	Date
N.T.S	CBP	APRIL 2001	D.M.F.	APRIL 2001	CP	APRIL 2001

Project No.	Office	Type	Drawing No.	Revision
E3808	4406	ENV	SK03	X

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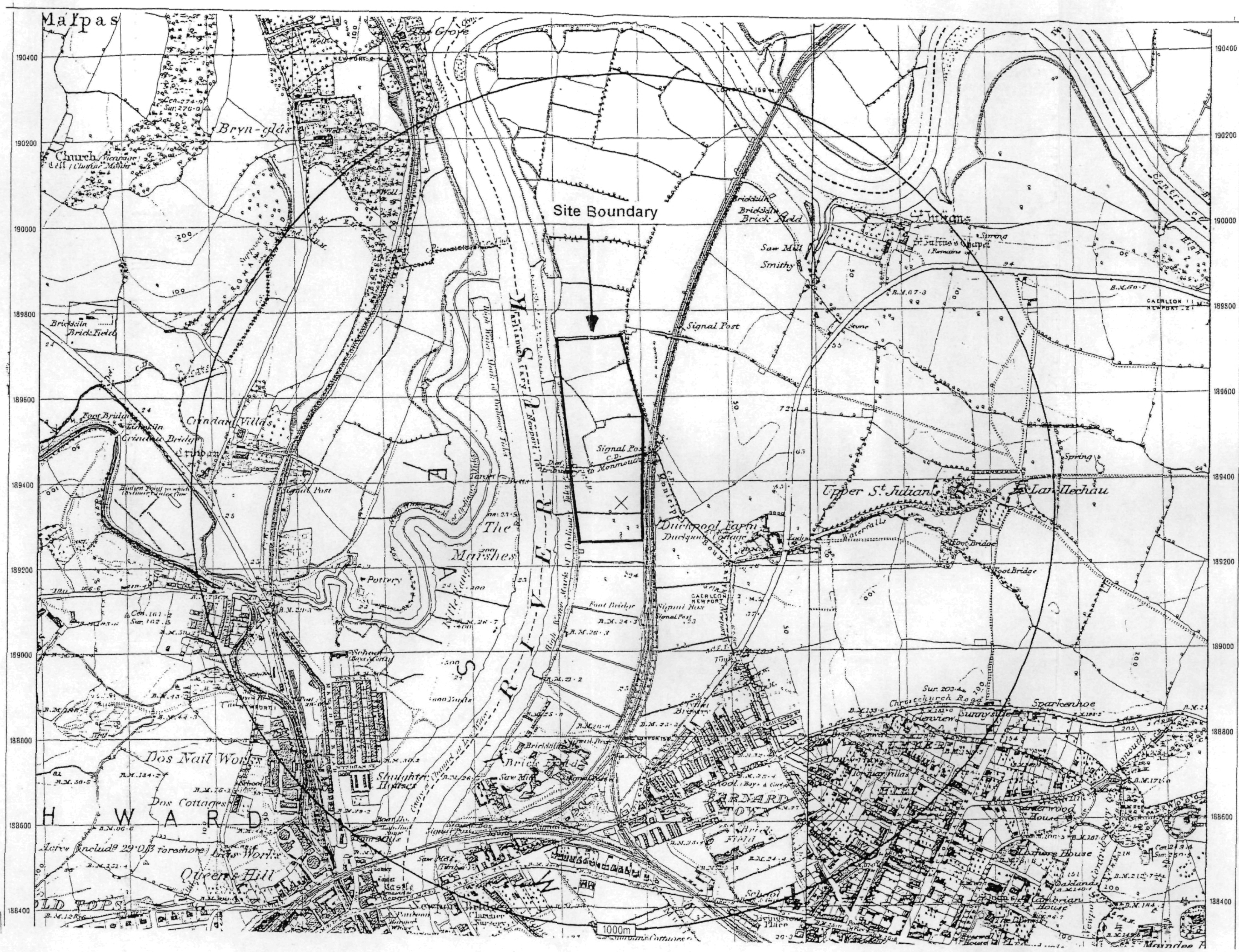

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1886 ORDNANCE SURVEY EXTRACT

Scale	Drawn By	Date	Checked By	Date	Approved By	Date
N.T.S	CBP	APRIL 2001	D.M.F	APRIL 2001	CP	APRIL 2001

Project No.	Office	Type	Drawing No.	Revision
E3808	4406	ENV	SK04	X

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Drawing Title:
1902 ORDNANCE SURVEY EXTRACT

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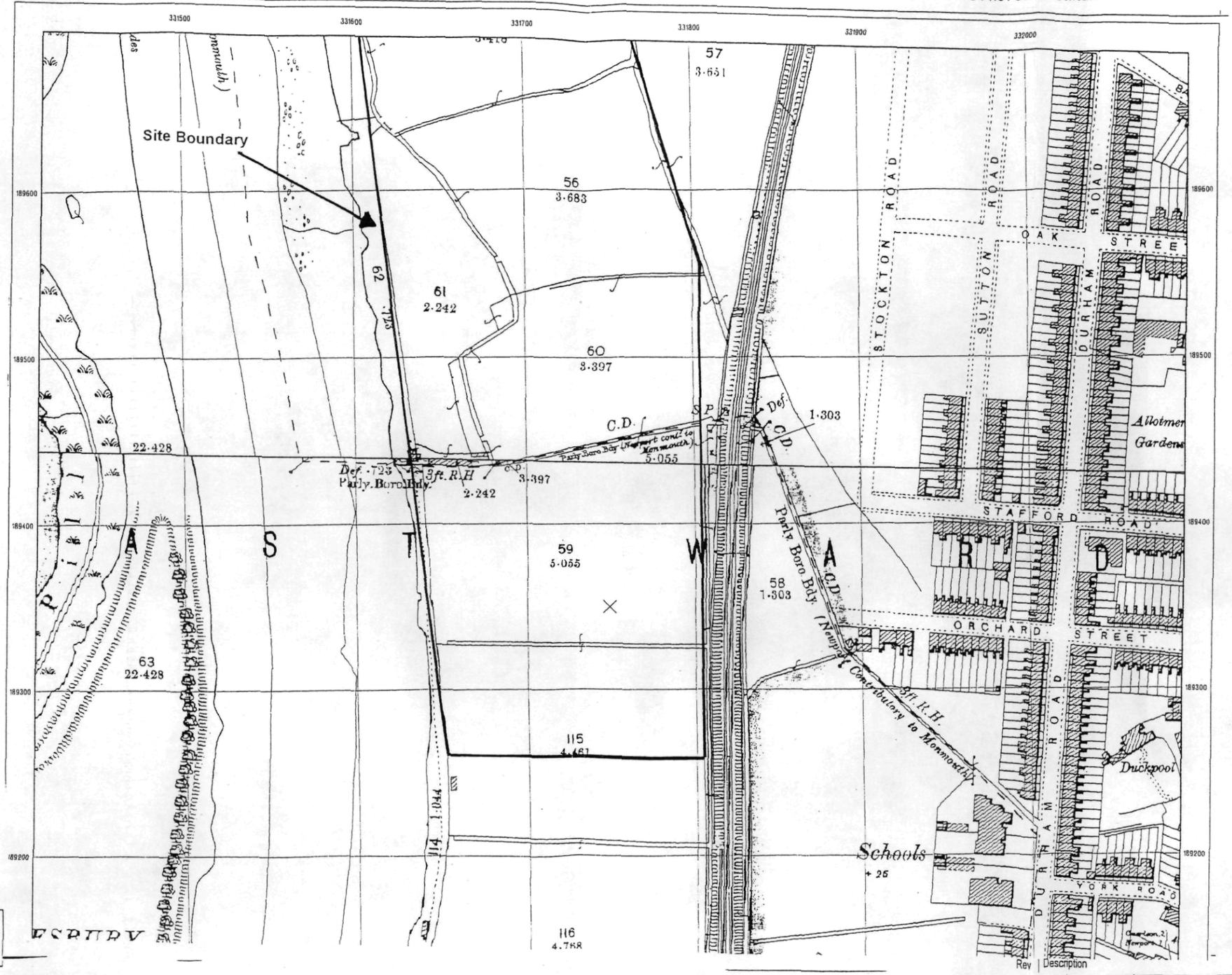

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1902 ORDNANCE SURVEY EXTRACT

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Project No.	Office	Type	Drawing No.	Revision
E3808	4406	ENV	SK05b	X

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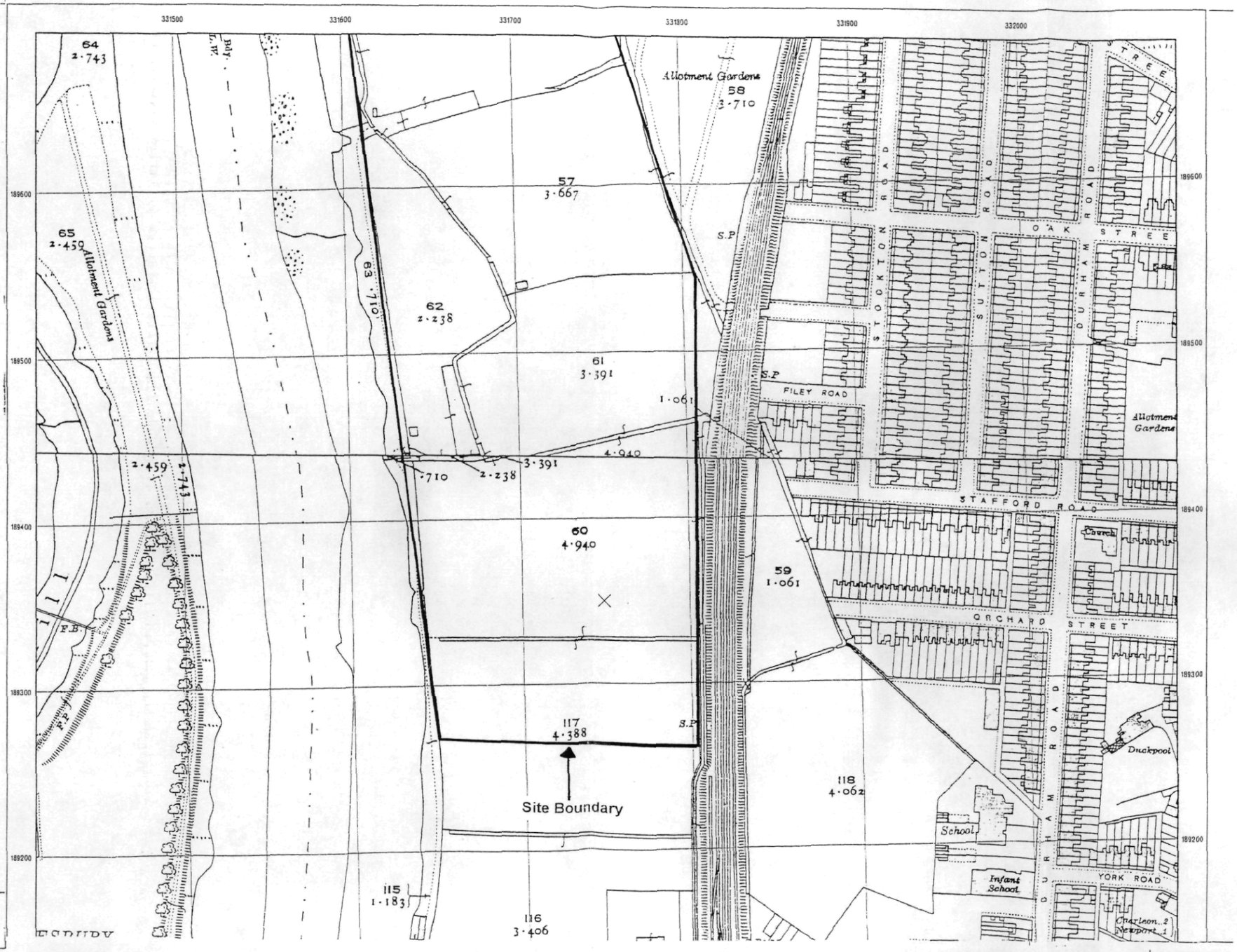

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Rev	Description	By	Chk	App	Date

Drawing Title:
1920 ORDNANCE SURVEY EXTRACT

Scale	Drawn By	Date	Checked By	Date	Approved By	Date
N.T.S	CBP	APRIL 2001	D.M.F	APRIL 2001	CP	APRIL 2001

Project No.	Office	Type	Drawing No.	Revision
E3808	4406	ENV	SK06	X

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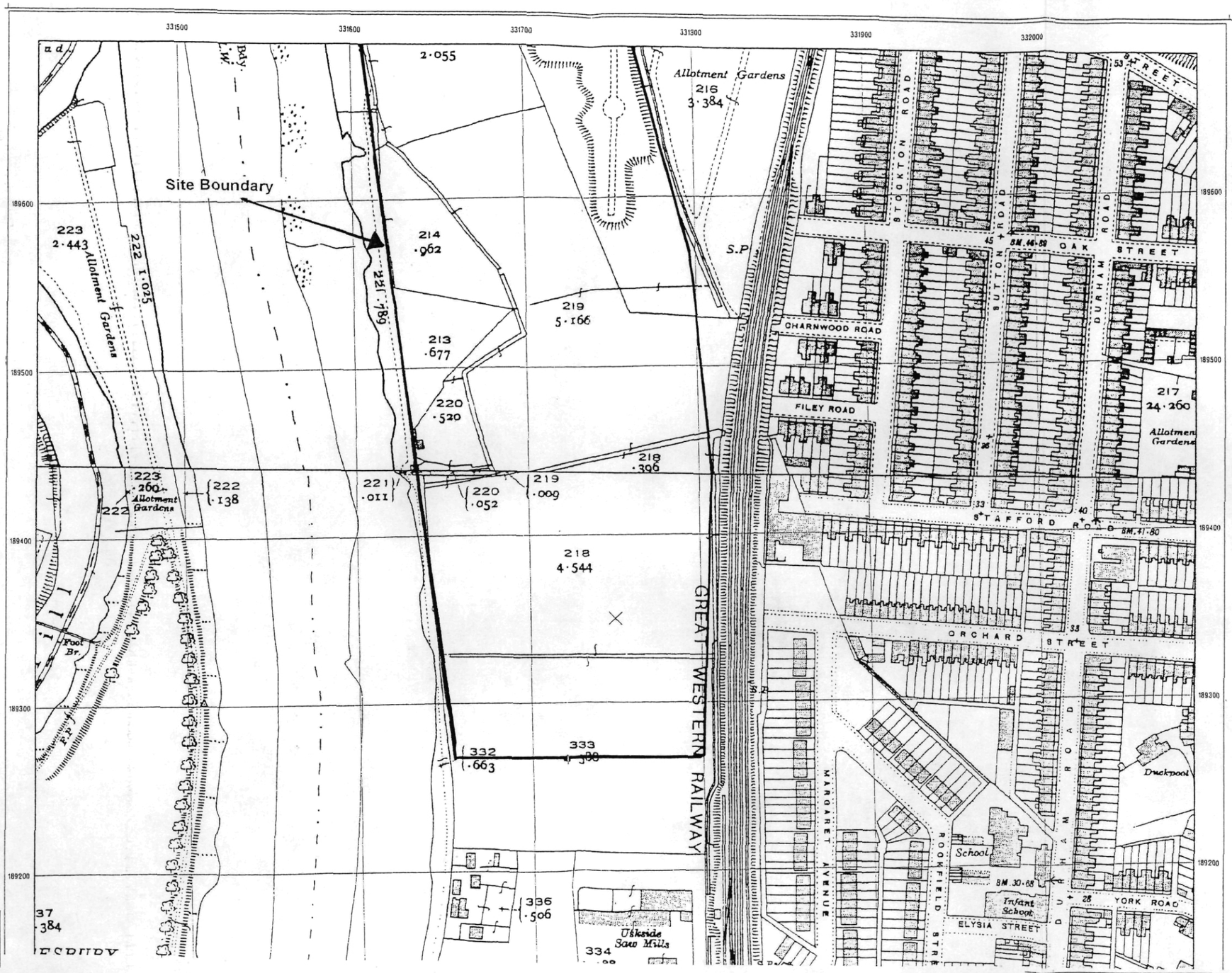

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Drawing Title:
1937 ORDNANCE SURVEY EXTRACT

Scale	Drawn By	Date	Checked By	Date	Approved By	Date
N.T.S	CBP	APRIL 2001	D.M.F	APRIL 2001	CP	APRIL 2001

Project No.	Office	Type	Drawing No.	Revision
E3808	4406	ENV	SK07	X

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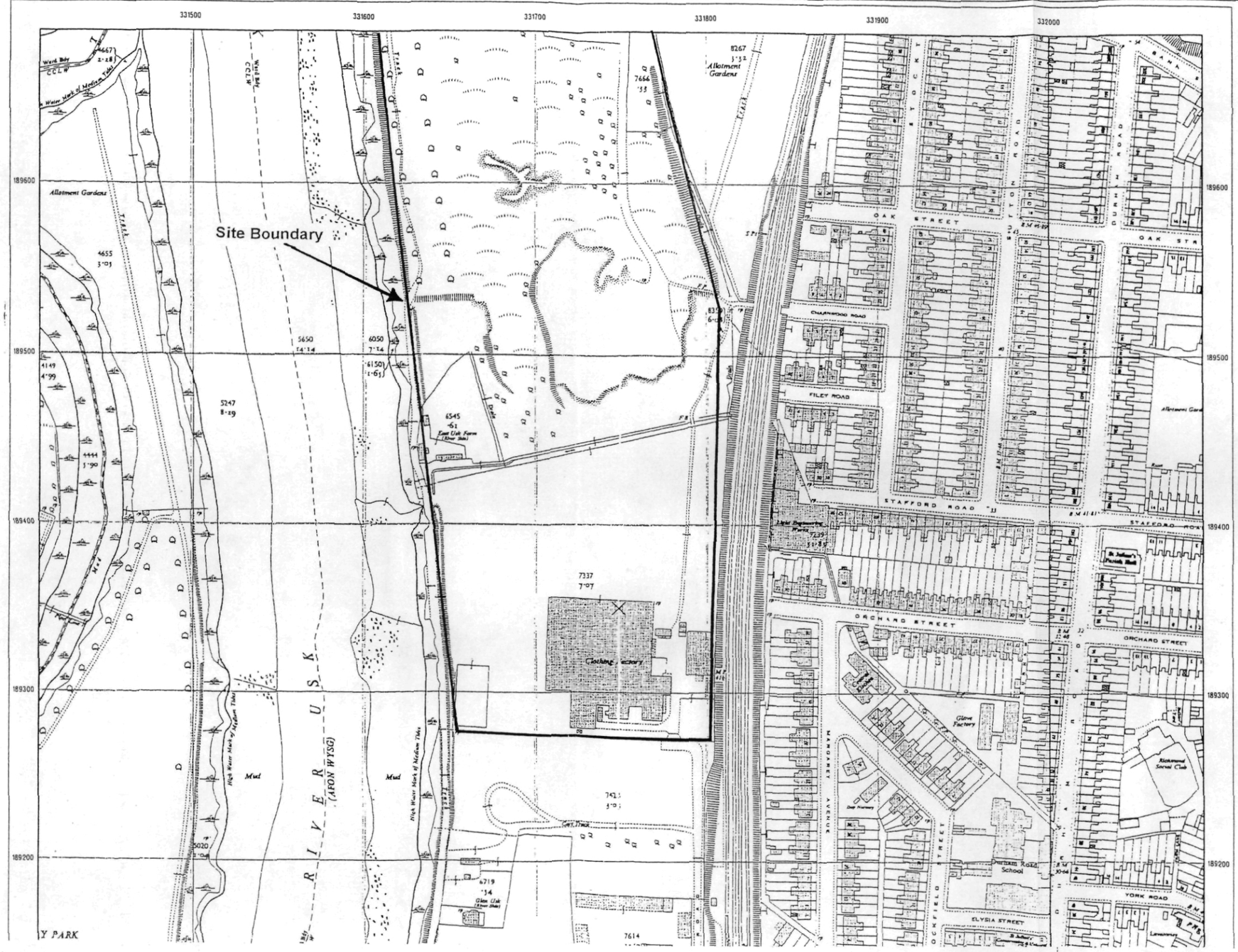

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Rev	Description	By	Chk	App	Date

Drawing Title:
1955 ORDNANCE SURVEY EXTRACT

Scale	Drawn By	Date	Checked By	Date	Approved By	Date
N.T.S	CBP	APRIL 2001	D.M.F	APRIL 2001	CP	APRIL 2001

Project No.	Office	Type	Drawing No.	Revision
E3808	4406	ENV	SK08	X

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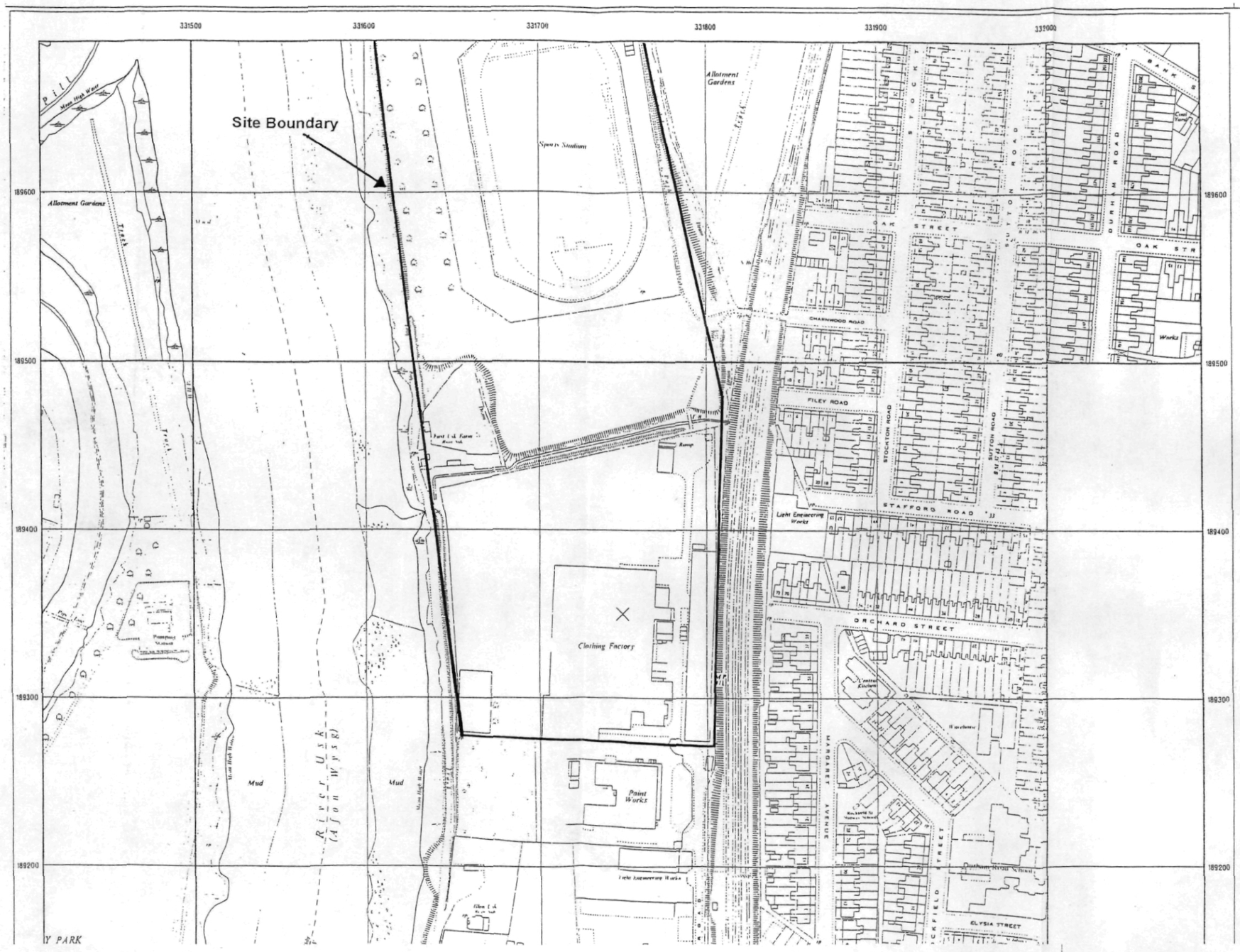

Rev	Description	By	Chk	App	Date

Drawing Title:
1966 ORDNANCE SURVEY EXTRACT

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Scale	Drawn By	Date	Checked By	Date	Approved By	Date
N.T.S	CBP	APRIL 2001	D.M.F	APRIL 2001	CP	APRIL 2001

Project No.	Office	Type	Drawing No.	Revision
E3808	4406	ENV	SK09	X

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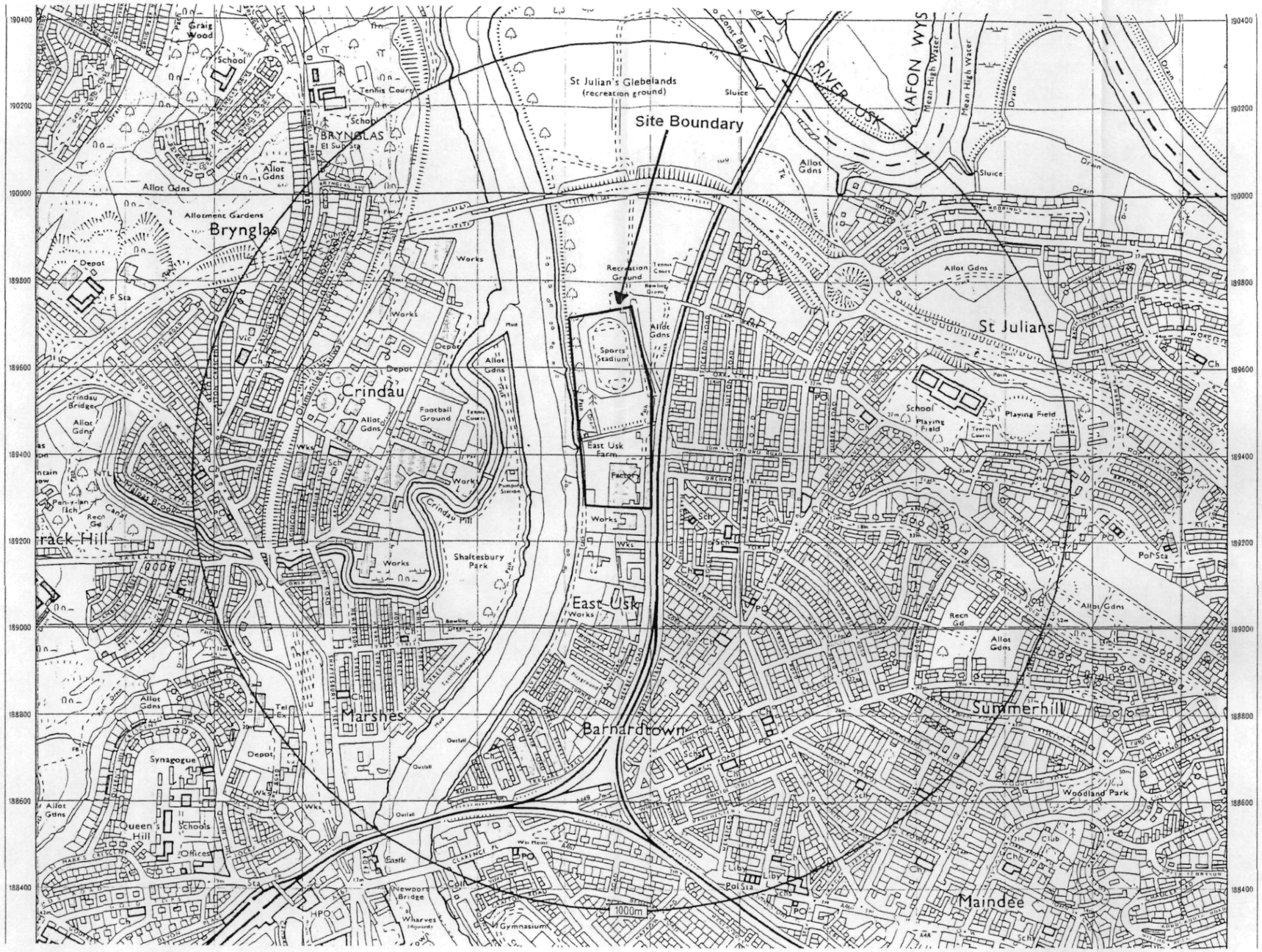

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Rev	Description	By	Chk	App	Date

Drawing Title:
1973 ORDNANCE SURVEY EXTRACT

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N.T.S	CBP	APRIL 2001	D.M.F	APRIL 2001	CP	APRIL 2001

Project No.	Office	Type	Drawing No.	Revision
E3808	4406	ENV	SK10	X

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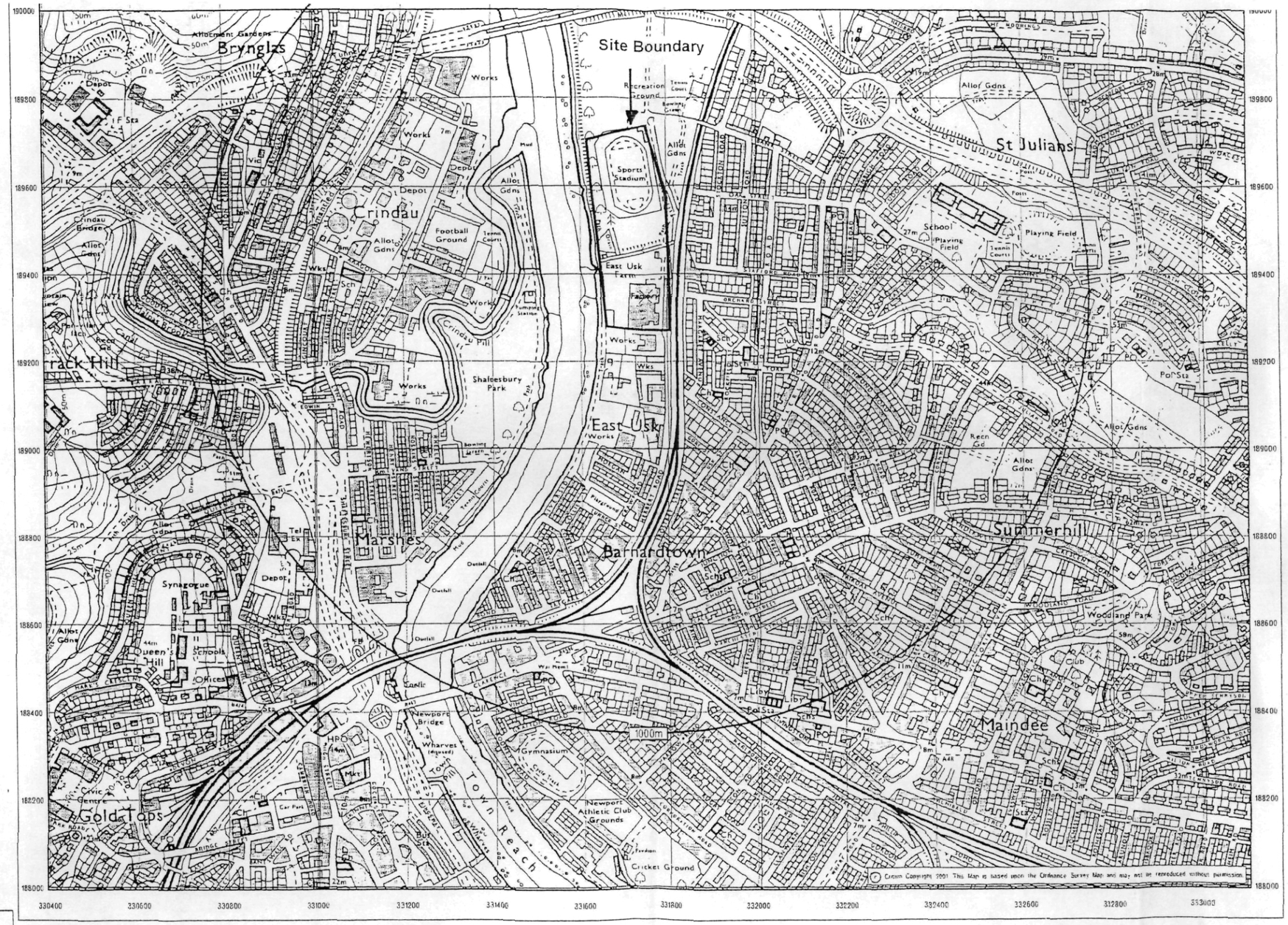

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Client
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Drawing Title:
1981 ORDNANCE SURVEY EXTRACT

Scale	Drawn By	Date	Checked By	Date	Approved By	Date
N.T.S	CBP	APRIL 2001	D.M.F	APRIL 2001	CP	APRIL 2001

Project No.	Office	Type	Drawing No.	Revision
E3808	4406	ENV	SK11	X

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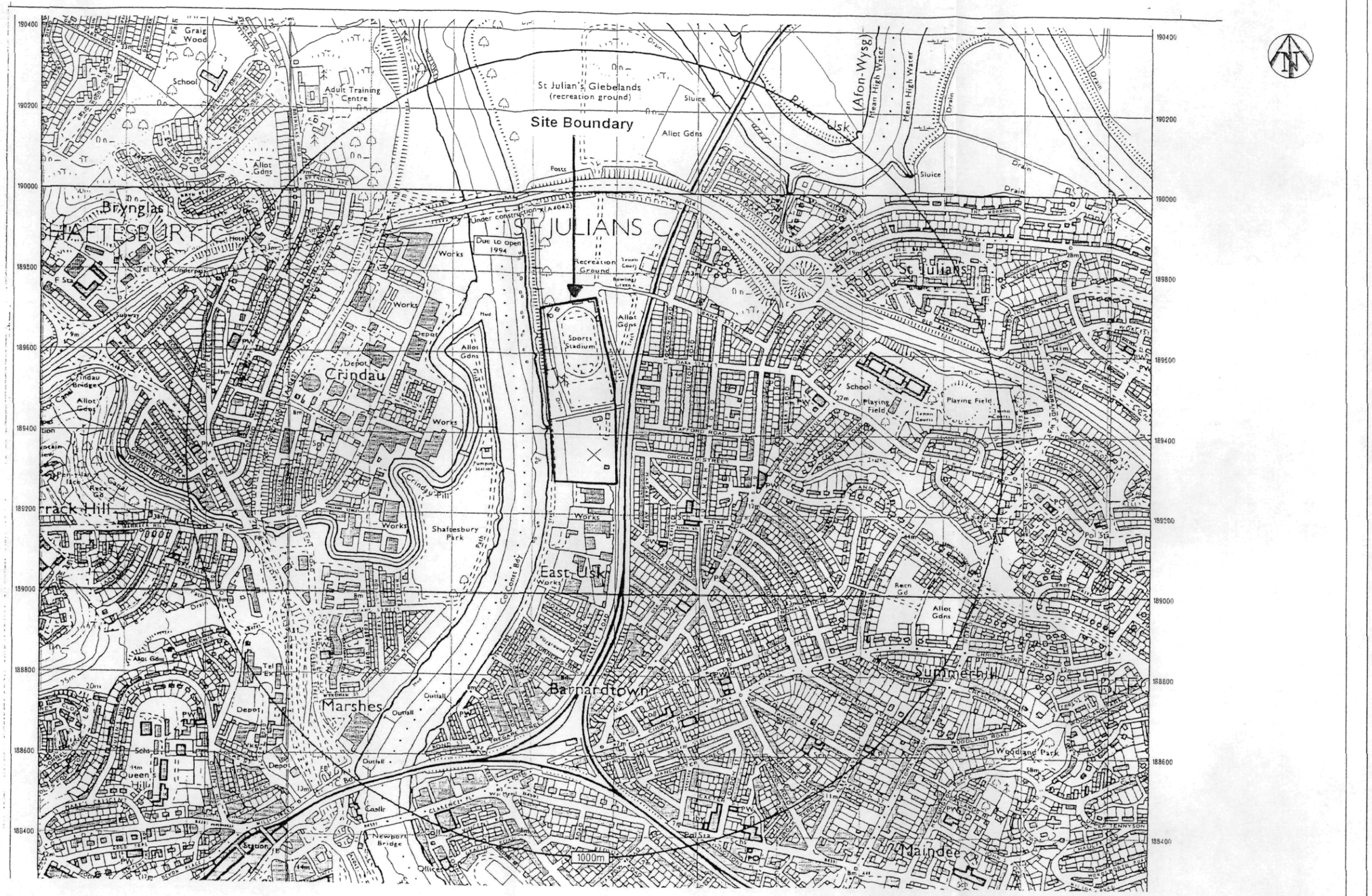

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Client
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Drawing Title:
1994 ORDNANCE SURVEY EXTRACT

Scale	Drawn By	Date	Checked By	Date	Approved By	Date
N.T.S	CBP	APRIL 2001	D.M.F	APRIL 2001	CP	APRIL 2001

Project No.	Office	Type	Drawing No.	Revision
E3808	4406	ENV	SK12	X

APPROVAL ☐ INFORMATION ☐ TENDER ☐ CONTRACT ☐ CONSTRUCTION ☐

APPENDIX A

REPORT CONDITIONS

(One A4 printed side)

WHITE YOUNG GREEN ENVIRONMENTAL

APPENDIX A - REPORT CONDITIONS

GROUND CONTAMINATION DESK TOP REVIEW

This report is produced solely for the benefit of Vinci Investments Limited and no liability is accepted for any reliance placed on it by any other party unless specifically agreed in writing otherwise

This report refers, within the limitations stated, to the condition of the site at the time of the inspections No warranty is given as to the possibility of future changes in the condition of the site

This report is based on a visual site inspection, reference to accessible referenced historical records, the physical investigation as detailed, information supplied by those parties referenced in the text, and preliminary discussions with local and statutory authorities Some of the opinions are based on unconfirmed data and information and are presented as the best that can be obtained without further extensive research Where ground contamination is suspected but no physical site test results are available to confirm this, the report must be regarded as initial advice only, and further assessment should be undertaken prior to detailed activities related to the site Where test results undertaken by others have been made available these can only be regarded as a limited sample The possibility of the presence of contaminants, perhaps in higher concentrations, elsewhere on the site cannot be discounted

Whilst confident in the findings detailed within this report reflect because there are no exact UK definitions of these matters, being subject to risk analysis, we are unable to give categoric assurances that they will be accepted by Authorities or Funds etc without question, as such bodies have unpublished, often more stringent objectives This report is prepared and written for the purposed uses stated in the report and should not be used in a different context without reference to WYGE In time improved practices or amended legislation may necessitate a re-assessment

The report is necessarily limited to those aspects of land contamination specifically reported on and is necessarily restricted and no liability is accepted for any other aspect especially concerning gradual or sudden pollution incidents that may occur The opinions expressed cannot be absolute due to the limitations of time and resources imposed by the agreed brief and the possibility of unrecorded previous use and abuse of the site and adjacent sites The report concentrates on the site as defined in the report and provides an opinion on surrounding sites If migrating pollution or contamination (past or present) exists this can only practically be better assessed following extensive on and off site intrusive investigations and monitoring

APPENDIX B

CONSULTATION CORRESPONDENCE

(Fifty-two A4 printed side)

1). Environmental Database Search

Introduction

The Environment Act 1995 has made site sensitivity a key issue as the legislation pays as much attention to the pathways by which contamination could spread and to the vulnerable targets of contamination as it does the potential sources of contamination For this reason Landmark s Site Sensitivity Data Sheet places great emphasis on statutory data provided by the Environment Agency and the Scottish Environment Protection Agency it also incorporates data from English Nature (and the Scottish and Welsh equivalents) the Environment Agency (and the Scottish equivalent) and Local Authorities and highlights hydrogeological features required by environmental and geotechnical consultants It does not include any information concerning past uses of land The datasheet is produced by querying the legend database to 1km from a single point provided by the client

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

Copyright Notice

Data Type	0 to 50m	51 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Agency & Hydrological				
Air Pollution Controls				7
Discharge Consents		3	3	7
Enforcement and Prohibition Notices				
Integrated Pollution Controls				
Nearest Surface Water Feature		Yes		
Pollution Incidents to Controlled Waters			8	5
Prosecutions Relating to Authorised Processes				
Prosecutions Relating to Controlled Waters				
Red List Discharge Consents				
Registered Radioactive Substances				
River Quality				
Water Abstractions				
Groundwater Vulnerability	Yes			
Waste				
BGS Recorded Landfill Sites				
Integrated Pollution Control Registered Waste Sites				
Registered Landfill Sites				2
Registered Waste Transfer Sites				1
Registered Waste Treatment or Disposal Sites				4
Hazardous Substances				
Control of Major Accident Hazards Sites (COMAH)				
Explosive Sites				
Notification of Installations Handling Hazardous Substances (NIHHS)				
Planning Hazardous Substance Consents				
Planning Hazardous Substance Enforcements				
Geological				
BGS Boreholes			2	114
BGS Recorded Mineral Sites				
BGS 1:625,000 Surface Geology	Yes			
Coal Mining Affected Areas				
Radon Affected Areas	Yes			

Data Type	0 to 50m	51 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Industrial Land Use				
Contemporary Trade Directory Entries		2	12	56
Fuel Station Entries				4
Post 1998 Planning Applications (of possible contaminative use)			2	10
Sensitive Land Uses				
Areas of Adopted Green Belt				
Areas of Unadopted Green Belt				
Areas of Outstanding Natural Beauty				
Enviromentally Sensitive Areas				
Forest Parks				
Local Nature Reserves				
Marine Nature Reserves				
National Nature Reserves				
National Parks				
National Scenic Areas				
Nitrate Sensitive Areas				
Nitrate Vulnerable Zones				
Ramsar Sites				
Sites of Special Scientific Interest		1		
Special Areas of Conservation		1		
Special Protection Areas				

Map ID	Details	Compass Direction	Estimated Distance From Site	Contact	NGR
	Air Pollution Controls				
1	Name: Lex Rover Location: Shaftesbury St,NEWPORT,Gwent,NP9 5XS Authority: Newport County Borough Council Permit Reference: APA/027/92 Dated: 26th May 1993 Process Type: Local Authority Air Pollution Control Description: PG6/34 Respraying of road vehicles Status: Authorisation either revoked or cancelled Positional Accuracy: Unknown	SW	821	1	331100 188850
	Air Pollution Controls				
2	Name: Sainsbury's Supermarkets Ltd Location: Wyndham Street,NEWPORT,Gwent,NP9 5JT Authority: Newport County Borough Council Permit Reference: APA/072/98 Dated: 31st December 1998 Process Type: Local Authority Air Pollution Control Description: PG 1/14 Petrol filling station Status: Application has been authorised and any conditions apply to the operator Positional Accuracy: Manually located to address	SW	930	1	331120 188660
	Air Pollution Controls				
3	Name: Stowe Woodward Ltd Location: East Usk Works,Tregare St,NEWPORT,NP9 7XE Authority: Newport County Borough Council Permit Reference: APA/024/92 Dated: 1st November 1993 Process Type: Local Authority Air Pollution Control Description: PG6/28 Rubber processes Status: Authorisation revoked Positional Accuracy: Automatically located to estate within address	S	747	1	331490 188650
	Air Pollution Controls				
4	Name: Shell Newport Location: Malpas Road,NEWPORT,Gwent,NP20 5PA Authority: Newport County Borough Council Permit Reference: APA/078/98 Dated: 31st December 1998 Process Type: Local Authority Air Pollution Control Description: PG 1/14 Petrol filling station Status: Application has been authorised and any conditions apply to the operator Positional Accuracy: Automatically located to estate within address	W	881	1	330880 189230
	Air Pollution Controls				
5	Name: Shell Casnewydd Location: 17-25 Chepstow Road,NEWPORT,Gwent,NP19 8BW Authority: Newport County Borough Council Permit Reference: Apa/084/98 Dated: 31st December 1998 Process Type: Local Authority Air Pollution Control Description: PG 1/14 Petrol filling station Status: Application has been authorised and any conditions apply to the operator Positional Accuracy: Automatically located to the address	S	843	1	331660 188510
	Air Pollution Controls				
6	Name: Caerleon Service Station Location: 20-22 Caerleon Road,NEWPORT,Gwent,NP Authority: Newport County Borough Council Permit Reference: APA/085/98 Dated: 31st December 1998 Process Type: Local Authority Air Pollution Control Description: PG 1/14 Petrol filling station Status: Application has been authorised and any conditions apply to the operator Positional Accuracy: Manually located to address	S	615	1	331840 188740

Map ID	Details		Compass Direction	Estimated Distance From Site	Contact	NGR
	Air Pollution Controls					
7	Name:	Newport Service Station	S	932	1	331940
	Location:	57-59 Chepstow Road,NEWPORT,Gwent,NP19 8BY				188440
	Authority:	Newport County Borough Council				
	Permit Reference:	APA/090/98				
	Dated:	31st December 1998				
	Process Type:	Local Authority Air Pollution Control				
	Description:	PG 1/14 Petrol filling station				
	Status:	Application has been authorised and any conditions apply to the operator				
	Positional Accuracy:	Automatically located to the address				
	Discharge Consents					
8	Operator:	DWR CYMRU CYFYNGEDIG	SW	260	2	331520
	Property Type:	Not Given				189230
	Location:	Shaftesbury Park Outfall,Newport				
	Authority:	Environment Agency				
	Catchment Area:	Not Given				
	Reference:	AA0025601				
	Issued:	18th April 1961				
	Discharge Type:	Sewage Effluent Discharge-Treated Effluent				
	Discharge Environment:	Saline Estuary				
	Receiving Water:	Usk Estuary				
	Positional Accuracy:	Located by supplier to within 100 m				
	Discharge Consents					
9	Operator:	Dwr Cymru Cyfyngedig	SW	187	2	331640
	Property Type:	Sewerage Network - Sewers				189200
	Location:	Cenotaph North Outfall,NEWPORT				
	Authority:	Environment Agency				
	Catchment Area:	Not Given				
	Reference:	AB0046701				
	Issued:	15th September 1965				
	Discharge Type:	Sewage Effluent Discharge-Crude Effluent				
	Discharge Environment:	Freshwater Estuary				
	Receiving Water:	Usk Estuary				
	Positional Accuracy:	Located by supplier to within 100 m				
	Discharge Consents					
10	Operator:	DWR CYMRU CYFYNGEDIG	SW	973	2	331170
	Property Type:	Not Given				188570
	Location:	Civic Outfall,Newport				
	Authority:	Environment Agency				
	Catchment Area:	Not Given				
	Reference:	AN0032001				
	Issued:	9th October 1992				
	Discharge Type:	Sewage Effluent Discharge-Crude Effluent				
	Discharge Environment:	Saline Estuary				
	Receiving Water:	Usk Estuary				
	Positional Accuracy:	Located by supplier to within 100 m				
	Discharge Consents					
11	Operator:	DWR CYMRU CYFYNGEDIG	SW	843	2	331240
	Property Type:	Not Given				188680
	Location:	Barracks Outfall,Newport				
	Authority:	Environment Agency				
	Catchment Area:	Not Given				
	Reference:	AN0031901				
	Issued:	9th October 1992				
	Discharge Type:	Sewage Effluent Discharge-Crude Effluent				
	Discharge Environment:	Saline Estuary				
	Receiving Water:	Usk Estuary				
	Positional Accuracy:	Located by supplier to within 100 m				

Map ID	Details		Compass Direction	Estimated Distance From Site	Contact	NGR
	Discharge Consents					
12	Operator:	Dwr Cymru Cyfyngedig	SW	739	2	331400 188700
	Property Type:	Sewerage Network - Sewers				
	Location:	Cenotaph South SSO ,Newport Urban Drainage Area				
	Authority:	Environment Agency				
	Catchment Area:	Not Given				
	Reference:	AC0122301				
	Issued:	23rd October 1981				
	Discharge Type:	Sewage Effluent Discharge-Storm Effluent				
	Discharge Environment:	Freshwater Stream/River				
	Receiving Water:	River Usk				
	Positional Accuracy:	Located by supplier to within 100 m				
	Discharge Consents					
13	Operator:	DWR CYMRU CYFYNGEDIG	W	234	2	331520 189310
	Property Type:	Not Given				
	Location:	Shaftesbury Pumped Outfall,Newport				
	Authority:	Environment Agency				
	Catchment Area:	Not Given				
	Reference:	AN0031401				
	Issued:	9th October 1992				
	Discharge Type:	Sewage Effluent Discharge-Crude Effluent				
	Discharge Environment:	Saline Estuary				
	Receiving Water:	Usk Estuary				
	Positional Accuracy:	Located by supplier to within 100 m				
	Discharge Consents					
14	Operator:	DWR CYMRU CYFYNGEDIG	NW	250	2	331600 189550
	Property Type:	Not Given				
	Location:	Newport Orchard Street Outfall				
	Authority:	Environment Agency				
	Catchment Area:	Not Given				
	Reference:	AN0035301				
	Issued:	9th October 1992				
	Discharge Type:	Sewage Effluent Discharge-Crude Effluent				
	Discharge Environment:	Saline Estuary				
	Receiving Water:	Usk Estuary				
	Positional Accuracy:	Located by supplier to within 100 m				
	Discharge Consents					
15	Operator:	Dwr Cymru Cyfyngedig	S	750	2	331510 188640
	Property Type:	Sewerage Network - Sewers				
	Location:	Tregare Street / Railway Bridge,NEWPORT				
	Authority:	Environment Agency				
	Catchment Area:	Not Given				
	Reference:	AN0159501				
	Issued:	13th December 1991				
	Discharge Type:	Sewage Effluent Discharge-Storm Effluent				
	Discharge Environment:	Freshwater Stream/River				
	Receiving Water:	River Usk				
	Positional Accuracy:	Located by supplier to within 100 m				
	Discharge Consents					
16	Operator:	Dwr Cymru Cyfyngedig	W	901	2	330870 189160
	Property Type:	Sewerage Network - Sewers				
	Location:	Barrack Hill,NEWPORT				
	Authority:	Environment Agency				
	Catchment Area:	Not Given				
	Reference:	AN0158301				
	Issued:	13th December 1991				
	Discharge Type:	Sewage Effluent Discharge-Storm Effluent				
	Discharge Environment:	Freshwater Stream/River				
	Receiving Water:	Crindau Pill				
	Positional Accuracy:	Located by supplier to within 100 m				

Map ID	Details		Compass Direction	Estimated Distance From Site	Contact	NGR
	Discharge Consents					
17	Operator:	Dwr Cymru Cyfyngedig	E	412	2	332140 189220
	Property Type:	Sewerage Network - Sewers				
	Location:	Risca Road ,(Caerleon Road /Richmond Road),NEWPORT				
	Authority:	Environment Agency				
	Catchment Area:	Not Given				
	Reference:	AN0159301				
	Issued:	13th December 1991				
	Discharge Type:	Sewage Effluent Discharge-Storm Effluent				
	Discharge Environment:	Pond/Lake				
	Receiving Water:	Gaer Pond				
	Positional Accuracy:	Located by supplier to within 100 m				
	Discharge Consents					
18	Operator:	Dwr Cymru Cyfyngedig	E	459	2	332200 189260
	Property Type:	Sewerage Network - Sewers				
	Location:	St Julians Road Opposite No 1,NEWPORT				
	Authority:	Environment Agency				
	Catchment Area:	Not Given				
	Reference:	AN0159401				
	Issued:	13th December 1991				
	Discharge Type:	Sewage Effluent Discharge-Storm Effluent				
	Discharge Environment:	Pond/Lake				
	Receiving Water:	Gaer Pond				
	Positional Accuracy:	Located by supplier to within 100 m				
	Discharge Consents					
19	Operator:	Dwr Cymru Cyfyngedig	NW	900	2	330960 189780
	Property Type:	Sewerage Network - Sewers				
	Location:	Brynglas Road,NEWPORT				
	Authority:	Environment Agency				
	Catchment Area:	Not Given				
	Reference:	AN0158201				
	Issued:	13th December 1991				
	Discharge Type:	Sewage Effluent Discharge-Storm Effluent				
	Discharge Environment:	Freshwater Stream/River				
	Receiving Water:	Crindau Pill				
	Positional Accuracy:	Located by supplier to within 100 m				
	Discharge Consents					
20	Operator:	Dwr Cymru Cyfyngedig	NE	989	2	332220 190220
	Property Type:	Sewerage Network - Sewers				
	Location:	Julians Outfall,Newport Street				
	Authority:	Environment Agency				
	Catchment Area:	Not Given				
	Reference:	AC0089801				
	Issued:	20th December 1973				
	Discharge Type:	Sewage Effluent Discharge-Crude Effluent				
	Discharge Environment:	Freshwater Estuary				
	Receiving Water:	Usk Estuary				
	Positional Accuracy:	Located by supplier to within 100 m				
	Pollution Incidents to Controlled Waters					
21	Property Type:	Waste Handling Facilities	W	475	2	331300 189200
	Location:	Ronton Haulage,At Rear Of New Rising Sun				
	Authority:	Environment Agency				
	Pollutant:	Chemicals - Other Inorganic				
	Note:	Poor Operational Practise				
	Incident Date:	6th March 1991				
	Incident Reference:	62				
	Catchment Area:	Not Given				
	Receiving Water:	Not Given				
	Cause of Incident:	Direct Discharge				
	Severity of Incident:	Category 2 - Significant Incident				
	Positional Accuracy:	Located by supplier to within 100 m				

Map ID	Details		Compass Direction	Estimated Distance From Site	Contact	NGR
	Pollution Incidents to Controlled Waters					
21	Property Type:	Waste Handling Facilities	W	476	2	331300 189200
	Location:	Ronton Haulage,At Rear Of New Rising Sun				
	Authority:	Environment Agency				
	Pollutant:	Chemicals - Other Inorganic				
	Note:	Poor Operational Practise				
	Incident Date:	13th March 1991				
	Incident Reference:	117				
	Catchment Area:	Not Given				
	Receiving Water:	Not Given				
	Cause of Incident:	Direct Discharge				
	Severity of Incident:	Category 2 - Significant Incident				
	Positional Accuracy:	Located by supplier to within 100 m				
	Pollution Incidents to Controlled Waters					
21	Property Type:	Waste Handling Facilities	W	472	2	331310 189200
	Location:	Ronton Haulage,Rear Of Albany Street				
	Authority:	Environment Agency				
	Pollutant:	Farm Effluent/Slurry				
	Note:	Poor Operational Practise				
	Incident Date:	13th March 1991				
	Incident Reference:	117				
	Catchment Area:	Not Given				
	Receiving Water:	Not Given				
	Cause of Incident:	Direct Discharge				
	Severity of Incident:	Category 2 - Significant Incident				
	Positional Accuracy:	Located by supplier to within 100 m				
	Pollution Incidents to Controlled Waters					
21	Property Type:	Waste Handling Facilities	W	470	2	331310 189200
	Location:	Bakery				
	Authority:	Environment Agency				
	Pollutant:	Light Oil				
	Note:	Poor Operational Practise				
	Incident Date:	6th March 1991				
	Incident Reference:	62				
	Catchment Area:	Not Given				
	Receiving Water:	Not Given				
	Cause of Incident:	Direct Discharge				
	Severity of Incident:	Category 2 - Significant Incident				
	Positional Accuracy:	Located by supplier to within 100 m				
	Pollution Incidents to Controlled Waters					
22	Property Type:	Not Given	NW	515	2	331500 189800
	Location:	Adjacent To M4,Brynglas Road,Tunnels				
	Authority:	Environment Agency				
	Pollutant:	Unknown				
	Note:	Not Supplied				
	Incident Date:	3rd April 1992				
	Incident Reference:	3471				
	Catchment Area:	Not Given				
	Receiving Water:	Not Given				
	Cause of Incident:	Unknown				
	Severity of Incident:	Category 3 - Minor Incident				
	Positional Accuracy:	Located by supplier to within 100 m				
	Pollution Incidents to Controlled Waters					
23	Property Type:	Miscellaneous Premises: Surface Runoff	SE	605	2	332000 188800
	Location:	Gamborinis Garage Church				
	Authority:	Environment Agency				
	Pollutant:	Industrial Solid Waste				
	Note:	Deliberate Act				
	Incident Date:	8th November 1991				
	Incident Reference:	994				
	Catchment Area:	Not Given				
	Receiving Water:	Not Given				
	Cause of Incident:	Direct Discharge				
	Severity of Incident:	Category 2 - Significant Incident				
	Positional Accuracy:	Located by supplier to within 100 m				

Map ID	Details	Compass Direction	Estimated Distance From Site	Contact	NGR
	Pollution Incidents to Controlled Waters				
24	Property Type: Not Given Location: Castle Bridge,NEWPORT Authority: Environment Agency Pollutant: Unknown Note: Not Supplied Incident Date: 8th May 1991 Incident Reference: 397 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Overflow Severity of Incident: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100 m	S	791	2	331500 188600
	Pollution Incidents to Controlled Waters				
25	Property Type: Water Company Sewage: Surface Water Outfall Location: Shaftsbury,NEWPORT Authority: Environment Agency Pollutant: Crude Sewage Note: Not Supplied Incident Date: 14th October 1994 Incident Reference: 21487 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Runoff Severity of Incident: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100 m	W	401	2	331350 189330
	Pollution Incidents to Controlled Waters				
26	Property Type: Not Given Location: Turner Street,NEWPORT Authority: Environment Agency Pollutant: Unknown Note: Not Supplied Incident Date: 10th August 1994 Incident Reference: 20892 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Severity of Incident: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100 m	S	258	2	331810 189100
	Pollution Incidents to Controlled Waters				
27	Property Type: Not Given Location: Glebelands Park,NEWPORT Authority: Environment Agency Pollutant: Coal Solids Note: Not Supplied Incident Date: 22nd September 1995 Incident Reference: 26280 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Severity of Incident: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100 m	NW	461	2	331450 189700
	Pollution Incidents to Controlled Waters				
28	Property Type: Not Given Location: Caerleon Road Authority: Environment Agency Pollutant: Crude Sewage Note: Not Supplied Incident Date: 15th December 1994 Incident Reference: 22212 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Severity of Incident: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100 m	SW	425	2	331510 189000

Map ID	Details	Compass Direction	Estimated Distance From Site	Contact	NGR
	Pollution Incidents to Controlled Waters				
29	Property Type: Not Given Location: Castle Bridge,NEWPORT Authority: Environment Agency Pollutant: Unknown Note: Not Supplied Incident Date: 3rd March 1997 Incident Reference: 31552 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Severity of Incident: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100 m	SW	985	2	331350 188450
	Pollution Incidents to Controlled Waters				
30	Property Type: Not Given Location: Kwik Fit Tyres,Clarence Place,NEWPORT Authority: Environment Agency Pollutant: Foam/Soap Suds Note: Vandalism; Boundary Of Ha 56 & Ha 57 Incident Date: 10th September 1998 Incident Reference: 36833 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Runoff Severity of Incident: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100 m	SW	962	2	331300 188500
	Water Abstractions				
	Operator: Newport Angling Association Licence Number: 20/56/11/0018 Location: Location Description Not Available Authority: Environment Agency Abstraction: Sports Grounds/Facilities: Make-Up Or Top Up Water Source: Surface Daily Rate (m3): 545 Yearly Rate (m3): 199115 Details: Malpas Brook Trib To Lake Positional Accuracy: Located by supplier to within 100 m	W	1983	2	329870 189980
	Water Abstractions				
	Operator: Pirelli Cables Licence Number: 20/56/11/0015 Location: Location Description Not Available Authority: Environment Agency Abstraction: General Industrial Source: Well And Borehole Daily Rate (m3): 0 Yearly Rate (m3): 0 Details: Not Supplied Positional Accuracy: Located by supplier to within 100 m	SE	1635	2	332610 187960
	Water Abstractions				
	Operator: Pirelli Cables Licence Number: 20/56/11/0015 Location: Location Description Not Available Authority: Environment Agency Abstraction: General Industrial Source: Groundwater Daily Rate (m3): 0 Yearly Rate (m3): 0 Details: Not Supplied Positional Accuracy: Located by supplier to within 100 m	SE	1639	2	332610 187960

Map ID	Details	Compass Direction	Estimated Distance From Site	Contact	NGR
	Water Abstractions				
	Operator: British Waterways Board Licence Number: 20/56/11/0016 Location: Location Description Not Available Authority: *Environment Agency* Abstraction: Sports Grounds/Facilities: Make-Up Or Top Up Water Source: Surface Daily Rate (m3): 364 Yearly Rate (m3): 132727 Details: Malpas Brook Canal Feeder To Npt. Angling. Positional Accuracy: Located by supplier to within 100 m	W	1807	2	330080 190040
	Water Abstractions				
	Operator: Newport Borough Council Licence Number: 20/56/11/0014 Location: Location Description Not Available Authority: Environment Agency Abstraction: Golf Courses: Spray Irrigation - Direct Source: Surface Daily Rate (m3): 36 Yearly Rate (m3): 5564.3 Details: Spring And Pond At Caerleon Golf Course Positional Accuracy: Located by supplier to within 100 m	NE	1831	2	333220 190440
	Groundwater Vulnerability				
	Geological Classification: Minor Aquifer (Variably permeable) - These can be fractured or potentially fractured rocks, which do not have a high primary permeability, or other formations of variable *permeability including unconsolidated deposits.* Although not producing large quantities of water for abstraction, they are important for local supplies and in supplying base flow to rivers Soil Classification: Soils of High Leaching Potential (U) - Soil information for restored mineral workings and urban areas is based on fewer observations than elsewhere. A worst case vulnerability classification (H) assumed, until proved otherwise Map Sheet: Sheet 36 Mid Glamorgan Scale: 1:100,000	-	0	3	331750 189350
	Drift Deposits				
	Drift Deposit: Low permeability drift deposits occuring at the surface and overlying Major and Minor Aquifers are head, clay-with-flints, brickearth, peat, river terrace deposits and marine and estuarine alluvium Map Sheet: Sheet 36 Mid Glamorgan Scale: 1:100,000	-	0	3	331750 189350

Map ID	Details	Compass Direction	Estimated Distance From Site	Contact	NGR
	Registered Landfill Sites				
31	Licence Holder: R A Baker Licence Reference: 017/77 Site Location: Pillmawr Farm Pill,Pillmawr Road,NEWPORT,Gwent Operator Location: 22 Yewberry Lane,Malpas,NEWPORT,Gwent Authority: Environment Agency - Welsh Region Site Category: Landfill Maximum Input Rate: Undefined Waste Source Restrictions: No known restriction on source of waste Licence Status: Licence lapsed/cancelled/defunct/not applicable/surrendered Dated: 1st September 1977 Preceded By Licence: Not Given Superceded By Licence: Not Given Positional Accuracy: Approximate location *provided by supplier* Waste Types on Site: Authorised Waste: Excavated Natural Materials $ Hardcore And Rubble Inert Waste	N	958	4	331200 190700
	Registered Landfill Sites				
32	Licence Holder: Douglas Plant Ltd Licence Reference: 027/80 Site Location: Riverbank,Ebbw Vale Wharf,NEWPORT,Gwent Operator Location: 209 Walsall Road,Perry Bar,BIRMINGHAM,West Midlands,B42 1BS Authority: Environment Agency - Welsh Region Site Category: Landfill Maximum Input Rate: Undefined Waste Source Restrictions: Only waste produced on site Licence Status: Licence lapsed/cancelled/defunct/not applicable/surrendered Dated: 1st September 1980 Preceded By Licence: Not Given Superceded By Licence: Not Given Positional Accuracy: Manually located to road within address Waste Types on Site: Authorised Waste: *Hardcore And Rubble* Inert Waste	S	981	4	331570 187880
	Registered Waste Transfer Sites				
33	Licence Holder: Leighton Carter Insulation Co Ltd Licence Reference: 045A/90 Site Location: 25 Argyle Street,NEWPORT,Gwent,NP9 5NF Operator Location: as site address Authority: Environment Agency - Welsh Region Site Category: Transfer Maximum Input Rate: Very Small (<10,000 tonnes/year) Waste Source Restrictions: No known restriction on source of waste Licence Status: Operational as far as is known Dated: 8th February 1990 Preceded By Licence: Not Given Superceded By Licence: Not Given Positional Accuracy: Manually located to address Waste Types on Site: Authorised Waste: Bagged Asbestos Waste	W	682	4	331070 189310

Map ID	Details		Compass Direction	Estimated Distance From Site	Contact	NGR
	Registered Waste Treatment or Disposal Sites					
34	Licence Holder:	W Harold John (Metals) Ltd	SW	605	4	331200 189100
	Licence Reference:	SDL/001/93				
	Site Location:	Site adj. Rumbelows,Adelaide Street,NEWPORT,Gwent				
	Operator Location:	*as site address*				
	Authority:	Environment Agency - Welsh Region				
	Site Category:	Scrapyard				
	Maximum Input Rate:	Small (<25,000 tonnes/year)				
	Waste Source Restrictions:	No known restriction on source of waste				
	Licence Status:	Site exempt from licence				
	Dated:	1st March 1993				
	Preceded By Licence:	Not Given				
	Superceded By Licence:	Not Given				
	Positional Accuracy:	Approximate location provided by supplier				
	Waste Types on Site:					
	Authorised Waste	Aluminium Dross Max.Stor Aluminium Swarf Max.Stor Max.Waste Permitted By Licence Other Non-Ferrous Metals Max.Stor				
	Registered Waste Treatment or Disposal Sites					
35	Licence Holder:	W Harold John (Metals) Ltd	W	571	4	331200 189200
	Licence Reference:	SDL/002/93				
	Site Location:	Site adj. Lovells,Adelaide Street,NEWPORT,Gwent				
	Operator Location:	as site address				
	Authority:	Environment Agency - Welsh Region				
	Site Category:	Scrapyard				
	Maximum Input Rate:	Small (<25,000 tonnes/year)				
	Waste Source Restrictions:	No known restriction on source of waste				
	Licence Status:	Site exempt from licence				
	Dated:	1st March 1993				
	Preceded By Licence:	Not Given				
	Superceded By Licence:	Not Given				
	Positional Accuracy:	Approximate location provided by supplier				
	Waste Types on Site:					
	Authorised Waste	Aluminium Dross Max.Stor Aluminium Swarf Max.Stor *Electrical Cable Max.Stor* Max.Waste Permitted By Licence Other Non-Ferrous Metals Max.Stor Steel Max.Stor				

Map ID	Details	Compass Direction	Estimated Distance From Site	Contact	NGR
	Registered Waste Treatment or Disposal Sites				
36	Licence Holder: Newport Smelting (1983) Ltd Licence Reference: SDL 10/93 Site Location: Abbey Works,Albany Street,Crindau,NEWPORT,Gwent,NP9 5NJ Operator Location: as site address Authority: Environment Agency - Welsh Region Site Category: Scrapyard Maximum Input Rate: Very Small (<10,000 tonnes/year) Waste Source Restrictions: No known restriction on source of waste Licence Status: Licence lapsed/cancelled/defunct/not applicable/surrendered Dated: 1st December 1993 Preceded By Licence: Not Given Superceded By Licence: Not Given Positional Accuracy: Manually located to road within address Waste Types on Site: Authorised Waste: Aluminium Dross Max.Stor. Batteries Max.Stor. Commercial Waste Max.Stor. Electrical Cable Max.Stor. Electrical Equipment Max.Stor. Engines Max.Stor. Ferrous Metal Swarf Max.Stor. Machinery Max.Stor. Max.Annual Waste Accepted By Licence Non-Ferrous Metal Swarf Max.Stor. Prohibited Waste: Percussive/Explosive/Similar Waste Special Wastes Sub'S Control. Radioactive Subs Act'60 W.Contain.Flammable Liqs,Incl.Petrol	W	578	4	331180 189260
	Registered Waste Treatment or Disposal Sites				
37	Licence Holder: S J Bull Licence Reference: SDL 05/93 Site Location: Albany Trading Estate,Albany Street,NEWPORT,Gwent,NP9 5XX Operator Location: 26 Green Meadow Drive,Penhow,NEWPORT,Gwent,NP6 3AW Authority: Environment Agency - Welsh Region Site Category: Scrapyard Maximum Input Rate: Very Small (<10,000 tonnes/year) Waste Source Restrictions: No known restriction on source of waste Licence Status: Site exempt from licence Dated: 1st December 1993 Preceded By Licence: Not Given Superceded By Licence: Not Given Positional Accuracy: Approximate location provided by supplier Waste Types on Site: Authorised Waste: Non-Ferrous Metals Max.Stor. Waste Paper Tape Max.Stor. Prohibited Waste: Percussive/Explosive/Similar Waste Special Wastes Sub'S Control. Radioactive Subs Act'60 Waste Contain.Flamm.Liqs,Incl.Petrol	W	668	4	331100 189200

Map ID	Details	Compass Direction	Estimated Distance From Site	Contact	NGR
	BGS Boreholes				
38	BGS Reference: St38nw74/A Drilled Length (m): 13.48 Borehole Name: 450yds Nne Newport Castle	SW	555	5	331510 188850
	BGS Boreholes				
38	BGS Reference: St38nw74/B Drilled Length (m): 12.95 Borehole Name: 430yds Nne Newport Castle	SW	573	5	331490 188840
	BGS Boreholes				
39	BGS Reference: St38nw29 Drilled Length (m): 14.33 Borehole Name: Newport-Mon By-Pass. 81	N	644	5	331760 189990
	BGS Boreholes				
39	BGS Reference: St38nw169 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 135	N	631	5	331740 189980
	BGS Boreholes				
40	BGS Reference: St38nw25 Drilled Length (m): 10.06 Borehole Name: Newport-Mon By-Pass. 75	N	649	5	331520 189950
	BGS Boreholes				
40	BGS Reference: St38nw27 Drilled Length (m): 8.53 Borehole Name: Newport-Mon By-Pass. 77	N	665	5	331540 189980
	BGS Boreholes				
40	BGS Reference: St38nw28 Drilled Length (m): 17.37 Borehole Name: Newport-Mon By-Pass. 80	N	655	5	331600 189990
	BGS Boreholes				
40	BGS Reference: St38nw166 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 131	N	633	5	331560 189960
	BGS Boreholes				
41	BGS Reference: St38nw31 Drilled Length (m): 6.1 Borehole Name: Newport-Mon By-Pass. 83	NE	672	5	332190 189860
	BGS Boreholes				
41	BGS Reference: St38nw174 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 142	NE	634	5	332170 189830
	BGS Boreholes				
42	BGS Reference: St38nw170 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 137	N	649	5	331980 189960
	BGS Boreholes				
42	BGS Reference: St38nw171 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 139	NE	639	5	332010 189930
	BGS Boreholes				
43	BGS Reference: St38nw30 Drilled Length (m): 6.1 Borehole Name: Newport-Mon By-Pass. 82	N	679	5	331980 189990
	BGS Boreholes				
43	BGS Reference: St38nw191 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Tp 125	N	642	5	331950 189960

Map ID	Details	Compass Direction	Estimated Distance From Site	Contact	NGR
44	**BGS Boreholes** BGS Reference: St38nw168 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 134c	N	643	5	331630 189980
44	**BGS Boreholes** BGS Reference: St39sw180 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 134a	N	688	5	331630 190030
45	**BGS Boreholes** BGS Reference: St38nw22 Drilled Length (m): 12.19 Borehole Name: Newport-Mon By-Pass. 72	NW	677	5	331450 189950
45	**BGS Boreholes** BGS Reference: St38nw163 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 128	NW	671	5	331390 189920
45	**BGS Boreholes** BGS Reference: St38nw164 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 129 Odex	NW	653	5	331430 189920
46	**BGS Boreholes** BGS Reference: St38nw23 Drilled Length (m): 10.36 Borehole Name: Newport-Mon By-Pass. 73	NW	684	5	331470 189970
46	**BGS Boreholes** BGS Reference: St38nw26 Drilled Length (m): 10.06 Borehole Name: Newport-Mon By-Pass. 76	N	678	5	331500 189980
46	**BGS Boreholes** BGS Reference: St38nw24 Drilled Length (m): 10.06 Borehole Name: Newport-Mon By-Pass. 74	NW	656	5	331480 189950
47	**BGS Boreholes** BGS Reference: St39sw178 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 132	N	683	5	331550 190000
47	**BGS Boreholes** BGS Reference: St39sw179 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 134	N	698	5	331600 190030
48	**BGS Boreholes** BGS Reference: St38nw35 Drilled Length (m): 10.06 Borehole Name: Newport-Mon By-Pass. 86	NE	693	5	332340 189710
48	**BGS Boreholes** BGS Reference: St38nw36 Drilled Length (m): 5.18 Borehole Name: Newport-Mon By-Pass. 87	NE	734	5	332380 189730
49	**BGS Boreholes** BGS Reference: St38nw172 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 140	NE	704	5	332030 189990
49	**BGS Boreholes** BGS Reference: St39sw182 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 138	N	715	5	331980 190030

Map ID	Details	Compass Direction	Estimated Distance From Site	Contact	NGR
49	**BGS Boreholes** BGS Reference: St39sw202 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Tp 126	N	698	5	331990 190000
50	**BGS Boreholes** BGS Reference: St38nw21 Drilled Length (m): 18.9 Borehole Name: Newport-Mon By-Pass. 69	NW	700	5	331380 189950
50	**BGS Boreholes** BGS Reference: St38nw162 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 127 Odex	NW	747	5	331350 189980
50	**BGS Boreholes** BGS Reference: St38nw165 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 130 Odex	NW	709	5	331420 189980
51	**BGS Boreholes** BGS Reference: St38nw152 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 114a	NW	707	5	331140 189710
51	**BGS Boreholes** BGS Reference: St38nw184 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Tp 105	NW	709	5	331140 189710
51	**BGS Boreholes** BGS Reference: St38nw185 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Tp 106	NW	737	5	331130 189740
52	**BGS Boreholes** BGS Reference: St38nw151 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 114	W	756	5	331050 189630
52	**BGS Boreholes** BGS Reference: St38nw183 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Tp 104b	W	718	5	331090 189620
53	**BGS Boreholes** BGS Reference: St38nw153 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 115	NW	722	5	331180 189790
53	**BGS Boreholes** BGS Reference: St38nw154 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 115a	NW	727	5	331210 189830
53	**BGS Boreholes** BGS Reference: St38nw186 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Tp 107	NW	747	5	331180 189830
54	**BGS Boreholes** BGS Reference: St38nw20 Drilled Length (m): 18.59 Borehole Name: Newport-Mon By-Pass. 68	NW	731	5	331320 189940
54	**BGS Boreholes** BGS Reference: St38nw158 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 126 Odex	NW	744	5	331320 189960

Map ID	Details	Compass Direction	Estimated Distance From Site	Contact	NGR
54	**BGS Boreholes** BGS Reference: St38nw159 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 126a	NW	763	5	331290 189960
54	**BGS Boreholes** BGS Reference: St38nw160 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 126a1	NW	763	5	331290 189960
55	**BGS Boreholes** BGS Reference: St38nw18 Drilled Length (m): 3.05 Borehole Name: Newport-Mon By-Pass. 66	NW	744	5	331250 189900
55	**BGS Boreholes** BGS Reference: St38nw155 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 115b	NW	754	5	331220 189890
55	**BGS Boreholes** BGS Reference: St38nw156 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 116	NW	778	5	331230 189920
55	**BGS Boreholes** BGS Reference: St38nw157 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 117	NW	774	5	331240 189930
55	**BGS Boreholes** BGS Reference: St38nw175 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh Ci	NW	767	5	331220 189910
55	**BGS Boreholes** BGS Reference: St38nw176 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh Cib	NW	769	5	331220 189900
55	**BGS Boreholes** BGS Reference: St38nw177 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh C2	NW	765	5	331230 189910
55	**BGS Boreholes** BGS Reference: St38nw178 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh C3	NW	761	5	331230 189910
55	**BGS Boreholes** BGS Reference: St38nw188 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Tp 108	NW	785	5	331200 189910
55	**BGS Boreholes** BGS Reference: St38nw196 Drilled Length (m): 15 Borehole Name: Brynglas Tunnels Bh3	NW	754	5	331210 189870
55	**BGS Boreholes** BGS Reference: St38nw19 Drilled Length (m): 11.58 Borehole Name: Newport-Mon By-Pass. 67	NW	762	5	331250 189920
56	**BGS Boreholes** BGS Reference: St38nw182 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Tp 104	W	763	5	331030 189600

Map ID	Details	Compass Direction	Estimated Distance From Site	Contact	NGR
	BGS Boreholes				
56	BGS Reference: St38nw197 Drilled Length (m): 2 Borehole Name: Brynglas Tunnels Tp1	W	749	5	331040 189580
	BGS Boreholes				
57	BGS Reference: St38nw150 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 113	W	780	5	330980 189470
	BGS Boreholes				
57	BGS Reference: St38nw180 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Tp 102	W	800	5	330950 189420
	BGS Boreholes				
57	BGS Reference: St38nw181 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Tp 103	W	765	5	330990 189450
	BGS Boreholes				
58	BGS Reference: St38nw161 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 126b	NW	783	5	331310 190000
	BGS Boreholes				
58	BGS Reference: St39sw254 Drilled Length (m): 17 Borehole Name: Brynglas Tunnels Bh4	NW	807	5	331300 190020
	BGS Boreholes				
59	BGS Reference: St38nw149 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 112a	W	787	5	330960 189310
	BGS Boreholes				
59	BGS Reference: St38nw195 Drilled Length (m): 21 Borehole Name: Brynglas Tunnels Bh2&2r	W	812	5	330940 189330
	BGS Boreholes				
60	BGS Reference: St38nw189 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Tp 108e	NW	794	5	331260 189980
	BGS Boreholes				
60	BGS Reference: St39sw168 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 118a	NW	827	5	331250 190010
	BGS Boreholes				
60	BGS Reference: St39sw183 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Tp 108b	NW	832	5	331240 190000
	BGS Boreholes				
60	BGS Reference: St39sw184 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Tp 108c	NW	844	5	331230 190010
	BGS Boreholes				
61	BGS Reference: St38nw139 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 106	W	858	5	330950 189050
	BGS Boreholes				
61	BGS Reference: St38nw141 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 107a	W	815	5	330980 189080

Map ID	Details	Compass Direction	Estimated Distance From Site	Contact	NGR
61	**BGS Boreholes** BGS Reference: St38nw194 Drilled Length (m): 12 Borehole Name: Brynglas Tunnels Bh1	W	830	5	330960 189110
62	**BGS Boreholes** BGS Reference: St38nw142 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 107ar	W	817	5	330970 189130
62	**BGS Boreholes** BGS Reference: St38nw143 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 108	W	854	5	330920 189140
63	**BGS Boreholes** BGS Reference: St38nw144 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 108a	W	858	5	330910 189160
63	**BGS Boreholes** BGS Reference: St38nw145 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 109	W	818	5	330950 189190
63	**BGS Boreholes** BGS Reference: St38nw146 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 110	W	842	5	330920 189200
64	**BGS Boreholes** BGS Reference: St38nw147 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 111	W	846	5	330910 189260
64	**BGS Boreholes** BGS Reference: St38nw179 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Tp 101	W	818	5	330940 189260
65	**BGS Boreholes** BGS Reference: St38nw61 Drilled Length (m): 17.68 Borehole Name: Newport Crown Building 1	S	821	5	331620 188540
65	**BGS Boreholes** BGS Reference: St38nw62 Drilled Length (m): 17.98 Borehole Name: Newport Crown Building 2	S	862	5	331610 188500
66	**BGS Boreholes** BGS Reference: St39sw169 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 118b	NW	846	5	331300 190070
66	**BGS Boreholes** BGS Reference: St39sw186 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Tp 108f	NW	840	5	331270 190040
67	**BGS Boreholes** BGS Reference: St38nw136 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 103	SW	861	5	331000 188920
67	**BGS Boreholes** BGS Reference: St38nw137 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 104	SW	852	5	330990 188970

Map ID	Details	Compass Direction	Estimated Distance From Site	Contact	NGR
67	**BGS Boreholes** BGS Reference: St38nw138 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 105	SW	875	5	330950 188990
68	**BGS Boreholes** BGS Reference: St39sw212 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Ha 110	NW	943	5	331250 190150
69	**BGS Boreholes** BGS Reference: St39sw167 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 118	NW	952	5	331310 190190
69	**BGS Boreholes** BGS Reference: St39sw255 Drilled Length (m): 10 Borehole Name: Brynglas Tunnels Bh5	NW	958	5	331270 190180
70	**BGS Boreholes** BGS Reference: St38nw3 Drilled Length (m): 24.08 Borehole Name: Newport Town. Bh.9,10,11,12	W	255	5	331500 189400
71	**BGS Boreholes** BGS Reference: St38nw17 Drilled Length (m): 36.58 Borehole Name: Newport-Mon By-Pass. 65a	NW	827	5	331140 189900
72	**BGS Boreholes** BGS Reference: St38nw32 Drilled Length (m): 7.01 Borehole Name: Newport-Mon By-Pass. 83a	NE	713	5	332230 189880
73	**BGS Boreholes** BGS Reference: St38nw33 Drilled Length (m): 7.32 Borehole Name: Newport-Mon By-Pass. 84	NE	670	5	332220 189830
74	**BGS Boreholes** BGS Reference: St38nw34 Drilled Length (m): 9.75 Borehole Name: Newport-Mon By-Pass. 85	NE	684	5	332290 189780
75	**BGS Boreholes** BGS Reference: St38nw58 Drilled Length (m): 16.46 Borehole Name: G.P.O. Garage, No.11	SW	561	5	331240 189110
76	**BGS Boreholes** BGS Reference: St38nw60 Drilled Length (m): 15.54 Borehole Name: G.P.O. Garage, No.13	W	548	5	331230 189190
77	**BGS Boreholes** BGS Reference: St38nw70 Drilled Length (m): 15.24 Borehole Name: Newport, Monmouth	NW	555	5	331260 189610
78	**BGS Boreholes** BGS Reference: St38nw71 Drilled Length (m): 31.09 Borehole Name: Newport, Monmouth	SW	935	5	331120 188660
79	**BGS Boreholes** BGS Reference: St38nw74/C Drilled Length (m): 11.43 Borehole Name: 400yds Nne Newport Castle	SW	658	5	331390 188800

Map ID	Details	Compass Direction	Estimated Distance From Site	Contact	NGR
80	**BGS Boreholes** BGS Reference: St38nw74/D Drilled Length (m): 14.93 Borehole Name: 530yds Nne Newport Castle	SW	448	5	331550 188950
81	**BGS Boreholes** BGS Reference: St38nw74/E Drilled Length (m): 13.25 Borehole Name: 300yds Nne Newport Castle	SW	716	5	331410 188720
82	**BGS Boreholes** BGS Reference: St38nw74/F Drilled Length (m): 15.69 Borehole Name: 530yds Nne Newport Castle	SW	506	5	331520 188900
83	**BGS Boreholes** BGS Reference: St38nw134 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 101	SW	956	5	331020 188740
84	**BGS Boreholes** BGS Reference: St38nw135 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 102	SW	889	5	331010 188860
85	**BGS Boreholes** BGS Reference: St38nw140 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 107	W	868	5	330920 189090
86	**BGS Boreholes** BGS Reference: St38nw148 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 112	W	772	5	330980 189390
87	**BGS Boreholes** BGS Reference: St38nw173 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 141	NE	696	5	332130 189930
88	**BGS Boreholes** BGS Reference: St38nw187 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Tp 107a	NW	780	5	331190 189890
89	**BGS Boreholes** BGS Reference: St38nw190 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Tp 123	N	648	5	331870 189990
90	**BGS Boreholes** BGS Reference: St38nw192 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Tp 127	NE	711	5	332080 189980
91	**BGS Boreholes** BGS Reference: St38nw193 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Tp 128	NE	616	5	332080 189870
92	**BGS Boreholes** BGS Reference: St39sw181 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Bh 136	N	716	5	331770 190070
93	**BGS Boreholes** BGS Reference: St39sw185 Drilled Length (m): Not Supplied Borehole Name: M4 Brynglas Tp 108d	NW	859	5	331210 190020

Map ID	Details		Compass Direction	Estimated Distance From Site	Contact	NGR
	BGS Boreholes					
94	BGS Reference:	St39sw200	N	682	5	331660 190030
	Drilled Length (m):	Not Supplied				
	Borehole Name:	M4 Brynglas Tp 122				
	BGS Boreholes					
95	BGS Reference:	St39sw201	N	712	5	331870 190050
	Drilled Length (m):	Not Supplied				
	Borehole Name:	M4 Brynglas Tp 124				
	BGS Boreholes					
96	BGS Reference:	St39sw282	NW	893	5	331270 190100
	Drilled Length (m):	3				
	Borehole Name:	Brynglas Tunnels Tp2				
	BGS Boreholes					
97	BGS Reference:	St38nw59	W	519	5	331270 189160
	Drilled Length (m):	16.76				
	Borehole Name:	G.P.O. Garage, No.12				
	BGS 1:625,000 Surface Geology					
	Description:	Tournaisian and Visean (Carboniferous Limestone Series)	-	0	6	331750 189350
	Coal Mining Affected Areas					
	Description	In an area which may not be affected by coal mining	-	-	-	-
	Radon Affected Areas					
	Description:	Less than 1% of homes are above the Action Level	-	0	7	331750 189350

Map ID	Details	Compass Direction	Estimated Distance From Site	Contact	NGR
	Contemporary Trade Directory Entries				
98	Name: Multiweld Location: Unit 7C Crawford Street,NEWPORT,Gwent,NP9 7AY Classification: Wrought Ironworking Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to the address	S	363	-	331730 188990
	Contemporary Trade Directory Entries				
98	Name: Newport Waste Savers Location: Unit 11 the Workshop,Crawford Street,NEWPORT,Gwent,NP9 7AY Classification: Recycling Contractors Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to road within address	S	363	-	331730 188990
	Contemporary Trade Directory Entries				
98	Name: Longlife Exhaust Location: Unit 11 the Workshops,Crawford Street,NEWPORT,Gwent,NP9 7AY Classification: Steel Products Manufacture Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to road within address	S	363	-	331730 188990
	Contemporary Trade Directory Entries				
98	Name: Cain Electrical Location: Unit 4,Herbert Road,NEWPORT,Gwent,NP19 7BH Classification: Electricity Mains Suppliers Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to road within address	S	354	-	331700 189000
	Contemporary Trade Directory Entries				
99	Name: Anglo American Autocare Location: Unit 4 the Workshops,Crawford Street,NEWPORT,Gwent,NP9 7AY Classification: Car Servicing & Repair Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to estate within address	S	412	-	331730 188940
	Contemporary Trade Directory Entries				
99	Name: Newport Vehicle Repair Centre Location: Crawford Street,NEWPORT,Gwent,NP9 7AY Classification: Car Servicing & Repair Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to estate within address	S	412	-	331730 188940
	Contemporary Trade Directory Entries				
99	Name: Copywrite Location: Unit 7B the Workshops,Crawford Street,NEWPORT,Gwent,NP9 7AY Classification: Printers - General Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to estate within address	S	412	-	331730 188940
	Contemporary Trade Directory Entries				
100	Name: Cardiff Transport Location: Albany Street,NEWPORT,Gwent,NP9 5NG Classification: Haulage Contractors Premises Type: Head Office Status: Active Positional Accuracy: Unknown	W	553	-	331200 189400
	Contemporary Trade Directory Entries				
100	Name: Three Counties Valves & Fittings Location: 26 Albany Trading Estate,Albany Street,NEWPORT,Gwent,NP20 5NQ Classification: Stainless Steel Manufacture Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to the address	W	509	-	331240 189390

Map ID	Details	Compass Direction	Estimated Distance From Site	Contact	NGR
	Contemporary Trade Directory Entries				
100	Name: Euro Welsh Pallets Location: Welsh Karting Centre,Alderney Street,NEWPORT,Gwent,NP20 5NH Classification: Pallet & Pallet Racking Manufacture Premises Type: Branch Office Status: Active Positional Accuracy: Automatically located to estate within address	W	553	-	331200 189400
	Contemporary Trade Directory Entries				
100	Name: S J Bull Trading Location: Unit 8,Albany Trading Estate,Albany Street,NEWPORT,Gwent,NP20 5NQ Classification: Recycling Contractors Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to the address	W	509	-	331240 189390
	Contemporary Trade Directory Entries				
100	Name: I C Engineering (Newport) Location: 2 Albany Trading Estate,Albany Street,NEWPORT,Gwent,NP20 5NQ Classification: Steel Fabrications Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to road within address	W	509	-	331240 189390
	Contemporary Trade Directory Entries				
100	Name: Proactive Cleaning UK Location: 4 Albany Trading Estate,Albany Street,NEWPORT,Gwent,NP20 5NQ Classification: Carpet,Curtain & Upholstery Cleaning Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to road within address	W	509	-	331240 189390
	Contemporary Trade Directory Entries				
100	Name: Three Counties Fluid Power Location: Unit 26 Albany Trading Estate,Albany Street,NEWPORT,Gwent,NP20 5NQ Classification: Pneumatic Tool Manufacture Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to the address	W	508	-	331240 189390
	Contemporary Trade Directory Entries				
100	Name: I C Engineering Location: Harlequin Trading Estate,Alderney Street,NEWPORT,Gwent,NP20 5NQ Classification: Pipe & Pipeline Fittings Manufacture Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to the address	W	508	-	331240 189390
	Contemporary Trade Directory Entries				
100	Name: Caerleon Coachbuilders Location: Unit 5,Harlequin Industrial Estate,Alderney Street,NEWPORT,Gwent,NP20 5NH Classification: Vehicle Body Builders Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to road within address	W	553	-	331200 189400
	Contemporary Trade Directory Entries				
101	Name: Len Beck Engineering Location: Turner Street,NEWPORT,Gwent,NP9 7BA Classification: Engine Re-conditioning Premises Type: Single Site Status: Active Positional Accuracy: Unknown	S	602	-	331770 188750
	Contemporary Trade Directory Entries				
101	Name: Crescent Motors Location: 45A Caerleon Road,NEWPORT,Gwent,NP9 7BW Classification: MOT Testing Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to the address	S	640	-	331740 188710

Map ID	Details	Compass Direction	Estimated Distance From Site	Contact	NGR
	Contemporary Trade Directory Entries				
102	Name: John Davies Location: 14 Corelli Street,NEWPORT,Gwent,NP9 7AR Classification: Photocopier Manufacture Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to the address	S	646	-	331600 188720
	Contemporary Trade Directory Entries				
102	Name: Kingswood Printers Location: 14 Corelli Street,NEWPORT,Gwent,NP9 7AR Classification: Printers - General Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to the address	S	646	-	331600 188720
	Contemporary Trade Directory Entries				
103	Name: Stowe Woodward Location: 4 Tregare Street,NEWPORT,Gwent,NP9 7XE Classification: Rubber Manufacture Premises Type: Branch Office Status: Active Positional Accuracy: Automatically located to the address	S	707	-	331520 188680
	Contemporary Trade Directory Entries				
103	Name: Stowe-Woodward Location: East Usk Road,NEWPORT,Gwent,NP9 7XE Classification: Rubber Manufacture Premises Type: Branch Office Status: Active Positional Accuracy: Automatically located to the address	S	707	-	331520 188680
	Contemporary Trade Directory Entries				
103	Name: Prestige Blinds Location: Maindee Dairies,Rudry Street,NEWPORT,Gwent,NP9 7AN Classification: Blinds & Awning Manufacture Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to estate within address	S	724	-	331480 188680
	Contemporary Trade Directory Entries				
103	Name: Apex Computer Services (Wales) Location: Riverside Buildings,Tregare Street,NEWPORT,Gwent,NP9 7AP Classification: Computer Manufacture Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to estate within address	S	747	-	331490 188650
	Contemporary Trade Directory Entries				
103	Name: Abercarn Asbestos & Waste Services Location: 2A Tregar Street,NEWPORT,Gwent,NP19 7AP Classification: Waste Disposal Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to estate within address	S	720	-	331540 188660
	Contemporary Trade Directory Entries				
103	Name: Abercarn Asbestos & Waste Services Location: 2A Tregare Street,NEWPORT,Gwent,NP19 7AP Classification: Waste Disposal Premises Type: Branch Office Status: Active Positional Accuracy: Automatically located to estate within address	S	721	-	331540 188660
	Contemporary Trade Directory Entries				
104	Name: Autowest Location: 10 Gloster Place,NEWPORT,Gwent,NP9 7EG Classification: Car Servicing & Repair Premises Type: Branch Office Status: Active Positional Accuracy: Automatically located to the address	S	711	-	331820 188640

Map ID	Details	Compass Direction	Estimated Distance From Site	Contact	NGR
	Contemporary Trade Directory Entries				
104	Name: Gwent Auto Panels Location: 81-82 Church Road,NEWPORT,Gwent,NP19 7EH Classification: Car Body Repairs Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to the address	S	736	-	331820 188620
	Contemporary Trade Directory Entries				
105	Name: Seary Printers Location: 10 Caerleon Road,NEWPORT,Gwent,NP9 7BU Classification: Printers - General Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to the address	S	766	-	331720 188590
	Contemporary Trade Directory Entries				
105	Name: Nutt Michael Engineering Location: 14 Caerleon Road,NEWPORT,Gwent,NP9 7BU Classification: Car Servicing & Repair Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to estate within address	S	749	-	331740 188600
	Contemporary Trade Directory Entries				
106	Name: Chepstow Road Filling Station Location: Chepstow Road,NEWPORT,Gwent,NP19 8BW Classification: Petrol Filling Stations Premises Type: Franchise Status: Active Positional Accuracy: Automatically located to the address	S	843	-	331660 188510
	Contemporary Trade Directory Entries				
106	Name: David Taylor Garages Location: Chepstow Road Filling Station,Chepstow Road,NEWPORT,Gwent,NP19 9EZ Classification: Petrol Filling Stations Premises Type: Branch Office Status: Active Positional Accuracy: Automatically located to the address	S	843	-	331660 188510
	Contemporary Trade Directory Entries				
107	Name: Kwik-Fit Tyre Exhaust & Brake Centres Location: 41 Clarence Place,NEWPORT,Gwent,NP9 7AB Classification: Exhaust Replacement Premises Type: Branch Office Status: Active Positional Accuracy: Automatically located to the address	S	896	-	331430 188510
	Contemporary Trade Directory Entries				
107	Name: Kwik-Fit Location: 41 Clarence Place,NEWPORT,Gwent,NP19 7AB Classification: Car Servicing & Repair Premises Type: Branch Office Status: Active Positional Accuracy: Automatically located to the address	S	896	-	331430 188510
	Contemporary Trade Directory Entries				
108	Name: Paragon Laundry (Wales) Location: 85 Caerleon Road,NEWPORT,Gwent,NP9 7BX Classification: Dry Cleaning - Retail Premises Type: Branch Office Status: Active Positional Accuracy: Automatically located to the address	S	535	-	331860 188830
	Contemporary Trade Directory Entries				
109	Name: Cleartone Telecoms Location: Clarence House,Clarence Place,NEWPORT,Gwent,NP9 7AA Classification: Telecommunications Equipment Manufacture Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to the address	SW	944	-	331340 188500

Map ID	Details	Compass Direction	Estimated Distance From Site	Contact	NGR
	Contemporary Trade Directory Entries				
110	Name: Dragon Cleaning Services Location: 1 St Julians Court,NEWPORT,Gwent,NP9 7DX Classification: Carpet,Curtain & Upholstery Cleaning Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to the address	E	342	-	332070 189230
	Contemporary Trade Directory Entries				
111	Name: Heather Road Garage Location: 2 Heather Road,NEWPORT,Gwent,NP9 7JZ Classification: Car Servicing & Repair Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to the address	NE	815	-	332470 189740
	Contemporary Trade Directory Entries				
112	Name: Hopkins Car Repairs Location: 50A London Street,NEWPORT,Gwent,NP9 8DG Classification: MOT Testing Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to the address	SE	823	-	332110 188610
	Contemporary Trade Directory Entries				
113	Name: Mullock & Sons Location: 42 Argyle Street,NEWPORT,Gwent,NP9 5NE Classification: Printers - General Premises Type: Single Site Status: Active Positional Accuracy: Unknown	W	665	-	331090 189290
	Contemporary Trade Directory Entries				
114	Name: Newport Service Station Location: 57 Chepstow Road,NEWPORT,Gwent,NP9 8BY Classification: Petrol Filling Stations Premises Type: Branch Office Status: Active Positional Accuracy: Automatically located to the address	S	924	-	331930 188440
	Contemporary Trade Directory Entries				
115	Name: Newport Smelting (1983) Location: Abbey Works,Crindau,NEWPORT,Gwent,NP9 5NJ Classification: Scrap Metal Dealers Premises Type: Head Office Status: Active Positional Accuracy: Automatically located to estate within address	W	533	-	331230 189440
	Contemporary Trade Directory Entries				
116	Name: Newport Vehicle Service Centre Location: 10A Junction Road,NEWPORT,Gwent,NP9 7EZ Classification: Car Servicing & Repair Premises Type: Single Site Status: Active Positional Accuracy: Unknown	SE	592	-	332040 188830
	Contemporary Trade Directory Entries				
117	Name: Bob Nurmi Location: 42 St Julians Road,NEWPORT,Gwent,NP9 7GN Classification: Haulage Contractors Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to the address	E	721	-	332450 189160
	Contemporary Trade Directory Entries				
118	Name: The Print Shop Location: 37 Church Road,NEWPORT,Gwent,NP9 7EL Classification: Printers - General Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to the address	SE	708	-	332100 188730

Map ID	Details	Compass Direction	Estimated Distance From Site	Contact	NGR
	Contemporary Trade Directory Entries				
119	Name: Sensible Lighting Location: 31 Malpas Road,NEWPORT,Gwent,NP9 5PB Classification: Car Servicing & Repair Premises Type: Head Office Status: Active Positional Accuracy: Automatically located to the address	W	928	-	330830 189280
	Contemporary Trade Directory Entries				
120	Name: Awesome Autos Location: 1 Exeter Road,Maindee,NEWPORT,Gwent,NP9 8DB Classification: Car Servicing & Repair Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to the address	SE	925	-	332120 188500
	Contemporary Trade Directory Entries				
121	Name: Linton Bros Location: Goodrich Engineering Works,Off Malpas Road,NEWPORT,Gwent,NP9 5PD Classification: Metal Fabrications Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to postcode unit	W	962	-	330800 189200
	Contemporary Trade Directory Entries				
122	Name: Glasses Galore Location: 68 Constant Street,NEWPORT,Gwent,NP9 7DD Classification: Fibre Glass Manufacture Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to road within address	S	354	-	331800 189000
	Contemporary Trade Directory Entries				
123	Name: I L Engineering Location: The Garage,Adelaide Street,NEWPORT,Gwent,NP9 5NF Classification: Engineering - General Premises Type: Head Office Status: Active Positional Accuracy: Automatically located to road within address	W	697	-	331100 189100
	Contemporary Trade Directory Entries				
124	Name: Frank Burston & Sons Location: 55 Chepstow Road,NEWPORT,Gwent,NP9 8BX Classification: Coal Merchants Premises Type: Head Office Status: Active Positional Accuracy: Automatically located to the address	S	888	-	331820 188470
	Contemporary Trade Directory Entries				
125	Name: W Harold John Location: Adelaide Street,NEWPORT,Gwent,NP9 1RR Classification: Scrap Metal Dealers Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to the address	W	575	-	331220 189130
	Contemporary Trade Directory Entries				
126	Name: Thomas & Beard Location: 2B Redland Street,NEWPORT,Gwent,NP9 5NA Classification: Car Servicing & Repair Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to the address	W	865	-	330890 189280
	Contemporary Trade Directory Entries				
127	Name: South Wales Prop Shafts Location: Unit 1,Edwin Street,NEWPORT,Gwent,NP9 5JJ Classification: Car Parts & Accessories Manufacture Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to the address	W	767	-	331020 189120

Map ID	Details	Compass Direction	Estimated Distance From Site	Contact	NGR
	Contemporary Trade Directory Entries				
128	Name: Melmec Engineers Location: Llanpair Road,NEWPORT,Gwent,NP19 7AQ Classification: Engineering - Precision Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to estate within address	S	656	-	331530 188730
	Contemporary Trade Directory Entries				
129	Name: T S Tracings Location: 12 Aston Crescent,NEWPORT,Gwent,NP20 5RA Classification: Engineering - General Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to the address	W	950	-	330820 189520
	Contemporary Trade Directory Entries				
130	Name: South Wales Computer Repairs Location: 1-2 Usk Street,NEWPORT,Gwent,NP19 7BE Classification: Computer Manufacture Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to the address	S	426	-	331860 188940
	Contemporary Trade Directory Entries				
131	Name: Trio 2000 Location: Fairoak House Business Centre,15 Church Road,NEWPORT,Gwent,NP19 7EJ Classification: Detergent Manufacture Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to the address	S	672	-	331940 188710
	Contemporary Trade Directory Entries				
132	Name: Gilbert Technical Dental Services Location: 18A Chepstow Road,NEWPORT,Gwent,NP19 8EA Classification: Laboratories Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to the address	S	896	-	331630 188460
	Contemporary Trade Directory Entries				
133	Name: H E C Engineers Location: 61 Stafford Road,NEWPORT,Gwent,NP19 7DR Classification: Engineering - Mechanical Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to the address	NE	118	-	331850 189420
	Contemporary Trade Directory Entries				
134	Name: Motorway Tyres & Accessories Location: 1A Junction Road,NEWPORT,Gwent,NP19 7FA Classification: Car Servicing & Repair Premises Type: Branch Office Status: Active Positional Accuracy: Automatically located to the address	S	614	-	331880 188750
	Contemporary Trade Directory Entries				
135	Name: Rossco Civil Engineering Location: Albany Street,NEWPORT,Gwent,NP20 5NG Classification: Engineering - Civil Premises Type: Head Office Status: Active Positional Accuracy: Automatically located to road within address	W	887	-	330900 189100
	Contemporary Trade Directory Entries				
136	Name: Shell (U K) Location: Malpas Road,NEWPORT,Gwent,NP20 5PA Classification: Petrol Filling Stations Premises Type: Branch Office Status: Active Positional Accuracy: Automatically located to estate within address	W	881	-	330880 189230

Map ID	Details	Compass Direction	Estimated Distance From Site	Contact	NGR
	Contemporary Trade Directory Entries				
137	Name: Longlife Exhaust Location: Crawford Street,NEWPORT,Gwent,NP19 7AY Classification: Exhaust Replacement Premises Type: Branch Office Status: Active Positional Accuracy: Automatically located to the address	S	327	-	331660 189040
	Contemporary Trade Directory Entries				
138	Name: J S Payne Location: Enterprise House,Herbert Road,NEWPORT,Gwent,NP19 7BH Classification: Steel Fabrications Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to estate within address	S	227	-	331740 189120
	Contemporary Trade Directory Entries				
139	Name: Azteq Location: 133C Caerleon Road,NEWPORT,Gwent,NP19 7BZ Classification: Computer Manufacture Premises Type: Branch Office Status: Active Positional Accuracy: Automatically located to the address	SE	430	-	331990 189000
	Contemporary Trade Directory Entries				
140	Name: *Commercial Refridgeration* Location: 59 Church Road,NEWPORT,Gwent,NP19 7EJ Classification: Air Conditioning Equipment Manufacture Premises Type: Head Office Status: Active Positional Accuracy: Automatically located to road within address	S	765	-	331900 188600
	Contemporary Trade Directory Entries				
141	Name: Drawline Location: 3-9 Grafton Lane,*NEWPORT,Gwent,NP19 0AT* Classification: Architectural Iron & Metalwork Producers Premises Type: Single Site Status: Active Positional Accuracy: Automatically located to the address	S	968	-	331530 188410
	Contemporary Trade Directory Entries				
142	Name: R J Mason Transport Location: Albany Street,NEWPORT,Gwent,NP20 5NJ Classification: Haulage Contractors Premises Type: Head Office Status: Active Positional Accuracy: Automatically located to the address	NW	502	-	331290 189550
	Contemporary Trade Directory Entries				
143	Name: Mason R J Transport Location: Albany Street,NEWPORT,Gwent,NP20 5NS *Classification: Haulage Contractors* Premises Type: Head Office Status: Active Positional Accuracy: Manually located to road within address	W	583	-	331170 189340
	Fuel Station Entries				
144	Name: Caerleon Service Station Location: 20 Caerleon Road,Junction Road,NEWPORT,Gwent,NP9 7BX Brand: ESSO Premises Type: Petrol Station Status: Open Positional Accuracy: Automatically located to estate within address	S	571	-	331850 188790
	Fuel Station Entries				
145	Name: Shell Newport Location: Malpas Road,NEWPORT,Gwent,NP9 5PA Brand: SHELL *Premises Type:* Petrol Station Status: Open Positional Accuracy: Automatically located to estate within address	W	882	-	330880 189230

Map ID	Details	Compass Direction	Estimated Distance From Site	Contact	NGR
	Fuel Station Entries				
146	Name: Newport Service Station Location: 57 Chepstow Road,Hereford Street,NEWPORT,Gwent,NP9 8BY Brand: TEXACO Premises Type: Petrol Station Status: Open Positional Accuracy: Automatically located to the address	S	924	-	331930 188440
	Fuel Station Entries				
147	Name: Shell Casnewydd Location: 17-25 Chepstow Road,NEWPORT,Gwent,NP9 8BW Brand: SHELL Premises Type: Petrol Station Status: Open Positional Accuracy: Automatically located to the address	S	843	-	331660 188510
	Post 1998 Planning Applications (of possible contaminative use)				
148	Name: Vehicle Workshop (Change Of Use) Location: 1 Llanvair Road,NEWPORT,Gwent,NP9 7AQ Authority: Newport County Borough Council Description: Vehicle Maintenance Application Ref: 98/0134/F Dated: 6th February 1998 Status: Detailed Plans Submitted Site Area: Not Supplied Positional Accuracy: Unknown	S	656	8	331530 188730
	Post 1998 Planning Applications (of possible contaminative use)				
148	Name: Vehicle Workshop (Change Of Use) Location: 1 Llanvair Road (adjacent to),NEWPORT,Gwent,NP9 7AQ Authority: Newport County Borough Council Description: Vehicle Maintenance Application Ref: 98/1319/F Dated: 22nd December 1998 Status: Detailed Plans Submitted Site Area: Not Supplied Positional Accuracy: Automatically located to the address	SW	646	8	331500 188750
	Post 1998 Planning Applications (of possible contaminative use)				
149	Name: Fuel Tank Installation Location: 25 Argyle Street,NEWPORT,Gwent,NP9 5NE Authority: Newport County Borough Council Description: Storage Tanks Application Ref: 96/0600/F Dated: 27th June 1996 Status: Detailed Plans Submitted Site Area: Not Supplied Positional Accuracy: Unknown	W	684	8	331070 189310
	Post 1998 Planning Applications (of possible contaminative use)				
150	Name: Workshop (Change Of Use) Location: 4 Constance Street,NEWPORT,Gwent,NP9 7DB Authority: Newport County Borough Council Description: Light Industrial Application Ref: 98/0202/F Dated: 25th February 1998 Status: Detailed Plans Submitted Site Area: Not Supplied Positional Accuracy: Unknown	SE	403	8	331990 189030
	Post 1998 Planning Applications (of possible contaminative use)				
151	Name: Vehicle Rental (Change Of Use) Location: 1-7 Merriotts Place,NEWPORT,Gwent,NP9 8DA Authority: Newport County Borough Council Description: Vehicle Maintenance Application Ref: 98/1223/F Dated: 24th November 1998 Status: Detailed Plans Submitted Site Area: Not Supplied Positional Accuracy: Automatically located to the address	SE	996	8	332170 188450

Map ID	Details	Compass Direction	Estimated Distance From Site	Contact	NGR
	Post 1998 Planning Applications (of possible contaminative use)				
152	Name: Car Valet Bay Location: 41 Chepstow Road,NEWPORT,Gwent,NP9 8BX Authority: Newport County Borough Council Description: Vehicle Maintenance Application Ref: 99/0091/F Dated: 27th January 1999 Status: Detailed Plans Submitted Site Area: Not Supplied Positional Accuracy: Automatically located to the address	S	860	8	331740 188490
	Post 1998 Planning Applications (of possible contaminative use)				
153	Name: Industrial Unit Location: Taylors Engineering Site,Alderney Street,NEWPORT,Gwent,NP9 5NH Authority: Newport County Borough Council Description: Light Industrial Application Ref: 99/0166/F Dated: 11th January 1999 Status: Detailed Plans Submitted Site Area: Not Supplied Positional Accuracy: Manually located to road within address	W	426	8	331330 189380
	Post 1998 Planning Applications (of possible contaminative use)				
154	Name: Vehicle Workshop (Change Of Use) Location: Telephone Exchange,Factory Road,NEWPORT,Gwent,NP9 5YL Authority: Newport County Borough Council Description: Vehicle Maintenance Application Ref: 99/0392 Dated: 12th April 1999 Status: Detailed Plans Submitted Site Area: Not Supplied Positional Accuracy: Automatically located to estate within address	SW	989	8	330950 188780
	Post 1998 Planning Applications (of possible contaminative use)				
155	Name: Laboratory Building Location: Gwent House,Albany Street,NEWPORT,Gwent,. Authority: Newport County Borough Council Description: Laboratories / Research Application Ref: 99/0658/F Dated: 21st June 1999 Status: Detailed Plans Submitted Site Area: Not Supplied Positional Accuracy: Manually located to road within address	W	544	8	331220 189450
	Post 1998 Planning Applications (of possible contaminative use)				
156	Name: Filling Station (Extension) Location: Sainsburys Filling Station,Wyndham Street,NEWPORT,Gwent,. Authority: Newport County Borough Council Description: Petrol Filling Stations Application Ref: 99/1317/F Dated: 22nd December 1999 Status: Detailed Plans Submitted Site Area: Not Supplied Positional Accuracy: Manually located to address	SW	931	8	331120 188660
	Post 1998 Planning Applications (of possible contaminative use)				
157	Name: Industrial Unit (Alterations) Location: Alderney Street,Harlequin Trading Estate,Crindau,NEWPORT,Gwent,NP20 5NH Authority: Newport County Borough Council Description: Light Industrial Application Ref: 00/0813/F Dated: 5th July 2000 Status: Detailed Plans Submitted Site Area: Not Supplied Positional Accuracy: Manually located to road within address	NW	538	8	331270 189590

Map ID	Details		Compass Direction	Estimated Distance From Site	Contact	NGR
	Post 1998 Planning Applications (of possible contaminative use)					
158	Name:	Filling Station (Extension)	S	843	8	331660
	Location:	Elf Filling Station,17-25 Bloomfield Close,Chepstow Road,Newport,Gwent,NP19 8BW				188510
	Authority:	Newport County Borough Council				
	Description:	Petrol Filling Stations				
	Application Ref:	00/0968				
	Dated:	18th August 2000				
	Status:	Detailed Plans Submitted				
	Site Area:	Not Supplied				
	Positional Accuracy:	Automatically located to the address				

Map ID	Details	Compass Direction	Estimated Distance From Site	Contact	NGR
	Sites of Special Scientific Interest				
	Name: River Usk (Lower Usk)/Afon Wysg (Wysg Isaf) Multiple Area: N Area (m2): 5431498 Source: Countryside Council for Wales Reference: 1425-33WEA Designation Details: Not Given 25th October 1996 First Notified	W	111	9	331640 189350
	Special Areas of Conservation				
	Name: River Usk/Afon Wysg Multiple Area: Y Area (m2): 7431154 Source: Countryside Council for Wales Reference: UK0013007	W	121	9	331630 189340

Data Type	Version	Update Cycle
Agency & Hydrological		
Air Pollution Controls Newport County Borough Council Environmental Health Department	September-2000	Annual Rolling Update
Discharge Consents Environment Agency Welsh Region	October-1999	Bi-Annually
Pollution Incidents to Controlled Waters Environment Agency Welsh Region	December-1998	Bi-Annually
Water Abstractions Environment Agency Welsh Region	January-2000	Bi-Annually
Groundwater Vulnerability Environment Agency Head Office	January-1999	Not Appliciable
Drift Deposits Environment Agency Head Office	January-1999	Not Appliciable
Waste		
Registered Landfill Sites Environment Agency - Welsh Region South East Area	September-2000	Annual Rolling Update
Registered Waste Transfer Sites Environment Agency - Welsh Region South East Area	September-2000	Annual Rolling Update
Registered Waste Treatment or Disposal Sites Environment Agency - Welsh Region South East Area	September-2000	Annual Rolling Update
Geological		
BGS Boreholes British Geological Survey National Geological Records Centre	January-2000	Bi-Annually
BGS 1:625,000 Surface Geology British Geological Survey Information Services Group	August-1996	Not Appliciable
Radon Affected Areas National Radiological Protection Board	September-1999	Not Appliciable
Industrial Land Use		
Contemporary Trade Directory Entries TDS Group Ltd	August-2000	Quarterly
Fuel Station Entries Catalist Ltd (Fuel Station Data)	October-2000	Quarterly
Post 1998 Planning Applications (of possible contaminative use) Newport County Borough Council	October-2000	Monthly

Ordnance Survey County Series Published 1883

County	Mapsheet	Scale	Year
Monmouthshire	028_12	1:2,500	1883
Monmouthshire	028_16	1:2,500	1883

Ordnance Survey County Series Published 1901 to 1902

County	Mapsheet	Scale	Year
Monmouthshire	028_12	1:2,500	1901
Monmouthshire	028_16	1:2,500	1902

Ordnance Survey County Series Published 1920

County	Mapsheet	Scale	Year
Monmouthshire	028_12	1:2,500	1920
Monmouthshire	028_16	1:2,500	1920

Ordnance Survey County Series Published 1936 to 1937

County	Mapsheet	Scale	Year
Monmouthshire	028_12	1:2,500	1936
Monmouthshire	028_16	1:2,500	1937

Ordnance Survey Plan Published 1955 to 1957

National Grid Series	Mapsheet	Scale	Year
Ordnance Survey Plan	ST3189	1:2,500	1955
Ordnance Survey Plan	ST3289	1:2,500	1957

Ordnance Survey Plan Published 1969

National Grid Series	Mapsheet	Scale	Year
Ordnance Survey Plan	ST3289	1:2,500	1969

Ordnance Survey Plan Published 1955 to 1957

National Grid Series	Mapsheet	Scale	Year
Ordnance Survey Plan	ST3189NE	1:1,250	1955
Ordnance Survey Plan	ST3189NW	1:1,250	1955
Ordnance Survey Plan	ST3189SE	1:1,250	1955
Ordnance Survey Plan	ST3189SW	1:1,250	1955
Ordnance Survey Plan	ST3289NW	1:1,250	1957
Ordnance Survey Plan	ST3289SW	1:1,250	1957

Ordnance Survey Plan Published 1966 to 1968

National Grid Series	Mapsheet	Scale	Year
Ordnance Survey Plan	ST3189NE	1:1,250	1968
Ordnance Survey Plan	ST3189NW	1:1,250	1968
Ordnance Survey Plan	ST3189SE	1:1,250	1966
Ordnance Survey Plan	ST3189SW	1:1,250	1967
Ordnance Survey Plan	ST3289NW	1:1,250	1968

Ordnance Survey Plan Published 1977

National Grid Series	Mapsheet	Scale	Year
Ordnance Survey Plan	ST3189NW	1:1,250	1977
Ordnance Survey Plan	ST3289NW	1:1,250	1977

Ordnance Survey County Series Published 1886

County	Mapsheet	Scale	Year
Monmouthshire	028_00	1:10,560	1886
Monmouthshire	029_00	1:10,560	1886

Ordnance Survey County Series Published 1902

County	Mapsheet	Scale	Year
Monmouthshire	028_SE	1:10,560	1902
Monmouthshire	029_SW	1:10,560	1902

Ordnance Survey County Series Published 1922

County	Mapsheet	Scale	Year
Monmouthshire	028_SE	1:10,560	1922
Monmouthshire	029_SW	1:10,560	1922

Ordnance Survey County Series Published 1954

County	Mapsheet	Scale	Year
Monmouthshire	028_SE	1:10,560	1954
Monmouthshire	029_SW	1:10,560	1954

Ordnance Survey Plan Published 1964 to 1965

National Grid Series	Mapsheet	Scale	Year
Ordnance Survey Plan	ST38NW	1:10,560	1965
Ordnance Survey Plan	ST39SW	1:10,560	1964

Ordnance Survey Plan Published 1972 to 1973

National Grid Series	Mapsheet	Scale	Year
Ordnance Survey Plan	ST38NW	1:10,000	1973
Ordnance Survey Plan	ST39SW	1:10,000	1972

Ordnance Survey Plan Published 1981

National Grid Series	Mapsheet	Scale	Year
Ordnance Survey Plan	ST38NW	1:10,000	1981

Ordnance Survey Plan Published 1983 to 1994

National Grid Series	Mapsheet	Scale	Year
Ordnance Survey Plan	ST38NW	1:10,000	1994
Ordnance Survey Plan	ST39SW	1:10,000	1983

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CLIENT DETAILS

Order No. EC50034_1_1

Customer Ref: Benedicte Saintier
White Young Green#
Yeoman House 63 Croydon Road
LONDON
SE20 7TS

SITE DETAILS

Grid Reference 331750 189350

The Glebelands
Herbert Road

NEWPORT

KEY TO THE LEGEND DATABASE

General

- Specified Site
- Buffer
- 8 Reference Number
- *Several of Type at Location*
- Pylon or Mast
- North
- Map Scale=1:10,000

Agency and Hydrological

- Air Pollution Control
- Discharge Consent
- Enforcement or Prohibition Notice
- *Integrated Pollution Control*
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- Red List Discharge Consent
- River Network and Water Feature
- Water Abstraction

Waste

- BGS Recorded Landfill Site
- Integrated Pollution Control Registered Waste Site
- Registered Landfill Site
- Registered Waste Treatment or Disposal Site
- Registered Waste Transfer Site

Hazardous Substances

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

Geological

- BGS Borehole
- BGS Recorded Mineral Site

Industrial Land Use

- Fuel Station Entry
- Post 1998 Planning Application (of possible contaminative use)
- Contemporary Trade Directory Entry

ENVIRONMENT AGENCY

British Geological Survey
Value Added Reseller

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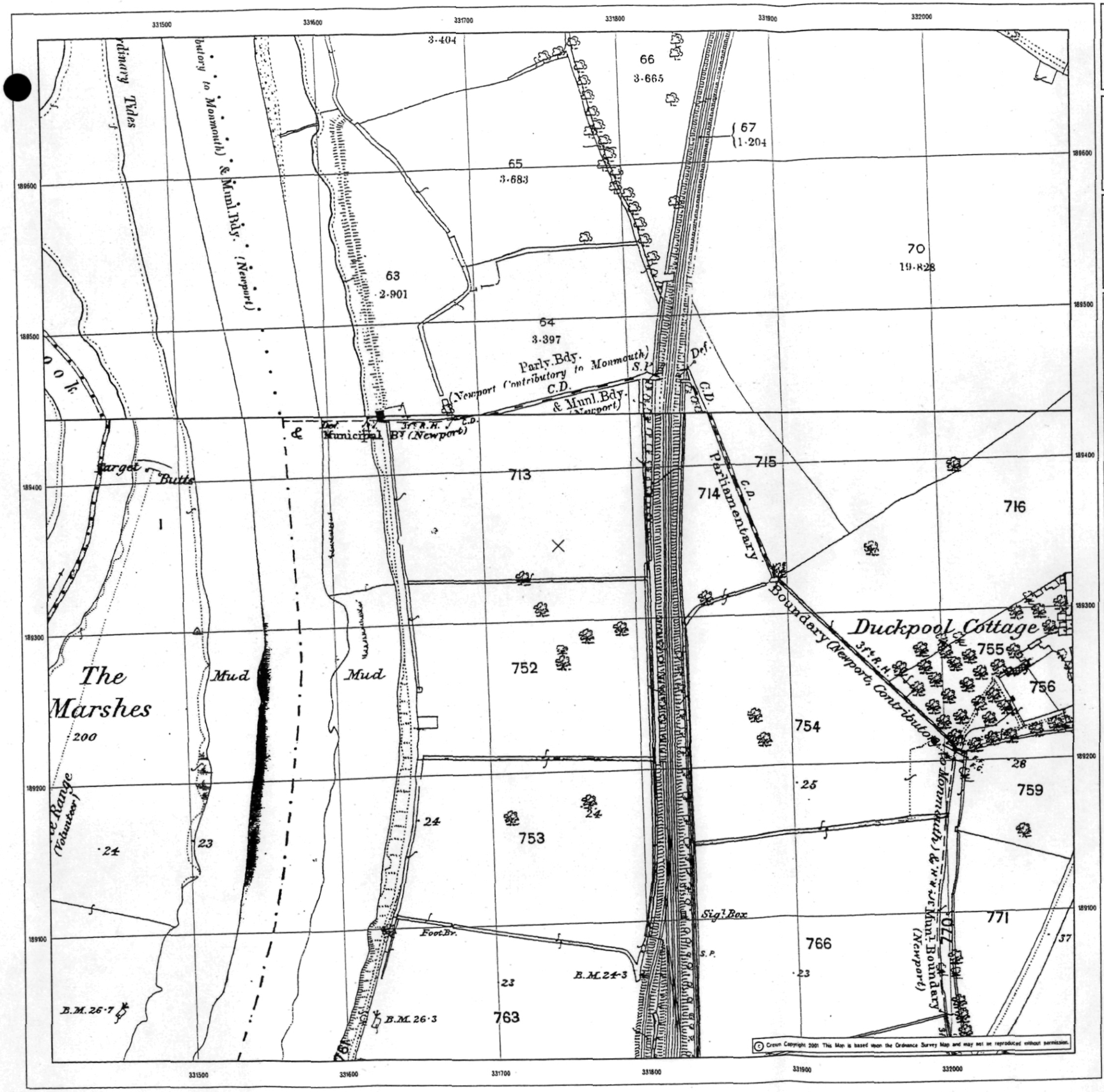
Licensed Partner

Provided by: Landmark Information Group Limited. Tel. 01392 441729 Fax: 01392 441709

APPEDIXA



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CLIENT DETAILS

Order No. EC50034_1_1

Customer Ref: Benedicte Saintier
White Young Green#
Yeoman House 63 Croydon Road
LONDON
SE20 7TS

SITE DETAILS

Grid Reference 331750 189350

The Glebelands
Herbert Road

NEWPORT

Historical Map Legend

- Quarry
- Shingle
- Railway over Road
- Road over Railway
- Railway over River
- Gravel Pit
- Sand Pit
- Level Crossing
- Other Pits
- Road over River or Canal
- Road over Stream
- Mixed Wood
- Rough Pasture
- Marsh
- Road over Stream
- Sunken Road
- Raised Road
- Sketched Contour
- Instrumental Contour
- Arrow denotes flow of water

MONMOUTHSHIRE

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

North

Map Scale=1:2,500

1883

1883

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Landmark Information Group Limited
7 Abbey Court, Eagle Way, Sowton
Exeter EX2 7HY
Telephone 01392 441729 Fax 01392 441709

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CLIENT DETAILS

Order No. EC50034_1_1

Customer Ref: Benedicte Saintier
White Young Green#
Yeoman House 63 Croydon Road
LONDON
SE20 7TS

SITE DETAILS

Grid Reference 331750 189350

The Glebelands
Herbert Road

NEWPORT

Historical Map Legend

Quarry
Shingle
Railway over Road
Road over Railway
Railway over River
Gravel Pit
Sand Pit
Level Crossing
Other Pits
Road over River or Canal
Road over Stream
Mixed Wood
Rough Pasture
Road over Stream
Marsh
Sunken Road
Raised Road
Sketched Contour
Instrumental Contour
Arrow denotes flow of water

MONMOUTHSHIRE

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North

Map Scale=1:10,000

1902	1902

Date(s) of Publication

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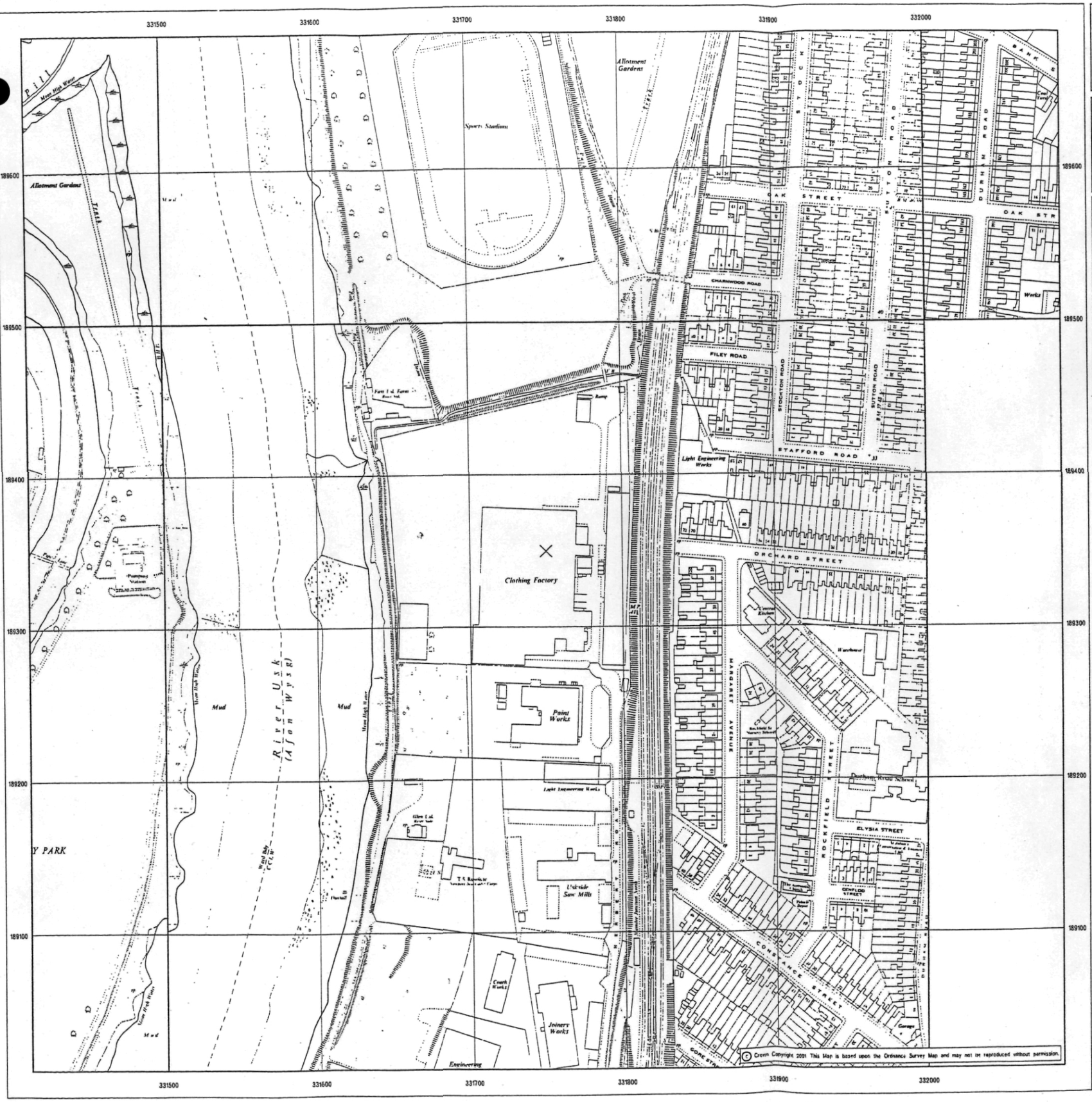

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CLIENT DETAILS

Order No. EC50034_1_1

Customer Ref: Benedicte Saintier
White Young Green#
Yeoman House 63 Croydon Road
LONDON
SE20 7TS

SITE DETAILS

Grid Reference 331750 189350

The Glebelands
Herbert Road

NEWPORT

Historical Map Legend

- Chalk Pit, Clay Pit or Quarry
- Gravel Pit
- Sand Pit
- Disused Pit or Quarry
- Refuse or Slag Heap
- Lake, Loch or Pond
- Non-Coniferous Trees
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- Sand
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- Embankment
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- Marsh
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- Standard Gauge Single Track
- Siding, Tramway or Mineral Line
- Narrow Gauge

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North

Map Scale=1:2,500

1968	1968	1968
1967	1968	

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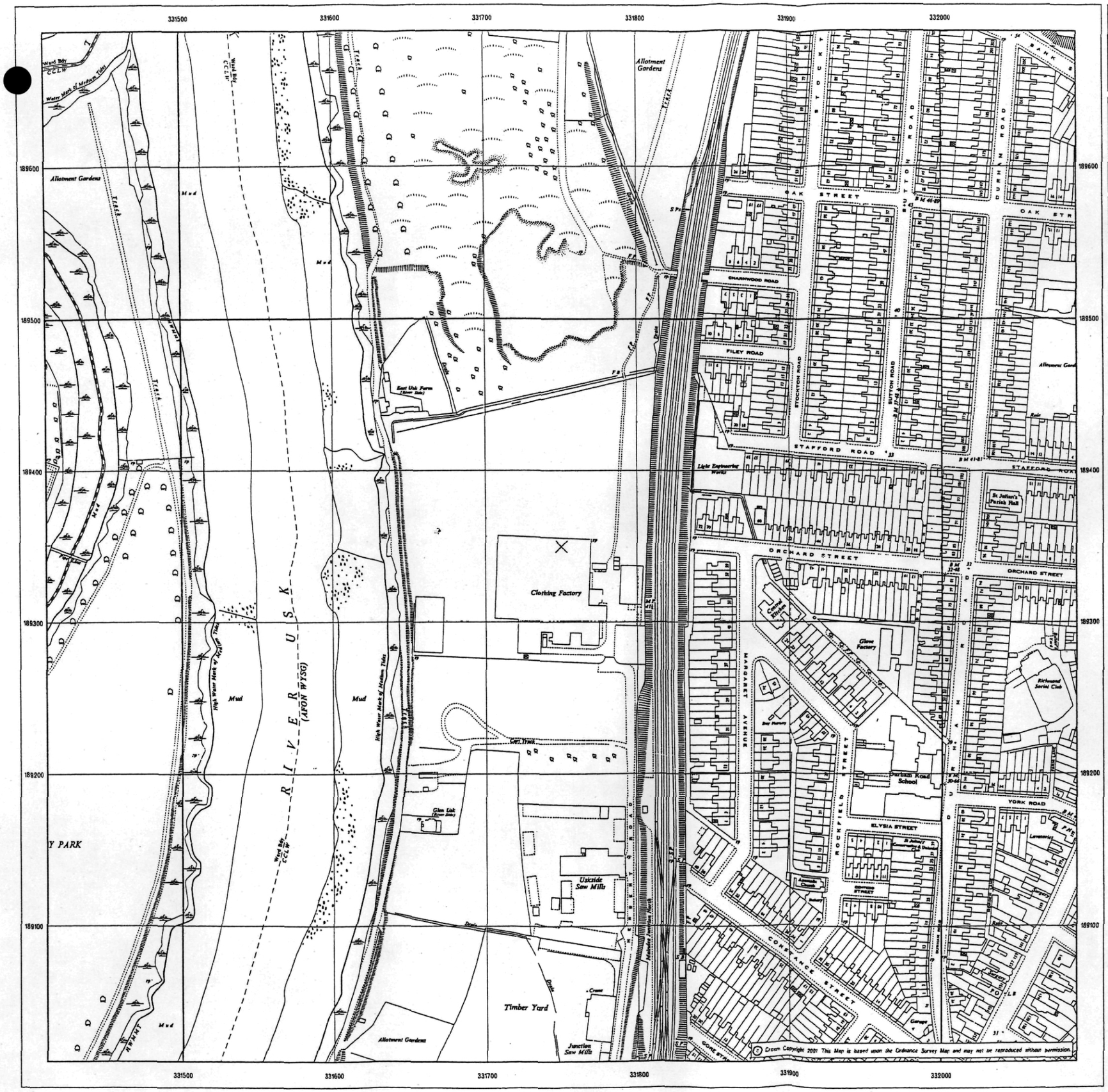

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3.A5

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North

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1955	1955	1957

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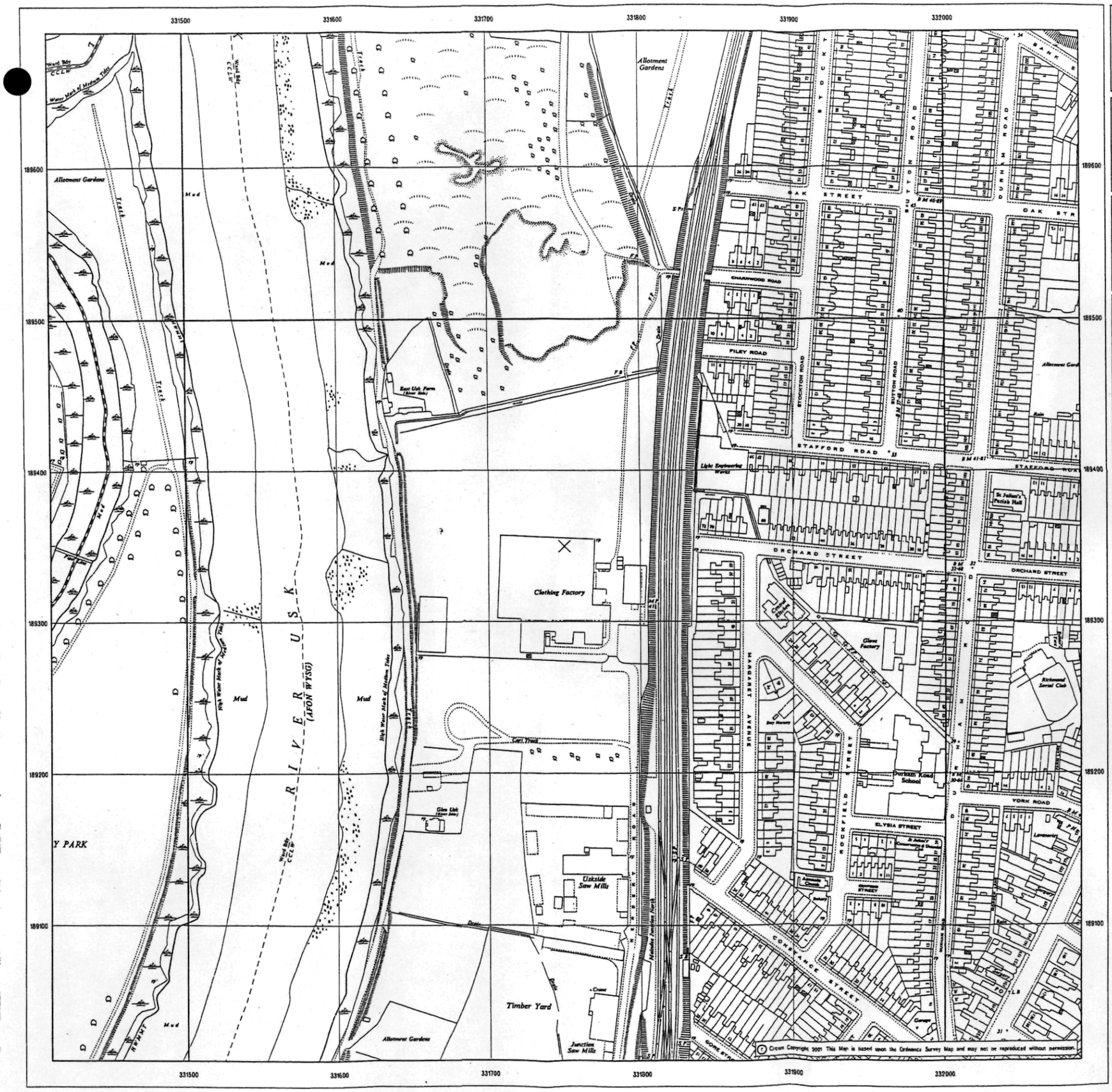

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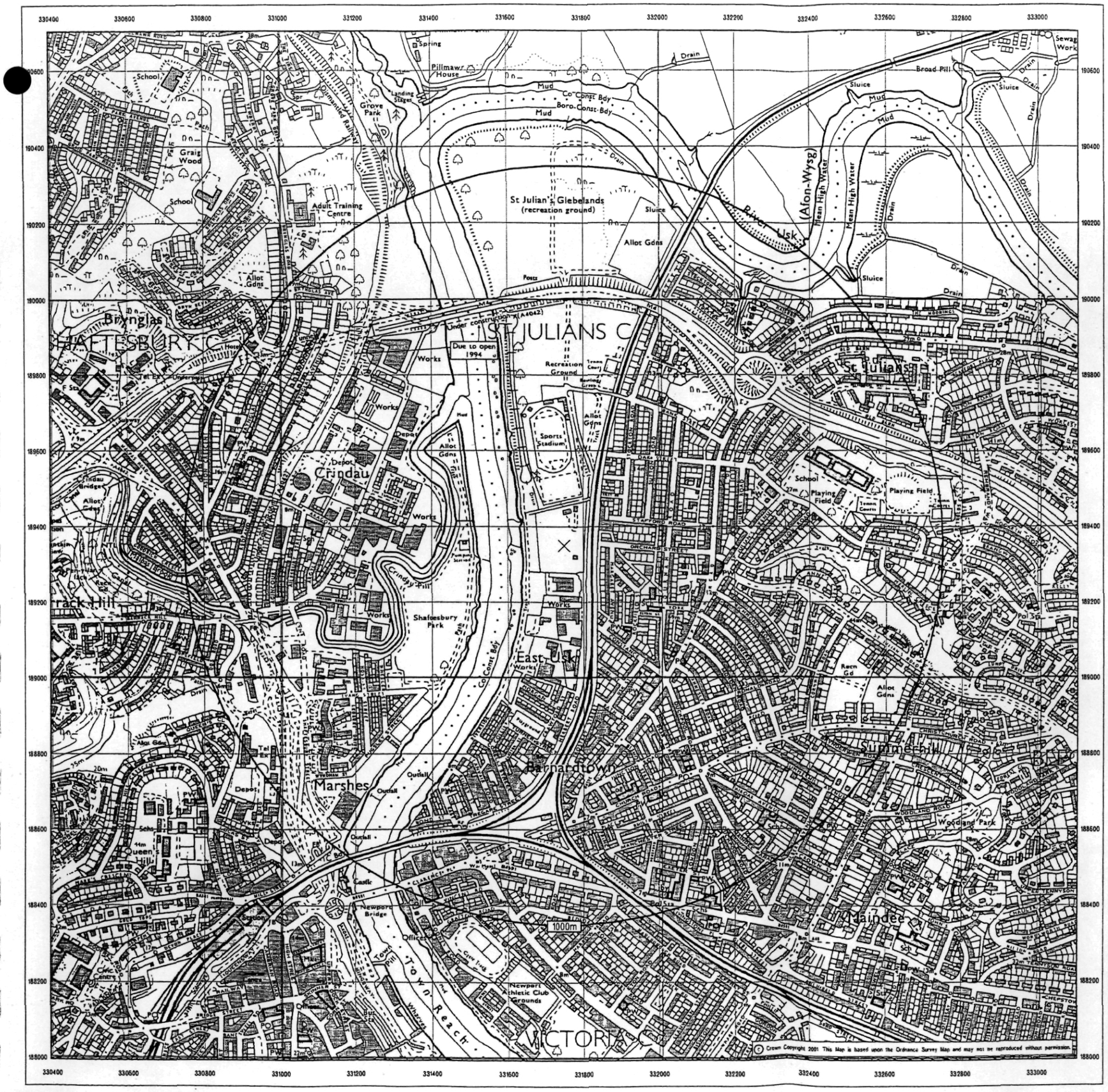

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Date(s) of Publication
1983
1994

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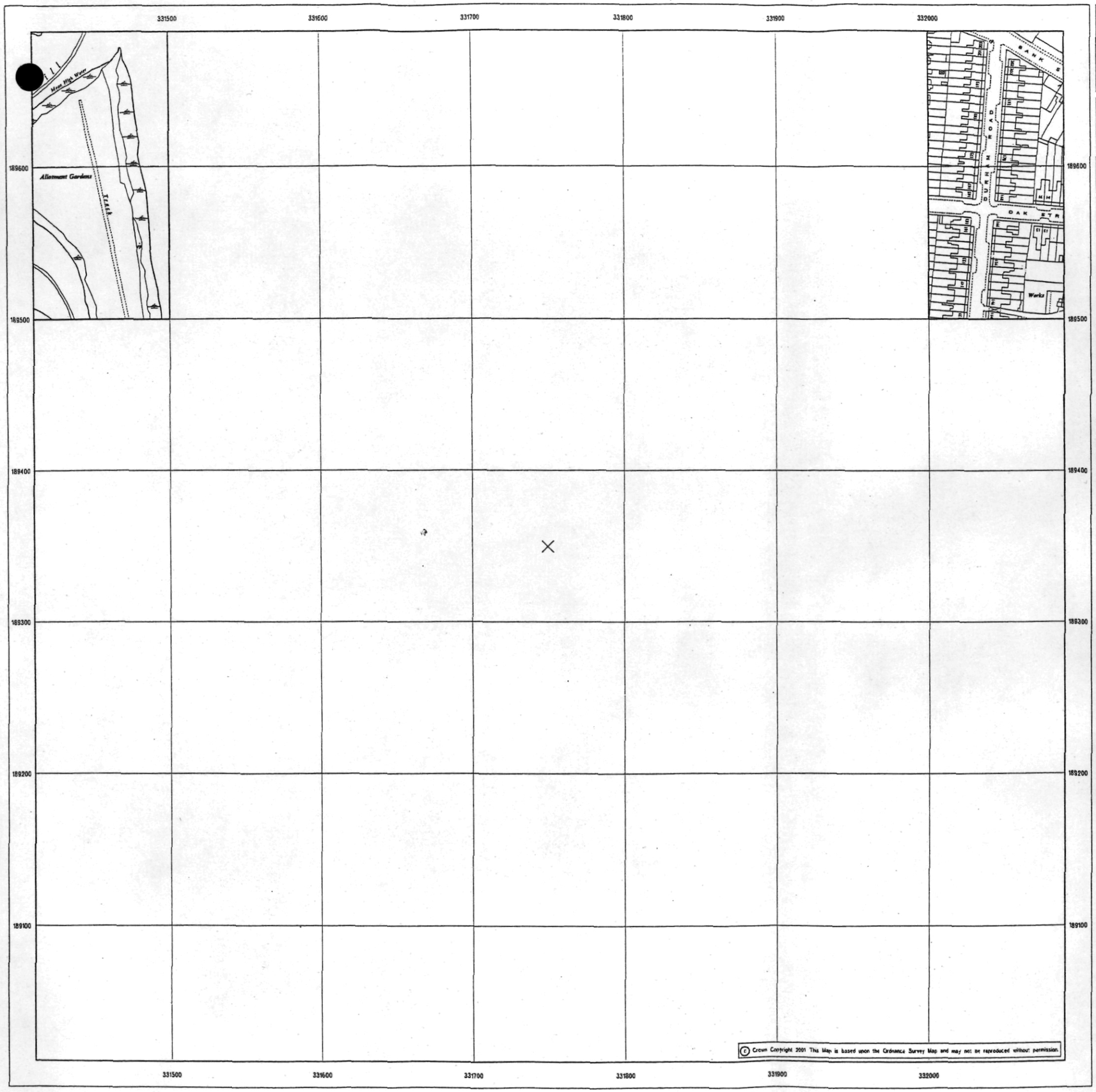

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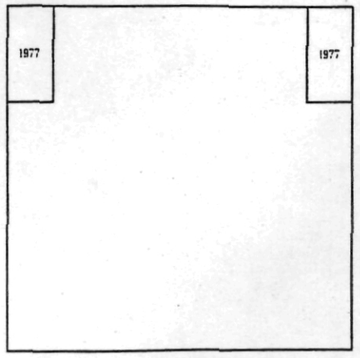

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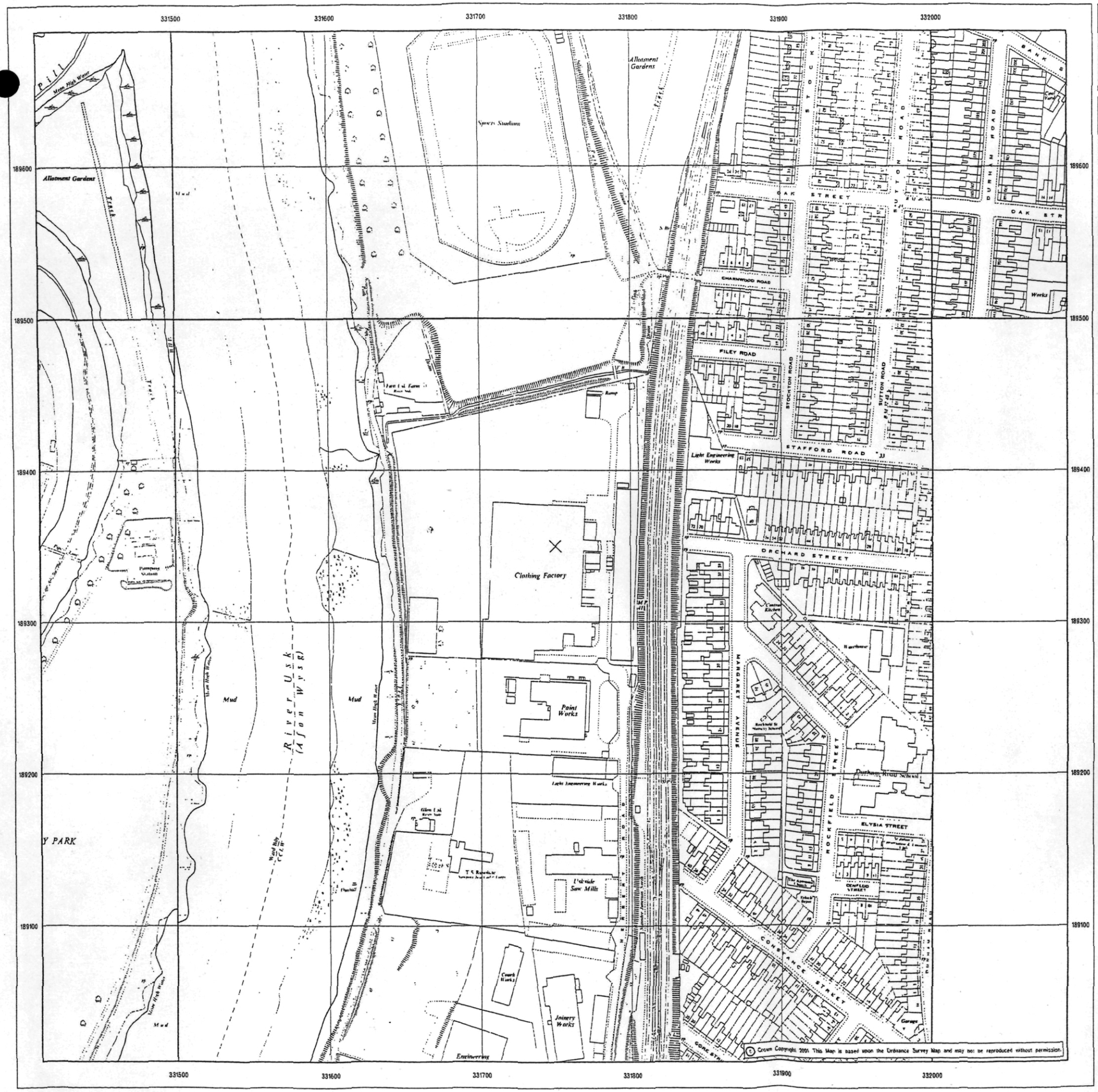

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1967	1966	

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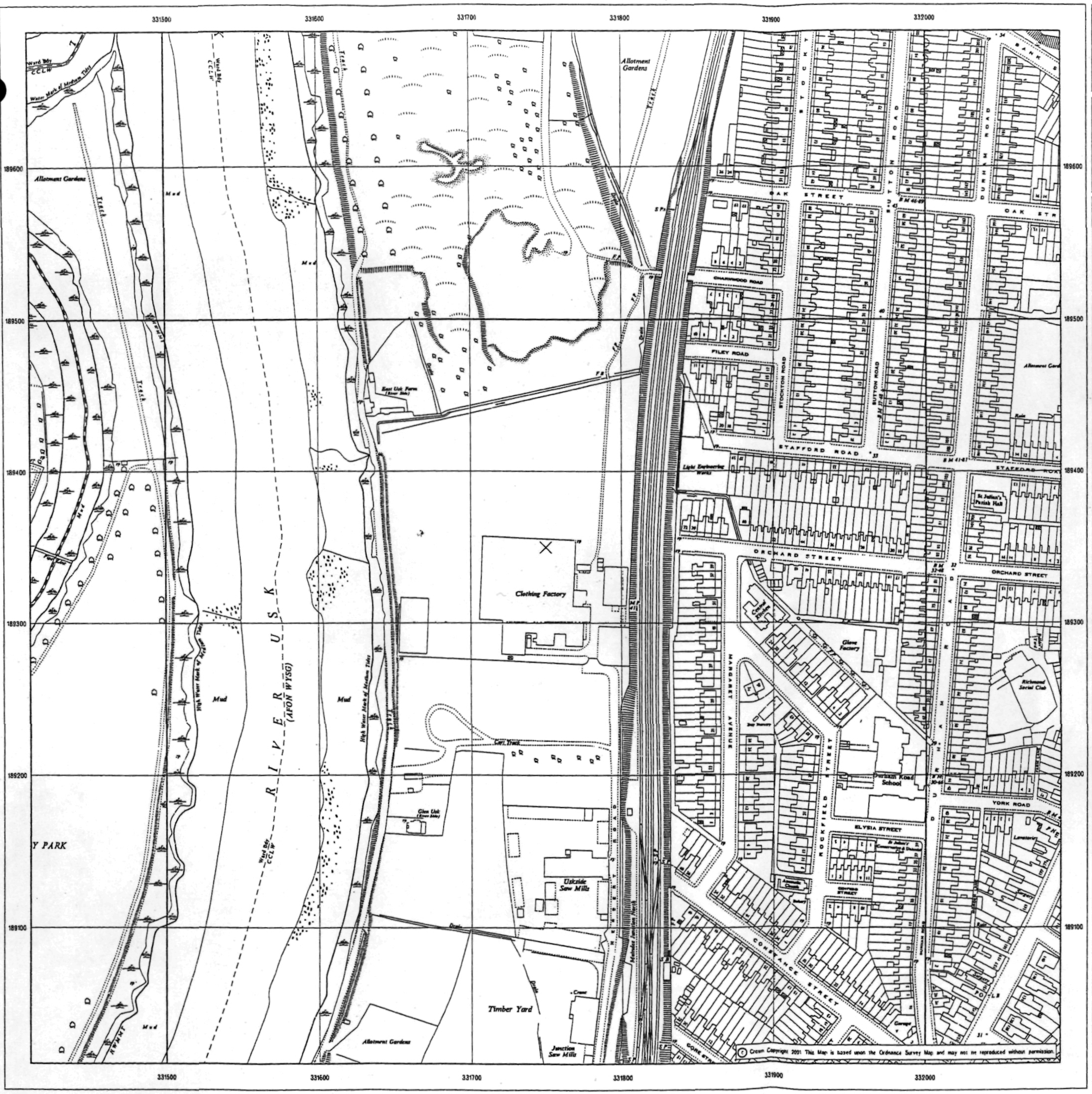

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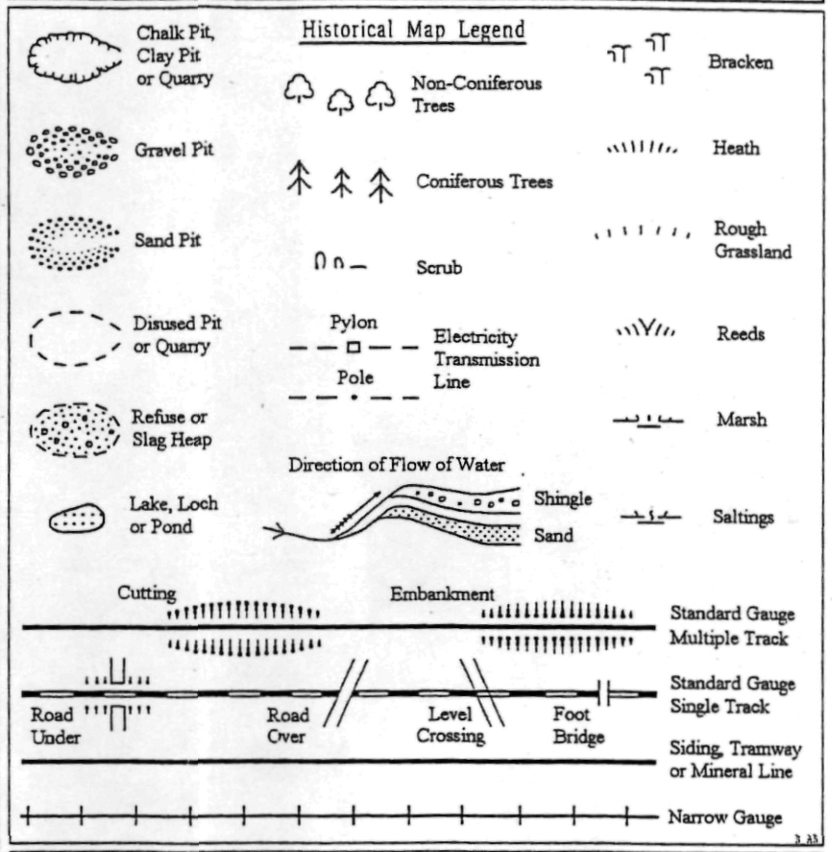

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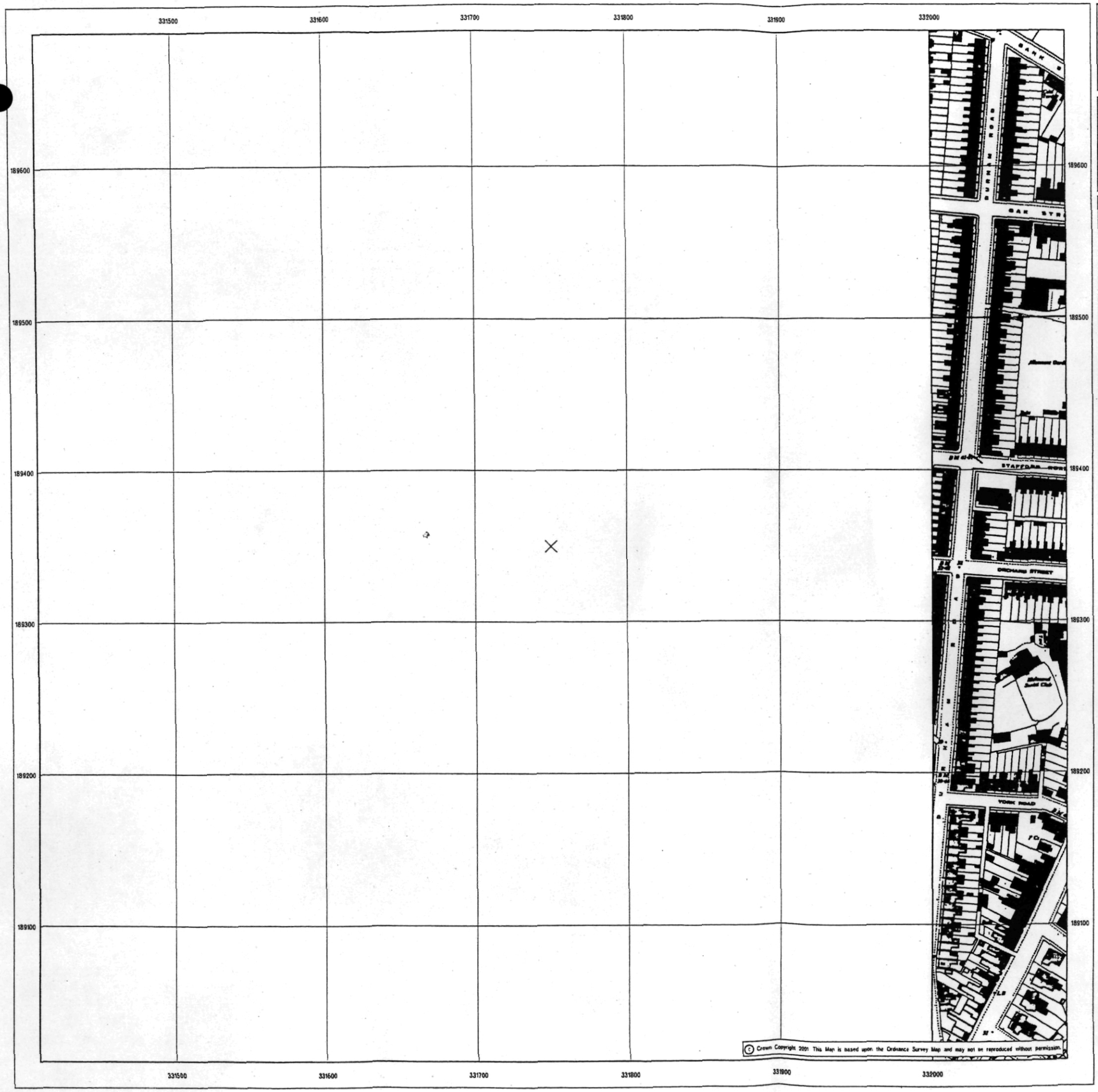

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1969

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2). Planning Conditions

REVISED PLANNING BRIEF TEXT AND CONDITIONS ATTACHED TO OUTLINE PLANNING CONSENT (REF 00/768/DC)

THE GLEBELANDS/HERBERT ROAD

1 INTRODUCTION

1 1 The site which is the subject of this brief has been identified for a new primary school and housing in the Adopted Usk Riverfront local Plan (1993) and the Deposited Unitary Development Plan (1999) The Newport Development Board Strategy covering the Glebelands area makes provision for both an infant and junior school and associated uses, in addition to the opportunities for a structured housing programme

1 2 This adopted Brief follows a period of public consultation which took place on the draft document over a six week period during July/August 2000 The Brief was approved subject to amendments by the Executive Service Leader for Development in August 2000

1 3 An outline planning application for a Replacement Primary School, All Weather Pitch, Soft and Hard Play Areas and Residential Development has been approved by the Planning Committee and the Council (October 31st 2000) This covers the area of land in Council ownership which is subject to the Private Finance Initiative through which funds will be made available to construct the new primary school It is intended that housing land will be made available to the selected bidder which will contribute to the overall financing of the scheme

2 PURPOSE OF THE BRIEF

2 1 Planning Briefs are prepared as Supplementary Planning Guidance to interpret more clearly and in more detail policies in the Newport County Borough Council Unitary Development Plan 1996 - 2011 and, also, in the case of the Glebelands, proposals of the Usk Riverfront Local Plan (Adopted September 1993 - Proposals E1 - New Primary School and H9 - Housing Site - Glebelands/ Compton Webb site, Herbert Road)

2 2 Welsh Office Planning Guidance (Unitary Development Plans April 1996) advises that supplementary guidance can usefully elucidate and exemplify plan policies, giving certainty to those affected by the proposals and those involved in the design and development process The weight accorded to the supplementary guidance by inspectors at public inquiries (Planning appeals and UDP Inquiries) increases where it has been prepared in consultation with the public and has been the subject of a Council resolution

2 3 The purpose of this Brief is thus -

(1) to interpret Deposited Unitary Development Plan and Adopted Usk Riverfront Local Plan policies on a more detailed basis,

(2) to ensure that the new school, housing and leisure developments proposed offer distinct enhancement to their local environment,

(3) to encourage additional housing development on privately owned land at Herbert Road,

4 SITE LOCATION (See Plans 1 and 2)

4 1 The site, some 9 hectares in total is located approximately 1 kilometre north east of Newport Town Centre on the east bank of the River Usk between the Newport to Hereford railway line and the river To the north are recreational facilities in the form of playing fields, bowling green and indoor bowls centre To the south is a mixed residential and commercial area An area of allotment gardens occupies a triangular site bounded by the railway to the east

4 2 The site encompasses

(i) the Glebelands Stadium, ie running track and adjacent gravel surface sports pitch to the south These uses occupy a former refuse tip site (tipping ceased approximately 50 years ago) of 4 hectares in extent (The land is in Council ownership),

(ii) an area of cleared land formerly occupied by a textile manufacturer (Compton Webb) - 2 8 hectares (This land is also in Council ownership)

(iii) A strip of river frontage, on a raised bank between 2 and 4 metres above the industrial units is owned by the Council

(ix) The Herbert Road site (2 hectares) mainly comprises industrial units, some of which, such as the former Hempel Marine Paints (0 89 h) and Jewson (0 57h) sites, are partially occupied They are in private ownership A sea cadet hut, HMS Resolute, occupies a site of 0 43 hectares

traffic

5 8 If it assumed that all school traffic will use the Bank Street access, the existing junction with Caerleon Road, according to traffic data, would be over capacity by 2011 This is a worse case scenario as it is anticipated that a proportion of school traffic, albeit a small one, will use the riverfront boulevard It is nevertheless clear that improvements to the junction will be required, in the form of signal controls at the Bank Street/Caerleon Road junction

Residential Amenity

5 9 If the above highway works are implemented it is considered that the increased traffic will not, at the points described, demonstrably worsen the existing situation and is likely, particularly in the short term, to lessen the disturbance associated with traffic backlogs Traffic will, however, inevitably increase along principle access routes and residents along those routes will be affected compared with the existing situation Nevertheless it is anticipated that further phases of residential development involving the redevelopment of existing commercial uses will be encouraged by the scheme This would have the effect of reducing commercial traffic in the area

7 GROUND CONDITIONS

7 1 Surveys of ground contamination have been undertaken in the area since the Barrage proposals in the early 1990's The findings resulted in concern over potential risks from previous tipping operations over 50 years ago as industrial as well as household waste was disposed of on the former landfill site However, it was concluded that contamination would not prove a major obstacle to development other than procedures for developing contaminated land would have to be observed

7 2 A Review of Existing Information was published by High Point Rendell in July 1999 The study concluded that the two uses may be developed as proposed, ie -New school on the stadium site, Housing on the Compton Webb site It is considered feasible, bearing in mind the controlled nature of the structure and the relatively low concentrations of landfill gas at the site, to construct the proposed new school buildings on the stadium site Options include deep floor foundations leaving the landfill in place with a sub-floor barrier underlain by a free venting layer In-building automatic monitoring would be desirable Alternatively all landfill materials beneath the buildings' footprint could be removed and replaced with inert, low permeability material If housing were considered on part of the landfill site the latter option would be applicable unless the type of housing proposed minimised garden areas

7 3 Gwent Consultancy's Land Reclamation Unit have prepared a Contamination Investigation Report (June 2000) Trial pit information from 27 sites has shown various 'hot spots' where contaminants potentially harmful to health (phenols and heavy metals) and plants (other metals) exceed 'trigger' levels for amenity and open space There are also quantities of asbestos present in some trial pits

7 4 It is clear that previous uses have affected the quality of soils and groundwater within this this area Contaminants which have been identified, particularly those which are present in concentrations potentially harmful to health, will need to be removed or treated in situ On the basis of results obtained to date it is considered that the effects of contamination can be remediated

7 5 Residents during the consultation exercise on the draft Brief expressed understandable concerns regarding the presence of toxic materials However, despite the numerous studies over the past ten years there is no evidence to suggest that contamination cannot be safely cleared or treated or should pose a long term risk to users of future development

7 6 Procedures for development on sites with varying levels of ground contamination will need to be carefully observed A comprehensive contamination remediation package, method of construction works, and detailed schedule of pre- and post-construction environmental management of the site will need to be secured by planning condition Any remediation package may include a requirement for additional site investigation work and all such works will need to be completed and checked prior to any development commencing on the site

7 7 In view of the above it is considered that these works and associated monitoring over the long term can ensure that contaminants on the site are removed or made safe to recognised standards and that the levels and effects of contamination and the success of the remediation works can be evaluated with a view to ensuring that there are no known immediate or long term effects or risks to human health

9 SITE CONSIDERATIONS

Design and Layout

Housing

9 1 In terms of design, layout and materials, the riverside treatment, the riverfront boulevard and the buildings fronting the river should be given special consideration as this part of the site will be viewed from a wide area

9 2 The new road along the riverfront should allow for an optimum area of retained open space which would incorporate tree planting, landscaping and other amenity features including sitting out areas, parking lay-bys and the continuous footpath/cycleway In order to maximise this open aspect it would be desirable to set the road back

9 3 The built frontage along the bank should have a "civic" dimension in order to reflect the scale of the river with extensive river views A mix of dwelling types is favoured, including apartments and linked 'town houses' and the height of buildings could exceed 3 storeys It would be desirable if buildings, in terms of height and aspect, were aligned to maximise the number of dwellings with south facing rooms and river views

9 4 Beyond the river frontage a mix of housing types is favoured with higher than average densities subject to the general provisions of this document Potential noise sources, including the railway line and any remaining commercial and industrial operations off Herbert Road would need to be addressed by appropriate planting, landscaping and noise mitigation measures

9 5 Significant land raising will be necessary across the Compton Webb site and the Phase 2 housing land off Herbert Road in order to meet Environment Agency flood prevention standards The visual characteristics of the site will not be adversely affected by the land raising required as it will provide a more level surface across the entire site

9 6 Revised school site requirements may allow for additional housing on the southern part of the site on part of the 'regra' pitch This would be subject to appropriate remediation measures and the layout would need to allow for the presence of trunk sewers and the need for access to manholes for maintenance purposes Some raising of levels on this site would also be required

Schools

9 7 A single storey development is favoured from an education point of view A total building footprint in the order of 3,300 square metres is anticipated It is yet to be established as to whether replacement leisure facilities would 'stand alone' or be incorporated with the school buildings

9 8 School and leisure requirements are being discussed prior to arriving at a final design solution, it is anticipated that this will emerge through the preferred private sector contractor's preferences in the context of the PFI scheme Prior to the submission of detailed plans for approval discussions with planning officers will be necessary In this context attention will need to be given to the design and materials in view of the visual prominence of the site Aspects of the site layout such as car parking, floodlighting and boundary treatment are also important considerations

Open Space and Landscaping

9 16 The area is well served by remaining playing field provision to the north In addition to the school site provision some residual open spaces should be incorporated in the site layout These include

(1) A "green corridor" along the reen as described

(2) The Riverfront,

(3) Buffers between residential and continuing industrial uses where appropriate along the railway and southern site boundary depending upon the phasing of redevelopment and to what extent industrial operations will remain

The road scheme along the riverfront will incorporate additional tree planting, landscaping and parking lay - bys Landscaping schemes will need to be carried out in accordance with plans to be approved by the Development Department which should show location, species and height of all trees and shrubs Particular emphasis will need to be given to riverside planting

9 17 Although higher than average density development is to be encouraged the incorporation in the layout of a hierarchy of spaces would be desirable, ranging from private garden areas to small scale sitting out areas and local play areas for young children It is anticipated that public open space will be adopted by the County Borough Council, who will be responsible for its future maintenance - subject to a commuted sum to be negotiated

9 18 General principles of the design layout and landscaping of the site should seek to create a safer, more secure environment Thus secure private areas and open, well viewed public areas are desirable Landscaping schemes should avoid creating hidden areas

Flood Defences

9 19 Environment Agency records show that parts of the site may be at risk from tidal flooding It is recommended that the site is protected against tidal flooding to a level of 9 8m Above Ordnance Datum The land fronting the river has been raised by fill material as has the stadium site and ranges from 8 5 to 9 8m AOD and will therefore not require significant raising The remainder of the area is at a lower level (7 - 8m AOD) and may thus require raising This would complement a contamination remediation programme, especially as some 'hotspots' are located in areas where land levels currently fall below 8 5 metres AOD

9 20 The requirement for flood risk alleviation across the site can be secured by condition Details of the land filling operations including types of material to be imported and how this will be controlled will need to be submitted There will also be a requirement for comprehensive cross sectional drawings of the site in relation to adjoining land in order to illustrate how the detailed design of the scheme has had regard to the requirement for land raising

10 NATURE CONSERVATION

10 1 Due to the location of the site adjacent to the River Usk, which is a Site of Special Scientific Interest (SSSI) as well as a Candidate for a Special Area of Conservation (CSAC), it is necessary to carry out an Appropriate Assessment under the Conservation (Natural Habitats) Regulations 1994

10 2 The river has been designated because the following species are of special interest to the River Usk -

(I) Allis Shad
(II) Twaite Shad
(III) Bullhead
(IV) River Lamprey
(V) Brook Lamprey

The river also supports the following species listed in Annex iv of the Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (The Habitat Directive) -
- Otter
- Atlantic Salmon

10 3 Conservation objectives for the CSAC are to -

- Maintain the availability and condition of current Shad spawning sites and Lamprey nurseries
- Maintain suitable flow, water quality and sediment foods to sustain populations of Shad, Lamprey and nurseries
- Maintain riparian habitats to ensure optimum conditions for Shad, Lamprey and Bullhead

10 4 The Usk is considered one of the best examples of a near natural river system in England and Wales The range of plants and animals reflects a transition from nutrient poor to naturally rich It was notified to protect a wide range of habitats and features It also acts as an important wildlife corridor, an essential migration route and a key breeding area for nationally and internationally important species, including the otter

10 5 There are no mid - channel works or development proposed to the river bank This will therefore be undisturbed as open space will be retained between the rivers edge and proposed development The development works which are likely to affect the cSAC are those during the construction phase and involve contamination remediation works, and transportation of materials for flood prevention, land remediation, and riverside boulevard formation Substantial earth moving works could lead to the release of suspended solids and contaminants into the river as run-off or via ground water disturbance It is intended that conditions be imposed which seek to control potential adverse effects by conditions requiring that contamination remediation and a programme of construction works be agreed Details will need to include measures to control any run off release or discharge of foul or turbid water into the river

10 6 The method by which oils and other chemicals will be stored, the nature of imported material and timing of works will be controlled by conditions on any approval to ensure that only clean, inert material is deposited, chemicals safely stored and fish

APPENDIX I - CONDITIONS ATTACHED TO OUTLINE PLANNING CONSENT - APPLICATION 00/0768/DC

RESERVED MATTERS

01 Details of the siting, design and external appearance of the buildings, the means of access thereto and the landscaping of the site (hereinafter called "the reserved matters") shall be obtained from the local planning authority in respect of the reserved matters and to comply with the provisions of Article 3(1) of the Town and Country Planning General Permitted Development Order 1995

02 Details provided in accordance with condition (1) and pursuant to discharging access as a reserved matter, shall include provisions to facilitate safe access for both cyclists and pedestrians This shall include the provision of a segregated pedestrian/cycle route that will provide access from Collier Street to the Glebelands recreation ground and the proposed school and housing development, and provision for a pedestrian/cycle route that will enable connection tothe existing pedestrian access route under the the existing railway underpass at Charnwood Road

Reason In the interest of promoting sustainability and facilitating access for all to the development and adjoining recreation ground in the interest of residential amenities

03 Details provided in accordance with condition (1) and pursuant to discharging landscaping as a reserved matter shall include details of existing trees and hedgerows on the site, identifying those features which are to be removed or retained, details of the method by which they will be protected during the course of construction, and provisions for landscape buffers north of Lotery's Reen, separating new residential and existing industrial developments and along the riverfront

Reason To maintain and reinforce existing landscape features on this prominent riverside site and to provide a suitable buffer between different land uses in the interest of visual and residential amenities

04 The landscaping scheme referred to in reserved matters shall be carried out in its entirety by a date not later than the end of the full planting season immediately following the completion of the development Thereafter, the trees and shrubs shall be adequately maintained for a period of 5 years from the date of planting and any which die or are damaged shall be replaced and maintained until satisfactorily established For the purposes of this condition a full planting season shall mean the period from October to April

Reason To secure the satisfactory implementation of the proposal

05 Details provided in accordance with condition (1) and pursuant to discharging siting as a reserved matter shall include a quantitative risk assessment that assesses levels of contamination on site and their potential to impact controlled water (groundwater and surface water) identified end receptors The risk assessment will have regard to the layout and design of the end/development use, particularly the foundation works required on site Such a risk assessment must be based upon information acquired following an investigation of the mobility of contamination on site in addition to the results of the site investigation entitled 'Durham Road Schools PFI Project Contamination Investigation Interpretative Report (June 2000)" and previous investigations in the area The risk assessment must identify any/all clean up levels required to ensure the integrity of controlled waters and identified end receptors A remediation strategy shall be formulated and approved in writing by the local planning authority and the agreed scheme shall be implemented in accordance with the approved details

the cessation of construction works at the site or such other time as may be agreed in writing by the local planning authority
Reason To prevent the deposit of material on the public highway and transmission of dust from the site and construction vehicles in the interest of highway safety and residential amenities

10 Prior to the commencement of construction on the approved scheme, details of the route by which all construction traffic will access the site, the number and size of vehicles required to import plant and equipment and a timetable for construction works shall be submitted to and approved in writing by the local planning authority Thereafter, construction traffic shall only use the approved routes unless otherwise agreed in writing by the local planning authority
Reason To minimise the impact of construction activity upon residential amenities and to safeguard highway interests

FLOOD PREVENTION

11 Prior to any construction work occurring on site the site shall be raised to a level of 9 8 metres Above Ordnance Datum with the finished floor levels of all development set 600mm above the 9 8 metres standard in accordance with details which shall first be submitted to and approved in writing by the local planning authority These details shall include the following
(a) comprehensive cross sectional drawings illustrating existing and proposed land levels across the site, the relationship between existing and proposed development, and confirmation of finished slab levels, and
(b) programme of land raising works which shall contain information relating to the amount of material to be imported, the type of material to be imported, the number and size of vehicles required to import the material, the route by which traffic will travel, a timetable for land raising works, a detailed method of dust suppression during the course of land raising activity, and a restoration plan for the site
Reason to safeguard against flooding and protect the amenities of future users of the site

POLLUTION PREVENTION &SAFEGUARDING OF CONSERVATION OBJECTIVES

12 Nothing other than uncontaminated excavated natural materials shall be tipped on the site
Reason to prevent pollution of the water environment and safeguard the conservation objectives of the River Usk cSAC

13 There shall be no discharge of foul or contaminated drainage from the site into either groundwater or any surface waters, whether direct or via soakaways
Reason to prevent pollution of the water environment and to safeguard the conservation objectives of the River Usk cSAC

14 No development shall commence on the construction of the approved scheme until a scheme for the disposal of foul and surface waters has been submitted to, and approved in writing by the local planning authority The scheme shall be completed in accordance with the approved details prior to the commencement of development
Reason To prevent pollution of the water environment, in the interests of amenities and to safeguard the conservation objectives of the River Usk cSAC

15 No obstructions to access shall be erected or placed within 7 metres of the top of the riverbank and there shall be no trafficking of vehicles or plant within this buffer zone at any time This buffer shall at all times be kept free of any spoil, stored materials, plant, machinery, and any structures unless otherwise agreed in writing by the local planning authority

3). Response from Environment Agency

Ein cyf/Our ref SE\2000\004260\001
Eich cyf/Your ref CONEX/00/0768

Dyddiad/Date 17th August 2000

ASIANTAETH YR AMGYLCHEDD CYMRU
ENVIRONMENT AGENCY WALES

Mr W L Mitchell
Newport County Borough
Civic Centre
Newport
NP9 4UR

Amended letter

Annwyl Syr/Madam / Dear Sir/Madam

GR ST3189 - REPLACEMENT PRIMARY SCHOOL, ALL WEATHER PITCH, SOFT & HARD PLAY AREAS & RESIDENTIAL DEVELOPMENT - GLEBELANDS, ST JULIANS, NEWPORT

Thank you for referring the above application, which was received on 14 July 2000

This site is adjacent to the River Usk SSSI, cSAC which receives particular protection as a conservation site of European significance There must be no adverse impact on this site as a result of the proposed development An appropriate assessment of effects might be required and full consultation with CCW is advised

Agency records show that the site or part of the site may be at risk of tidal flooding from the River Usk The developer should be requested to submit a topographical survey indicating both existing and proposed levels at half metre intervals (the levels must relate to Ordnance Datum) The developer should then ensure that the site is raised to a level of 9 2 metres Above Ordnance Datum with finished floor levels set 600mm above (or a protection is provided to 600mm above) to afford a level of protection equal to the 9 8 metres standard

Activities carried out at this site in the past may have caused contamination of soils, subsoils and groundwater (water in both unsaturated and saturated zones) Therefore, it is recommended that any planning permission require the applicant to carry out a site investigation to the satisfaction of the Planning Authority, in consultation with The Agency to determine the nature and extent of contamination In the event that contamination of the site is confirmed the developer should liaise with The Agency on measures required to protect surface water and groundwater interests

In view of the above information, we recommend that a survey for the presence of landfill gas is carried out on land subject to this consultation, before the application is determined

Cont/d

Asiantaeth yr Amgylchedd Cymru
Ty Abacus Parc Busnes, Llandirwg Caerdydd, CF3 0LY
Ffon 029 20770088 Ffacs 029 20798555

Environment Agency Wales
Abacus House, St Mellons Business Park St Mellons Cardiff CF3 0EY
Tel 029 20770088 Fax 029 20798555

Waste Management Paper No 27 "Landfill Gas" recommends that no house, garden shed, greenhouse or any domestic extension should be constructed within 50 metres of any landfill site which -a) has landfill gas concentrations at or above 1% by volume flammable gas and 1 5% by volume carbon dioxide, orb) still has potential to produce large quantities of landfill gas

The applicant should be advised that any site investigations undertaken should be sufficiently comprehensive so that if any material is to be disposed of to a licensed landfill site no further analysis, specific to that landfill site, will be required - i e total and soluble chemical analysis

Insufficient technical information was submitted with this application Given both the historical and existing land-uses at the site the Environment Agency Wales would be concerned regarding the potential for contamination in any made ground/drift deposits in the area Therefore the following should be undertaken prior to any demolition or development work beginning on site Appropriate site investigations should be undertaken across the site, such that the potential impact on controlled waters can he assessed This site investigation must,

i Establish ground conditions and take representative soil and groundwater samples across the site

ii Establish both the total and leachable levels of each contaminant within the soils and/or made ground on site

iii Establish the quality of groundwater below the site and the direction of ground water flow

A risk assessment must be completed for any contaminant encountered Such a risk assessment should use both the results of the site investigation and any previous investigations in the area. This assessment should address the following issues -

i Identify all potential end receptors for groundwater leaving each site

ii Identify the potential risk to each identified end receptor from each contaminated site

iii Identify and agree in writing with the Environment Agency Wales appropriate mitigating measures to protect identified end receptors

iv An appropriate quality assurance testing and reporting programme must be agreed in writing with the Environment Agency Wales, to minimise any impacts from the developments on the aquatic environment

The Agency would require suitable pollution prevention measures to be agreed with the planning authority, in consultation with the Agency to minimise any impacts from the developments on the aquatic environment

Cont/d

With respect to the proposed development of the primary school there would be concerns regarding the type of foundations to be used as part of the construction

Therefore, an assessment of the likely impacts of the preferred method of foundation construction on the underlying groundwater bodies should be carried out

Should the above matters be successfully resolved the Agency would recommend the inclusion of the following conditions within any permission granted

CONDITION No development approved by this permission shall be commenced until a scheme for the disposal of foul and surface waters has been approved by and implemented to the reasonable satisfaction of the Local Planning Authority REASON To prevent pollution of the water environment

CONDITION Before the development hereby permitted commences a site investigation should be carried out to ascertain the presence of landfill gas and a report on the investigation shall be submitted for the consideration and approval of the LPA The report shall include the results of the survey and recommendations regarding any structural precautions to be incorporated into the building(s) REASON In the interests of the safety of future occupants of the building(s)

CONDITION Nothing other than uncontaminated excavated natural materials shall be tipped on the site REASON To prevent pollution of the water environment

CONDITION There shall be no discharge of foul or contaminated drainage from the site into either groundwater or any surface waters, whether direct or via soakaways REASON To prevent pollution of the water environment

It is recommended that a buffer of at least 7m is maintained between the development and the river bank to preserve conservation interest in the riparian area No trees or vegetation should be removed from this zone

The Agency considers it essential that the development is designed to permit adequate access to the watercourse/s for maintenance purposes, and that such access is kept free of any impediment to such access in perpetuity It is essential that this aspect of the site layout is agreed with the Environment Agency Wales (together with the arrangements to secure future compliance) prior to the issue of any Planning Approval

In addition the following should be noted -

Under the terms of the Water Resources Act 1991 and the Land Drainage Byelaws, the prior written consent of The Agency is required for any proposed works or structures in under, over or within 7 metres of the top of the bank of the main river (River Usk)

Under the terms of the Water Resources Act 1991 and the Land Drainage Byelaws, the prior written consent of the Agency is required for any proposed works or structures either affecting or within 7 metres of the tidal or fluvial flood defence

Cont/d

Site operators should ensure that there is no possibility of contaminated water entering and polluting surface or underground waters

No material is to be deposited within 10m of any watercourse/ditch or spring

Any waste excavation material or building waste generated in the course of the development must be disposed of satisfactorily and in accordance with section 34 of the Environmental Protection Act 1990

If controlled wastes are to be utilised for construction purposes the developer must register the activity with the Environment Agency Wales The Duty of Care Regulations apply to all movements of controlled waste

Carriers transporting waste from the site must be registered waste carriers

Yn gywir/Yours faithfully

pp L Price

Anthony Wilkes
Team Leader Planning Liaison

Gofynnwch am/Please ask for Laurence Price

APPENDIX C

PREVIOUS SITE INVESTIGATION DATA

1). Environmental Advisory Unit (EAU), 1994 and Integral Geotechnique, April 1995.

APPROXIMATE LOCATION OF CHILDREN S PLAY AREA

CRICKET CIRCLE (SUMMER)

Kilvorment Gardens

WG11

WG13

WG14

WG15

WG16

WG17

WG18

WG19

WG20

SCHOOL SITE

St Julian s Glebelands (Recreation Ground)

Mean High Water

Mud

River Usk (Afon Wysg)

ISSUE	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
0	07/99	ORIGINAL	ALS	CFS	

CLIENT

NEWPORT COUNTY BOROUGH COUNCIL

PROJECT

GLEBELANDS

TITLE

BOREHOLE LOCATION PLAN - SCHOOL SITE

High-Point Rendel
capital management engineering carbonity

High Point Rendel Limited
Norfolk House, Smallbrook Queensway Birmingham B5 4LU
Tel 0121 627 1777 Fax 0121 643 6024

ORIG SCALE	DRG Nº	ISSUE
1:1250	FIGURE NO 2.1	0

ontract	SW208	Coordinates	E331745 N189738
lt	Newport B C	Dates	22/10/93

...d Methods	Job Number	SW208	Orientation Vertical
	Borehole Number	WG15	Ground Level 9 70
	Location	Glebelands South	

Water Level	In-Situ Tests	Samples Taken	Remarks	Depth m	Thickness	Strata Descriptions	Red Level	Legend
				0 07	(0 07)	ASPHALT	9 63	
		B S1	bag & jar PID 0					
		B S2	bag & jar PID 0	2 10	(2 03)	Medium dense to loose MADE GROUND black fine to medium silty sand gravel & cobbles of brick some grass & pottery dry no odour much ash Pocket of red brown gravelly clay medium firm brittle damp no odour at 1 4-1 6m	7 60	
		B S3	bag & jar PID 0	2 50	(0 40)	MADE GROUND as above but wet	7 20	
		B S4	bag & jar PID 0	2 80	(0 30)	MADE GROUND mixed into dark grey SILT, much rootlets wet no odour	6 90	
		B S5	bag & jar PID 0	4 30	(1 50)	Very firm grey with occassional brown mottling SILTY CLAY occassional rootlets damp no odour recent alluvium	5 40	
				4 90	(0 60)	Loose red brown SILTY SAND with some well rounded gravel wet no odour	4 80	
				5 70	(0 80)	Dense red brown with grey patches BOULDER CLAY fine silty clayey sand well rounded gravel & cobbles damp no odour	4 00	
				6 00	(0 30)	As above BOULDER CLAY with angular gravel of marl damp to dry	3 70	
				6 10	(0 10)		3 60	
				6 50	(0 40)	As above BOULDER CLAY more gravelly less cohesive	3 20	
						Very hard fine SILTY SANDSTONE (MARL) red brown with greenish grey laminations fresh no definite fabric other than the green grey laminations breaks into angular gravel to cobbles water struck at 6 1m		
						End Of Borehole		

Sample Types
Disturbed
Bulk Disturbed
Water
Piston
Jar
Thin Wall
No Recovery

In-Situ Tests
S SPT Value
C CPT Value
\+ Seating Blows
‡ Inc Seating Blows
Ⅰ No Penetration
\+ Sampler Sank
V Vane Test
k Permeability

Progress / Water Levels
___Borehole Depth

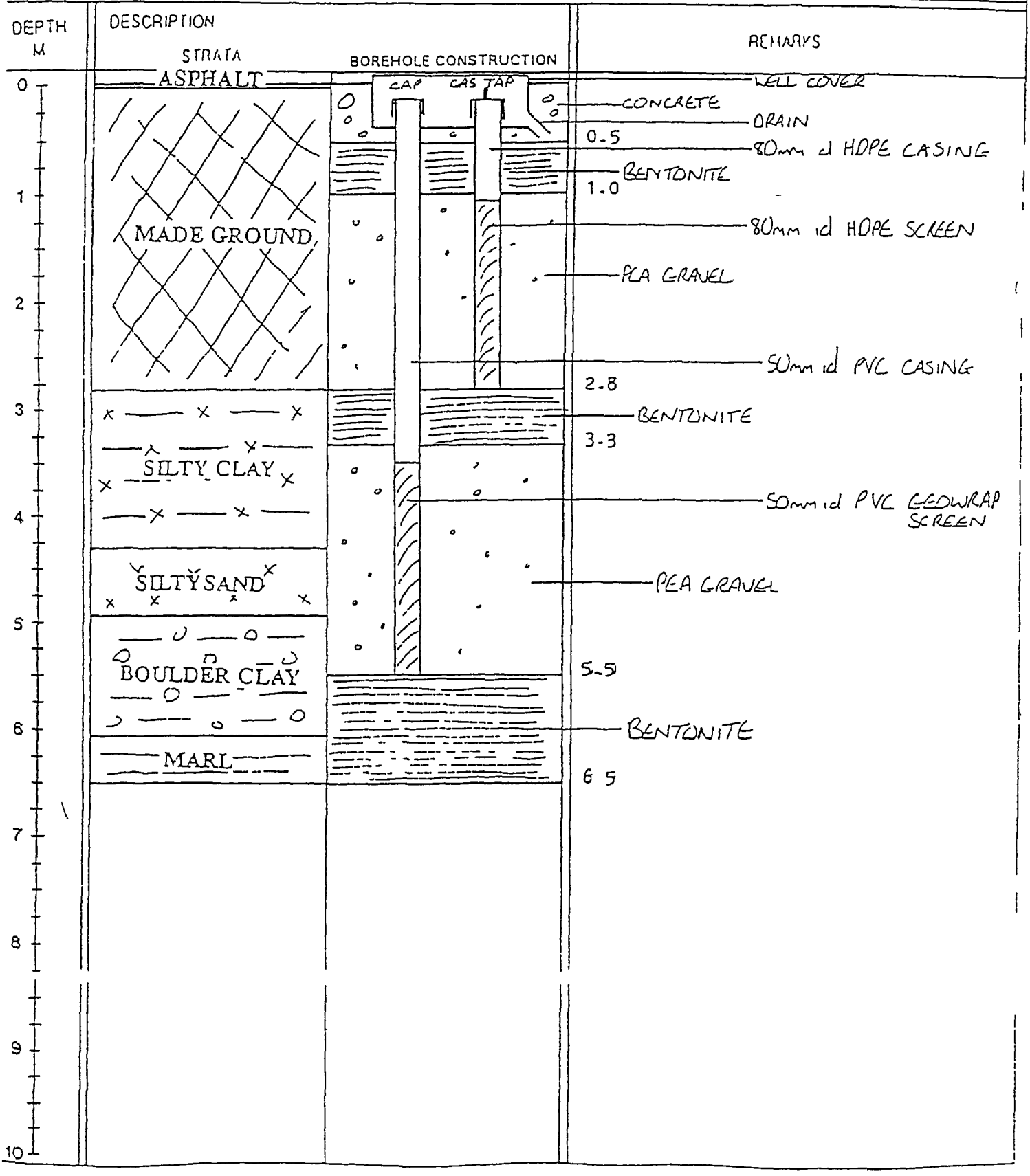
_ _Casing Depth
Water Level a m
Water Level p m
Water Strike
Standpipe Reading

General Remarks
(PID) Photo Ionisation Detector

Scale 9 0	Sheet No 1 Of 1 Depth 0 to 9 metres	
Operator F S	Appendix	Figure No

environmental advisory unit

SW208	Newport B C
BOREHOLE NO: WG 15	LOCATION: Glebelands South
DATE: 22/10/93	FIELD OFFICER: FS
SHEET OF: 1 of 1	



Contract SW208

ent Newport B C

Coordinates E331635 N189712
Dates 21/10/93

nt and Methods
Auger

Job Number SW20B
Borehole Number MG16
Location Glebelands South

Orientation Vertical
Ground Level 9 70

Prog	Water Level	In-Situ Tests	Samples Taken	Remarks	Depth m	Thickness	Strata Descriptions	Red Level	Legend
					0 00			6 L	
					0 20	(0 20)	Dark brown gravelly topsoil	9 50	
			B S1	bag & jar PID 0		(1 30)	Loose dark grey brown with orange patches MADE GROUND fine silty to coarse sand gravel & cobbles dry no odour much ash brick some glass plastic & pottery		
					1 50			8 20	
			B S2	bag & jar PID 0		(0 50)	MADE GROUND as above wet		
			B S3	bag & jar PID 0	2 00	(0 70)	Soft to firm MADE GROUND mixedwith silty clay dark grey some rootlets & vegetation	7 70	
			B S4	bag & jar PID 0	2 70	(1 00)	Firm grey with brown mottles SILTY CLAY damp no odour moderate plasticity recent alluvium	7 00	
					3 70	(2 80)	SILTY CLAY as above withwet seams	6 00	
					6 50	(0 90)	SILTY CLAY as above with traces of peat	3 20	
					7 40	(0 20)		2 30	
					7 60	(0 40)	Firm medium brown fibrous PEAT damp to dry strong rotting odour	2 10	
					8 00		Soft fine SANDY SILTY CLAY with some well rounded gravel & cobbles occassional plant remains moderate rotting odour wet	1 70	
							End Of Borehole		

Sample Types
D Disturbed
Bulk Disturbed
W Water
P Piston
J Jar
T Thin Wall
No Recovery

In-Situ Tests
S SPT Value
C CPT Value
+ Seating Blows
‡ Inc Seating Blows
X No Penetration
→ Sampler Sank
V Vane Test
k Permeability

Progress / Water Levels
___ Borehole Depth

_ _ Casing Depth
▼ Water Level a m
▽ Water Level p m
▷ Water Strike
⊙ Standpipe Reading

General Remarks
(PID) Photo Ionisation Detector

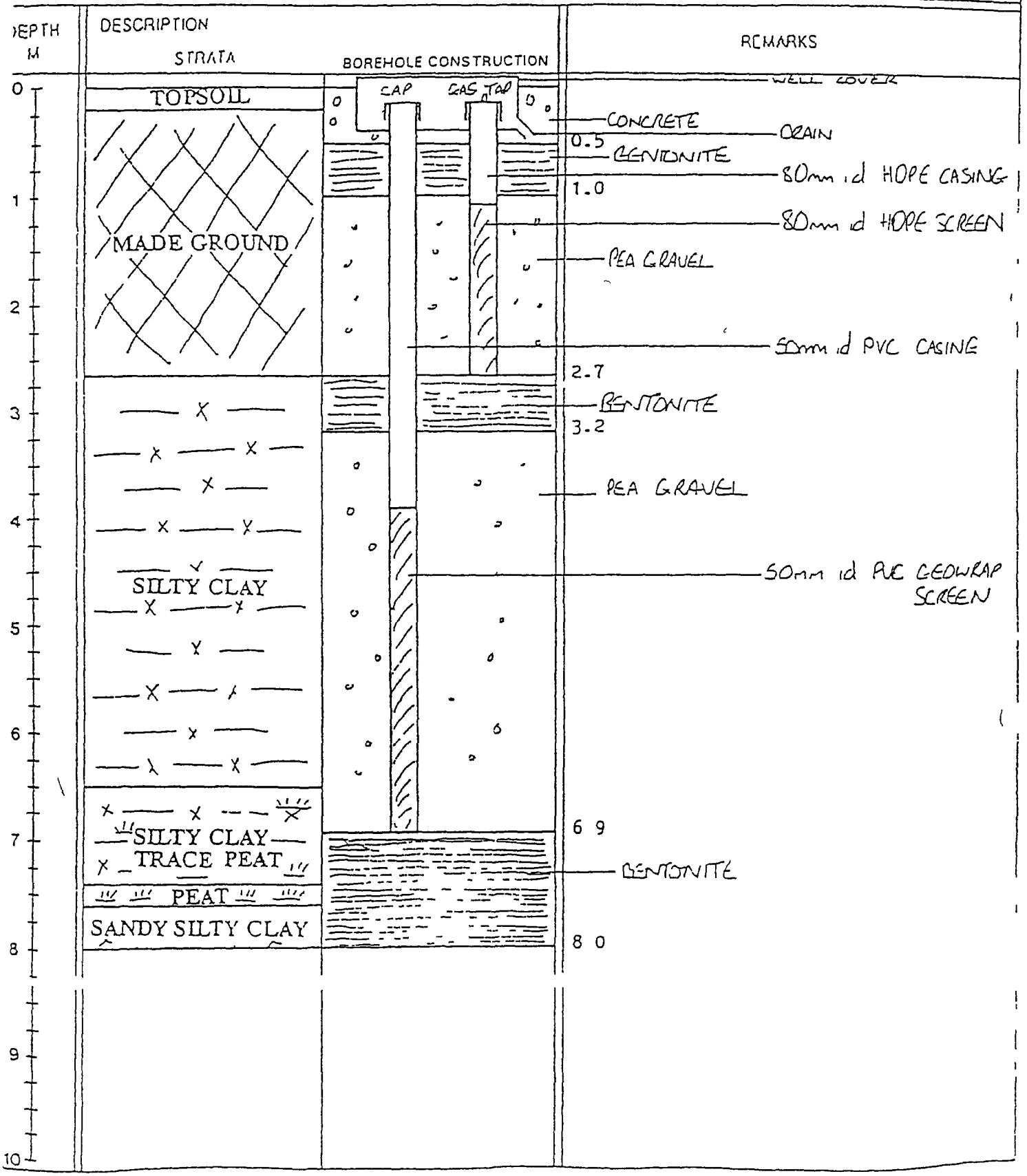
Scale	Sheet No	1 Of 1
9 0	Depth	0 to 9 metres

Operator	Appendix	Figure No
F S		

environmental advisory unit

JOB NUMBER	CLIENT
SW208	Newport B C
BOREHOLE NO	LOCATION
WG 16	Glebelands South

DATE	FIELD OFFICER	SHEET OF
21/10/93 / 22/10/93	F S	1 of 1



ntract SW208
ent Newport B C

Coordinates E331774 N189586
Dates 25/10/93

ent and Methods
& Auger

Job Number SW208
Borehole Number WG17
Location Glebelands South

Orientation Vertical
Ground Level 9 70

Water Level	In-Situ Tests	Samples Taken	Remarks	Depth m	Thickness	Strata Descriptions	Red Level	Legend
				0 10	(0 10)	Dark brown gravelly topsoil	9 60	
		B S1	bag & jar PID 0			Loose MADE GROUND dark grey brown with some rusty brown, fine to coarse sand & gravel ashy brick glass pottery dry no odour abundant shells at 2 3m wet at 2 9m		
		B S2	bag & jar PID 0		(2 90)			
		B S3	bag & jar PID 0	3 00			6 70	
		B S4	bag & jar PID 0	3 20	(0 20)	Medium stiff MADE GROUND mixed with grey & black silty clay damp no odour	6 50	
			water seepage	3 60	(0 40)	Firm, grey with brown mottling SILTY CLAY slighty plastic damp no odour occassional rootlets recent alluvium	6 10	
				4 80	(1 20)	SILTY CLAY as above damp to wet firm to soft	4 90	
				6 40	(1 60)	Medium loose red brown with some grey patches fine SILTY SAND with some well rounded gravel damp occassional rootlets no odour gravel becomes more angular with depth Wet at 5 2m	3 30	
				7 00	(0 60)	Dense red brown fine SILTY CLAYEY SAND & GRAVEL damp to dry no odour gravel is sub-angular to well rounded	2 70	
				8 00	(1 00)	SILTY CLAYEY SAND & GRAVEL as above with grey mottling dry	1 70	
						End Of Borehole		

Key

ple Types
_ Disturbed
B Bulk Disturbed
W Water
Piston
Jar
Thin Wall
* No Recovery

In-Situ Tests
S SPT Value
C CPT Value
\+ Seating Blows
‡ Inc Seating Blows
X No Penetration
\+ Sampler Sank
V Vane Test
k Permeability

Progress / Water Levels
____Borehole Depth

_ _Casing Depth
Water Level a m
Water Level p m
Water Strike
Standpipe Reading

General Remarks
(PID) Photo Ionisation Detector

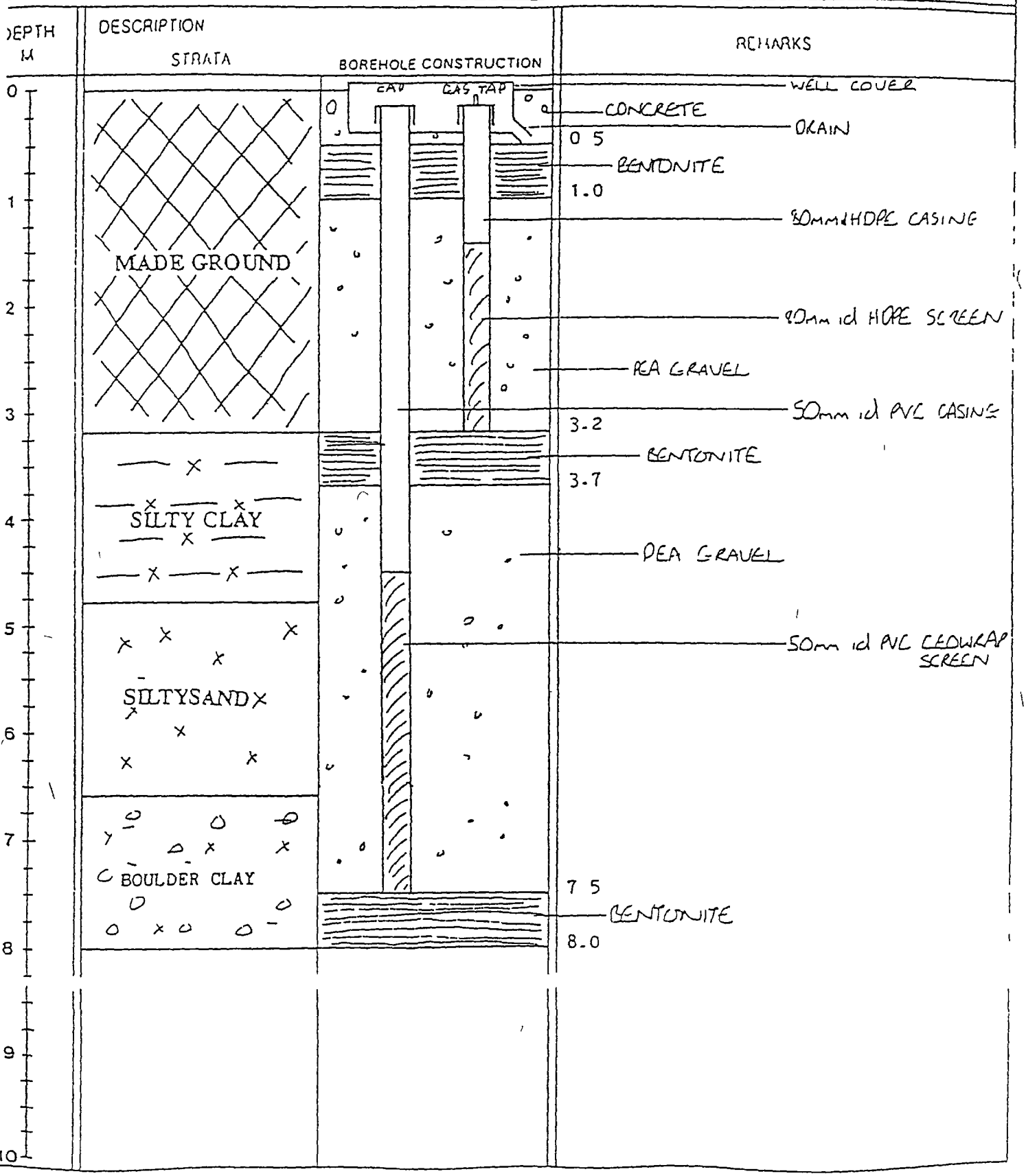
Scale	Sheet No	Depth
9 0	1 Of 1	0 to 9 metres

Operator	Appendix	Figure No
F S		

environmental advisory unit

JOB NUMBER	
SW208	Newport B C
BOREHOLE NO	LOCATION
WG 17	Glebelands South

DATE	FIELD OFFICER	SHEET OF
25/10/93	FS	1 of 1



Contract SW208
Client Newport B C

Coordinates E331720 N189578
Dates 26/10/93

Shell and Methods
Auger

Job Number SW208
Borehole Number WG18
Location Glebelands South

Orientation Vertical
Ground Level 9 70

Fr.ug	Water Level	In-Situ Tests	Samples Taken	Remarks	Depth m	Thickness	Strata Descriptions	Red Level	Legend
					0 00			G L	
						(0 30)	Dark brown topsoil		
					0 30			9 40	
			B S1	bag & jar PID 0			Loose MADE GROUND dark grey ashy gravelly & cobbly brick stone glass & some pottery dry no odour Becomes wet at approx 2 5m		
						(2 30)			
			B S2	bag & jar PID 0					
			B S3	bag & jar PID 0	2 60			7 10	
						(0 90)	As above MADE GROUND mixed into grey clayey silt with black mottling no odour		
			B S4	bag & jar PID 0	3 50			6 20	
						(1 30)	Firm SILTY CLAY grey & brown mottled damp to dry not plastic recent alluvium occassional rootlets becomes damp to wet with depth wet in grey root channels		
					4 80			4 90	
						(0 50)	CLAYEY SILT as above soft wet all grey		
					5 30			4 40	
						(0 70)	Fibrous soft compressible PEAT damp moderate rotting odour		
					6 00	(0 10)		3 70	
					6 10		PEAT mixed with grey brown damp soft silt no odour	3 60	
						(1 00)	Loose soft very silty fine SAND Occassional gravel grey with red brown patches damp to wet no odour occassional vegetation gravel & cobbles well rounded grades into predominantly red brown with depth		
					7 10			2 60	
						(0 90)			
					8 00		Firm dense very clayey SILT with well rounded gravel & cobbles (Screel) damp no odour red brown with red streaks occassional rootlets some fine sand	1 70	
							End Of Borehole		

Sample Types
D Disturbed
B Bulk Disturbed
W Water
P Piston
J Jar
T Thin Wall
X No Recovery

In-Situ Tests
S SPT Value
C CPT Value
+ Seating Blows
‡ Inc Seating Blows
R No Penetration
+ Sampler Sank
V Vane Test
k Permeability

Progress / Water Levels
Borehole Depth

Casing Depth
Water Level a m
Water Level p m
Water Strike
Standpipe Reading

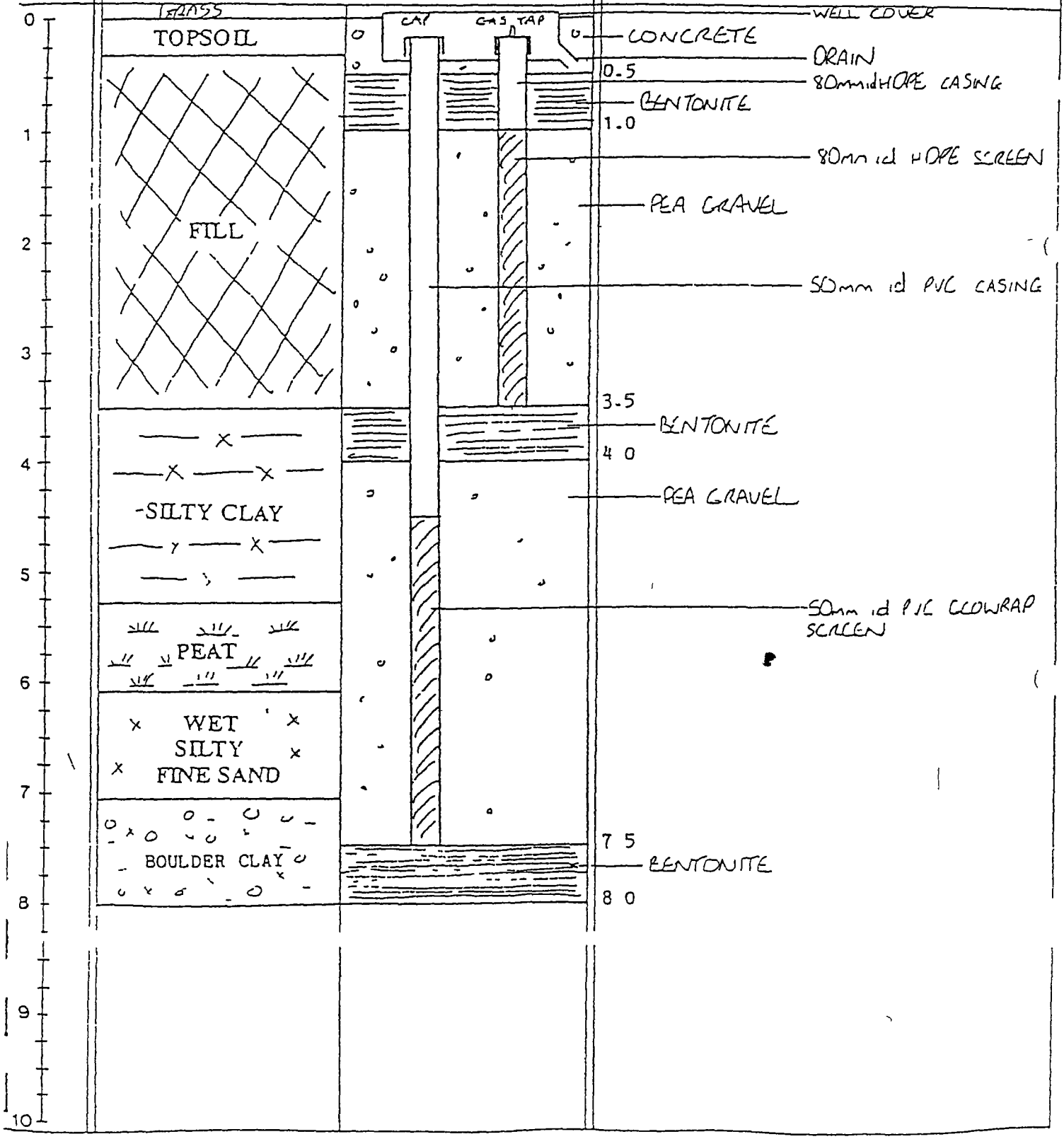
General Remarks
(PID) Photo Ionisation Detector

Scale 9 0
Sheet No 1 Of 1
Depth 0 to 9 metres

Operator F S
Appendix
Figure No

environmental advisory unit

	SW208	Newport B C	
	BOREHOLE NO: WG 18	LOCATION: Glebelands South	
DATE: 26/10/93	FIELD OFFICER: F S	SHEET OF: 1 of 1	



Contract SW208
Client Newport B C

Coordinates E331658 N189572
Dates 26/10/93

...ment and Methods
...& Auger

Job Number SW208
Borehole Number WG19
Location Glebelands South

Orientation Vertical
Ground Level 9 70

Daily Prog	Water Level	In-Situ Tests	Samples Taken	Remarks	Depth m	Thickness	Strata Descriptions	Red Level	Legend
					0 00 / 0 10	(0 10)	Dark brown topsoil	GL 9 60	
			B S1	bag & jar PID 0		(1 80)	Loose dark grey MADE GROUND fine to coarse sand & gravel brick concrete ash & glass dry no odour wet at approx 1 8-1 9m		
			B S2 B S3	bag & jar PID 0 (wet) bag & jar PID 0	1 90	(0 30)	MADE GROUND as above mixed with grey brown silt medium stiff many rootlets damp no odour	7 80	
			B S4	bag & jar PID 0	2 20	(2 80)	Grey brown, firm SILTY CLAY damp no odour occassional rootlets recent alluvium, grades into grey with brown mottling	7 50	
					5 00	(1 70)	SILTY CLAY as above now all grey soft to firm, wet to damp very sticky silty clay no odour	4 70	
					6 70	(0 60)	PEAT half amorphous half fibrous crumbly crumbles upon compression dry to damp moderate rotting odour	3 00	
					7 30 / 7 40	(0 10)	PEAT mixed with grey silty clay	2 40 / 2 30	
						(0 80)	PEAT as above		
					8 20	(0 40)	Grey soft silty clayey fine SAND damp some vegetation trace to moderate rotten odour	1 50	
					8 60		End Of Borehole	1 10	

Key

Sample Types
D Disturbed
B Bulk Disturbed
W Water
P Piston
J Jar
T Thin Wall
N No Recovery

In-Situ Tests
S SPT Value
C CPT Value
* Seating Blows
‡ Inc Seating Blows
※ No Penetration
+ Sampler Sank
V Vane Test
k Permeability

Progress / Water Levels
____Borehole Depth

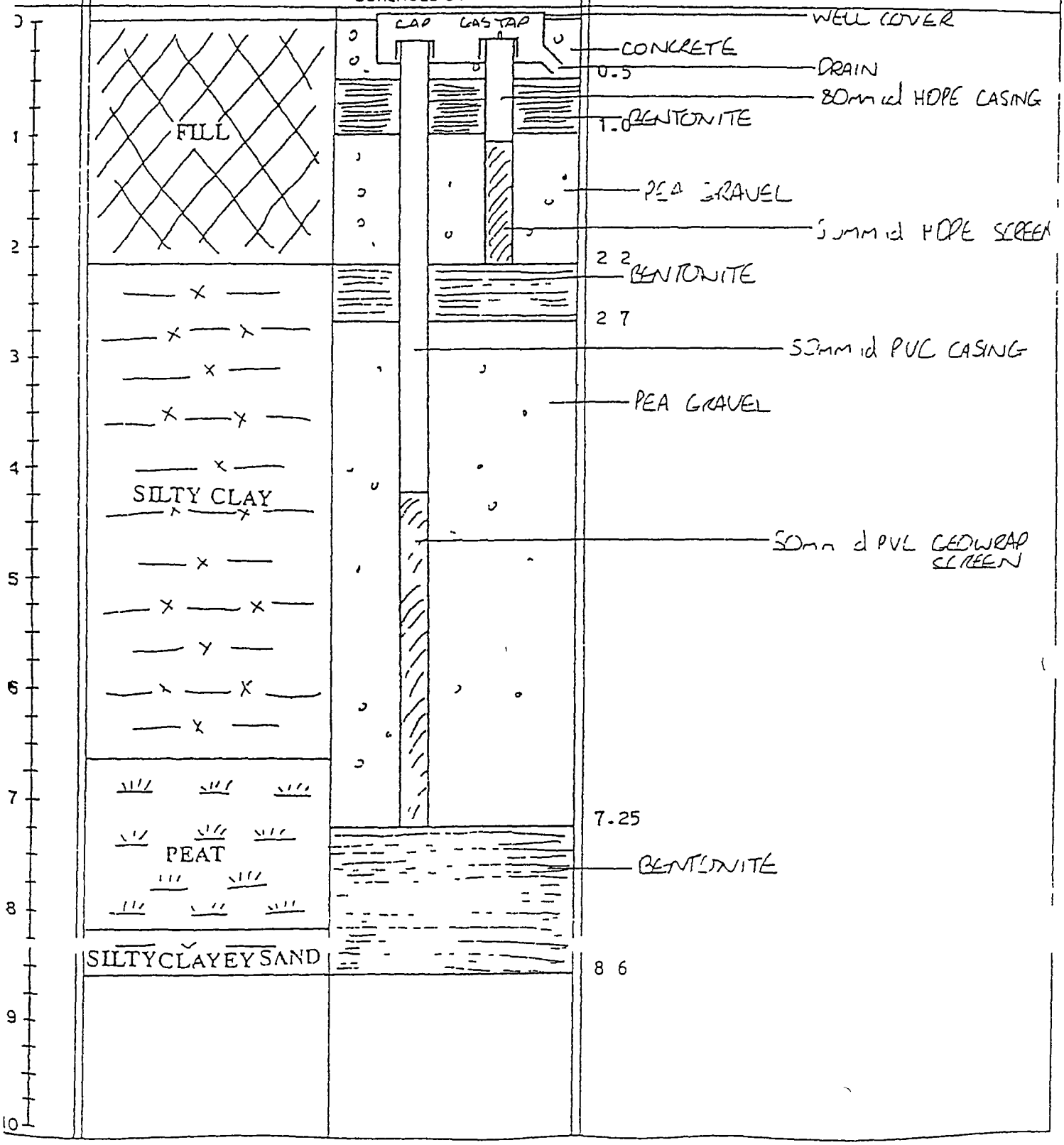
_ _Casing Depth
Water Level a m
Water Level p m
Water Strike
Standpipe Reading

General Remarks
(PID) Photo Ionisation Detector

Scale 9 0
Sheet No 1 Of 1
Depth 0 to 9 metres
Operator F S
Appendix
Figure No

environmental advisory unit

	SW208	Newport B C	
	BOREHOLE NO: WG 19	LOCATION: Glebelands South	
ATE: 26/10/93	FIELD OFFICER: FS	SHEET OF: 1 of 1	



Contract SW208
Client Newport B C

Coordinates E331717 N189465
Dates 25/10/93

Equipment and Methods	Job Number SW208	Orientation Vertical
Hand Auger	Borehole Number WG20	Ground Level 9 70
	Location Glebelands South	

Water Level	In-Situ Tests	Samples Taken	Remarks	Depth m	Thickness	Strata Descriptions	Red Level	Legend
				0 00			G L	
					(0 40)	Medium brown topsoil		
				0 40			9 30	
		B S1	bag & jar PID 0		(1 20)	Loose MADE GROUND dark grey & rusty brown fine to medium silty sand & gravel ash ceramic glass & one piece of leather dry no odour		
				1 60			8 10	
					(0 60)	MADE GROUND as above wet silty matrix much vegetation strong solvent odour at 2 0m PID 50 in hole at 2 3m Ambient air readings around rig < 1 ppm		
		B S2	bag & jar PID 80	2 20			7 50	
				2 30	(0 10)		7 40	
					(0 50)			
		B S3	bad & jar PID 7	2 80		MADE GROUND as above mixed with greenish grey silty clay	6 90	
					(1 20)	Firm SILTY CLAY greenish grey with black mottling moderately plastic recent alluvium damp trace odour		
				4 00			5 70	
					(0 60)	Firm SILTY CLAY grey with brown mottling occassional rootlets damp wet in root channels moderate plasticity recent alluvium moderate solvent odour		
		B S4	bag & jar PID 8 PID 25 of some cuttings from approx 3 0m	4 60			5 10	
					(0 70)			
				5 30		Soft SILTY CLAY grey occassional vegetation sticky plastic wet trace solvent odour	4 40	
					(1 60)	SILTY CLAY as above with traces of peat		
						PEAT fibrous compressible wet upon squeezing moderate rotting odour		
				6 90			2 80	
					(0 30)	Soft clayey silty fine SAND with occassional gravel well rounded to sub-angular cobbles grey with pockets of red brown damp to wet no odour		
				7 20			2 50	
					(0 80)			
				8 00		Dense SCREE red brown with grey pockets & lenses silty clay with well rounded to sub angular gravel and cobbles damp no odour occassional vegetation	1 70	
						End Of Borehole		

Key

Sample Types
D Disturbed
B Bulk Disturbed
W Water
P Piston
J Jar
U Thin Wall
* No Recovery

In-Situ Tests
S SPT Value
C CPT Value
\+ Seating Blows
‡ Inc Seating Blows
¥ No Penetration
\+ Sampler Sank
V Vane Test
k Permeability

Progress / Water Levels
Borehole Depth

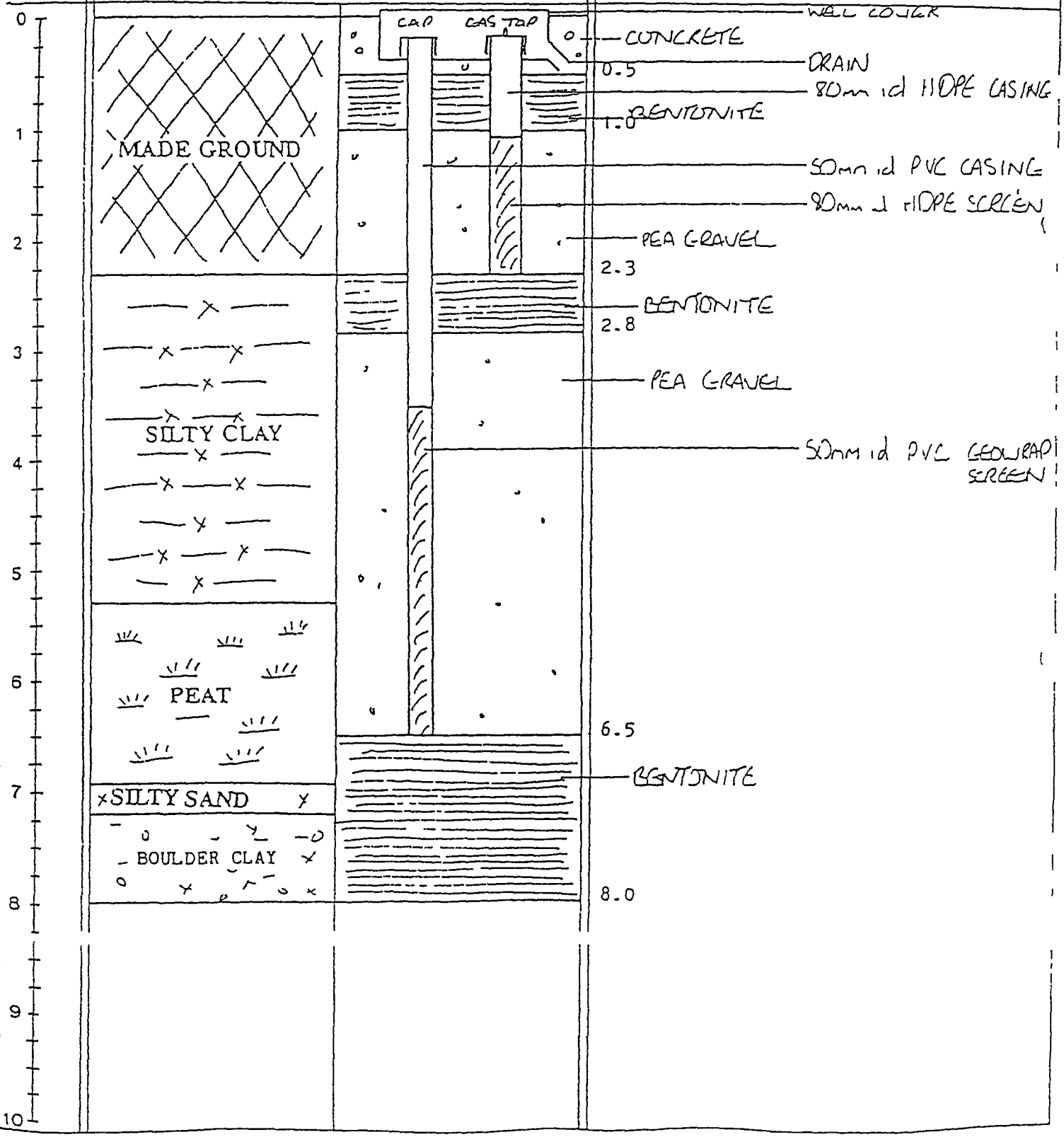
Casing Depth
Water Level a m
Water Level p m
Water Strike
Standpipe Reading

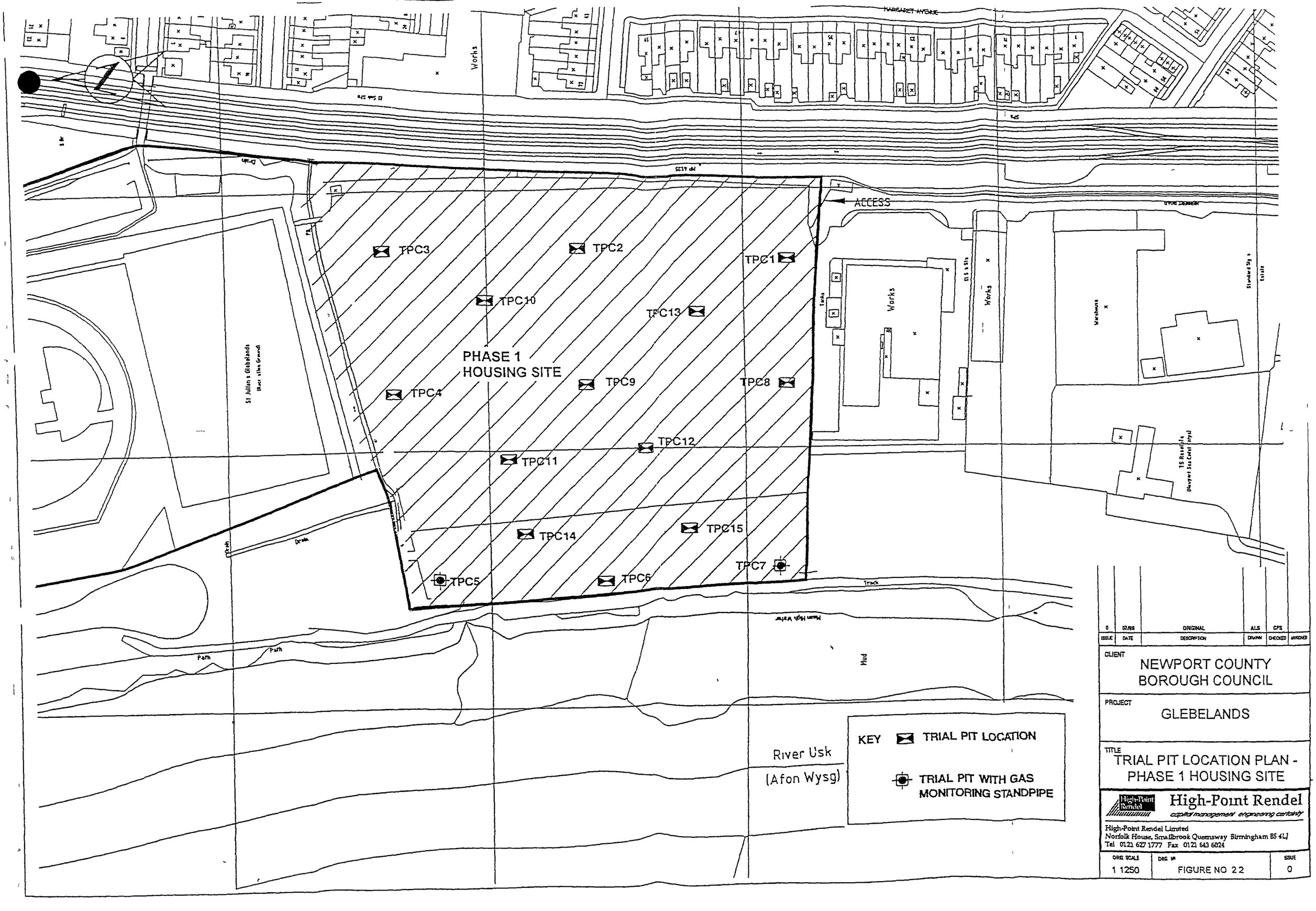
General Remarks
(PID) Photo Ionisation Detector

Scale	Sheet No 1 Of 1	
9 0	Depth 0 to 9 metres	
Operator F S	Appendix	Figure No

environmental advisory unit

SW208	Newport B C
BOREHOLE NO: WG 20	LOCATION: Glebelands South
DATE: 25/10/93	FIELD OFFICER: F S
SHEET OF: 1 of 1	





ISSUE	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
0	07/99	ORIGINAL	ALS	CPS	

CLIENT
NEWPORT COUNTY BOROUGH COUNCIL

PROJECT
GLEBELANDS

TITLE
TRIAL PIT LOCATION PLAN - PHASE 1 HOUSING SITE

High-Point Rendel
capital management engineering certainty
High-Point Rendel Limited
Norfolk House, Smallbrook Queensway Birmingham B5 4LJ
Tel 0121 627 1777 Fax 0121 643 6024

ORIG SCALE	DRG Nº	ISSUE
1 1250	FIGURE NO 2.2	0

TRIAL PIT NO C/1

Depth (m)	Stratum
GL - 0 6	FILL (Loose dark grey clayey silty SAND/firm brown sandy silty CLAY with occasional to many gravels and pockets of ashy coaly sand)
0 6 - 0 8	Firm to stiff red brown silty CLAY with occasional gravels
0 8 - 1 5	Firm to stiff grey with brown mottling silty CLAY

Notes

1 No groundwater

2 Sides of pit unstable in fill

3 Samples taken from 0 5m and 1 0m

TRIAL PIT NO C/2

Depth (m)	Stratum
GL - 0 1	TOPSOIL (Soft dark brown silty CLAY with occasional gravels)
0 1 - 0 9	FILL (Loose to medium dense grey and brown silty SAND with many angular gravels, cobbles and occasional boulders of stone, brick and concrete)
0 9 - 1 3	Firm to stiff grey silty CLAY with brown mottling

Notes

1 Moderate perched groundwater at 0 9

2 Sides unstable and collapsing down to 0 9m

3 Samples taken from 0 5m and 1 0m

4 Water sample taken

5752/C

TRIAL PIT NO C/3

Depth (m)	Stratum
GL - 0 1	TOPSOIL (Soft dark brown silty CLAY with occasional gravels)
0 1 - 0 6	FILL (Loose dark grey clayey silty SAND mixed firm brown sandy silty CLAY occasional roots)
0 6 - 1 4	Firm to stiff grey silty CLAY with brown mottling

Notes

1 No groundwater

2 Sides of pit stable

3 Samples taken from 0 5m and 1 0m

TRIAL PIT NO C/4

Depth (m)	Stratum
GL - 1 2	FILL (Loose clayey silty SAND with many angular gravels occasional cobbles and boulders, old foundations, pockets of firm to stiff grey silty clay)
1 2 - 1 7	Firm and firm to stiff grey with brown mottling silty CLAY

Notes

1 Strong perched groundwater from 1 0m to 1 2m standing at 1 0m after 10 minutes

2 Sides unstable down to 1 2m

3 Samples taken 0 5m, 1 0m and 1 5m

4 Water sample taken

5752/C

TRIAL PIT NO C/5

Depth (m)	Stratum
GL - 0 2	FILL (Soft to firm dark brown silty slightly sandy CLAY with many fine roots)
0 2 - 1 7	FILL (Stiff red brown silty CLAY)
1 7 - 3 0	Soft to firm grey silty CLAY with lenses and layers of brown fibrous peat below 2 5m

Notes

1 Slight groundwater below 2 5m

2 Sides of pit stable

3 Organic smell below 2 5m

4 Samples taken from 0 5m, 1 0m and 2 0m

5 Gas monitoring pipe inserted with response zone from 1 0m to 3 0m

5752/C

TRIAL PIT NO C/6

Depth (m)	Stratum
GL - 0 2	FILL (Soft to firm dark brown silty slightly sandy CLAY with many fine roots)
0 2 - 0 7	FILL (Stiff red brown silty CLAY)
0 7 - 2 2	Stiff grey silty CLAY
2 2 - 3 3	Soft grey silty CLAY

Notes

1 Slight groundwater below 2 2m

2 Sides of pit stable

3 Samples taken from 0 5m, 1 0m and 2 0m

TRIAL PIT NO C/7

Depth (m)	Stratum
GL - 0 4	TOPSOIL (Soft to firm dark brown silty sandy CLAY with occasional gravels and many fine roots)
0 4 - 1 2	FILL (Stiff red brown silty CLAY)
1 2 - 1 8	Stiff grey silty CLAY
1 8 - 2 7	Soft grey silty CLAY with lenses and layers of soft brown fibrous peat below 2 0m

Notes

1 Slight groundwater below 1 8m

2 Sides of pit stable

3 Samples taken at 0 4m, 1 0m and 2 0m

4 Gas monitoring pipe inserted with response zone from 1 0m to 2 7m

TRIAL PIT NO C/8

Depth (m)	Stratum
GL - 0 7	FILL (Firm brown sandy silty CLAY with many gravels and cobbles of brick stone, clay pipe and concrete)
0 7 - 2 1	Firm to stiff grey silty CLAY with brown mottling down to 1 2m

Notes

1 Moderate groundwater below 1 2m

2 Sides unstable with overbreak down to 0 7m

3 Samples taken from 0 5m 1 0m

4 Old foundations and drain at west end of pit down to 1 4m depth

TRIAL PIT NO C/9

Depth (m)	Stratum
GL - 0 3	FILL (Loose brown silty SAND with many gravels and cobbles of brick and concrete)
0 3 - 0 5	FILL (Loose pale brown SAND)
0 5 - 0 9	FILL (Loose black ashy silty SAND with many gravels)
0 9 - 1 4	Firm to stiff grey silty CLAY

Notes

1 No groundwater

2 Sides of pit unstable and collapsing down to 0 9m

3 Samples taken from GL to 0 5m, 0 7m and 1 0m

TRIAL PIT NO C/10

Depth (m)	Stratum
GL - 0 1	TOPSOIL (Loose brown silty SAND with many gravels and cobbles of brick and concrete)
0 1 - 0 6	FILL (Loose/soft dark grey clayey silty SAND/silty sandy CLAY with many gravels)
0 6 - 0 8	Buried TOPSOIL (Firm dark brown silty CLAY with many fine roots)
0 8 - 1 4	Firm to stiff grey silty CLAY

Notes

1 Slight groundwater below 1 2m

2 Sides of pit stable

3 Samples taken from 0 5m and 1 0m

4 Slight organic smell below 0 6m

TRIAL PIT NO C/11

Depth (m)	Stratum
GL - 0 6	FILL (Soft to firm dark brown silty sandy CLAY with gravels, cobbles and boulders many fine roots)
0 6 - 0 8	FILL (Stiff red brown silty sandy CLAY)
0 8 - 1 6	Firm grey silty CLAY
1 6 - 3 6	Soft grey silty CLAY

Notes

1 Perched groundwater at 0 8m

2 Sides of pit stable

3 Samples taken from 0 5m, 1 0m and 2 0m

4 Water sample taken

TRIAL PIT NO C/12

Depth (m)	Stratum
GL - 0 1	FILL (Soft dark brown silty sandy CLAY with many fine roots)
0 1 - 0 3	FILL (Medium dense black ashy sandy SILT with many gravels)
0 3 - 0 6	FILL (Medium dense GRAVELS and COBBLES of stone brick and concrete in a sparse silty sand matrix)
0 6 - 1 0	FILL (Stiff red brown silty CLAY)
1 0 - 2 1	Firm to stiff blue grey silty CLAY)
2 1 - 3 2	Soft blue grey silty CLAY with lenses and layers of brown peat

Notes

1 No groundwater

2 Sides of pit stable

3 Samples taken from 0 5m, 1 0m, 2 0m

TRIAL PIT NO C/13

Depth (m)	Stratum
GL - 0 8	FILL (Loose grey, brown and dark grey slightly clayey silty SAND mixed with sandy silty CLAY with gravels, cobbles and occasional boulders of brick, stone and concrete)
0 8 - 3 5	Firm to stiff grey with brown mottling down to 2 1m silty CLAY becoming locally firm below 2 3m
3 5 - 3 7	Very soft brown fibrous PEAT

Notes

1 Slight groundwater below 1 6m

2 Sides of pit unstable down to 0 8m

3 Samples taken from 0 5m and 1 0m

TRIAL PIT NO C/14

Depth (m)	Stratum
GL - 0 5	TOPSOIL (Soft dark brown silty CLAY with many fine roots)
0 5 - 0 7	FILL (Firm to stiff red brown silty CLAY with occasional gravels)
0 7 - 1 6	Firm to stiff grey with red mottling silty CLAY

Notes

1 Slight groundwater seepage at 1 6m

2 Sides stable

3 Samples taken from 0 6m and 1 0m

5752/C

TRIAL PIT NO C/15

Depth (m)	Stratum
GL 0 1	TOPSOIL (Firm dark brown silty CLAY with occasional gravels and many fine roots)
0 1 - 0 9	FILL (Firm grey and grey brown sandy silty CLAY with many angular gravels and cobbles of brick, concrete and stone, a little metal trace of yellow orange brown substance at 0 9m)
0 9 - 1 6	Firm to stiff grey brown sitly CLAY

Notes

1 Slight groundwater seepage at 1 6m

2 Sides unstable and collapsing down to 0 9m

3 Samples taken from 0 5m, 0 9m and 1 0m

APPENDIX FIVE

Phase One Housing Site – Chemical Test Results

INTEGRAL GEOTECHNIQUE
ST ANDREWS CRESCENT
CARDIFF

CERTIFICATE OF ANALYSIS

Clayton
ENVIRONMENTAL
CONSULTANTS

288 Windsor Street
Heartlands
Birmingham
B7 4DW
Tel 021 359 5951
Fax 021 359 7606

For the attention of GWYN LAKE

We certify that we have examined the samples received on 18 APR 1995

marked RIVER USK COMPTON
taken on 18 APR 1995

with the following results

			TPC7 1 0 B13708	TPC7 2 0 B13709	TPC8 0 5 B13710	TPC9 1 0 B13714	TPC10 0 5 B13715	TPC15 0 9 B13728
Results Basis			Air Dried Sample	Air Dried Sample	Air Dried Sample	Air Dried Sample	Air Dried Sample	Air Dried Sample
Loss on ignition 500°C	% W/W		7 8	7 0	7 9	8 4	20 1	11 8
* pH (20% W/V Water Extract)			8 0	7 0	9 0	7 0	7 0	8 0
Total Sulphate	mg/kg	SO4	3340	3900	3480	3820	4260	11120
* Water Soluble Sulphate (2 1 Water Soil Extract)	g/l	SO4	<0 01	<0 01	0 12	0 03	0 10	0 03
* Sulphide	mg/kg	S	<20	<20	<20	<20	<20	<20
* Toluene Extractable Matter	mg/kg		<250	<250	<250	<250	570	700
Mineral Oils	mg/kg							-
Coal Tars	mg/kg							
* Monohydric Phenols	mg/kg							
* Total Phenol	mg/kg		<0 5	<0 5	0 7	0 6	17 1	5 8
* Total Cyanide	mg/kg	CN	<0 5	<0 5	<0 5	0 7	<0 5	<0 5
* Free Cyanide	mg/kg	CN						
* Complex Cyanide	mg/kg	CN	-					
* Total Zinc	mg/kg	Zn	100	110	140	94	200	460
* Total Cadmium	mg/kg	Cd	<1	1	<1	1	1	2
* Total Lead	mg/kg	Pb	36	33	76	39	130	2700
* Total Nickel	mg/kg	Ni	33	34	29	36	31	120
Water Soluble Boron	mg/kg	B	0 3	0 3	0 2	0 4	1 5	0 4
* Total Mercury	mg/kg	Hg	<0 1	<0 1	<0 1	<0 1	0 5	0 5
Hexavalent Chromium	mg/kg	Cr	<0 3	<0 3	<0 3	<0 3	<0 3	<0 3
* Total Chromium	mg/kg	Cr	38	40	32	43	31	72
* Total Copper	mg/kg	Cu	1	<1	12	4	59	140
* Total Arsenic	mg/kg	As	9	14	8	10	10	60
* Total Selenium	mg/kg	Se	<1	<1	<1	<1	<1	<1
* Total PAH	mg/kg		<20	<20	<20	<20	<20	<20

* denotes NAMAS accredited test

Test Method & Performance Data available on request

Signed

J E COOKE for Clayton Environmental Consultants Limited

Date 1 JUN 1995

Date 4 JUN 1995

INTEGRAL GEOTECHNIQUE
ST ANDREWS CRESCENT
CARDIFF

For the attention of GWYN LAKE

Clayton
ENVIRONMENTAL CONSULTANTS

288 Windsor Street
Heartlands
Birmingham
B7 4DW
Tel 0121 359 5951
Fax 0121 359 7606

CERTIFICATE OF ANALYSIS

We certify that we have examined the samples received on 18-APR 1995

marked RIVER USK COMPTON
taken on 18-APR-1995

with the following results

		TPC4 1 0 B13699	TPC5 1 0 B13702	TPC6 1 0 B13705	TPC 0 0 0 5 B13712
Polyaromatic Hydrocarbons					
Naphthalene	µg/l	<1	<1	<1	<1
Acenaphthylene	µg/l	<1	<1	<1	<1
Acenaphthene	µg/l	<1	<1	<1	<1
Fluorene	µg/l	<1	<1	<1	<1
Phenanthrene	µg/l	<1	<1	<1	<1
Anthracene	µg/l	<1	<1	<1	<1
Fluoranthene	µg/l	<1	<1	<1	<1
Pyrene	µg/l	<1	<1	<1	<1
Benz(a)Anthracene	µg/l	<1	<1	<1	<1
Chrysene	µg/l	<1	<1	<1	<1
Benzo(b)Fluoranthene	µg/l	<1	<1	<1	<1
Benzo(k)Fluoranthene	µg/l	<1	<1	<1	<1
Benzo(a)Pyrene	µg/l	<1	<1	<1	<1
Indeno(123,cd)Pyrene	µg/l	<1	<1	<1	<1
Dibenz(ah)Anthracene	µg/l	<1	<1	<1	<1
Benzo(ghi)Perylene	µg/l	<1	<1	<1	<1
Total PAH	µg/l	ND	ND	ND	ND

24HR NRA LEACHATE,10%w/v

Signed DR R J C BARRON FOR CLAYTON ENVIRONMENTAL CONSULTANTS LIMITED

INTEGRAL GEOTECHNIQUE
ST ANDREWS CRESCENT
CARDIFF

CERTIFICATE OF ANALYSIS

Our Ref 25883 / B13707 / Page 1 of 1

Clayton
ENVIRONMENTAL
CONSULTANTS

288 Windsor Street
Heartlands
Birmingham
B7 4DW
Tel 0121 359 5951
Fax 0121 359 7606

For the attention of GWYN LAKE

We certify that we have examined the sample received on 18-APR 1995

marked RIVER USK COMPTON
taken on 18 APR 1995

with the following results

		TPC7 0 5 B13707
Polyaromatic Hydrocarbons		
Naphthalene	µg/l	<1
Acenaphthylene	µg/l	<1
Acenaphthene	µg/l	<1
Fluorene	µg/l	<1
Phenanthrene	µg/l	<1
Anthracene	µg/l	<1
Fluoranthene	µg/l	1
Pyrene	µg/l	1
Benz(a)Anthracene	µg/l	<1
Chrysene	µg/l	<1
Benzo(b)Fluoranthene	µg/l	<1
Benzo(k)Fluoranthene	µg/l	<1
Benzo(a)Pyrene	µg/l	<1
Indeno(123,cd)Pyrene	µg/l	<1
Dibenz(ah)Anthracene	µg/l	<1
Benzo(ghi)Perylene	µg/l	<1
Total PAH	µg/l	2

Signed DR R J C BARRON for Clayton Environmental Consultants Limited Date 22 JUN-1995

Laboratory
Chemical Test Results

- WATER SAMPLE

Date 21-JUN-1995

INTEGRAL GEOTECHNIQUE
[redacted] ANDREWS CRESCENT
[redacted]RDIFF

Clayton
ENVIRONMENTAL
CONSULTANTS

288 Windsor Street
Heartlands
Birmingham
B7 4DW
Tel 0121 359 5951
Fax 0121 359 7606

For the attention of GWYN LAKE

CERTIFICATE OF ANALYSIS

We certify that we have examined the sample received on 18-APR-1995

marked RIVER USK COMPTON
taken on 18-APR-1995

with the following results -

			TPC2 0 9m WS B13730
*	pH		7 8
	Conductivity	µS/cm 20°C	635
*	Ammonia	mg/l N	0 03
*	Chloride	mg/l Cl	44
*	Sulphate	mg/l SO4	50
*	Chemical Oxygen Demand	mg/l O2	<10
	Hydrocarbons by IR	mg/l	<0 5
*	Total Organic Carbon	mg/l C	0 3
*	Total Phenol	mg/l	<0 05
*	Total Cyanide	mg/l CN	<0 05
*	Total Zinc	mg/l Zn	0 11
*	Total Cadmium	mg/l Cd	0 0006
*	Total Lead	mg/l Pb	0 006
*	Total Nickel	mg/l Ni	<0 02
*	Total Boron	mg/l B	0 16
*	Total Chromium	mg/l Cr	<0 02
*	Total Copper	mg/l Cu	<0 02
*	Total Mercury	mg/l Hg	0 0005
*	Total Arsenic	mg/l As	0 005
*	Total Selenium	mg/l Se	<0 005

* denotes NAMAS accredited test Test Method & Performance Data available on request

Signed J.E COOKE FOR CLAYTON ENVIRONMENTAL CONSULTANTS LIMITED

Laboratory
Chemical Test Results

- LEACHATE RESULTS

Date 1-JUN-1995

INTEGRAL GEOTECHNIQUE
ANDREWS CRESCENT
CARDIFF

Clayton
ENVIRONMENTAL
CONSULTANTS

288 Windsor Street
Heartlands
Birmingham
B7 4DW
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For the attention of GWYN LAKE

CERTIFICATE OF ANALYSIS

We certify that we have examined the samples received on 18-APR-1995

marked RIVER USK COMPTON
taken on 18-APR-1995

with the following results -

			TPC4 1 0 B13699	TPC5 1 0 B13702	TPC6 1 0 B13705
*	Ammonia	mg/l N	0 12	0 07	0 04
	Chloride	mg/l Cl	2	10	3
*	Sulphate	mg/l SO4	18	3	1
*	Chemical Oxygen Demand	mg/l O2	16	26	<10
	Hydrocarbons by IR	mg/l	<0 25	<0 25	<0 25
*	Sulphide	mg/l S	<0 02	0 04	0 06
*	Total Zinc	mg/l Zn	<0 02	0 05	0 05
*	Total Cadmium	mg/l Cd	<0 0005	<0 0005	<0 0005
*	Total Lead	mg/l Pb	<0 005	<0 005	<0 005
*	Total Nickel	mg/l Ni	<0 02	<0 02	<0 02
*	Total Chromium	mg/l Cr	<0 02	<0 02	<0 02
*	Total Copper	mg/l Cu	<0 02	<0 02	<0 02
*	Total Mercury	mg/l Hg	<0 0005	<0 0005	<0 0005
*	Total Arsenic	mg/l As	0 009	<0 005	<0 005
*	Total Phenol	mg/l	0 05	0 06	<0 05
*	Free Cyanide	mg/l	<0 05	<0 05	<0 05

The above results were obtained on a 24 hour 10% w/v soil/water leachate

* denotes NAMAS accredited test Test Method & Performance Data available on request

Signed J E COOKE FOR CLAYTON ENVIRONMENTAL CONSULTANTS LIMITED

Date 28-JUN-1995

INTEGRAL GEOTECHNIQUE
ST ANDREWS CRESCENT
CARDIFF

Clayton
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288 Windsor Street
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Tel 0121 359 5951
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For the attention of GWYN LAKE

CERTIFICATE OF ANALYSIS

We certify that we have examined the sample received on 18-APR-1995

marked RIVER USK COMPTON
taken on 18-APR-1995

with the following results -

			TPC7 0 5 B13707
*	Ammonia	mg/l N	0 14
*	Chloride	mg/l Cl	4
*	Sulphate	mg/l SO4	8
*	Chemical Oxygen Demand	mg/l O2	55
	Hydrocarbons by IR	mg/l	<0 25
*	Sulphide	mg/l S	<0 02
*	Free and Simple Complexed Cyanide	mg/l CN	<0 05
*	Total Zinc	mg/l Zn	0 07
*	Total Cadmium	mg/l Cd	<0 0005
*	Total Lead	mg/l Pb	<0 05
*	Total Nickel	mg/l Ni	<0 02
*	Total Chromium	mg/l Cr	<0 02
*	Total Copper	mg/l Cu	0 02
*	Total Mercury	mg/l Hg	<0 0005
*	Total Arsenic	mg/l As	<0 005

The above results were obtained on a 24 hour 10% w/v soil/water leachate

* denotes NAMAS accredited test Test Method & Performance Data available on request

Signed J E COOKE FOR CLAYTON ENVIRONMENTAL CONSULTANTS LIMITED

2550

Date 1-JUN-1995

23 Ju

INTEGRAL GEOTECHNIQUE
ST ANDREWS CRESCENT
CARDIFF

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288 \
Hear
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Tel
Fax

For the attention of GWYN LAKE

CERTIFICATE OF ANALYSIS

To

We certify that we have examined the samples received on 18-APR-1995

Copy

marked RIVER USK COMPTON
taken on 18-APR-1995

with the following results -

From

KING

			TPC 9 0 0-0 5 B13712
* Ammonia	mg/l	N	0 14
* Chloride	mg/l	Cl	3
* Sulphate	mg/l	SO4	3
* Chemical Oxygen Demand	mg/l	O2	22
Hydrocarbons by IR	mg/l		<0 25
* Sulphide	mg/l	S	<0 02
* Total Zinc	mg/l	Zn	0 03
* Total Cadmium	mg/l	Cd	<0 0005
* Total Lead	mg/l	Pb	<0 005
* Total Nickel	mg/l	Ni	<0 02
* Total Chromium	mg/l	Cr	<0 02
* Total Copper	mg/l	Cu	<0 02
* Total Mercury	mg/l	Hg	<0 0005
* Total Arsenic	mg/l	As	<0 007
* Total Phenol	mg/l		0 05
* Free Cyanide	mg/l		<0 05

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The above results were obtained on a 24 hour 10% w/v water/soil leachate

* denotes NAMAS accredited test Test Method & Performance Data availab

KERF
For h

Signed J E COOKE FOR CLAYTON ENVIRONMENTAL CON

Laboratory
Chemical Test Results

- GAS MONITORING

SITE RIVER USK - COMPTON SITE

JOB NO 5752/C

DATE 2 5 95

WEATHER Sunny Spells

NAME OF ENGINEER/CHEMIST P Bateman

BAROMETRIC PRESSURE (Millibars) 1033

GAS MONITORING RESULTS

Station No	Methane CH^4 LEL (%)	Methane CH^4 GAS (%)	Oxygen O^2 (%)	Carbon Dioxide CO^2 (%)
TP C/5	0 9	0	18 9	1 0
TP C/7	0 3	0	20 2	<0 1

Notes

Notes

1 Instruments used G M I (Gas Measuremert Instruments Limited) Landsurveyor 1 and G M I CO^2 Portable

2 Accuracy of Landsurveyor 1 - % Volume Gas +/- 1%
% LEL +/- 2%
% Oxygen +/- 1%

3 Acccuracy of CO^2 Portable - % CO^2 +/- 10% of reading

4 LEL = Lower Explosive Limit

SITE RIVER USK - COMPTON SITE

JOB NO 5752/C

DATE 18 5 95

WEATHER Sunny Spells

NAME OF ENGINEER/CHEMIST P Bateman

BAROMETRIC PRESSURE (Millibars) 1019

GAS MONITORING RESULTS

Station No	Methane CH^4 LEL (%)	Methane CH^4 GAS (%)	Oxygen O^2 (%)	Carbon Dioxide CO^2 (%)
TP C/5	0 7	0	19 1	<0 1
TP C/7	0 2	0	20 4	<0 1

Notes

1 Instruments used G M I (Gas Measureme-t Instruments Limited) Landsurveyor 1 and G M I CO^2 Portable

2 Accuracy of Landsurveyor 1 - % Volume Gas - - 1%
% LEL -/- 2%
% Oxygen +/- 1%

3 Acccuracy of CO^2 Portable - % CO^2 +/- 10% of reading

4 LEL = Lower Explosive Limit

SITE RIVER USK - COMPTON SITE

JOB NO 5752/C

DATE 2 6 95

WEATHER Sunny Spells

NAME OF ENGINEER/CHEMIST P Bateman

BAROMETRIC PRESSURE (Millibars) 1025

GAS MONITORING RESULTS

Station No	Methane CH^4 LEL (%)	Methane CH^4 GAS (%)	Oxygen O^2 (%)	Carbon Dioxide CO^2 (%)
TP C/5	0 1	0	19 6	<0 1
TP C/7	0 2	0	20 5	<0 1

Notes

1 Instruments used G M I (Gas Measurement Instruments Limited) Landsurveyor 1 and G M I CO^2 Portable

2 Accuracy of Landsurveyor 1 - % Volume Gas +/- 1%
% LEL +/- 2%
% Oxygen +/- 1%

3 Acccuracy of CO^2 Portable - % CO^2 +/- 10% of reading

4 LEL - Lower Explosive Limit

SITE RIVER USK - COMPTON SITE

JOB NO 5752/C

DATE 16 6 95

WEATHER Sunny

NAME OF ENGINEER/CHEMIST P Bateman

BAROMETRIC PRESSURE (Millibars) 1026

GAS MONITORING RESULTS

Station No	Methane CH_4 LEL (%)	Methane CH_4 GAS (%)	Oxygen O_2 (%)	Carbon Dioxide CO_2 (%)
TP C/5	0 4	0	19 5	<0 1
TP C/7	0 3	0	20 1	<0 1

Notes

1 Instruments used G M I (Gas Measurement Instruments Limited) Landsurveyor 1 and G M I CO_2 Portable

2 Accuracy of Landsurveyor 1 - % Volume Gas +/- 1%
% LEL +/- 2%
% Oxygen +/- 1%

3 Acccuracy of CO_2 Portable - % CO_2 +/- 10% of reading

4 LEL = Lower Explosive Limit

SITE RIVER USK - COMPTON SITE

JOB NO 5752/C

DATE. 12 7 95

WEATHER Sunny Periods

NAME OF ENGINEER/CHEMIST P Bateman

BAROMETRIC PRESSURE (Millibars) 1020

GAS MONITORING RESULTS

Station No	Methane CH^4 LEL (%)	Methane CH^4 GAS (%)	Oxygen O^2 (%)	Carbon Dioxide CO^2 (%)
TP C/5	0 6	0	19 9	1 5
TP C/7	0	0	21 6	1 0

Notes

1 Instruments used G M I (Gas Measurement Instruments Limited) Landsurveyor 1 and G M I CO^2 Portable

2 Accuracy of Landsurveyor 1 - % Volume Gas +/- 1%
% LEL +/- 2%
% Oxygen +/- 1%

3 Acccuracy of CO^2 Portable - % CO^2 +/- 10% of reading

4 LEL - Lower Explosive Limit

SITE RIVER USK - COMPTON SITE

JOB NO 5752/C

DATE 29 6 95

WEATHER Sunny

NAME OF ENGINEER/CHEMIST P Bateman

BAROMETRIC PRESSURE (Millibars) 1022

GAS MONITORING RESULTS

Station No	Methane CH^4 LEL (%)	Methane CH^4 GAS (%)	Oxygen O^2 (%)	Carbon Dioxide CO^2 (%)
TP C/5	0 3	0	20 0	<0 1
TP C/7	0 2	0	20 2	<0 1

Notes

1 Instruments used G M I (Gas Measurement Instruments Limited) Landsurveyor 1 and G M I CO^2 Portable

2 Accuracy of Landsurveyor 1 - % Volume Gas +/- 1%
% LEL +/- 2%
% Oxygen +/- 1%

3 Acccuracy of CO^2 Portable - % CO^2 +/- 10% of reading

4 LEL = Lower Explosive Limit

Date 23-JUN-1995

INTEGRAL GEOTECHNIQUE
[redacted] ANDREWS CRESCENT
[redacted]DIFF

Clayton
ENVIRONMENTAL
CONSULTANTS

288 Windsor Street
Heartlands
Birmingham
B7 4DW
Tel 0121 359 5951
Fax 0121 359 7606

For the attention of GWYN LAKE

CERTIFICATE OF ANALYSIS

We certify that we have examined the sample received on 18-APR-1995

marked RIVER USK COMPTON
taken on 18-APR-1995

with the following results -

			TPC3 0 5 B13696
	Results Basis		Air Dried Sample
	Loss on Ignition 105 - 500°C	% w/w	13 0
*	pH (20% w/v Water Extract)		7 8
	Total Sulphate	mg/kg SO4	3440
*	Sulphide	mg/kg S	<20
*	Toluene Extractable Matter	mg/kg	<250
*	Total Phenol	mg/kg	0 12
*	Total Cyanide	mg/kg CN	<0 5
*	Total Zinc	mg/kg Zn	170
*	Total Cadmium	mg/kg Cd	1
*	Total Lead	mg/kg Pb	85
*	Total Nickel	mg/kg Ni	19
	Water Soluble Boron	mg/kg B	0 1
*	Total Mercury	mg/kg Hg	0 2
	Hexavalent Chromium	mg/kg Cr	<0 25
*	Total Chromium	mg/kg Cr	19
*	Total Copper	mg/kg Cu	32
*	Total Arsenic	mg/kg As	11
*	Total Selenium	mg/kg Se	<1
	Total PAH	mg/kg	<20

* denotes NAMAS accredited test Test Method & Performance Data available on request

Signed J.E COOKE FOR CLAYTON ENVIRONMENTAL CONSULTANTS LIMITED

INTEGRAL GEOTECHNIQUE
ST ANDREWS CRESCENT
CARDIFF

CERTIFICATE OF ANALYSIS

Clayton
ENVIRONMENTAL
CONSULTANTS

288 Windsor Street
Heartlands
Birmingham
B7 4DW
Tel 021 359 5951
Fax 021 359 7606

For the attention of GWYN LAKE

We certify that we have examined the samples received on 18 APR 1995

marked RIVER USK COMPTON
taken on 18 APR 1995

with the following results

		TPC7 1 0 B13708	TPC7 2 0 B13709	TPC8 0 5 B13710	TPC9 1 0 B13714	TPC10 0 5 B13715	TPC15 0 9 B13728
Results Basis		Air Dried Sample	Air Dried Sample	Air Dried Sample	Air Dried Sample	Air Dried Sample	Air Dried Sample
Loss on ignition 500°C	% w/w	7 8	7 0	7 9	8 4	20 1	11 8
* pH (20/ w/v Water Extract)		8 0	7 0	9 0	7 0	7 0	8 0
Total Sulphate	mg/kg SO4	3340	3900	3480	3820	4260	11120
* Water Soluble Sulphate (2 1 Water Soil Extract)	g/l SO4	<0 01	<0 01	0 12	0 03	0 10	0 03
* Sulphide	mg/kg S	<20	<20	<20	<20	<20	<20
* Toluene Extractable Matter	mg/kg	<250	<250	<250	<250	570	700
Mineral Oils	mg/kg						-
Coal Tars	mg/kg						
* Monohydric Phenols	mg/kg						
* Total Phenol	mg/kg	<0 5	<0 5	0 7	0 6	17 1	5 8
* Total Cyanide	mg/kg CN	<0 5	<0 5	<0 5	0 7	<0 5	<0 5
* Free Cyanide	mg/kg CN	-					-
* Complex Cyanide	mg/kg CN	-					
* Total Zinc	mg/kg Zn	100	110	140	94	200	460
* Total Cadmium	mg/kg Cd	<1	1	<1	1	1	2
* Total Lead	mg/kg Pb	36	33	76	39	130	2700
* Total Nickel	mg/kg Ni	33	34	29	36	31	120
Water Soluble Boron	mg/kg B	0 3	0 3	0 2	0 4	1 5	0 4
* Total Mercury	mg/kg Hg	<0 1	<0 1	<0 1	<0 1	0 5	0 5
Hexavalent Chromium	mg/kg Cr	<0 3	<0 3	<0 3	<0 3	<0 3	<0 3
* Total Chromium	mg/kg Cr	38	40	32	43	31	72
* Total Copper	mg/kg Cu	1	<1	12	4	59	140
* Total Arsenic	mg/kg As	9	14	8	10	10	60
* Total Selenium	mg/kg Se	<1	<1	<1	<1	<1	<1
* Total PAH	mg/kg	<20	<20	<20	<20	<20	<20

* denotes NAMAS accredited test Test Method & Performance Data available on request

Signed J E COOKE for Clayton Environmental Consultants Limited Date 1 JUN 1995

INTEGRAL GEOTECHNIQUE
ST ANDREWS CRESCENT
CARDIFF

CERTIFICATE OF ANALYSIS

Clayton Environmental Consultants
288 Windsor Street
Heartlands
Birmingham
B7 4DW
Tel 021 359 5951
Fax 021 359 7606

Our Ref 25140 / B13692 B13728 / Page 1 of 2

For the attention of GWYN LAKE

We certify that we have examined the samples received on 18 APR 1995

marked RIVER USK COMPTON
taken on 18 APR 1995

with the following results

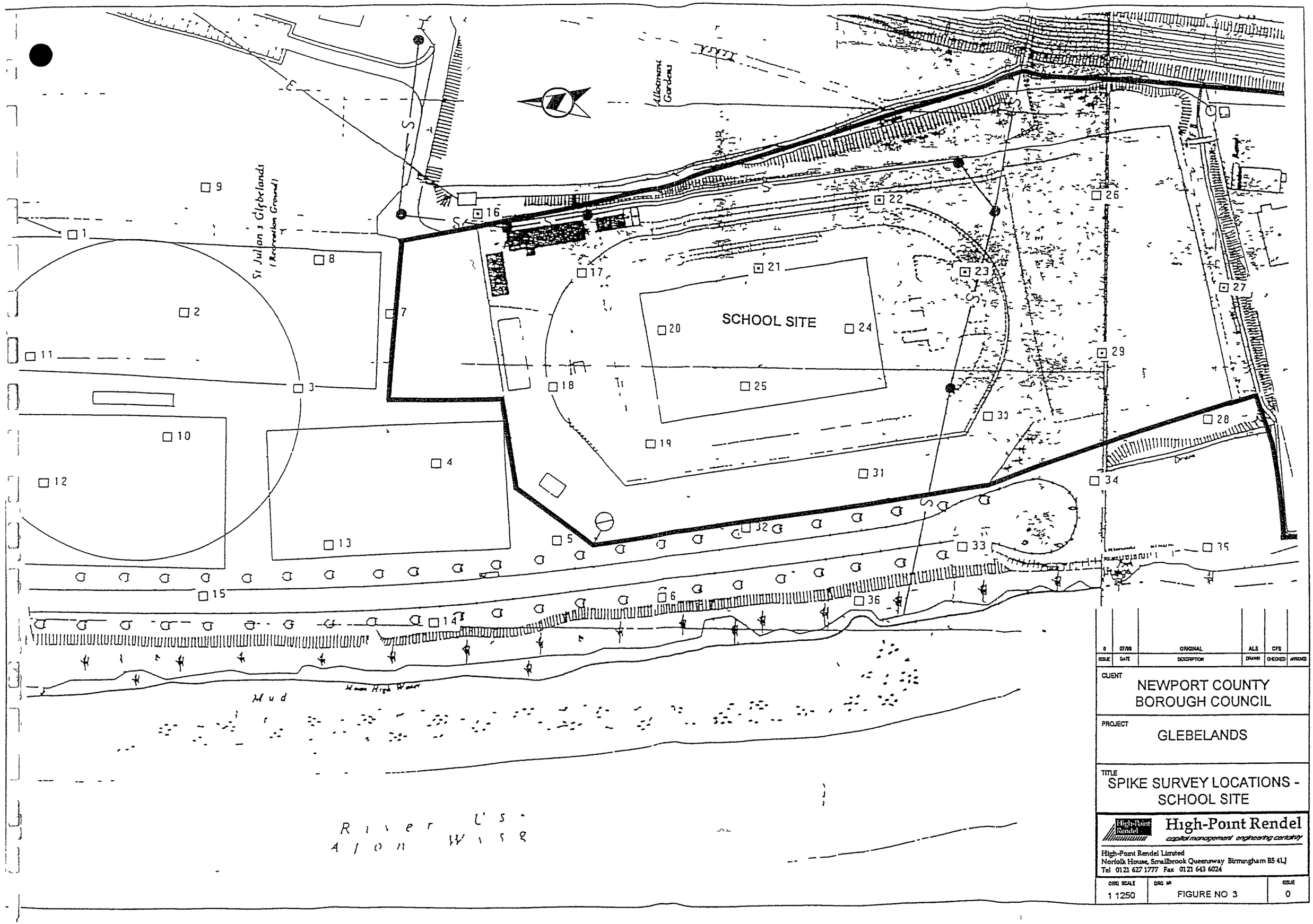
			TPC1 0 5 B13692	TPC1 1 0 B13693	TPC2 0 5 B13694	TPC3 1 0 B13697	TPC4 0 5 B13698	TPC5 0 5 B13701	TPC5 2 0 B13703	TPC6 0 5 B13704
Results Basis			Air Dried Sample	Air Dried Sample	Air Dried Sample	Air Dried Sample	Air Dried Sample	Air Dried Sample	Air Dried Sample	Air Dried Sample
Loss on Ignition 500 C	% W/W		8 9	8 3	6 9	8 4	8 8	7 6	8 3	9 2
* pH (20/ W/V Water Extract)			10 0	7 5	10 0	7 8	9 0	7 1	7 8	7 0
Total Sulphate	mg/kg	SO4	3060	5400	4140	2940	2760	3300	2540	3440
* Water Soluble Sulphate (2 1 Water Soil Extract)	g/l	SO4	0 15	<0 01	0 25	<0 01	0 09	0 04	0 09	<0 01
* Sulphide	mg/kg	S	<20	<20	<20	<20	<20	<20	<20	<20
* Toluene Extractable Matter	mg/kg		<250	<250	1260	<250	320	<250	<250	<250
Mineral Oils	mg/kg						-	-	-	
Coal Tars	mg/kg							-		
* Monohydric Phenols	mg/kg						-		-	
* Total Phenol	mg/kg		<0 5	0 5	<0 5	0 6	2 9	1 0	5 4	2 8
* Total Cyanide	mg/kg	CN	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5
* Free Cyanide	mg/kg	CN				-	-			
* Complex Cyanide	mg/kg	CN	-						-	
* Total Zinc	mg/kg	Zn	100	110	320	97	91	95	110	93
* Total Cadmium	mg/kg	Cd	<1	<1	4	<1	<1	<1	<1	<1
* Total Lead	mg/kg	Pb	43	40	270	44	35	34	33	34
* Total Nickel	mg/kg	Ni	25	30	22	28	11	39	34	33
Water Soluble Boron	mg/kg	B	0 4	0 2	0 3	0 2	0 2	<0 1	0 7	0 2
* Total Mercury	mg/kg	Hg	<0 1	<0 1	<0 1	<0 1	0 1	<0 1	<0 1	<0 1
Hexavalent Chromium	mg/kg	Cr	0 3	<0 3	<0 3	<0 3	<0 3	<0 3	<0 3	<0 3
* Total Chromium	mg/kg	Cr	24	41	29	43	15	39	39	36
* Total Copper	mg/kg	Cu	16	<1	43	<1	12	4	5	7
* Total Arsenic	mg/kg	As	5	17	6	13	2	7	6	8
* Total Selenium	mg/kg	Se	<1	<1	<1	<1	<1	<1	<1	<1
* Total PAH	mg/kg		<20	<20	<20	<20	<20	<20	<20	<20

* denotes NAMAS accredited test Test Method & Performance Data available on request

Signed J E COOKE for Clayton Environmental Consultants Limited Date 1 JUN 1995

Laboratory
Chemical Test Results

- SOIL SAMPLES



ISSUE	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
0	07/99	ORIGINAL	ALS	CFS	

CLIENT
NEWPORT COUNTY BOROUGH COUNCIL

PROJECT
GLEBELANDS

TITLE
SPIKE SURVEY LOCATIONS - SCHOOL SITE

High-Point Rendel
capital management engineering certainty
High-Point Rendel Limited
Norfolk House, Smallbrook Queensway Birmingham B5 4LJ
Tel 0121 627 1777 Fax 0121 643 6024

ORIG SCALE	DRG No	ISSUE
1 1250	FIGURE NO 3	0

APPENDIX C Gas Monitoring Results (SITEWORKS PERIOD)

Exploratory Hol	Screened Length (mbgl)	Screened Soil Type	MONITORING DATE																			
			10 Apr-00						11 Apr-00						12 Apr 00						18-Apr 00					
			Landfill Gas Levels (% by vol)				Flow (l/min)	Barometric Pressure (mbars)	Landfill Gas Levels (% by vol)				Flow (l/min)	Barometric Pressure (mbars)	Landfill Gas Levels (% by vol)				Flow (l/min)	Barometric Pressure (mbars)	Landfill Gas Levels (% by vol)				Flow (l/min)	Barometric Pressure (mbars)
			O	CH_4	CO	H_2S			O	CH_4	CO_2	H_2S			O_2	CH_4	CO_2	H_2S			O	CH_4	CO_2	H_2S		
SPORTS STADIUM & RECREATIONAL GROUND																										
BH1	1.00 6.00	MG/ALL/RTD/RM	[redacted]	0.0	7.1	0.0	0.60	991													[redacted]	0.0	8.5	3.5	0.70	980
BH2	0.80 2.80	MG	18.4	0.0	1.9	0.0	0.50	992													[redacted]	0.0	1.9	0.0	0.70	980
BH3	7.10 10.10	RTD/RM	20.1	0.0	0.7	0.0	0.20	993													19.2	0.0	1.1	0.0	0.10	980
BH4	1.00 9.00	MG/ALL							18.7	0.0	3.0	0.0	0.40	994							[redacted]	0.0	2.7	0.0	0.50	980
BH5	2.90 6.90	ALL	20.2	0.0	0.2	0.0	0.20	992													19.3	0.0	1.9	2.6	0.20	980
BH6	0.80 2.80	MG							19.6	0.0	1.6	0.0	1.20	996							19.4	0.0	1.1	3.4	1.40	980
COMPTON WEBB SITE & RIVERSIDE EMBANKMENT																										
BH7	1.70 7.70	ALL/RM/WB							20.1	0.0	0.2	0.0	0.90	994							19.3	0.0	0.3	1.7	1.70	980
BH8	2.00 10.00	ALL													[redacted]	[redacted]	3.1	0.0	0.30	988	[redacted]	0.0	1.2	1.4	0.10	980
BH9	1.70 7.70	ALL/RM							20.2	0.0	0.1	0.0	0.30	991							[redacted]	0.5	2.6	0.0	0.20	980
BH10	2.00 9.00	ALL													19.2	2.6	1.4	0.0	0.30	988	20.5	0.0	0.0	1.3	0.40	980
BH11	1.00 6.00	ALL/RM							20.4	0.0	0.1	0.0	0.20	990							20.5	0.0	0.0	1.2	0.10	980

Notes
= Measurement of this parameter has not been undertaken.
[redacted] = Short Term Exposure Limit for CO has been exceeded (1.5% vol. over 10 minutes)
[redacted] = Confined Spaces Limit for O has been achieved (18% vol. or less)
= Explosive range for CH_4 has been achieved (5-15% vol with O above 13%)
N = Measurement of this parameter unable to be taken
MG = Made Ground
ALL = Alluvium
RTD = River Terrace Deposits
RM = Reworked Mud
WB = Weathered Bedrock

APPENDIX C - Groundwater Monitoring Results (SITEWORKS PERIOD)

Exploratory Hole	Screened Length (mbgl)	Screened Soil Type	Ground Level (mOD)	MONITORING DATE			
				10 Apr 00 Ground Water (mOD)	11 Apr 00 Ground Water (mOD)	12 Apr 00 Ground Water (mOD)	18 Apr 00 Ground Water (mOD)
SPORTS STADIUM & RECREATIONAL GROUND							
BH1	1 00 6 00	MG/ALL/RTD/RM	9 84	6 24			7 16
BH2	0 80 2 80	MG	9 01	7 53			7 92
BH3	7 10 10 10	RTD/RM	9 67	5 37			5 47
BH4	1 00 9 00	MG/ALL	9 48		7 40		7 39
BH5	2 90 6 90	ALL	9 61	7 39			7 38
BH6	0 80 2 80	MG	9 74		7 74		7 26
COMPTON WEBB SITE & RIVERSIDE EMBANKMENT							
BH7	1 70 7 70	ALL/RM/WB	7 35		7 00		6 95
BH8	2 00 10 00	ALL	8 51			5 55	6 26
BH9	1 70 7 70	ALL/RM	7 25		6 44		6 52
BH10	2 00 9 00	ALL	7 87			6 52	6 52
BH11	1 00 6 00	ALL/RM	7 11		6 52		6 80

Notes

	= Measurements of this parameter have not been undertaken
N	= Measurements of this paramater unable to be taken
MG	= Made Ground
ALL	= Alluvium
RTD	= River Terrace Deposits
RM	= Reworked Marl
WB	= Weathered Bedrock

APPENDIX THREE

School Site – Chemical Test Results and Spiking Survey Results

RESULTS OF ANALYSES OF GROUNDWATER – Landfill Suite
GLEBELANDS AND CRINDAU, NEWPORT, GWENT
DECEMBER, 1993

	Dutch List	Units	WG8	Dup WG8	WG10	WG13	WG19	Dup WG19	WG20	Dup WG20
SODIUM		mg/l	194	226	803	200	520	489	989	
POTASSIUM		mg/l	46 9	44	35 2	21 3	23 8	22 5	26 2	
CALCIUM		mg/l	84	89	127	146	74	76	170	
MAGNESIUM		mg/l	104	100	89	57	46	44	121	
CHLORIDE		mg/l	81	97	719	113	344	304	1520	
SULPHATE		mg/l	7	9	53	102	153	150	<5	
TOTAL OXIDISED NITROGEN		mg/l	<0 2	<0 2	<0 2	<0 2	<0 2	<0 2	<0 2	
AMMONIACAL NITROGEN	•	mg/l	79 7	72 7	26 6	11 5	*1 2*	*1 6*	*2 1*	
ALKALINITY		mg/l	1130	1200	1320	798	748	776	998	
TOTAL ORGANIC CARBON		mg/l	8 6	11 1	23 4	13 6	14 6	16 4	25 2	
DISSOLVED OXYGEN		mg/l	<0 5	2 5	<0 5	<0 5	2 7	<0 5	0 8	
TOTAL DISSOLVED SOLIDS		mg/l	1180	1220	2590	1100	1630	1550	3380	
ELECTRICAL CONDUCTIVITY		µS/cm	2260	2260	4040	1780	2420	2210	5420	
pH		pH units	7 1	7	6 9	7 1	7 2	7 1	6 9	
COPPER	•	µg/l	30	*120*	*80*	*60*	20	30	30	
CADMIUM	•	µg/l	<1	<1	<1	<1	<1	<1	1	
ZINC	•	µg/l	40	130	190	40	40	40	30	
LEAD	•	µg/l	36	*160*	*160*	30	*170*	200	200	
NICKEL	•	µg/l	14	14	26	10	11	<7	10	
ARSENIC	•	µg/l	<1	9	8	7	7	7	3	
MERCURY	•	µg/l								
DISSOLVED METHANE		mg/l					♪		0 16	0 75
BIOCHEMICAL OXYGEN DEMAND		mg/l					1 4	0 8		
CHEMICAL OXYGEN DEMAND		mg/l					209	63		
FREE CYANIDE	•	mg/l								

NOTES

WG1 – Monitoring Well Number
WG1S – Shallow well of monitoring well installation with nested wells
♪ – No results available Sample container broken
Dup – Duplicate
• – Appears on Dutch groundwater criteria for contaminated land
Numbers in italics denote concentrations in excess of Dutch 'B' level
Numbers in bold denote concentrations in excess of Dutch 'C' level

ng/l – Nanograms per litre
µg/l – Micrograms per litre
mg/l – Milligrams per litre

RESULTS OF ANALYSES OF GROUNDWATER – Landfill Suite
GLEBELANDS AND CRINDAU, NEWPORT, GWENT
DECEMBER, 1993

	Dutch List	Units	WG11S	WG12S	Dup WG12S	WG13S	WG17S	WG19S	WG20S	Dup WG20S	Blank
SODIUM		mg/l		20		214	68	84	49		<2
POTASSIUM		mg/l		13 8		52 2	9 6	9 5	9 2		<0 2
CALCIUM		mg/l		380		1710	279	274	191		<2
MAGNESIUM		mg/l		35		171	47	27	27		<1
CHLORIDE		mg/l		36		141	40	44	41		<2
SULPHATE		mg/l		89		509	163	162	102		<5
TOTAL OXIDISED NITROGEN		mg/l		0 7		<0 2	1 6	0 4	<0 2		<0 2
AMMONIACAL NITROGEN	•	mg/l		0 4		13 2	*17*	<0 2	*17*		<0 2
ALKALINITY		mg/l		612		1290	749	426	542		26
TOTAL ORGANIC CARBON		mg/l		4 4		15 2	14 5	6 6	6 3		0 3
DISSOLVED OXYGEN		mg/l									10 7
TOTAL DISSOLVED SOLIDS		mg/l									<25
ELECTRICAL CONDUCTIVITY		µS/cm		1290		2100	1430	1090	1110		10
pH		pH units		6 8		7	7	6 7	6 7		5.2
COPPER	•	µg/l		1450		*130*	360	1290	310		30
CADMIUM	•	µg/l		*5 6*		30	*2 5*	*5 7*	2.2		<1
ZINC	•	µg/l		3300		18100	1 3	4400	1300		30
LEAD	•	µg/l		2810		3090	580	2150	290		<10
NICKEL	•	µg/l		210		990	*110*	510	*90*		<7
ARSENIC	•	µg/l		323		2990	131	744	28		<1
MERCURY	•	µg/l		2 3	2 3	<0 1	*1 5*	2 6	*1.2*	*1 1*	<0 1
DISSOLVED METHANE		mg/l	0 03					0 03	0 62		<0 03
BIOCHEMICAL OXYGEN DEMAND		mg/l				145					0 5
CHEMICAL OXYGEN DEMAND		mg/l				9610					<10
FREE CYANIDE	•	mg/l									<0 05

NOTES

WG1 – Monitoring Well Number
WG1S – Shallow well of monitoring well installation with nested wells
Dup – Duplicate
• – Appears on Dutch groundwater criteria for contaminated land
Numbers in italics denote concentrations in excess of Dutch 'B' level
Numbers in bold denote concentrations in excess of Dutch 'C' level

ng/l – Nanograms per litre
µg/l – Micrograms per litre
mg/l – Milligrams per litre

SOIL GAS SPIKE SURVEY RESULTS
GLEBELANDS SOUTH, NEWPORT GWENT
12/10/93

Spike point number	CH4 (%)	O2 (%)	CO2 (%)	Time	Air Pressure (mb)	Weather	Temperature	Depth to Water (M)
1	0	13 max	1 75	9 40	982	overcast	12°C	
		8 5 steady				with showers		
2	0	2	10	9 50				
3	0	8	11	10 30				
4	0	16	8	10 34				
5	0	19	3 5	10 37				
6	0	20	2	10 41				
7	0	20	13 5	11 05				
8	0	1 min	0 5	10 52				0 9
		10 unsteady						
9	0	16	2	11 00				
10	0	12	6	11 10				
11	0	16	5	11 18				1
12	0	19	6 5	11.26				
13	0	20	1	11 32				
14	0	14	5	11 37				
15	0	18	4	11 42				
16	0	15	0	12.38				
17	0	17	2	12.57				1
18	0	20	2 5	13 00				1
19	0	14	7	13 04				
20	0	15	8	13 50	983	partly	16°C	
21	0	19 unsteady	11	13 57		cloudy		
22	0	20	1	14 02				
23	0	4 5	5	14 06				
24	0	13	9	14 12				
25	0	16	6	14 16				
26	0	6 5	2	14.21				
27	0	16	2	14.27				
28	0	19	3	14 31				
29	0	9	6	14 37				
30	0	11	0 5	14 43				
31	0	5	1 5	14 49				
32	0	17	4 5	14 58				
33	0	20	2	15 02				
34	0	20 5	1	15 07				
35	0	20	1	15 10				
36	0	20	0 5	15 15	983	partly	15°C	0 4
						cloudy		

NOTES CH4 – Methane CO2 – Carbon Dioxide M – Metres
O2 – Oxygen mb – millibars

SOIL GAS SPIKE SURVEY RESULTS

GLEBELANDS SOUTH NEWPORT GWENT

9/11/93

Spike point number	CH4 (%LEL)	O2 (%)	CO2 (%)	Time	Air Pressure (mb)	Weather	Temperature
2	0 4	7 min	7 5	10 50			
		11 steady					
3	0	6 min	9 5	11 35			
		9 steady					
4	0 2	10	9 5	11 50			
5	0	17 5	2	12 10			
7	0 5	7 min	9 5	10 35	1003	Overcast	9°C
		15 steady					
10	0 2	14	7 5	11 25			
11	0 2	14	7	11 00			
12	0 1	15	5	11 15			
14	0 3	17 5	3	12 00	1004	Drizzle	8°C
19	0 4	5 5 min	–	15 40			
		7 steady					
20	0 4	12	–	15 30			
21	0 5	3	–	15 25			
23	0 5	11 5	9	12 40			
24	0 4	10 5	–	15 15			
25	0 3	12	–	15 35	1002	Rain	8°C
29	0 5	4 min	12	12 30			
		8 steady					
32	0 1	18	2 5	12 15			

NOTES CH4 – Methane mb – millibars CO2 – Carbon dioxide

O2 – Oxygen LEL – Lower Explosion Limit

GAS WELL MONITORING RESULTS
GLEBELANDS SOUTH, NEWPORT, GWENT
29/10/93 and 31/10/93

Monitoring Well Number	CH4 (%LEL)	CH4 (%)	O2 (%)	CO2 (%)	Time	Air Pressure (mb)	Weather	Temperature
WG 11	7	<1	1 5	12	12.14	1015	cloudy	11°C
WG 12	0 5	<1	4	15	12.19			
WG 13	0 7	<1	12	7	12.10			
WG 14	0 5	<1	2	13 75	12:00			
WG 15	0	<1	20 9	10 max	12.06			
				2 steady				
WG 16	0	<1	19	4	11 55			
WG 17	0 5	<1	9	11 5	11 49			
WG 18	0	<1	17	6	11 45			
WG 19		8	6 5	11 5	11 35			
WG 20	0	<1	20 5	4 5	11 30	1015	cloudy	11°C

GAS WELL MONITORING RESULTS
GLEBELANDS SOUTH, NEWPORT, GWENT
5/11/93

Monitoring Well Number	CH4 (%LEL)	CH4 (%)	O2 (%)	CO2 (%)	Time	Air Pressure (mb)	Weather	Temperature
WG 11	32	1 6	3 5	11	11 20			
WG 12	0	<1	11 5	7	11 15			
WG 13	0	<1	11	8	11 25			
WG 14	0	<1	12	10	11 03			
WG 15	0	<1	21	0	10 40	999.5	overcast	11°C
WG 16	0	<1	18 5	3 5	10 50			
WG 17	0	<1	11	9	11 30			
WG 18	0	<1	11 5	9	11 35			
WG 19	34 max	1 7	8	11	11 50	999.5	overcast	11°C
	25 steady	1 25						
WG 20	0	<1	20	2	11 38			

NOTES CH4 – Methane CO2 – Carbon Dioxide mb – Millibars
O2 – Oxygen LEL – Lower Explosion Limit
CO2, times, air pressure and temperature readings shown in top table taken on 31/10/93

Path. fjs disk g lotus sw208

GAS EMISSION RATES FOR WG19

METHANE

Change in Concentration %	Time Min	Rate %/Sec	Volume of Gas in Well (litres)	Emission Rate (litres/hour)
0 2125	4	0 000885	0 00757	27 24
0 3625	8	0 00075	0 00641	23 1
0 25	16	0 00026	0 00222	8 0

CARBON DIOXIDE

Change in Concentration %	Time Min	Rate %/Sec	Volume of Gas in Well (litres)	Emission Rate (litres/hour)
2 5	4	0 0104	0 089	32
4 5	8	0 0094	0 08	28
2 0	16	0 002	0 017	6

APPENDIX FOUR

Phase One Housing Site – Trial Pit Logs

2). Exploration Associates, April 2000

Exploration Associates , Unit 15, Crosby Yard, Wildmill,
Bridgend, Mid Glamorgan, CF31 1JX
Tel (01656) 646588

Durham Road Schools PFI Project Contamination Investigation

Volume 1. Factual Report on Ground Investigation

150055
June 2000

Client
Newport County Borough Council

Engineer
Gwent Consultancy
Gwent House
Albany Street
Newport
South Wales
NP20 5GH

CONTENTS

150055

VOLUME 1

VOLUME 2

1 INTRODUCTION

On the instruction of Gwent Consultancy, on behalf of Newport County Borough Council, a contamination investigation was carried out by Exploration Associates at the Glebelands Recreation Ground and adjoining site for the Proposed Durham Road Schools PFI Project in Newport, Gwent The instruction to proceed was given in the letter from Gwent Consultancy, dated 17 March 2000, reference GT/72615/GDW/JET16

The investigation was required to determine the contamination status of the proposed developmnt areas

This report presents a description of the site, together with an account of the investigation procedures adopted and factual data obtained from the site works and subsequent contamination testing programme

The investigation was carried out in general accordance with the relevant British Standards and the General Notes appended

2 THE SITE

The site is located to the north east end of Newport, Gwent and is centred on approximate National Grid Reference SO 317 895 The site comprises the Glebelands Sports Stadium and Recreation Ground and a section of undeveloped land to the south The site is bounded to the north by the M4 and to the west by the River Usk, to the east by a railway line and to the south by a plot of land with a demolished industrial unit

The Glebelands Sports Stadium and Recreation Ground comprises a central hard surfaced running track and grassed football pitch An all weather sports pitch, model railway track, changing rooms and a club house were also present at the time of the investigation The area of land to the south of the Glebelands Sports Stadium and Recreation Ground comprises a relatively level area of grassed land with many trees and bushes, locally these were dense

3 FIELDWORK

3 1 General

The fieldwork was carried out during the period 28 March to 11 April 2000, and comprised the drilling of light cable percussion boreholes, excavation of machine dug trial pits, the installation of combined land gas/groundwater monitoring standpipes, soil and groundwater sampling, soil and soil and groundwater sampling

The fieldwork was carried out in general accordance with BS 5930 1999

3 2 Boreholes

A total of eleven boreholes were put down during the investigation, the boreholes, BH1 to BH11 were put down using cable percussion techniques to depths of between 5 50 metres and 14 00 metres The boreholes were formed using 200mm diameter tools

The location of all boreholes was specified by the Engineer and are shown on the Exploratory Hole Location Plan Drawing 2, Enclosure F During cable percussion boring, small (tub) and large (bulk) disturbed samples were taken of all strata encountered for descriptive and subsequent contamination testing purposes When groundwater was encountered in the boreholes, drilling was suspended for 20 minutes and the ground water level measured every 5 minutes Water samples were then taken

Descriptions the strata encountered together with details of samples obtained, groundwater behaviour and rates of progress are presented on the Borehole Records, Enclosure A The descriptions are based on an examination of the samples obtained during drilling and are in general accordance with BS 5930 1999 and the definitions contained therein

3 3 Trial Pitting

Twenty seven trial pits, TP1 to TP8 and TP12 to TP30 were excavated using a mechanical excavator to a maximum depth of 4 50 metres Small (tub) and large (bulk) disturbed samples were taken from the trial pits Where there was a significant inflow of groundwater, samples were taken Descriptions of the strata encountered in the trial pits, together with details of samples are presented on the Trial Pit Records, Enclosure A Measurement of the radiation levels of the spoil recovered from the pits were taken by a hand held Scintillation Detector immediately after excavation of the material The maximum radiation level of the spoil from each pit is noted on the Trial Pit Records Photographs were taken of the trial pits, these are included in Volume 2

3 4 Instrumentation

50mm nominal diameter gas monitoring standpipes were installed in all eleven boreholes The slotted filter sections of the standpipes were wrapped with 120 micron geotextile material Details of the instruments are shown on the individual borehole records Standpipes were developed after installation by pumping out groundwater with a surge pump for 30 minutes, or until the borehole was dry

Rising head tests were performed in all of the boreholes immediately after development, in accordance with the method specified in BS 5930 1981 Results of the tests and calculated permeabilities are presented in

Enclosure B Water samples for contamination testing were taken after development and the subsequent rising head tests

Gas and groundwater levels in the instruments were monitored during the fieldworks The gas monitoring comprised the measurements of volumes of methane, carbon dioxide, hydrogen sulphide, oxygen and flow The atmospheric pressure was also recorded at the times when gas monitoring was carried out Results are tabulated in Enclosure D, Gas/Groundwater Level Monitoring

3 5 Radiation Survey

Prior to the drilling of boreholes and excavation of trial pits, a radiation survey was carried out to determine background radiation levels on the site The survey was carried out using a hand held Scintillation Detector Readings of the radiation levels across the site were taken on a 25 metre square grid across the site The results of the survey are included in Enclosure C

3 6 Survey

A topographical survey of the exploratory hole locations was carried out by John Vincent Surveys under the supervision of Exploration Associates The resultant levels and co-ordinates are presented as part of the Exploratory Hole Records, Enclosure A

4 CONTAMINATION TESTING

A programme of contamination testing was scheduled by Gwent Consultancy The testing was carried out by Severn Trent Laboratories, Bridgend

Water samples were analysed for the following determinands

- Arsenic
- Cadmium
- Chromium
- Lead
- Mercury
- Selenium
- Water Soluble Boron
- Copper
- Nickel
- Zinc
- Cyanide
- Phenols
- Sulphate

- pH value
- Chloride
- Ammoniacal nitrogen
- Chemical oxygen demand
- Biochemical oxygen demand
- Total organic carbon
- Iron
- Electrical Conductivity

Soil samples were analysed for the following determinands

- Arsenic
- Cadmium
- Chromium
- Lead
- Mercury
- Selenium
- Water Soluble Boron
- Copper
- Nickel
- Zinc
- Cyanide
- Phenols
- Sulphur
- pH Value
- Sulphate (2 1 soil/water extract method)
- Polyaromatic Hydrocarbon (US EPA16)
- Chloride
- Sulphide
- Calorific Value
- Asbestos
- Mineral Oils and Grease

NRA Leaching tests of soil samples were analysed for the following determinands

- Arsenic
- Cadmium
- Chromium
- Lead
- Mercury
- Selenium
- Water Soluble Boron
- Copper
- Nickel

- Zinc
- Cyanide
- Phenols
- Sulphur
- Sulphate
- pH value
- Chloride
- Ammoniacal nitrogen
- Chemical oxygen demand
- Electrical Conductivity

The contamination test results were issued directly to Gwent Consultancy, and are not included herein

5 GROUND CONDITIONS

5 1 Published Geology

Reference to British Geological Survey 1 63360 Scale Map 249, Newport indicates the site to be underlain by Alluvium overlying River Terrace Deposits The solid geology in the proximity is shown to be the St Maughan's Group of the Old Red Sandstone Group

5 2 Strata Encountered

For full details of the strata encountered, reference should be made to the exploratory hole records

Made Ground

Made ground of varying thicknesses up to 4 50 metres was found across the site The Sports and Recreation Ground was typically underlain by 2 50 to 3 50 metres of dark grey silty gravelly ash sand, where the gravel generally comprised fragments of clinker, glass, brick Fragments of pottery, tile, timber and metal were also observed Steel drums containing a wet powder with a strong choking, otherwise indescribable odour were found in the made ground in trial pits TP17 and TP18

The southern area of the site was typically underlain by less than 1 00 metre of predominantly granular material

Alluvium

Alluvium was encountered underlying the made ground The alluvium typically comprised a stiff grey mottled brown layer of silty organic clay overlying firm and soft grey silty organic clays Bands of peat, peaty clay and clayey peat were encountered towards the base of the alluvium layer The Alluvium was encountered up to a maximum depth of between 9 80 and 15 00 metres below ground level

A thin layer of soft/loose red brown slightly clayey silty sand with some sub-rounded to rounded sandstone and quartzite gravel was noted at the base of the alluvium in some boreholes The layer was encountered up to 1 20 metres in thickness

River Terrace Deposits

A thin band of gravel, up to 0 60 metres thick was encountered in some of the boreholes, mainly to the north of the site

Old Red Sandstone

Old Red Sandstone was encountered at depths between 6 10 and 13 40 metres below ground level and was not fully penetrated by any of the boreholes The top of the Old Red Sandstone generally sloped down towards the River Usk

A thin layer of reworked material up to 1 20 metres thick was encountered in some boreholes The material generally comprised a stiff or very stiff red brown to purple brown slightly sandy silty gravelly clay, where the gravel was sub-angular to rounded fragments of sandstone

Highly weathered material was encountered overlying more competent moderately weathered material The highly weathered material generally comprised a stiff to very stiff red brown to purple brown clayey silt or silty clay with variable quantities of siltstone lithorelicts

5 3 Groundwater

Groundwater was encountered at varying levels in the exploratory holes For full details of groundwater levels and behaviour, reference should be made to the Exploratory Hole Records, Enclosure A and Gas/Groundwater Level Monitoring, Enclosure D

It should be noted that groundwater levels vary due to changes in climate and other conditions, and may, at times be different to those measured during these operations

For and on behalf of
Exploration Associates Limited

pp R Higgis

I Wright
MEng(Hons)
Engineer

R H Griffiths
BSc(Hons), MSc , F G S , C Geol
Principal Geotechnical Engineer

EXPLORATION ASSOCIATES
IW/RHG/150055 Vol 1, Rev 2/June 2000

REFERENCES

- Ordnance Survey Map No 171 Cardiff, Newport and Surrounding area 1 50,000 Scale Series
- British Geological Survey Map, Sheet No 249 Newport (drift)
- BS 5930 1999 Code of Practice for Site Investigations British Standards Institution
- BS 1377 1990 Methods of Tests for Soils for Civil Engineering Purposes British Standards Institution

ENCLOSURE A

Exploratory Hole Records

Summary of Descriptive Methods

Symbol Sheet

Borehole Records	BH1 to BH11
Trial Pit Records	TP1 to TP8 and TP12 to TP30
Co-ordinate/level summary	1

KEY TO SYMBOLS ON EXPLORATORY HOLE RECORDS

All linear dimensions are in metres or millimetres

DESCRIPTIONS

**	Drillers Description

SAMPLES

U ( )	Undisturbed 102mm diameter sample, ( ) denotes number of blows to drive sampler
U ( )F U ( )P	F not recovered P partially recovered
U38	Undisturbed 38mm diameter sample
P(F),(P)	Piston sample F - not recovered P - partially recovered
B	Bulk sample disturbed
D	Jar Sample disturbed
W	Water Sample
CBR	California Bearing Ratio mould sample
G	Gas Sample and depth of hole at time of sampling

CORE RECOVERY AND ROCK QUALITY

TCR	Total Core Recovery %
SCR	Solid Core Recovery %
RQD	Rock Quality Designation %
FI	Fracture Index (discontinuities per metre) NI not intact NR not recordable, NA - not applicable

GROUNDWATER

∇	Groundwater strike
$\underline{\nabla}$	Groundwater level after standing period
Date/Water	Date of shift (day/month)/Depth to water at end of previous shift shown above the date and depth to water at beginning of shift given below the date

IN SITU TESTING

S	Standard Penetration Test - split barrel sampler
C	Standard Penetration Test solid 60° cone
V(H)(R)	Vane Test (Hand) (R) demonstrates remoulded strength
K(F) (C), (R) (P)	Permeability Test (falling constant or rising head packer)
PT	Pressuremeter Test
HP	Hand Penetrometer Test

MEASURED PROPERTIES

N	Standard Penetration Test - blows required to drive 300mm after seating drive
x/y	Denotes x blows for y mm within the Standard Penetration Test
x^*/y	Denotes x blows for y mm within the seating drive
c_u	Undrained Shear Strength (kN/m^2)
CBR	California Bearing Ratio

ROTARY DRILLING SIZES

Index Letter	NOMINAL DIAMETER (mm)	
	Borehole	Core
N	75	54
H	99	76
P	120	92
S	146	113

EXPLORATORY HOLE SYMBOLS	Project Durham Road Schools PFI Newport Newport County Borough Council	Contract 150055
Exploration Associates		Figure

Sampling					Strata			
Depth	Type	Casing Depth	Date/ Water	SPT N (Cu)	Description	Depth (Thickness)	Level	Legend
			28/03 2000			G L	9 84	
0 30-0 50	B				MADE GROUND Stiff slightly sandy slightly gravelly clay Gravel is angular to subangular, fine to coarse of flint, brick and concrete	(0 60)		
0 70 0 90	B					0 60	9 24	
1 00 1 20	B				MADE GROUND Dark grey silty gravelly to very gravelly ashy fine to medium sand Gravel is angular to subangular, fine to coarse of clinker, glass, brick and sandstone Occasional framents of possibe asbestos			
1 50 2 00	B					(2 10)		
					Below 2 00m slightly clayey			
2 50-3 00	B							
2 50	W							
2 70	D					2 70	7 14	
3 00	D				Firm to stiff dark grey organic CLAY Below 3 00m, becoming stiff			
					Below 3 50m, becoming grey mottled brown	(1 60)		
4 00	W							
4 00	D							
4 40	D					4 30	5 54	
4 50 4 80	B				Firm to stiff red brown slightly sandy slightly gravelly CLAY Gravel is subrounded to rounded fine to coarse sandstone and quartzite			
					Below 5 20m, recovered soft	(1 20)		
5 30	D							
5 50-5 70	B					5 50	4 34	
5 70-6 00	B				Grey subangular to subrounded medium to coarse sandstone GRAVEL	5 70	4 14	
5 80	D					(0 50)		
6 00		6 00	DRY 29/03 DRY					
6 50	D				Very stiff red brown slightly sandy gravelly CLAY Gravel is subangular to subrounded fine to coarse sandstone and quartzite (Reworked Marl)	6 20	3 64	
6 50-7 00	B					(0 80)		
7 00-7 40	B				Stiff red brown SILT (Highly Weathered Marl)	7 00	2 84	
						(0 40)		
7 40					Moderately strong red brown slightly weathered SILTSTONE Probably very closely to closely fractured (Old Red Sandstone)	7 40	2 44	
					End of Borehole			

Equipment Light Cable Percussion

Borehole Dia (mm)	Casing Dia (mm)
200 to 7 40m	200 to 7 40m

Groundwater

No	Struck	Behaviour	Sealed
1	2 50	Rose to 2 50m in 20 mins	2 90
2	5 50	Rose to 4 10m in 20 mins	5 80
3	6 50	Rose to 4 70m in 20 mins	

Ground Level 9 84 m OD
Coordinates 331759 04 mE
189732 77 mN

Drilled by GW
Logged by IW
Checked by PWG

Remarks

Chiselled from 6 00m to 6 20m (30 mins) 7 00m to 7 40m (60 mins)
50mm gas standpipe installed at 6 30m upon completion slotted and geowrapped from 1 00-6 00m
Water strikes 1 @ 10 00hrs, 2 @ 16 30hrs, 3 @ 09 15hrs
Hand dug inspection pit to 1 20metres depth (60mins)

See key sheet and appendices for explanations

Form 1/0

Borehole Record

Exploration Associates

Project

Durham Road Schools PFI Project, Newport
Newport County Borough Council

Contract 150055

Borehole 1(1 of 1)

Sampling					Strata			
Depth	Type	Casing Depth	Date/ Water	SPT N (Cu)	Description	Depth (Thickness)	Level	Legend
			31/03 2000			G L	9 01	
0 20 [redacted]50	B				Topsoil**	0 10	8 91	
0 60-1 00	B				MADE GROUND Dark brown very silty gravelly fine to coarse sand with pockets of gravelly clay Gravel is angular to subangular, fine to coarse of brick clinker and sandstone	0 40	8 61	
						(0 50)		
1 00 1 30	B				MADE GROUND Firm grey brown to green grey slightly sandy slightly gravelly clay Gravel is angular to subangular fine to coarse of siltstone and brick	0 90	8 11	
1 50 2 00	B					(1 50)		
2 30	W				MADE GROUND Dark grey silty gravelly to very gravelly ashy fine to medium sand Gravel is angular to subangular, fine to coarse of clinker glass brick and sandstone			
2 40	D					2 40	6 61	
3 00 3 40	B				Stiff grey mottled brown organic CLAY Above about 2 60m, firm grey brown with some plant remnants roots and rootlets			
3 50	D					(3 20)		
4 50	D							
5 50	D				Below about 5 50m, becoming firm to stiff	5 60	3 41	
5 70	D					(0 40)		
6 10	D				Firm brown grey peaty organic CLAY	6 00	3 01	
					Firm grey slightly peaty organic CLAY with some plant remnants	(1 30)		
7 10	D							
7 40	D					7 30	1 71	
					Firm brown peaty organic CLAY with many plant remnants	(0 60)		
8 00	D					7 90	1 11	
1 30	W							
8 20	D				Soft to firm grey sandy organic CLAY, below 8 10m, becoming slightly fine to medium sandy	(0 50)		
8 50 8 90	B					8 40	0 61	
					Firm red brown slightly fine to medium sandy CLAY Gravel is subangular to rounded, fine to coarse sandstone	(0 90)		
9 30 9 60	B					9 30	0 29	
					Red grey subangular to rounded fine to coarse sandstone GRAVEL with some cobbles of sandstone (River Terrace Deposit) 10 00 10 30m, band of cobbles	(1 00)		
10 00		10 00	7 10 03/03					

Equipment Light Cable Percussion

Borehole Dia (mm) 200 to 10 50m

Casing Dia (mm) 200 to 10 50m

Groundwater

No	Struck	Behaviour	Sealed
1	2 30	Rose to 2 30m in 20 mins	2 50
2	8 40	Rose to 1 30m in 20 mins	

Ground Level 9 01 m OD

Coordinates 331635 14 mE
189706 91 mN

Drilled by GW
Logged by IW
Checked by

Remarks

Chiselled from 9 60m to 10 00m (60 mins), 10 00m to 10 30m (40 mins)
50mm gas standpipe installed at 3 10m, slotted and geowrapped from 0 80 2 80m
Water strikes 1 @ 10 30hrs, 2 @ 15 20hrs Hand dug inspection pit to 1 20metres (60mins)

See key sheet and appendices for explanations

Form 1/0

Borehole Record

Exploration Associates

Project

Durham Road Schools PFI Project Newport
Newport County Borough Council

Contract 150055

Borehole 2(1 of 2)

Sampling					Strata			
Depth	Type	Casing Depth	Date/ Water	SPT N (Cu)	Description	Depth (Thickness)	Level	Legend
			03/03 6 60					
10 40	D				Firm red brown CLAY with occasional fine gravel sized fragments of siltstone (Reworked Marl)	10 30	1 29	
10 50					End of Borehole	10 50	1 49	

Equipment Light Cable Percussion

Borehole Dia (mm) 200 to 10 50m

Casing Dia (mm) 200 to 10 50m

Groundwater
No Struck Behaviour Sealed

Ground Level 9 01 m OD
Coordinates 331635 14 mE
189706 91 mN

Drilled by GW
Logged by IW
Checked by

Remarks

See key sheet and appendices for explanations

Form 1/0

Borehole Record

Exploration Associates

Project
Durham Road Schools PFI Project, Newport
Newport County Borough Council

Contract 150055

Borehole 2(2 of 2)

Sampling					Strata			
epth	Type	Casing Depth	Date/ Water	SPT N (Cu)	Description	Depth (Thickness)	Level	Legend
			29/03 2000		Topsoil**	G L	9 67	
40 0 70	B				MADE GROUND Dark grey silty very gravelly, locally gravelly ashy fine to coarse sand Gravel is angular to subangular fine to coarse of clinker, glass tile brick and sandstone	0 30	9 37	
0 80 1 10	B							
20 1 50	B							
1 50 2 00	B					(2 30)		
2 50 2 80	B					2 60	7 07	
2 80	D				Stiff below 3 50m becoming firm to stiff grey mottled brown organic CLAY			
3 50	D					(2 10)		
4 50	D					4 70	4 97	
4 80	D				Soft grey organic CLAY			
5 80	D					(1 20)		
6 00	D					5 90	3 77	
6 20	D		—		Firm grey brown peaty CLAY with occasional plant remnants	6 10	3 57	
						(0 70)		
					Soft grey organic CLAY	6 80	2 87	
6 90	D				Red brown slightly clayey silty fine to coarse SAND	7 10	2 57	
7 20 7 50	B					(0 40)		
7 60	D				Grey slightly sandy subrounded to rounded fine to coarse sandstone GRAVEL	7 50	2 17	
7 60 8 00	B							
					Stiff to very stiff red brown slightly sandy gravelly CLAY Gravel is subangular to subrounded fine to coarse sandstone and siltstone (Reworked Marl)	(1 70)		
8 60	D							
						9 20	0 47	
9 30	D				Stiff red brown slightly sandy slightly gravelly CLAY Gravel is subangular to subrounded, fine to coarse, mudstone and siltstone (Reworked Marl)	(0 60)		
9 80 10 00	B					9 80	0 13	
4 70	W							

Equipment Light Cable Percussion

Borehole Dia (mm) 200 to 11 00m

Casing Dia (mm) 200 to 10 00m

Groundwater

No	Struck	Behaviour	Sealed
1	2 60	Rose to 2 50m in 20 mins	2 70
2	6 10	Rose to 6 10m in 20 mins	6 30
3	7 10	Rose to 3 10m in 20 mins	8 00
4	9 80	Rose to 4 70m in 20 mins	

Ground Level 9 67 m OD

Coordinates 331701 38 mE
189685 77 mN

Drilled by GW
Logged by IW
Checked by

Remarks Chiselled from 8 10m to 8 50m (60 mins), 8 70m to 8 90m (30 mins) 10 10m to 10 50m (60 mins) 10 50m to 11 00m (75 mins)
50mm gas standpipe installed at 10 40m slotted and geowrapped from 7 10 10 10m
Hand dug inspection pit to 1 20metres, (60mins) Water strikes 1 @ 10 45hrs, 2 @ 12 00hrs, 3 @ 13 15 4 @ 16 30hrs

See key sheet and appendices for explanations

Form 1/0

Borehole Record

Exploration Associates

Project
Durham Road Schools PFI Project, Newport
Newport County Borough Council

Contract 150055

Borehole 3(1 of 2)

Sampling					Strata			
Depth	Type	Casing Depth	Date/ Water	SPT N (Cu)	Description	Depth (Thickness)	Level	Legend
		10 00	30/03 6 30					
10 00			30/03 4 70		Moderately weak red brown slightly to moderately weathered SILTSTONE Probably very closely to closely fractured (Old Red Sandstone)			
3 10	W					(1 20)		
10 20-10 50	B				Above 10 00m, weak to moderately weak			
10 70-11 00	B							
11 00						11 00	-1 33	
					End of Borehole			

Equipment Light Cable Percussion

Borehole Dia (mm)	Casing Dia (mm)
200 to 11 00m	200 to 10 00m

Groundwater

No	Struck	Behaviour	Sealed

Ground Level 9 67 m OD
Coordinates 331701 38 mE
189685 77 mN

Drilled by GW
Logged by IW
Checked by

Remarks

See key sheet and appendices for explanations

Form 1/0

Borehole Record

Exploration Associates

Project
Durham Road Schools PFI Project Newport
Newport County Borough Council

Contract 150055

Borehole 3(2 of 2)

Sampling					Strata			
Depth	Type	Casing Depth	Date/ Water	SPT N (Cu)	Description	Depth (Thickness)	Level	Legend
			03/04 2000			G L	9 48	
0 30-0 70	B				MADE GROUND Dark grey silty very gravelly ashy fine to coarse sand Gravel is angular to subangular, fine to coarse, of clinker glass and brick			
0 80 1 10	B							
1 20 1 50	B					(2 60)		
1 50 2 00	B							
2 40	W							
						2 60	6 88	
2 70	D				Soft to firm grey organic CLAY			
2 50 3 00	B							
3 00	D							
4 00	D					(3 20)		
5 00	D							
						5 80	3 68	
6 00	D				Soft grey organic CLAY			
7 00	D					(2 10)		
						7 90	1 58	
8 00	D				Firm grey organic CLAY			
						(0 90)		
						8 80	0 68	
8 90	D							
9 00-9 30	B				Stiff black fibrous PEAT	(0 50)		
						9 30	0 18	
					Soft to firm dark grey peaty organic CLAY	(0 60)		
						9 90	-0 42	

Equipment Light Cable Percussion

Borehole Dia (mm) 200 to 10 50m

Casing Dia (mm) 200 to 10 50m

Groundwater

No	Struck	Behaviour	Sealed
1	2 60	Rose to 2 40m in 20 mins	8 00

Ground Level 9 48 m OD

Coordinates 331631 53 mE
189545 97 mN

Drilled by GW
Logged by IW
Checked by

Remarks 50 mm gas standpipe installed at 9 30m, slotted and geowrapped from 1 00-9 00m
Water strike, 1 @ 10 15hrs Hand dug inspection pit to 1 20metres, (60mins)

See key sheet and appendices for explanations

Form 1/0

Borehole Record

Exploration Associates

Project
Durham Road Schools PFI Project, Newport
Newport County Borough Council

Contract 150055

Borehole 4(1 of 2)

Sampling					Strata			
Depth	Type	Casing Depth	Date/ Water	SPT N (Cu)	Description	Depth (Thickness)	Level	Legend
10 00	D		03/04					
10 2[redacted]50	B				Firm to stiff red brown CLAY (Reworked Marl)	(0 60)		
		10 50	DRY			10 50	1 02	
10 50					End of Borehole			

Equipment Light Cable Percussion

Borehole Dia (mm): 200 to 10 50m

Casing Dia (mm): 200 to 10 50m

Groundwater

No Struck Behaviour Sealed

Ground Level 9 48 m OD

Coordinates 331631 53 mE
189545 97 mN

Drilled by GW
Logged by IW
Checked by

Remarks

See key sheet and appendices for explanations

Form 1/0

Borehole Record

Exploration Associates

Project

Durham Road Schools PFI Project Newport
Newport County Borough Council

Contract 150055

Borehole 4(2 of 2)

Sampling					Strata			
Depth	Type	Casing Depth	Date/ Water	SPT N (Cu)	Description	Depth (Thickness)	Level	Legend
			30/03 2000		Topsoil**	G L 0 10	9 61 9 51	
30 [illegible]80	B				MADE GROUND Dark grey silty very gravelly ashy fine to coarse sand Gravel is angular to subangular fine to coarse of clinker glass, brick tile and sandstone Occasional brick cobbles			
0 90 1 20	B							
1 50 2 00	B					(2 70)		
? 50 3 00	B							
3 00	D					2 80	6 81	
					Stiff grey brown below 3 50m, becoming grey mottled brown organic CLAY	(1 50)		
4 00	D							
4 40	D					4 30	5 31	
					Soft to firm grey organic CLAY	(0 80)		
5 20	D					5 10	4 51	
					Firm grey brown organic CLAY	(1 30)		
6 20	D							
6 50	D					6 40	3 21	
					Firm grey brown peaty organic CLAY with thin bands of black peat	(0 50)		
7 00	D					6 90	2 71	
					Firm red brown slightly sandy slightly gravelly CLAY Gravel is angular to subangular fine to coarse sandstone	(0 80)		
7 80	D					7 70	1 91	
7 90-8 10	B				Brown to red brown slightly clayey silty slightly gravelly to gravelly fine to coarse SAND Gravel is subrounded to rounded, fine to coarse sandstone and quartzite	(0 40) 8 10	1 51	
8 20 8 50	B							
6 10	W					(1 00)		
9 00	D				Stiff red brown to purple brown slightly fine to coarse sandy silty slightly gravelly to gravelly CLAY with some cobbles Gravel is subangular to subrounded, fine to coarse sandstone (Reworked Marl)	9 10	0 51	
9 00		9 00	DRY 31/03 8 00			(0 50)		
9 20 9 60	B					9 60	0 01	
9 60					Moderately weak red brown slightly to moderately weathered SILTSTONE (Old Red Sandstone)			
					End of Borehole			

Equipment Light Cable Percussion

Borehole Dia (mm): 200 to 9 60m

Casing Dia (mm): 200 to 9 00m

Groundwater

No	Struck	Behaviour	Sealed
1	2 70	Rose to 2 70m in 20 mins	3 00
2	6 40	Rose to 6 40m in 20 mins	6 60
3	8 00	Rose to 6 10m in 20 mins	8 20

Ground Level 9 61 m OD

Coordinates 331710 12 mE, 189532 43 mN

Drilled by GW

Logged by IW

Checked by

Remarks

Chiselled from 8 60m to 9 00m (75 mins) 9 10m to 9 50m (60 mins) 9 50m to 9 60m (20 mins)
50mm gas standpipe installed at 7 10m, slotted and geowrapped from 2 90-6 90m
Hand dug pit to 1 20metres (60mins) Water strikes 1 @ 11 30hrs 2 @ 14 30hrs, 3 @ 16 00hrs

See key sheet and appendices for explanations

Form 1/0

Borehole Record

Exploration Associates

Project

Durham Road Schools PFI Project, Newport
Newport County Borough Council

Contract 150055

Borehole 5(1 of 1)

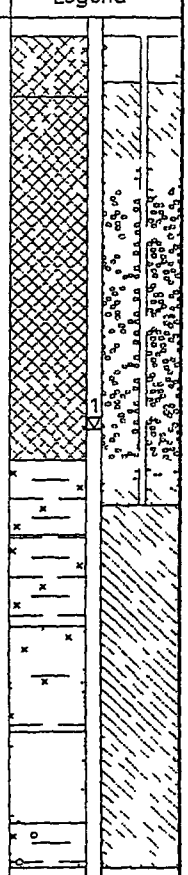
Sampling

Depth	Type	Casing Depth	Date/ Water	SPT N (Cu)
0 10 0 40	B		04/04 2000	
0 60 0 90	B			
1 00 1 30	B			
1 50 2 00	B			
2 50 3 00	B			
2 90	D			
3 10	D			
3 40	D			
4 00	D			
4 20 4 50	B			
4 60-4 80	B			
5 30-5 50	B			
5 50		5 00	DAMP	

Strata

Description	Depth (Thickness)	Level
	G L	9 74
MADE GROUND Firm red brown slightly sandy gravelly clay Gravel is angular to subrounded, fine to coarse, of brick and sandstone	(0 40)	
	0 40	9 34
MADE GROUND Dark grey silty very gravelly ashy fine to coarse sand Gravel is angular to subrounded fine to coarse of clinker glass and brick	(2 40)	
	2 80	6 94
Firm to stiff dark grey organic CLAY with some roots and rootlets	(0 50)	
	3 30	6 44
Stiff grey mottled brown organic CLAY	(0 60)	
	3 90	5 84
Red brown slightly clayey silty fine to coarse SAND Below 4 30m with some subrounded to rounded sandstone gravel	(0 70)	
	4 60	5 14
Red grey slightly fine to coarse sandy subangular to subrounded fine to coarse GRAVEL of sandstone	(0 60)	
	5 20	4 54
Stiff to very stiff red brown slightly gravelly to gravelly CLAY with some cobbles Gravel and cobbles are subrounded to rounded, fine to coarse sandstone and quartzite (Reworked Marl)		5 50	4 24
End of Borehole		

Legend



Equipment Light Cable Percussion

Borehole Dia (mm) 200 to 5 50m

Casing Dia (mm) 200 to 5 00m

Groundwater

No	Struck	Behaviour	Sealed
1	2 60	Damp	

Ground Level 9 74 m OD

Coordinates 331784 95 mE 189565 07 mN

Drilled by GW

Logged by IW

Checked by

Remarks

Chiselled from 4 80m to 5 20m (60 mins) 5 20m to 5 50m (60 mins)
Water added to assist boring from 4 70m to 5 50m
50mm gas standpipe installed at 3 10m, slotted and geowrapped 0 80 2 80m
Hand dug pit to 1 20metres (60mins) Water strikes 1 @ 11 30hrs

See key sheet and appendices for explanations

Form 1/0

Borehole Record

Exploration Associates

Project

Durham Road Schools PFI Project Newport
Newport County Borough Council

Contract 150055

Borehole 6(1 of 1)

Sampling

Depth	Type	Casing Depth	Date/ Water	SPT N (Cu)
			06/04 2000	
0 20-0 50	B			
0 70	D			
1 00	D			
1 80	D			
2 70	D			
2 80-3 00	B			
3 20	D			
3 40-3 70	B			
4 40	D			
4 00	W			
		4 50	DRY	
4 60			07/04 4 00	
4 90	D			
5 00-5 30	B			
6 00	D			
7 00	D			
3 20	W			
7 90	D			
8 20	D			
9 00-9 20	B			
9 20				

Strata

Description	Depth (Thickness)	Level
MADE GROUND Dark grey silty very gravelly ashy fine to coarse sand with occasional cobbles Gravel and cobbles are angular to subangular, fine to coarse, of brick, clinker and concrete	G L (0 60)	7 35
Stiff grey mottled brown organic CLAY	0 60 (1 10)	6 75
Soft to firm grey organic CLAY	1 70 (0 90)	5 65
Soft dark brown clayey PEAT	2 60 (0 50)	4 75
Red brown slightly clayey silty slightly gravelly fine to coarse SAND Gravel is subrounded to rounded, fine to coarse sandstone	3 10 (1 20)	4 25
Stiff red brown slightly sandy slightly gravelly CLAY Gravel is subangular to subrounded fine to coarse sandstone (Reworked Marl)	4 30 (1 20)	3 05
Very stiff red brown to purple brown slightly sandy CLAY with some lithorelicts of very weak siltstone (Highly Weathered Marl)	5 50 (2 70)	1 85
Weak purple brown moderately weathered SILTSTONE (Old Red Sandstone)	8 20 (1 00)	-0 85
End of Borehole	9 20	1 85

Legend

Equipment Light Cable Percussion

Borehole Dia (mm)	Casing Dia (mm)
200 to 9 20m	200 to 8 20m

Groundwater

No	Struck	Behaviour	Sealed
1	7 00	Rose to 3 20m in 20 mins	

Ground Level 7 35 m OD
Coordinates 331794 27 mE
189438 36 mN

Drilled by GW
Logged by IW
Checked by RG

Remarks

Chiselled from 8 20m to 9 20m (120 mins)
50mm gas standpipe installed at 8 00m, slotted and geowrapped from 1 70 7 70m
Hand dug pit to 0 60metres (60mins) 1 @ 13 30hrs

See key sheet and appendices for explanations

Form 1/0

Borehole Record

Exploration Associates

Project
Durham Road Schools PFI Project, Newport
Newport County Borough Council

Contract 150055

Borehole 7(1 of 1)

Sampling / Strata

Depth	Type	Casing Depth	Date/ Water	SPT N (Cu)	Description	Depth (Thickness)	Level
			07/04 2000		MADE GROUND Stiff brown slightly fine to coarse sandy gravelly clay Gravel is angular to subrounded fine to coarse of brick, ash and concrete Some cobble and boulder sized fragments of concrete and brick Occasional timber fragments	G L	8 51
0 20 - 0 50	B					(1 60)	
1 30 1 60	B						
1 70	D					1 60	6 91
2 00	D				Stiff grey mottled brown organic CLAY	(1 40)	
3 00	D					3 00	5 51
3 00		3 00	DRY 10/04 DRY		Firm grey organic CLAY		
4 00	D						
5 00	D					(4 10)	
6 00	D						
7 00	D						
7 20	D				Soft dark brown fibrous PEAT	7 10	1 41
8 20	D					(2 50)	
9 20	D						
9 70	D				Soft grey organic CLAY	9 60	1 09

Legend

Equipment: Light Cable Percussion

Borehole Dia (mm): 200 to 11 50m

Casing Dia (mm): 200 to 10 80m

Groundwater

No Struck Behaviour — Sealed

No groundwater encountered

Ground Level 8 51 m OD

Coordinates 331646 59 mE, 189407 09 mN

Drilled by GW

Logged by IW

Checked by RC

Remarks Chiselled from 60m to 1 30m (90 mins), 10 90m to 11 30m (60 mins), 11 30m to 11 50m (30 mins)
50mm gas standpipe installed at 10 30m, slotted and geowrapped from 2 00-10 00m

See key sheet and appendices for explanations

Form 1/0

Borehole Record

Exploration Associates

Project

Durham Road Schools PFI Project, Newport
Newport County Borough Council

Contract 150055

Borehole 8(1 of 2)

Sampling

Depth	Type	Casing Depth	Date/ Water	SPT N (Cu)
			10/04	
10 [illegible]	D			
10 90	D			
11 00 11 30	B			
11 50	D	10 80	DAMP	
11 50				

Strata

Description	Depth (Thickness)	Level
	(0 80)	
	10 40	1 89
(Damp) red brown slightly clayey silty fine to coarse SAND	(0 40) 10 80	2 29
Very stiff red brown to purple brown slightly sandy CLAY with some lithorelicts of very weak to weak siltstone Occasional roots (Highly Weathered Marl)	(0 70)	
	11 50	2 99
End of Borehole		

Legend

Equipment Light Cable Percussion

Borehole Dia (mm)	Casing Dia (mm)
200 to 11 50m	200 to 10 80m

Groundwater
No Struck Behaviour Sealed

Ground Level 8 51 m OD
Coordinates 331646 59 mE
189407 09 mN

Drilled by GW
Logged by IW
Checked by

Remarks

See key sheet
nd appendices
or explanations

Form 1/0

Borehole Record

Exploration Associates

Project
Durham Road Schools PFI Project, Newport
Newport County Borough Council

Contract 150055

Borehole 8(2 of 2)

Sampling Depth	Type	Casing Depth	Date/ Water	SPT N (Cu)	Strata Description	Depth (Thickness)	Level	Legend
			06/04 2000			G L	7 25	
20	B				MADE GROUND Firm dark brown slightly sandy gravelly clay with occasional cobbles Gravel is angular to sub angular fine to coarse of sandstone and brick	(0 50)		
50	D					0 50	6 75	
					Stiff grey mottled brown organic CLAY			
90 1 20	B					(1 40)		
1 50	D							
00	D					1 90	5 35	
					Soft to firm grey organic CLAY			
60	W							
3 00	D					(2 30)		
00	D							
4 30	D					4 20	3 05	
4 50 4 80	B				Soft to firm brown fibrous PEAT			
4 80	W							
5 30	D					(2 60)		
6 30	D							
6 90	D					6 80	0 45	
7 00 7 40	B				Red brown clayey silty slightly gravelly to gravelly fine to coarse SAND Gravel is subrounded to rounded fine to coarse sandstone and quartzite			
8 00	D					(1 90)		
8 80	D					8 70	1 45	
					Stiff red brown to purple brown slightly sandy CLAY with some lithorelicts of very weak to weak siltstone (Highly Weathered Marl)			
						(1 50)		
9 80	D							

Equipment Light Cable Percussion

Borehole Dia (mm): 200 to 10 50m

Casing Dia (mm): 200 to 10 50m

Groundwater

No	Struck	Behaviour	Sealed
1	3 00	Rose to 2 60m in 20 mins	3 50
2	8 80	Rose to 4 80m in 20 mins	

Ground Level 7 25 m OD

Coordinates 331744 32 mE
189335 43 mN

Drilled by GW
Logged by IW
Checked by

Remarks

Chiselled from 10 30m to 10 50m (30 mins)
50mm gas standpipe installed at 8 00m, slotted and geowrapped from 1 70 7 70m
Water strikes, 1 @ 9 15hrs, 2 @ 11 30hrs

See key sheet and appendices for explanations

Form 1/0

Borehole Record

Exploration Associates

Project

Durham Road Schools PFI Project, Newport
Newport County Borough Council

Contract 150055

Borehole 9(1 of 2)

ampling

Strata

Depth	Type	Casing Depth	Date/ Water	SPT N (Cu)	Description	Depth (Thickness)	Level	Legend
			06/04					
10	D	10 20						
10 20						10 20	2 95	
					Weak purple brown moderately weathered SILTSTONE (Old Red Sandstone)	10 50	3 25	
					End of Borehole			

Equipment Light Cable Percussion

Borehole Dia (mm) 200 to 10 50m

Casing Dia (mm) 200 to 10 50m

Groundwater
No Struck Behaviour Sealed

Ground Level 7 25 m OD
Coordinates 331744 32 mE
189335 43 mN

Drilled by GW
Logged by IW
Checked by

Remarks

See key sheet and appendices for explanations

Form 1/0

Borehole Record

Exploration Associates

Project
Durham Road Schools PFI Project Newport
Newport County Borough Council

Contract 150055

Borehole 9(2 of 2)

Sampling

Strata

Depth	Type	Casing Depth	Date/ Water	SPT N (Cu)	Description	Depth (Thickness)	Level
			10/04 2000			G L	7 87
0 2[illegible]50	B				MADE GROUND Stiff brown slightly fine to coarse sandy gravelly clay with occasional cobbles Gravel is angular to subangular fine to coarse of brick		
0 70 1 00	B					(1 40)	
1 00-1 30	B						
1 50	D					1 40	6 47
					Stiff, becoming firm below 5 00m, grey organic CLAY		
2 50	D						
3 50	D						
						(5 40)	
4 50	D						
		4 50	DRY				
5 00			11/04 DRY				
5 50	D						
6 50	D						
7 00	D					6 80	1 07
					Firm dark brown fibrous PEAT		
						(1 40)	
8 00	D						
8 30	D					8 20	0 33
					Soft to firm grey peaty organic CLAY	(0 70)	
9 00	D					8 90	1 03
					Firm dark brown fibrous PEAT		
						(1 20)	

Legend

Equipment Light Cable Percussion

Borehole Dia (mm) 200 to 14 00m

Casing Dia (mm) 200 to 14 00m

Groundwater

No Struck Behaviour — Sealed

No groundwater encountered

Ground Level 7 87 m OD

Coordinates 331650 94 mE
189286 94 mN

Drilled by GW
Logged by IW
Checked by [illegible]

Remarks Chiselled from 13 60m to 14 00m (60 mins)
50mm gas standpipe installed at 9 30m, slotted and geowrapped from 2 00 9 00m

See key sheet and appendices for explanations

Form 1/0

Borehole Record

Exploration Associates

Project
Durham Road Schools PFI Project Newport
Newport County Borough Council

Contract 150055

Borehole 10(1 of 2)

Sampling

pth	Type	Casing Depth	Date/ Water	SPT N (Cu)
10 00	D		11/04	
10 20	D			
20	D			
2 00	D			
2 70	D			
3 50	D			
4 00	D			
14 00				

Strata

Description	Depth (Thickness)	Level
Firm grey organic CLAY with some plant remnants/fibrous peat	10 10	2 23
	(1 70)	
Firm brown grey slightly clayey fibrous PEAT	11 80	3 93
	(0 80)	
Soft red brown clayey silty fine to coarse SAND	12 60	4 73
	(0 80)	
Very stiff red brown to purple brown slightly sandy CLAY with some lithorelicts of very weak siltstone (Highly Weathered Marl)	13 40	5 53
	(0 60)	
End of Borehole	14 00	-6 13

Legend

Equipment Light Cable Percussion

Borehole Dia (mm): 200 to 14 00m

Casing Dia (mm): 200 to 14 00m

Groundwater
No Struck Behaviour Sealed

Ground Level 7 87 m OD
Coordinates 331650 94 mE
189286 94 mN

Drilled by GW
Logged by IW
Checked by

Remarks

See key sheet and appendices for explanations

Form 1/0

Borehole Record

Exploration Associates

Project
Durham Road Schools PFI Project, Newport
Newport County Borough Council

Contract 150055

Borehole 10(2 of 2)

Sampling

Depth	Type	Casing Depth	Date/ Water	SPT N (Cu)
			05/04 2000	
0 40	D			
0 80 1 10	B			
1 40	D			
1 70	D			
2 70	D			
3 00	D			
3 30 3 60	B			
4 00	D			
5 00	D			
5 30	D			
5 70 6 00	D			
6 20	D			
6 60-7 00	B			
6 90	W			
7 80-8 00	B			
8 00		7 50	6 90	

Strata

Description	Depth (Thickness)	Level
	G L	7 11
MADE GROUND Firm brown slightly fine to coarse sandy gravelly clay Gravel is angular to subangular, fine to coarse of brick	0 30	6 81
Stiff grey mottled brown organic CLAY	(1 30)	
Soft grey organic CLAY	1 60	5 51
	(1 30)	
Soft to firm dark brown fibrous PEAT	2 90	4 21
	(1 90)	
Red brown clayey silty fine to coarse SAND Below 4 80m, becoming damp	4 80	2 31
Below 5 60m with some subrounded to rounded fine to coarse sandstone gravel	(1 30)	
Stiff red brown to purple brown slightly sandy CLAY with some lithorelicts of siltstone (Highly Weathered Siltstone)	6 10	1 01
	(1 40)	
Weak purple brown moderately weathered SILTSTONE (Old Red Sandstone)	7 50	0 39
	(0 50)	
End of Borehole	8 00	0 89

Legend

Equipment Light Cable Percussion

Borehole Dia (mm) 200 to 8 00m

Casing Dia (mm) 200 to 8 00m

Groundwater

No	Struck	Behaviour	Sealed
1	7 50	Rose to 6 90m in 20 mins	

Ground Level 7 11 m OD

Coordinates 331787 54 mE
189280 67 mN

Drilled by GW
Logged by JW
Checked by RE

Remarks Chiselled from 7 50m to 8 00m (60 mins)
50mm gas standpipe installed at 6 30m, slotted and geowrapped from 1 00-6 00m
Water strikes 1 @ 13 15hrs

See key sheet and appendices for explanations

Form 1/0

Borehole Record

Exploration Associates

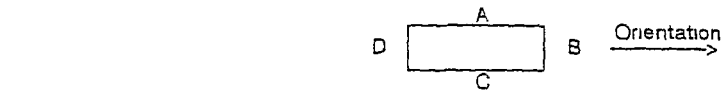
Project
Durham Road Schools PFI Project, Newport
Newport County Borough Council

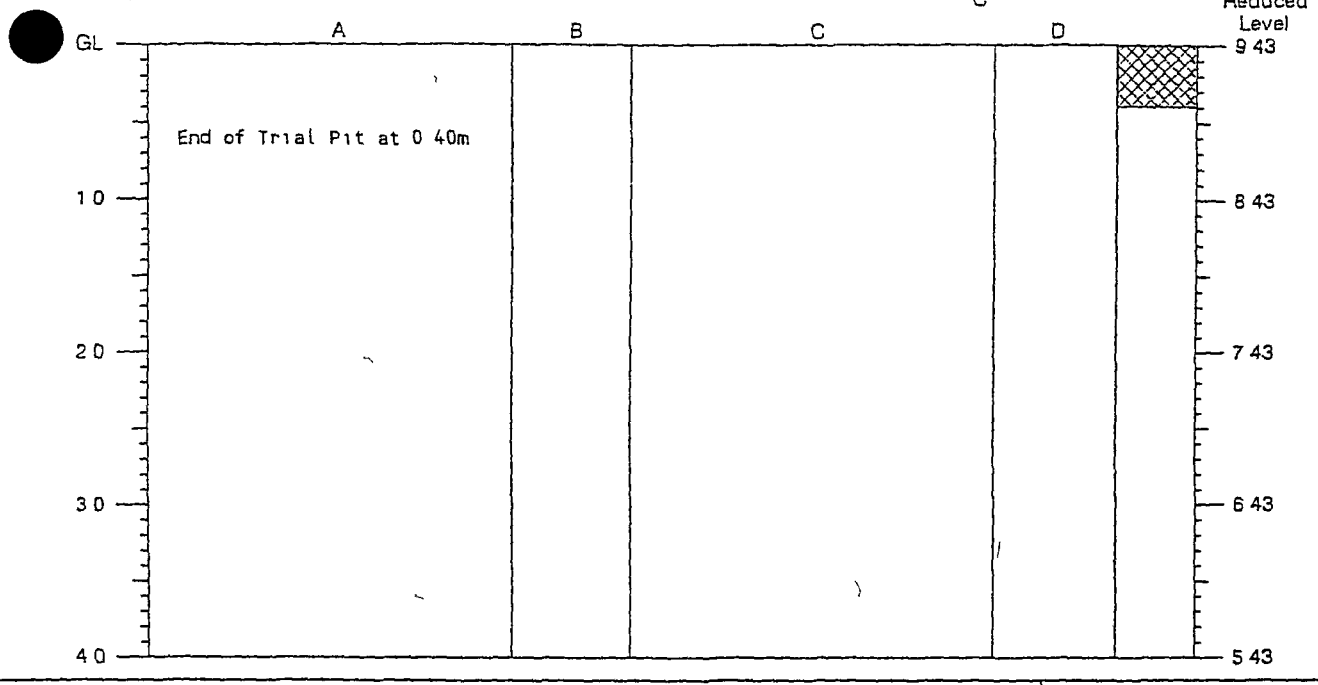
Contract 150055

Borehole 11(1 of 1)

Dimensions 1 2x0 9

Orientation N





Strata

Depth (m)	No	Description
0 00 0 40	1	MADE GROUND Soft to firm dark brown to black occasionally red brown clay (topsoil) with rootlets and ceramic fragments

Samples and Tests

Depth (m)	Type	Results
0 20	D	
0 40	D	

Date of Excavation 03/04/00
Equipment JCB 3CX
Stability Stable

Groundwater
No Struck Behaviour
Not encountered during excavation

Ground Level 9 43 m OD
Coordinates 331762 66 mE
189699 21 mN

Logged by KH
Checked by

Remarks
Pit terminated due to buried services
Radiation Detector 6 counts per second
Trial pit backfilled and compacted with arisings on completion

See key sheet and appendices for explanations

Form 2/0

Trial Pit Record

Exploration Associates

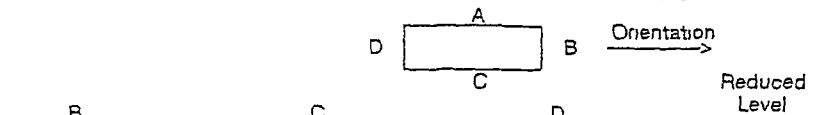
Project
Durham Road Schools PFI Project, Newport
Newport County Borough Council

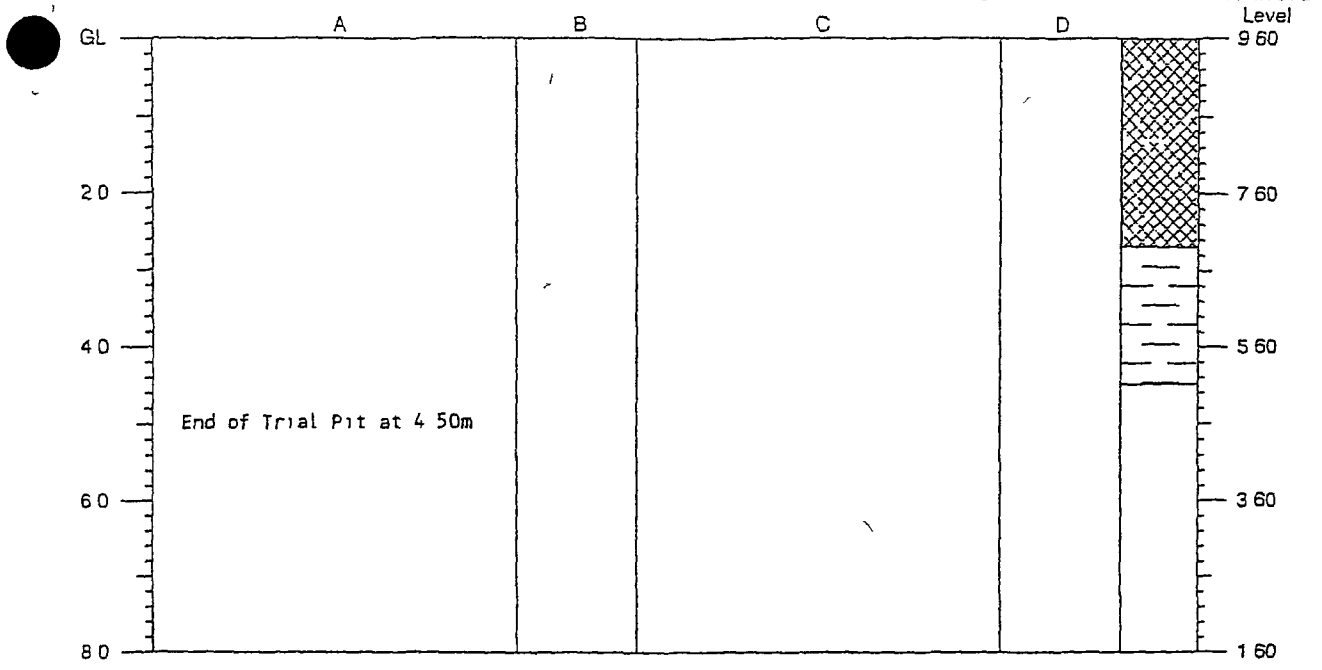
Contract 150055

Trial Pit TP1

Dimensions 1 6x1 1

Orientation N





Strata

Depth (m)	No	Description
0 00 2 70	1	MADE GROUND Loose dark brown grey to black silty gravelly ashy fine to coarse sand Gravel is angular to subangular fine to coarse of brick glass and wood
2 70 4 50	2	Soft to firm blue green grey to grey occasionally dark grey slightly sandy CLAY

Samples and Tests

Depth (m)	Type	Results
0 20	D	
0 50	D	
1 50	D	
2 50	D	
2 70	B	–
3 50	D	
4 50	D	

Date of Excavation 06/04/00
Equipment JCB 3CX
Stability Stable

Groundwater

No	Struck	Behaviour
1	2 80	

Ground Level 9 60 m OD
Coordinates 331719 64 mE
189707 23 mN

Logged by KH
Checked by

Remarks Radiation detector 7 counts per second
Trial Pit backfilled and compacted with arisings on completion

See key sheet and appendices for explanations

Form 2/0

Trial Pit Record

Exploration Associates

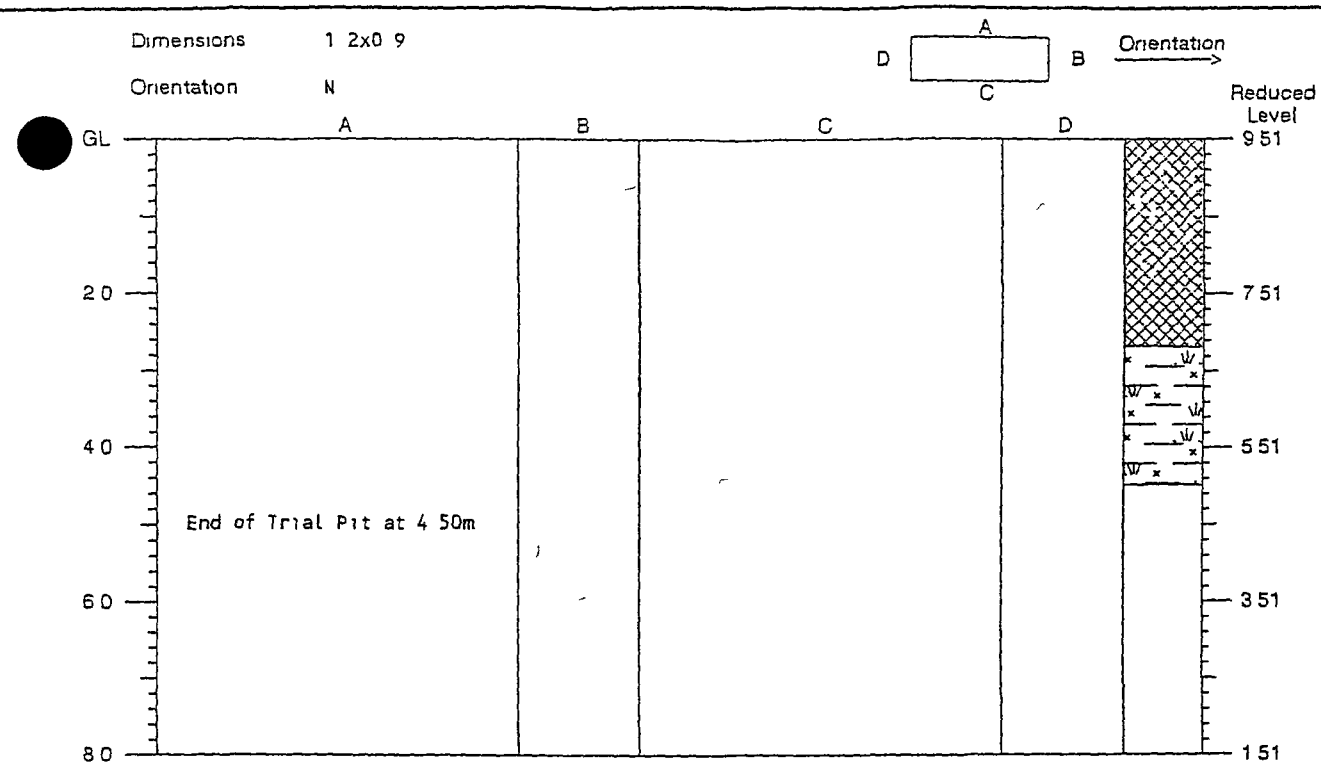
Project
Durham Road Schools PFI Project Newport
Newport County Borough Council

Contract 150055

Trial Pit TP2

Dimensions 1 2x0 9

Orientation N



Strata

Depth (m)	No	Description
0 00-2 70	1	MADE GROUND Loose dark brown grey to black silty gravelly ashy medium to coarse sand Gravel is angular to subangular fine to coarse brick glass and wood fragments
2 70-4 50	2	Soft to locally firm dark brown grey to grey peaty CLAY

Samples and Tests

Depth (m)	Type	Results
0 20	D	
0 50	D	
1 50	D	
2 50	D	
2 70	B	
3 50	D	
4 50	D	

Date of Excavation 06/04/00
Equipment JCB 3CX
Stability Unstable

Groundwater

No	Struck	Behaviour
1	2 70	

Ground Level 9 51 m OD
Coordinates 331720 64 mE
189721 34 mN

Logged by KH
Checked by

Remarks Radiation Detector 9 counts per second
Trial pit backfilled and compacted with arisings on completion

See key sheet and appendices for explanations

Form 2/0

Trial Pit Record

Exploration Associates

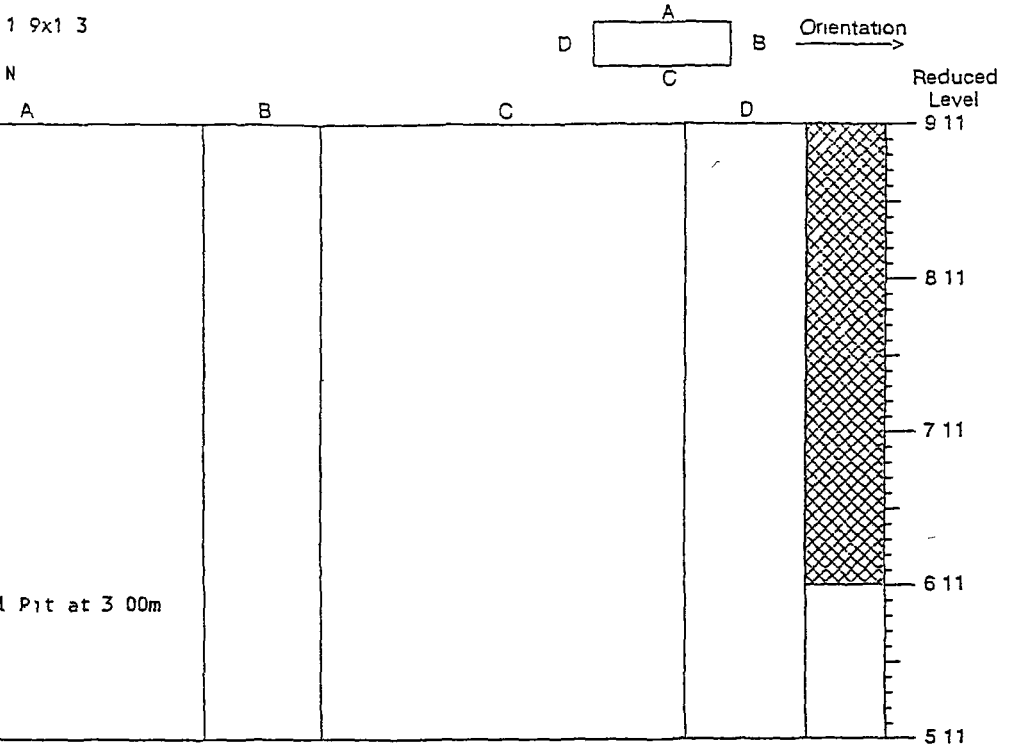
Project
Durham Road Schools PFI Project, Newport
Newport County Borough Council

Contract 150055

Trial Pit TP3

Dimensions 1 9x1 3

Orientation N



Strata

Depth (m)	No	Description
0 00 3 00	1	MADE GROUND Loose dark brown grey to black silty gravelly ashy medium to coarse sand Gravel is angular to subangular, fine to coarse brick glass and ceramic fragments

Samples and Tests

Depth (m)	Type	Results
0 20	D	
0 50	D	
1 50	D	
2 50	D	
3 00	D	

Date of Excavation 06/04/00
Equipment JCB 3CX
Stability Unstable

Groundwater

No	Struck	Behaviour
1	1 90	

Ground Level 9 11 m OD
Coordinates 331654 10 mE
189718 19 mN

Logged by KH
Checked by

Remarks

See key sheet and appendices for explanations

Radiation Detector 5 counts per second
Trial Pit terminated due to instability
Trial pit backfilled and compacted with arisings on completion

Form 2/0

Trial Pit Record

Exploration Associates

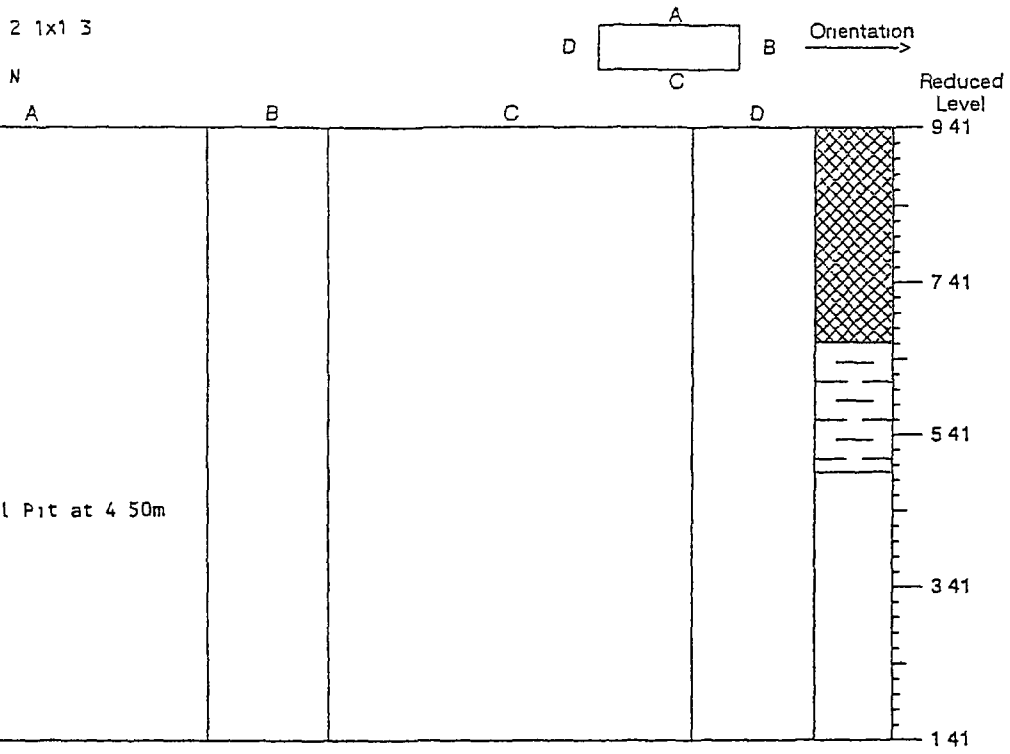
Project
Durham Road Schools PFI Project, Newport
Newport County Borough Council

Contract 150055

Trial Pit TP4

Dimensions 2 1x1 3

Orientation N



Strata

Depth (m)	No	Description
0 00 2 80	1	MADE GROUND Loose to medium dense dark brown grey to black silty gravelly ashy medium to coarse sand Gravel is angular to subangular fine to coarse brick, glass, wood and ceramic fragments
2 80 4 50	2	Soft to firm becoming stiff with depth grey to dark grey CLAY

Samples and Tests

Depth (m)	Type	Results
0 20	D	
0 50	D	
1 50	D	
2 50	D	
2 80	B	
3 50	D	
4 50	D	

Date of Excavation 06/04/00
Equipment JCB 3CX
Stability Stable

Groundwater
No Struck Behaviour
Not encountered during excavation

Ground Level 9 41 m OD
Coordinates 331614 05 mE
189669 29 mN

Logged by KH
Checked by

Remarks Radiation Detector 6 counts per second
Trial pit backfilled and compacted with arisings on completion

See key sheet and appendices for explanations

Form 2/0

Trial Pit Record

Exploration Associates

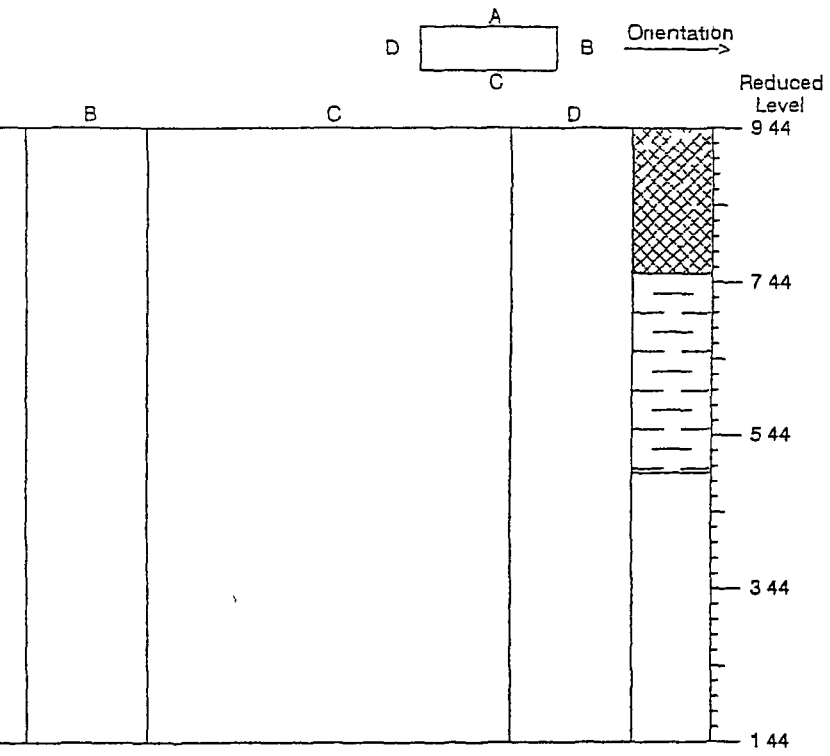
Project
Durham Road Schools PFI Project, Newport
Newport County Borough Council

Contract 150055

Trial Pit TP5

Dimensions 1 9x1 4

Orientation N



Strata

Depth (m)	No	Description
0 00-1 90	1	MADE GROUND Loose to medium dense dark brown grey to black silty gravelly ashy medium to coarse sand Gravel is angular to subangular fine to coarse brick bottles and porcelain fragments
1 90-4 50	2	Soft to firm brown grey to dark grey slightly medium to coarse sandy CLAY

Samples and Tests

Depth (m)	Type	Results
0 20	D	
0 50	D	
1 50	D	
1 90	B	
2 50	D	
3 50	D	
4 50	D	

Date of Excavation 06/04/00
Equipment JCB 3CX
Stability Unstable in made ground

Groundwater

No	Struck	Behaviour
1	1 90	

Ground Level 9 44 m OD
Coordinates 331644 76 mE
189644 38 mN

Logged by KH
Checked by

Remarks Radiation Detector 5 counts per second
Trial pit backfilled and compacted with arisings on completion

See key sheet and appendices for explanations

Form 2/0

Trial Pit Record

Exploration Associates

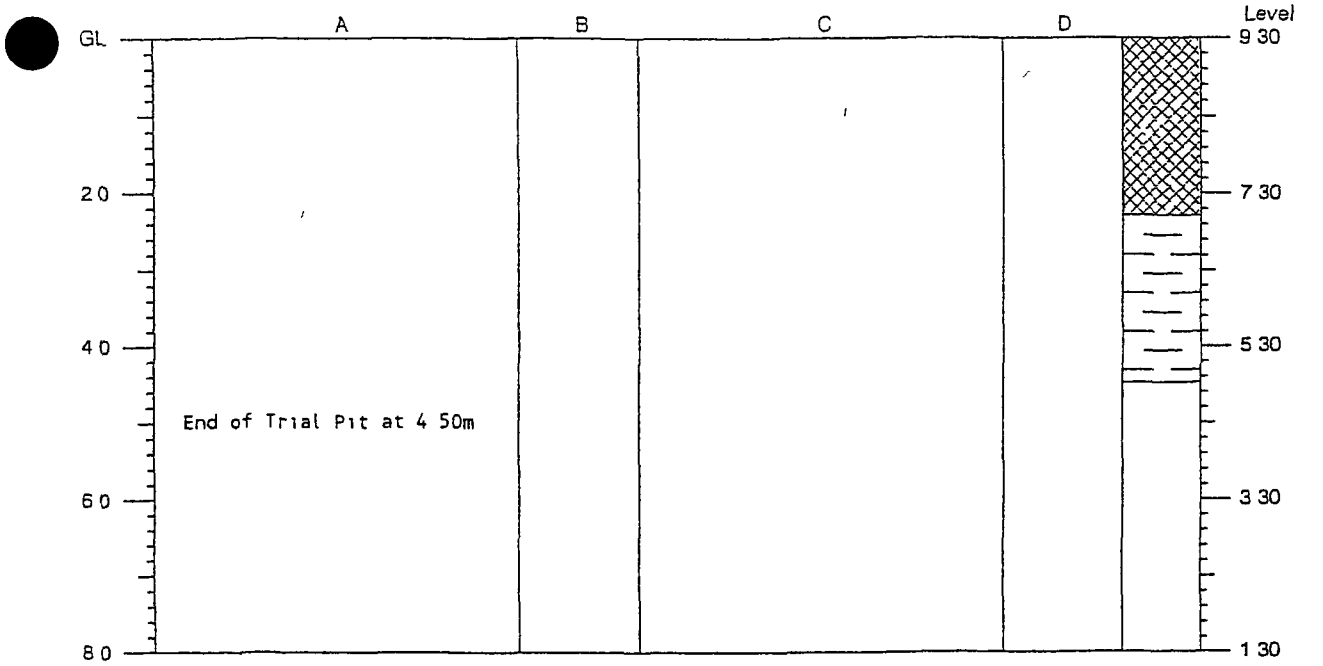
Project
Durham Road Schools PFI Project, Newport
Newport County Borough Council

Contract 150055

Trial Pit TP6

Dimensions 2 3x1 6

Orientation N



Strata

Depth (m)	No	Description
0 00 2 30	1	MADE GROUND Loose dark grey brown to black gravelly ashy medium to coarse sand Gravel is angular to subangular, fine to coarse bricks, glass and wood fragments
2 30 4 50	2	Firm (locally soft) dark grey to blue grey CLAY

Samples and Tests

Depth (m)	Type	Results
0 20	D	
0 50	D	
1 50	D	
2 30	B	
2 50	D	
3 50	D	
4 50	D	

Date of Excavation 05/04/00
Equipment JCB 3CX
Stability Unstable in made ground

Groundwater

No	Struck	Behaviour
1	2 70	

Ground Level 9 30 m OD
Coordinates 331622 42 mE
189604 11 mN

Logged by KH
Checked by

Remarks Radiation Detector 6 counts per second
Trial pit backfilled and compacted with arisings on completion

See key sheet and appendices for explanations

Form 2/0

Trial Pit Record

Exploration Associates

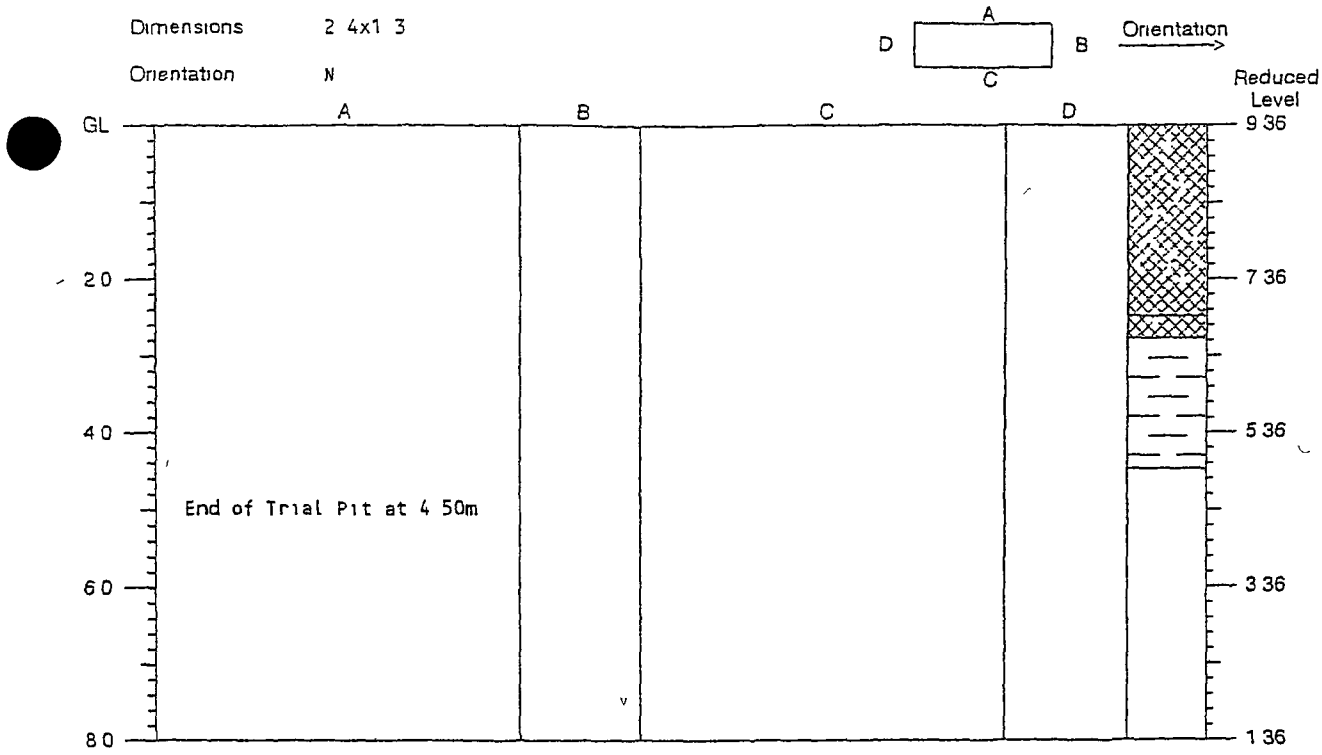
Project
Durham Road Schools PFI Project, Newport
Newport County Borough Council

Contract 150055

Trial Pit TP7

Dimensions 2 4x1 3

Orientation N



Strata

Depth (m)	No	Description
0 00 2 50	1	MADE GROUND Loose dark grey to black occasionally red brown slightly clayey silty gravelly ashy fine to medium sand Gravel is angular to subangular, fine to coarse brick clinker, glass ceramic and wood fragments
2 50-2 80	2	MADE GROUND Firm to stiff brown grey to dark grey slightly fine sandy clay with dark grey to black pockets from 2 50 to 2 80m
2 80-4 50	3	Firm to stiff grey to dark grey slightly fine to medium sandy CLAY

Samples and Tests

Depth (m)	Type	Results
0 20	D	
0 50	D	
1 50	D	
2 50	D	
3 50	D	
4 50	D	

Date of Excavation 04/04/00
Equipment JCB 3CX
Stability Stable

Groundwater

No	Struck	Behaviour
1	2 00	

Ground Level 9 36 m OD
Coordinates 331662 99 mE
189550 33 mN

Logged by KH
Checked by

Remarks Radiation Detector 6 counts per second
Trial pit backfilled and compacted with arisings on completion

See key sheet and appendices for explanations

Form 2/0

Trial Pit Record

Exploration Associates

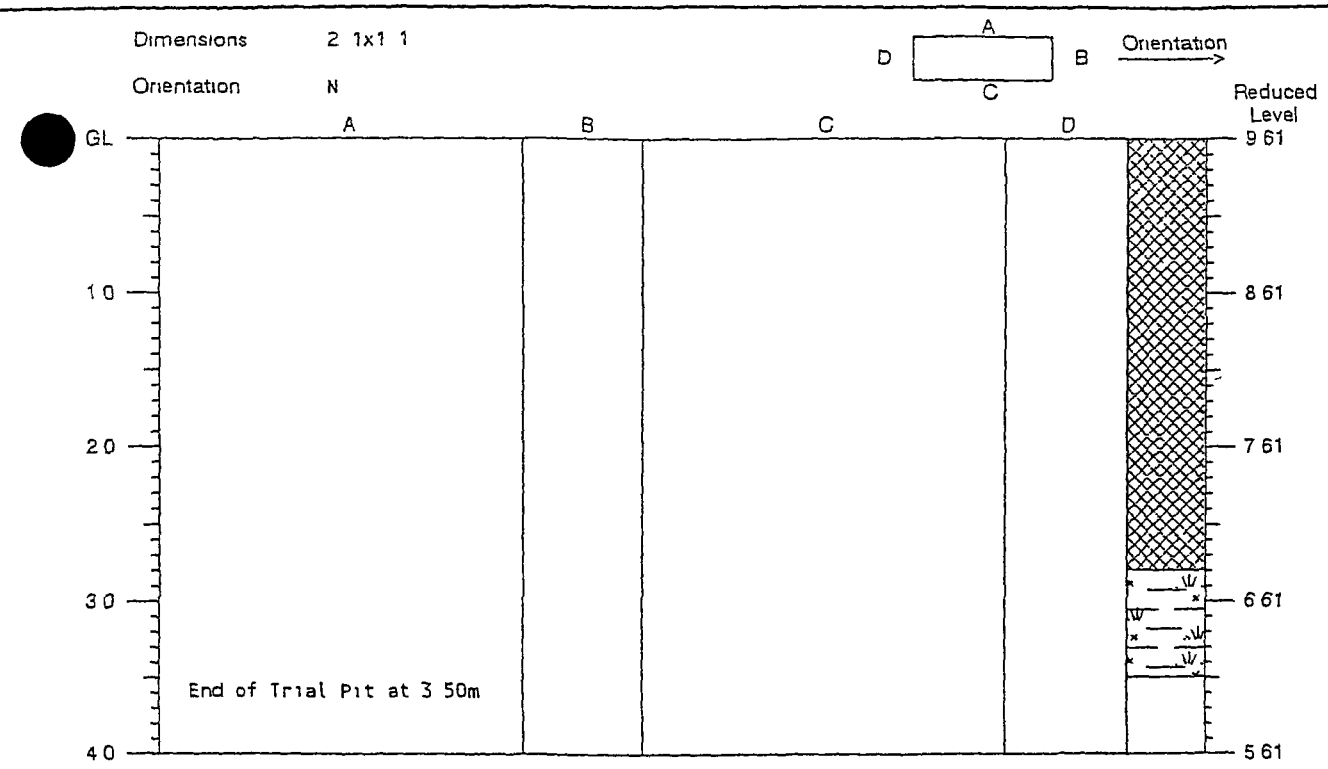
Project
Durham Road Schools PFI Project, Newport
Newport County Borough Council

Contract 150055

Trial Pit TP8

Dimensions 2 1x1 1

Orientation N



Strata

Depth (m)	No	Description
0 00 2 80	1	MADE GROUND Loose dark grey to black occasionally red brown to brown grey silty gravelly ashy medium to coarse sand Gravel is angular to subangular, fine to coarse brick and glass fragments with occasional brown to dark brown coarse sand sized pockets of wood
2 80-3 50	2	Firm to stiff dark grey to grey slightly peaty CLAY

Samples and Tests

Depth (m)	Type	Results
0 20	D	
0 50	D	
1 50	D	
2 50	D	
2 80	B	
3 50	D	

Date of Excavation 04/04/00
Equipment JCB 3CX
Stability Unstable in made ground

Groundwater
No Struck Behaviour
Not encountered during excavation

Ground Level 9 61 m OD
Coordinates 331731 21 mE
189561 15 mN

Logged by KH
Checked by

Remarks

Radiation Detector 8 counts per second
Trial Pit terminated due to instability
Trial pit backfilled and compacted with arisings on completion

See key sheet and appendices for explanations

Form 2/0

Trial Pit Record

Exploration Associates

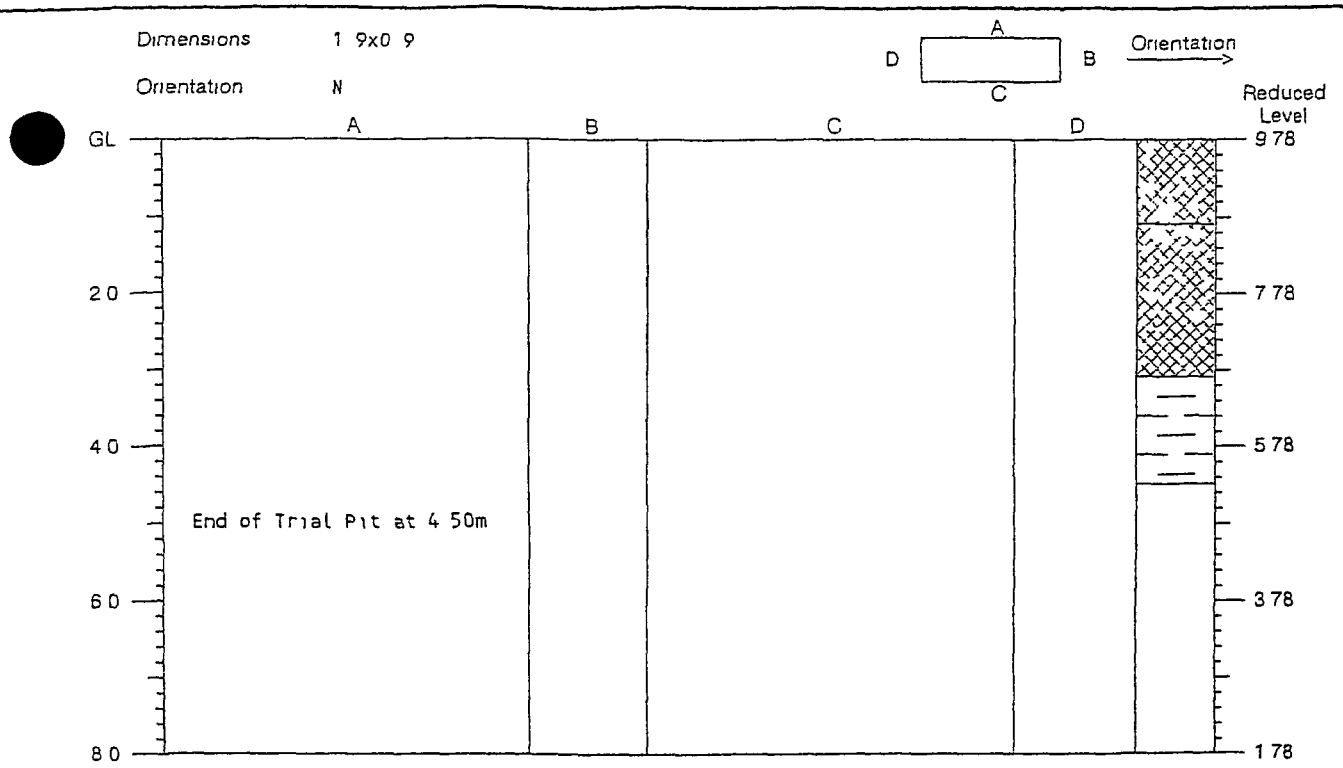
Project
Durham Road Schools PFI Project, Newport
Newport County Borough Council

Contract 150055

Trial Pit TP12

Dimensions 1 9x0 9

Orientation N



Strata

Depth (m)	No	Description
0 00 1 10	1	MADE GROUND Soft to firm brown grey to grey occasionally yellow brown to brown medium to coarse sandy gravelly ashy clay Gravel is angular to subangular fine to coarse brick fragments
1 10 3 10	2	MADE GROUND Firm red brown to grey brown sandy gravelly ashy clay Gravel is angular to subangular fine to coarse brick fragments with glass wood plastic and fabric
3 10 4 50	3	Soft to firm red brown to dark grey sandy gravelly CLAY becoming dark grey to grey brown below 3 60m Gravel is angular to subangular medium to coarse sandstone fragments

Samples and Tests

Depth (m)	Type	Results
0 20	D	
0 50	D	
1 10	B	
1 50	D	
2 50	D	
3 10	B	
3 50	D	
4 50	D	

Date of Excavation 04/04/00
Equipment JCB 3CX
Stability Unstable in made ground

Groundwater

No	Struck	Behaviour
1	2 60	

Ground Level 9 78 m OD
Coordinates 331770 98 mE
189545 22 mN

Logged by KH
Checked by

Remarks

See key sheet and appendices for explanations

Radiation Detector 9 counts per second
1 full suite of water samples taken for testing
Trial pit backfilled and compacte with arisings on completion

Form 2/0

Trial Pit Record

Exploration Associates

Project

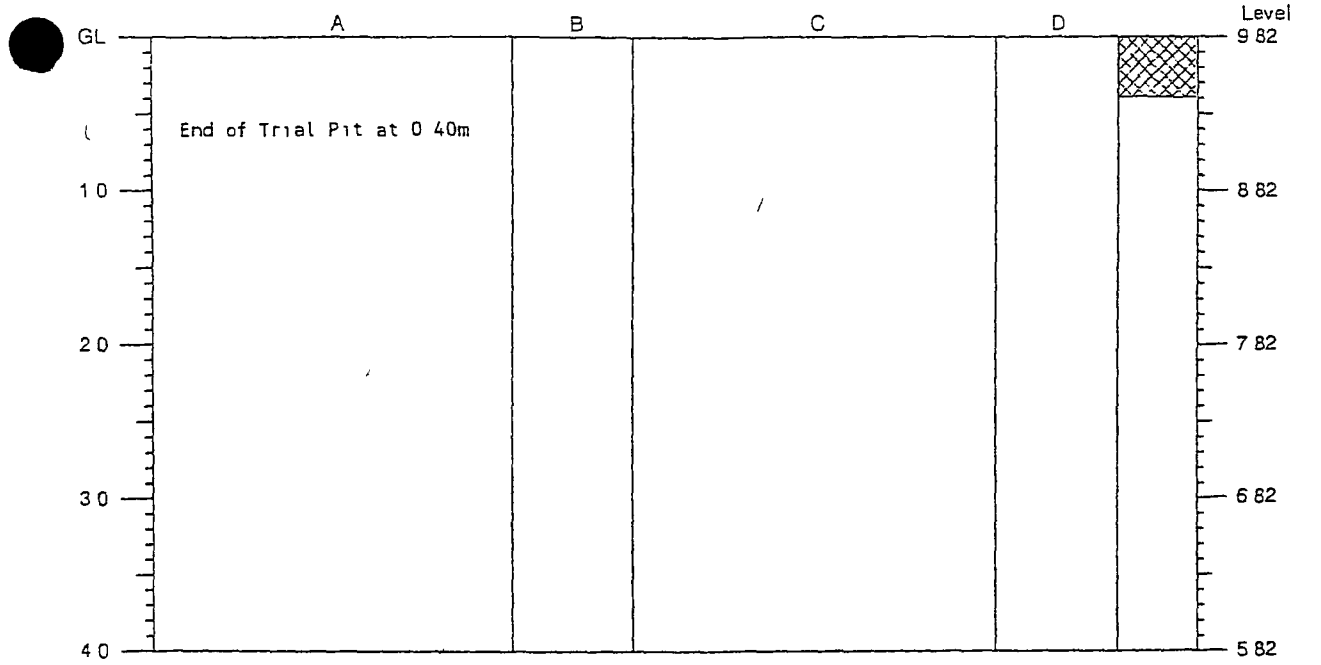
Durham Road Schools PFI Project Newport
Newport County Borough Council

Contract 150055

Trial Pit TP13

Dimensions 1 0x0 8

Orientation N



Strata

Depth (m)	No	Description
0 00 0 40	1	MADE GROUND Loose dark brown to brown silt (topsoil) with rootlets and glass and brick fragments

Samples and Tests

Depth (m)	Type	Results
0 20	D	
0 40	D	

Date of Excavation 04/04/00
Equipment JCB 3CX
Stability Stable

Groundwater
No Struck Behaviour
Not encountered during excavation

Ground Level 9 82 m OD
Coordinates 331775 50 mE
189614 16 mN

Logged by KH
Checked by

Remarks
Radiation Detector 6 counts per second
Trial Pit terminated due to buried services
Trial pit backfilled and compacted with arisings on completion

See key sheet and appendices for explanations

Form 2/0

Trial Pit Record

Exploration Associates

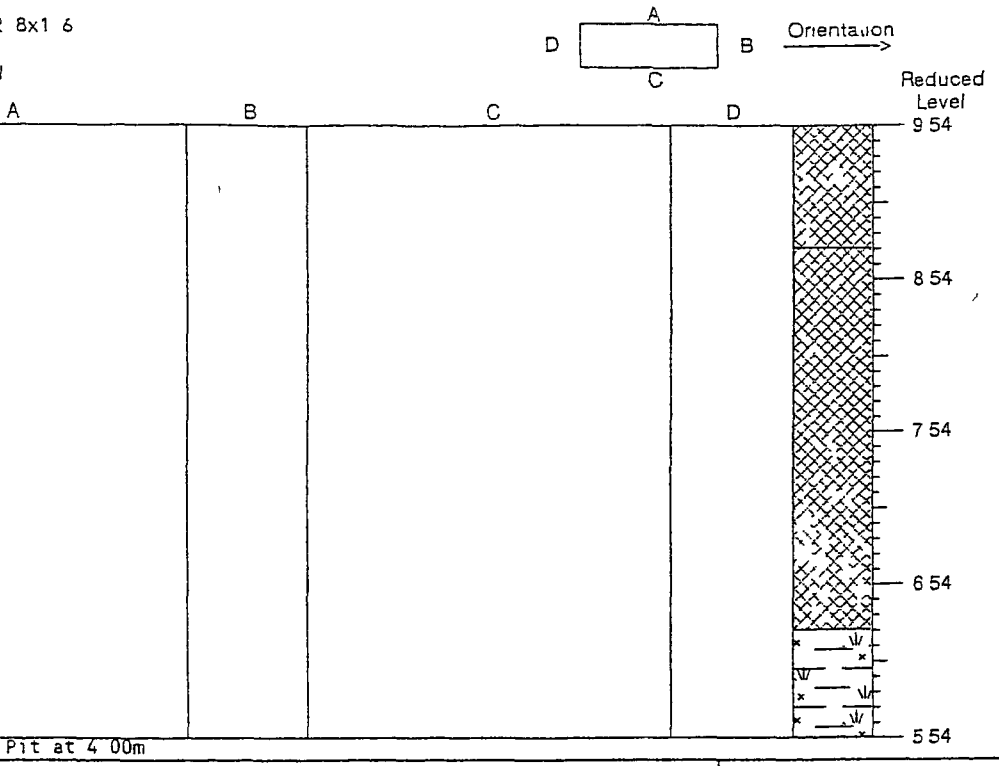
Project
Durham Road Schools PFI Project, Newport
Newport County Borough Council

Contract 150055

Trial Pit TP14

Dimensions 2 8x1 6

Orientation N



Strata

Depth (m)	No	Description
0 00-0 80	1	MADE GROUND Soft to firm clay (topsoil) with rootlets, brick and glass fragments
0 80-3 30	2	MADE GROUND Loose to medium dense dark grey to black occasionally dark brown silty clayey ashy gravel Gravel is angular to sub angular fine to coarse red brown to brown brick with broken glass and porcelain fragments
3 30 4 00	3	Firm to stiff blue grey to grey CLAY with red brown to brown peat pockets

Samples and Tests

Depth (m)	Type	Results
0 20	D	
0 50	D	
0 80	B	
1 50	D	
2 50	D	–
3 30	B	
4 00	D	

Date of Excavation 04/04/00
Equipment JCB 3CX
Stability Unstable in made ground

Groundwater
No Struck Behaviour
Not encountered during excavation

Ground Level 9 54 m OD
Coordinates 331788 02 mE
189544 10 mN

Logged by KH
Checked by

Remarks
Radiation Detector 9 counts per second
Trial Pit terminated due to instability
Trial pit backfilled and compacted with arisings on completion

See key sheet and appendices for explanations

Form 2/0

Trial Pit Record

Exploration Associates

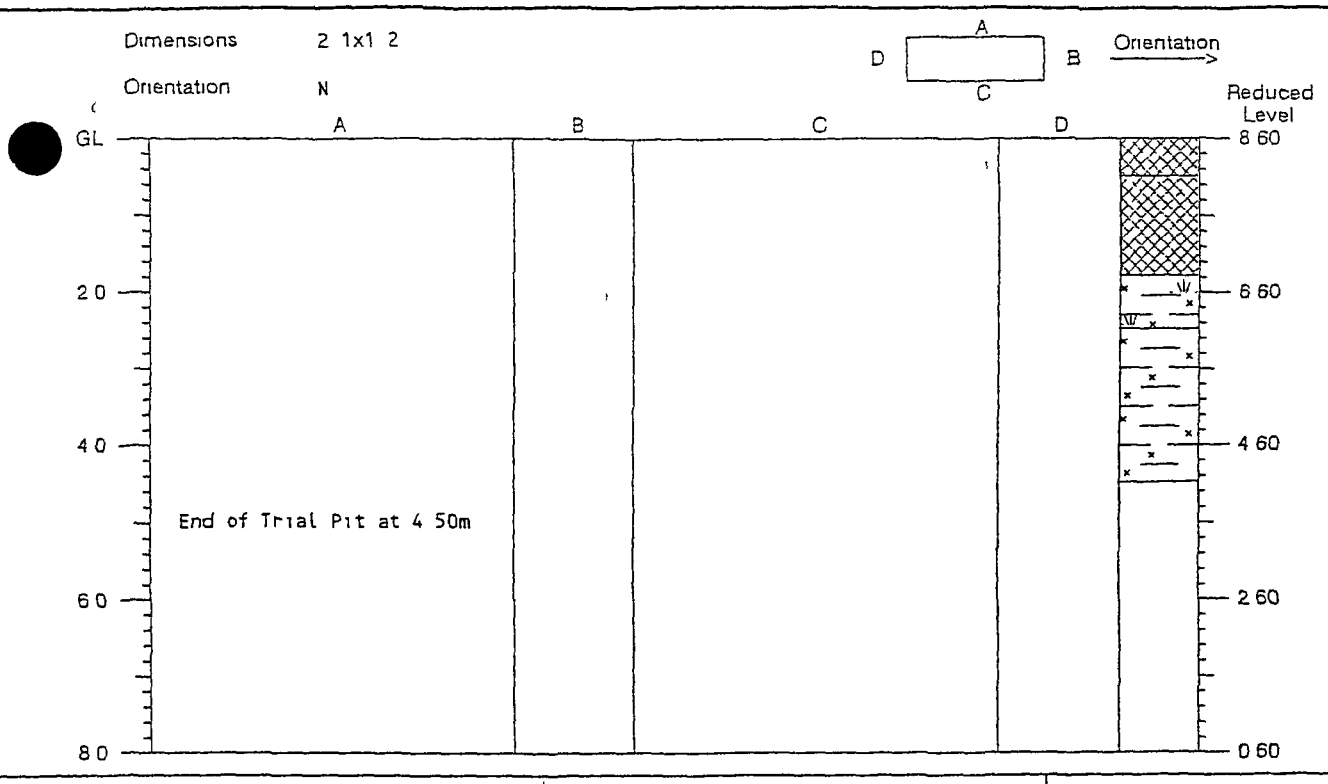
Project
Durham Road Schools PFI Project, Newport
Newport County Borough Council

Contract 150055

Trial Pit TP15

Dimensions 2 1x1 2

Orientation N



Strata

Depth (m)	No	Description
0 00 0 50	1	MADE GROUND Loose to medium dense dark brown to black clay (topsoil) with rootlets, bricks and broken bottles
0 50 1 80	2	MADE GROUND Loose dark grey to dark brown slightly gravelly ashy silt Gravel is angular to subangular, fine to coarse brick and glass fragments
1 80 2 50	3	Firm to stiff blue grey to grey occasionally red brown CLAY with brown to dark brown peat pockets
2 50-4 50	4	Stiff to locally very stiff dark grey to blue grey CLAY with occasional pockets of red brown to brown silt

Samples and Tests

Depth (m)	Type	Results
0 20	D	
0 50	D	
1 50	D	
1 80	B	
2 50	D	
3 50	D	
4 50	D	

Date of Excavation 04/04/00
Equipment JCB 3CX
Stability Unstable in made ground

Groundwater

No	Struck	Behaviour
1	1 60	

Ground Level 8 60 m OD
Coordinates 331802 01 mE
189480 77 mN

Logged by KH
Checked by

Remarks Radiation Detector 7 counts per second
Trial pit backfilled and compacted with arisings on completion

See key sheet and appendices for explanations

Form 2/0

Trial Pit Record

Exploration Associates

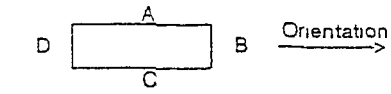
Project
Durham Road Schools PFI Project, Newport
Newport County Borough Council

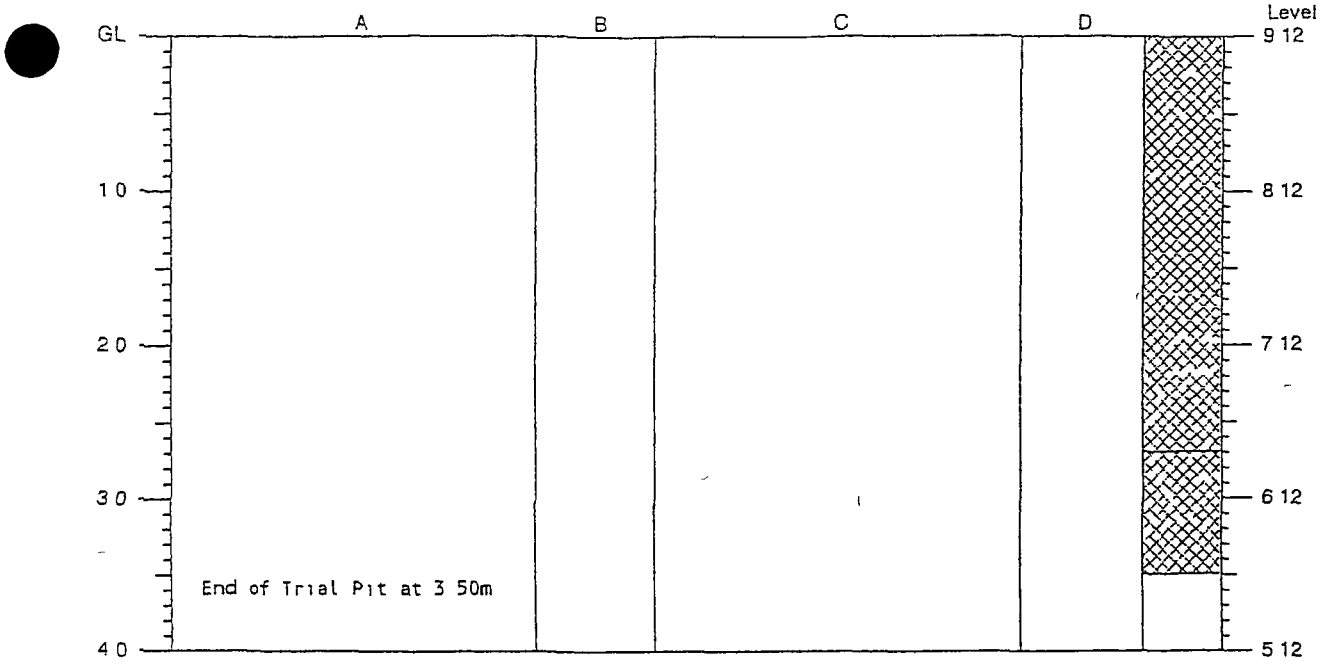
Contract 150055

Trial Pit TP16

Dimensions 2 3x1 0

Orientation N





Strata

Depth (m)	No	Description
0 00 2 70	1	MADE GROUND Loose dark grey to black occasionally red brown slightly clayey silty gravelly ashy fine to medium sand Gravel is angular to subangular fine to coarse brick and glass fragments Steel drums at 2 50m with foul choking odour
2 70 3 50	2	MADE GROUND Soft to firm grey brown to dark grey gravelly clay Gravel angular to subangular fine to coarse brick fragments, bottles and wood

Samples and Tests

Depth (m)	Type	Results
0 20	D	
0 50	D	
1 50	D	
2 50	D	
2 70	B	
3 50	D	

Date of Excavation 04/04/00
Equipment JCB 3CX
Stability Unstable

Groundwater

No	Struck	Behaviour
1	3 20	

Ground Level 9 12 m OD
Coordinates 331763 14 mE
189509 71 mN

Logged by KH
Checked by

Remarks

Radiation Detector 15 counts per second
Trial Pit terminated due to instability
Trial pit backfilled and compacted with arisings on completion

See key sheet and appendices for explanations

Form 2/0

Trial Pit Record

Exploration Associates

Project

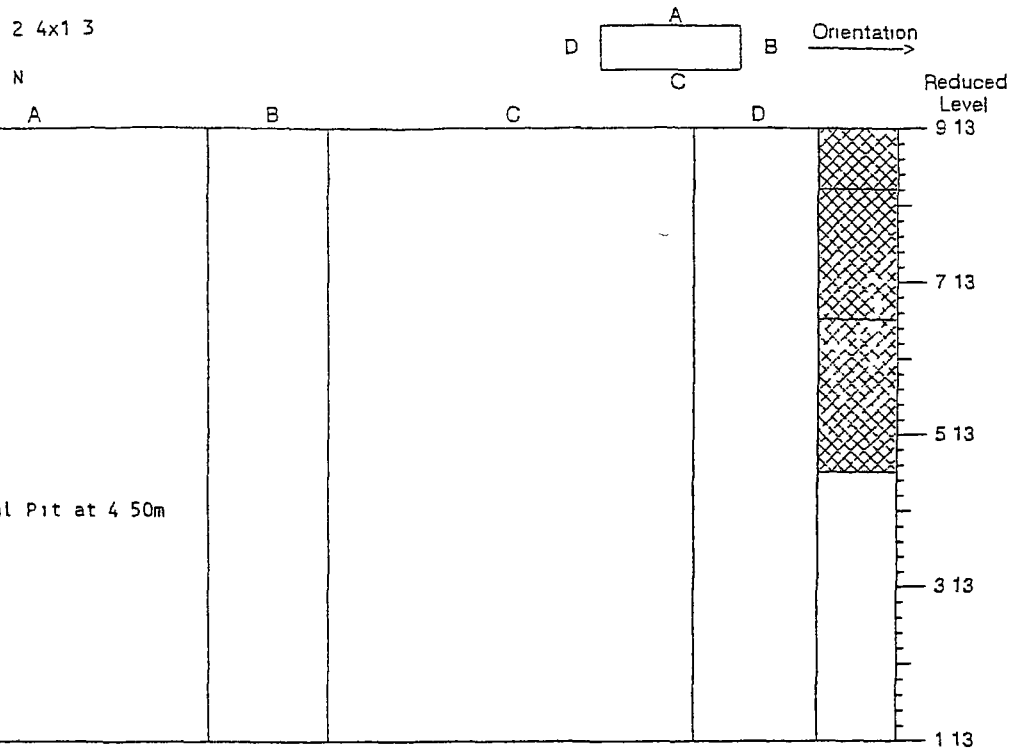
Durham Road Schools PFI Project, Newport
Newport County Borough Council

Contract 150055

Trial Pit TP17

Dimensions 2 4x1 3

Orientation N



Strata

Depth (m)	No	Description
0 00 0 80	1	MADE GROUND Loose dark grey to black occasionally red brown silty gravelly ashy fine to coarse sand Gravel is angular to subangular, fine to coarse brick and glass fragments
0 80 2 50	2	MADE GROUND Firm blue grey to silver grey slightly ashy silt with occasional pale blue to white blue sugary material
2 50 4 50	3	MADE GROUND Firm to stiff grey to brown grey slightly sandy clay with occasional black coarse ashy sand pockets

Samples and Tests

Depth (m)	Type	Results
0 20	D	
0 50	D	
0 80	B	
1 50	D	
2 50	D	
3 50	D	
4 50	D	

Date of Excavation 04/04/00
Equipment JCB 3CX
Stability Stable

Groundwater

No	Struck	Behaviour
1	1 60	

Ground Level 9 13 m OD
Coordinates 331709 09 mE
189496 12 mN

Logged by KH
Checked by

Remarks

See key sheet and appendices for explanations

Radiation Detector 6 counts per second
1 full suite of water samples taken for testing
Trial pit backfilled and compacted with arisings on completion

Form 2/0

Trial Pit Record

Exploration Associates

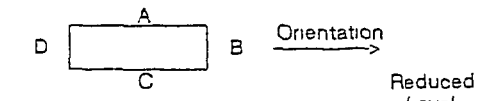
Project
Durham Road Schools PFI Project, Newport
Newport County Borough Council

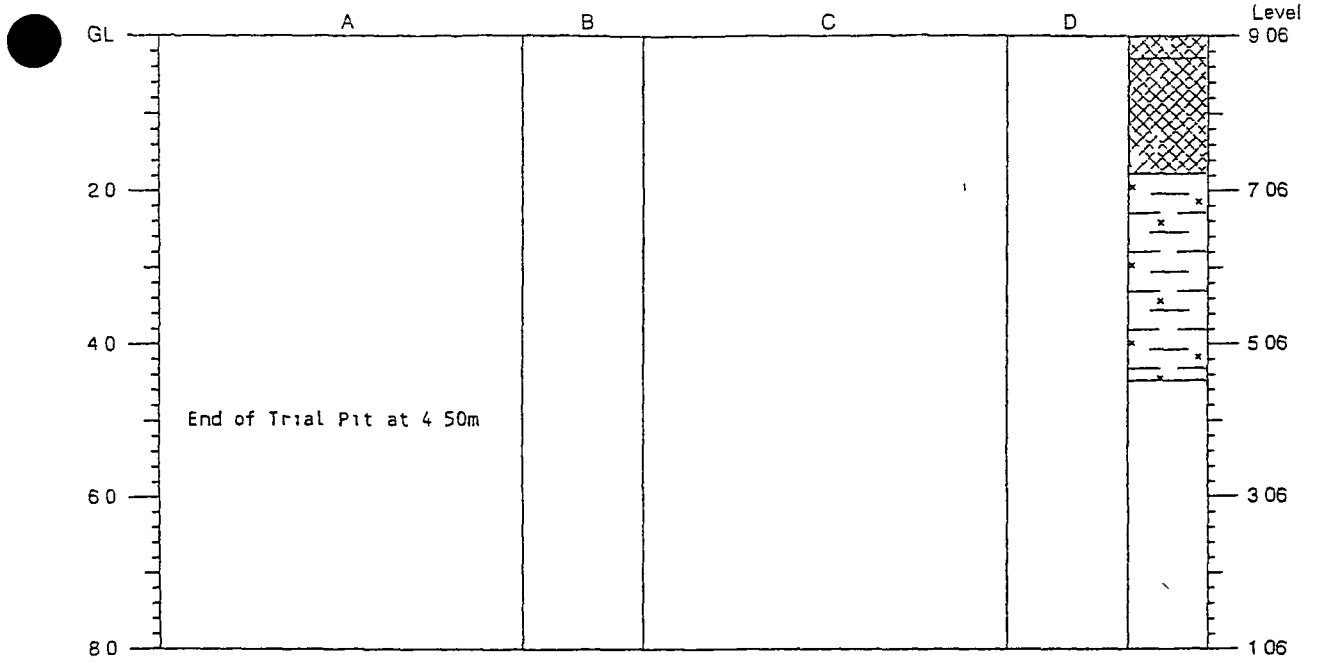
Contract 150055

Trial Pit TP18

Dimensions 1 9x1 1

Orientation N





Strata

Depth (m)	No	Description
0 00 0 30	1	MADE GROUND Firm to stiff dark brown to brown gravelly clay Gravel is angular to subangular medium to coarse brick and glass
0 30-1 80	2	MADE GROUND Stiff red brown gravelly silt Gravel is angular to subangular fine to medium of brick, clinker and occasional black ashy silt pockets
1 80 4 50	3	Soft to firm dark grey to brown grey CLAY

Samples and Tests

Depth (m)	Type	Results
0 20	D	
0 50	D	
1 50	D	
1 80	B	
2 50	D	
3 50	D	
4 50	D	

Date of Excavation 04/04/00
Equipment JCB 3CX
Stability Unstable in made ground

Groundwater
No Struck Behaviour
Not encountered during excavation

Ground Level 9 06 m OD
Coordinates 331646 73 mE
189462 93 mN

Logged by KH
Checked by

Remarks Radiation Detector 11 counts per second
Trial pit backfilled and compcted with arisings on completion

See key sheet and appendices for explanations

Form 2/0

Trial Pit Record

Exploration Associates

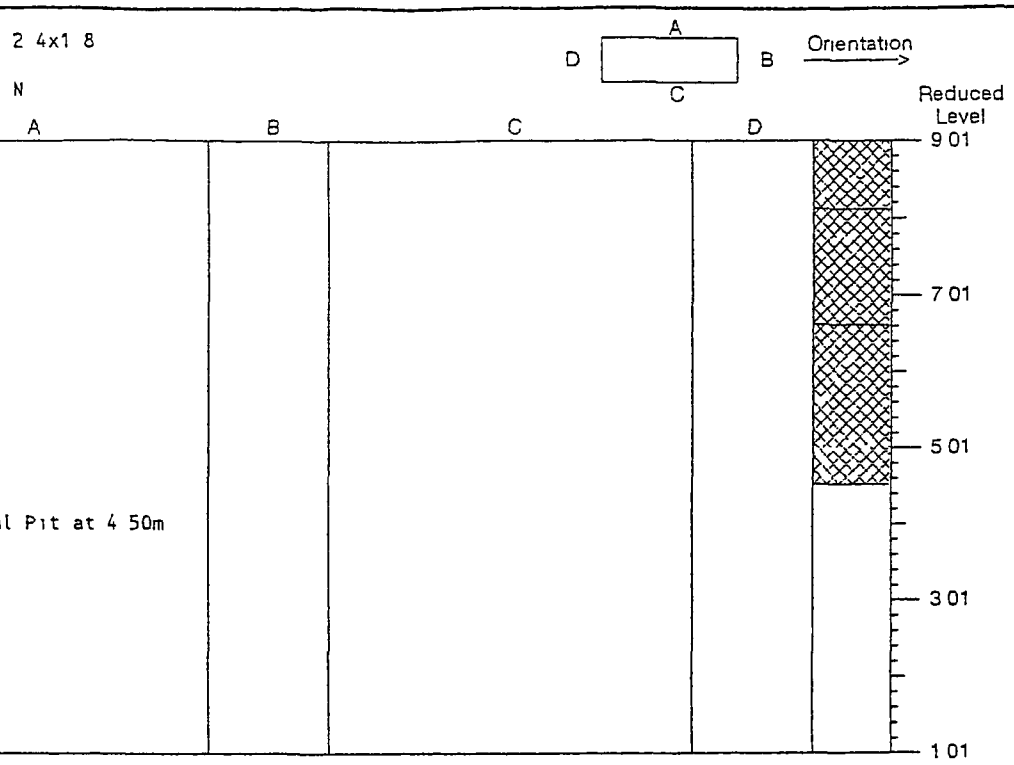
Project
Durham Road Schools PFI Project, Newport
Newport County Borough Council

Contract 150055

Trial Pit TP19

Dimensions 2 4x1 8

Orientation N



Strata

Depth (m)	No	Description
0 00 0 90	1	MADE GROUND Firm to stiff dark grey brown to red brown gravelly ashy clay Gravel is angular to subangular fine to coarse brick, glass and metal fragments
0 90 2 40	2	MADE GROUND Loose dark grey to black silty ashy fine to medium sand with occasional grey to dark grey clay pockets Gravel is angular to subangular fine to coarse of brick and glass
2 40 4 50	3	MADE GROUND Firm to stiff blue grey to grey slightly sandy gravelly clay Gravel is angular to subangular fine to coarse of brick and glass

Samples and Tests

Depth (m)	Type	Results
0 20	D	
0 50	D	
0 90	B	
1 50	D	
2 40	B	
2 50	D	
3 50	D	
4 50	D	

Date of Excavation 04/04/00
Equipment JCB 3CX
Stability Unstable

Groundwater

No	Struck	Behaviour
1	2 60	

Ground Level 9 01 m OD
Coordinates 331681 62 mE
189452 99 mN

Logged by KH
Checked by

Remarks Radiation Detector 13 counts per second
Trial pit backfilled and compacted with arisings on completion

See key sheet and appendices for explanations

Form 2/0

Trial Pit Record

Exploration Associates

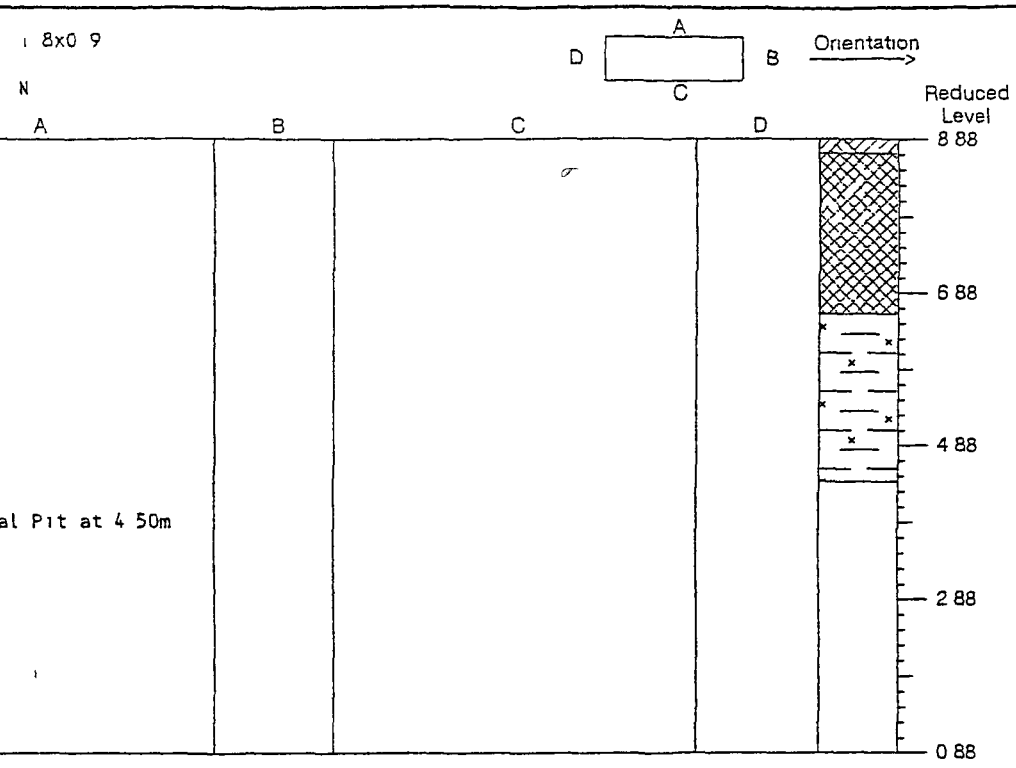
Project
Durham Road Schools PFI Project Newport
Newport County Borough Council

Contract 150055

Trial Pit TP20

Dimensions 1 8x0 9

Orien ation N



Strata			Samples and Tests		
Depth (m)	No	Description	Depth (m)	Type	Results
0 00-0 20	1	Soft to firm CLAY (topsoil) with rootlets	0 20	D	
0 20-2 30	2	MADE GROUND Loose dark grey to black occasionally red brown gravelly ashy clay Gravel is angular to subangular fine to medium of glass wood and brick	0 50 1 50	D D	
2 30-4 50	3	Firm to stiff grey to dark grey occasionally brown grey CLAY with occasional red brown to brown silt pockets	2 30 2 50 3 50 4 50	B D D D	

Date of Excavation 04/04/00
Equipment JCB 3CX
Stability Stable

Groundwater

No	Struck	Behaviour
1	1 90	

Ground Level 8 88 m OD
Coordinates 331750 40 mE
189466 05 mN

Logged by KH
Checked by

Remarks Radiation Detector 6 counts per second
Trial pit backfilled and compacted with arisings on completion

See key sheet and appendices for explanations

Form 2/0

Trial Pit Record

Exploration Associates

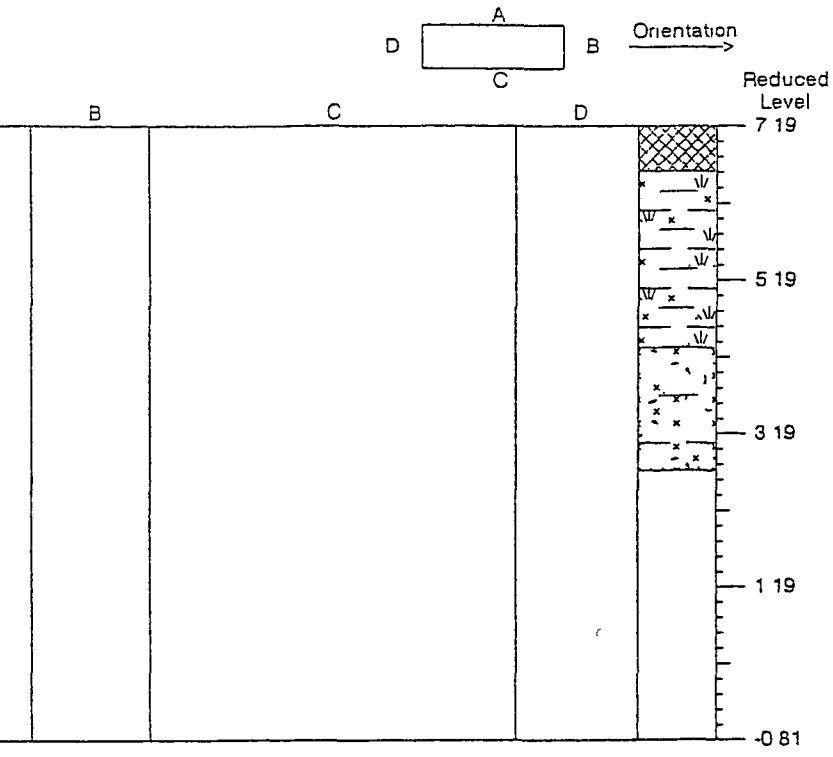
Project
Durham Road Schools PFI Project, Newport
Newport County Borough Council

Contract 150055

Trial Pit TP21

Dimensions 2 5x1 3

Orientation N



Strata

Depth (m)	No	Description
0 00 0 60	1	MADE GROUND Loose red brown to dark grey black silty clayey gravelly ashy medium to coarse sand Gravel is angular to subangular fine to coarse of clinker and brick
0 60 2 90	2	Firm to stiff blue grey to grey brown CLAY with occasional brown to dark brown peat layers
2 90 4 50	3	Firm (locally stiff) red brown and grey brown gravelly sandy SILT Gravel is rounded to subrounded, fine to coarse grey to dark grey weak mudstone

Samples and Tests

Depth (m)	Type	Results
0 20	D	
0 50	D	
0 60	B	
1 50	D	–
2 50	D	
2 90	B	
3 50	D	
4 50	D	

Date of Excavation 06/04/00
Equipment JCB 3CX
Stability Stable

Groundwater
No Struck Behaviour
Not encountered during excavation

Ground Level 7 19 m OD
Coordinates 331789 59 mE
189451 27 mN

Logged by KH
Checked by

Remarks Radiation Detector 5 counts per second
Trial pit backfilled and compacted with arisings on completion

See key sheet and appendices for explanations

Form 2/0

Trial Pit Record

Exploration Associates

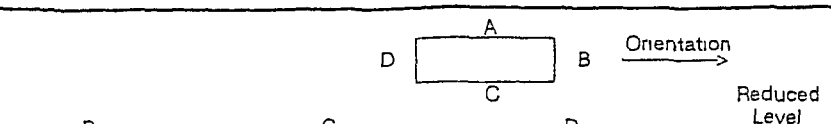
Project
Durham Road Schools PFI Project Newport
Newport County Borough Council

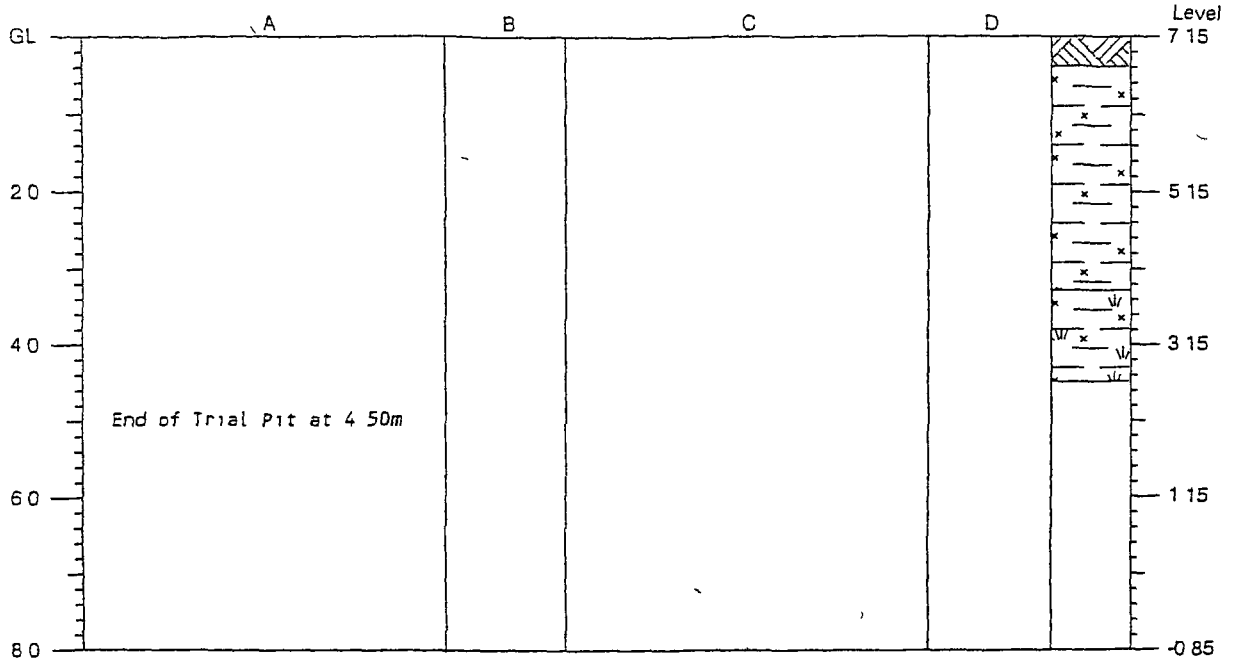
Contract 150055

Trial Pit TP22

Dimensions 1 9x1 3

Orientation N





Strata

Depth (m)	No	Description
0 00 0 40	1	Firm to stiff brown to dark brown CLAY (Topsoil) with rootlets
0 40-3 30	2	Stiff blue grey to grey CLAY with local rust coloured staining
3 30-4 50	3	Stiff blue grey to silver blue grey CLAY with brown to dark brown fibrous peat layers Becoming CLAY/SILT with depth

Samples and Tests

Depth (m)	Type	Results
0 20	D	
0 40	B	
0 50	D	
1 50	D	
2 50	D	
3 30	B	
3 50	D	
4 50	D	

Date of Excavation 06/04/00
Equipment JCB 3CX
Stability Stable

Groundwater
No Struck Behaviour
Not encountered during excavation

Ground Level 7 15 m OD
Coordinates 331729 83 mE
189424 80 mN

Logged by KH
Checked by

Remarks Radiation Detector 5 counts per second
Trial pits backfilled and compacted with arisings on completion

See key sheet and appendices for explanations

Form 2/0

Trial Pit Record

Exploration Associates

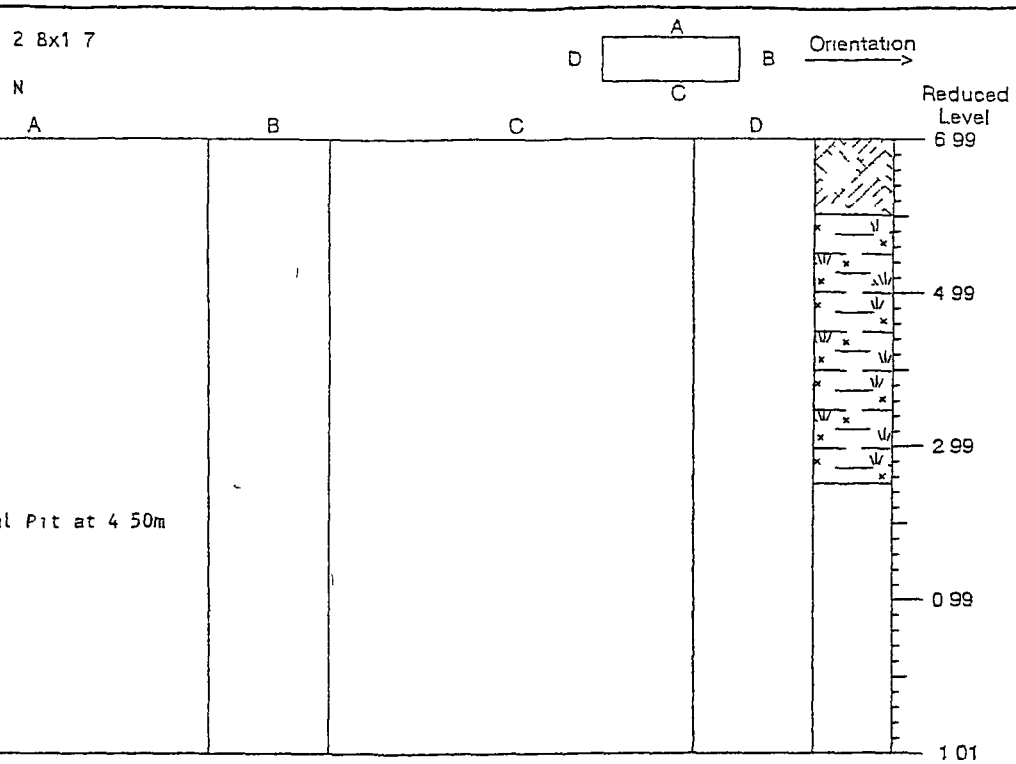
Project
Durham Road Schools PFI Project, Newport
Newport County Borough Council

Contract 150055

Trial Pit TP23

Dimensions 2 8x1 7

Orientation N



Strata

Depth (m)	No	Description
0 00 1 00	1	Firm to stiff brown to dark brown occasionally red brown CLAY (Topsoil) with rootlets
1 00 4 50	2	Firm to very stiff blue grey to silver blue grey locally brown to dark brown CLAY Becoming CLAY/SILT with depth and with fibrous peat bands below 3 20m

Samples and Tests

Depth (m)	Type	Results
0 20	D	
0 50	D	
1 00	B	
1 50	D	
2 50	D	
3 50	D	
4 50	D	

Date of Excavation 06/04/00
Equipment JCB 3CX
Stability Stable

Groundwater
No Struck Behaviour
Not encountered during excavation

Ground Level 6 99 m OD
Coordinates 331677 29 mE
189417 17 mN

Logged by KH
Checked by

Remarks Radiation Detector 8 counts per second
Trial pit backfilled and compacted with arisings on completion

See key sheet and appendices for explanations

Form 2/0

Trial Pit Record

Exploration Associates

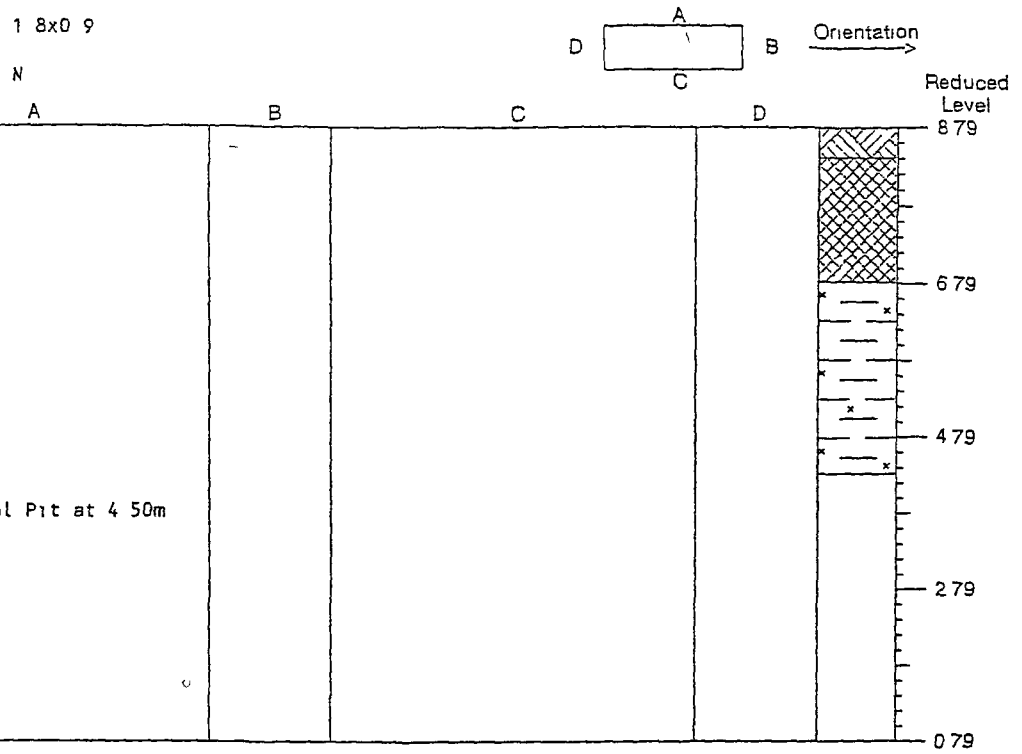
Project
Durham Road Schools PFI Project, Newport
Newport County Borough Council

Contract 150055

Trial Pit TP24

Dimensions 1 8x0 9

Orientation N



Strata

Depth (m)	No	Description
0 00 0 40	1	Soft to firm dark grey brown to black CLAY (Topsoil) with rootlets
0 40 2 00	2	MADE GROUND Loose to medium dense dark grey to black gravelly ashy medium to coarse sand Gravel is angular to subangular fine to coarse of brick and wood
2 00 4 50	3	Firm to stiff brown grey to blue green grey CLAY becoming CLAY/SILT with depth

Samples and Tests

Depth (m)	Type	Results
0 20	D	
0 40	B	
0 50	D	
1 50	D	
2 00	B	
2 50	D	
3 50	D	
4 50	D	

Date of Excavation 06/04/00
Equipment JCB 3CX
Stability Stable

Groundwater
No Struck Behaviour
Not encountered during excavation

Ground Level 8 79 m OD
Coordinates 331654 21 mE
189338 44 mN

Logged by KH
Checked by

Remarks Radiation Detector 8 counts per second
Trial pit backfilled and compacted with arisings on completion

See key sheet and appendices for explanations

Form 2/0

Trial Pit Record

Exploration Associates

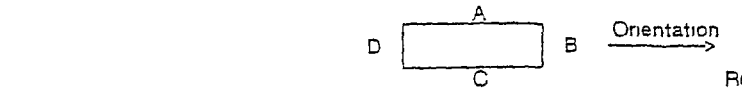
Project
Durham Road Schools PFI Project Newport
Newport County Borough Council

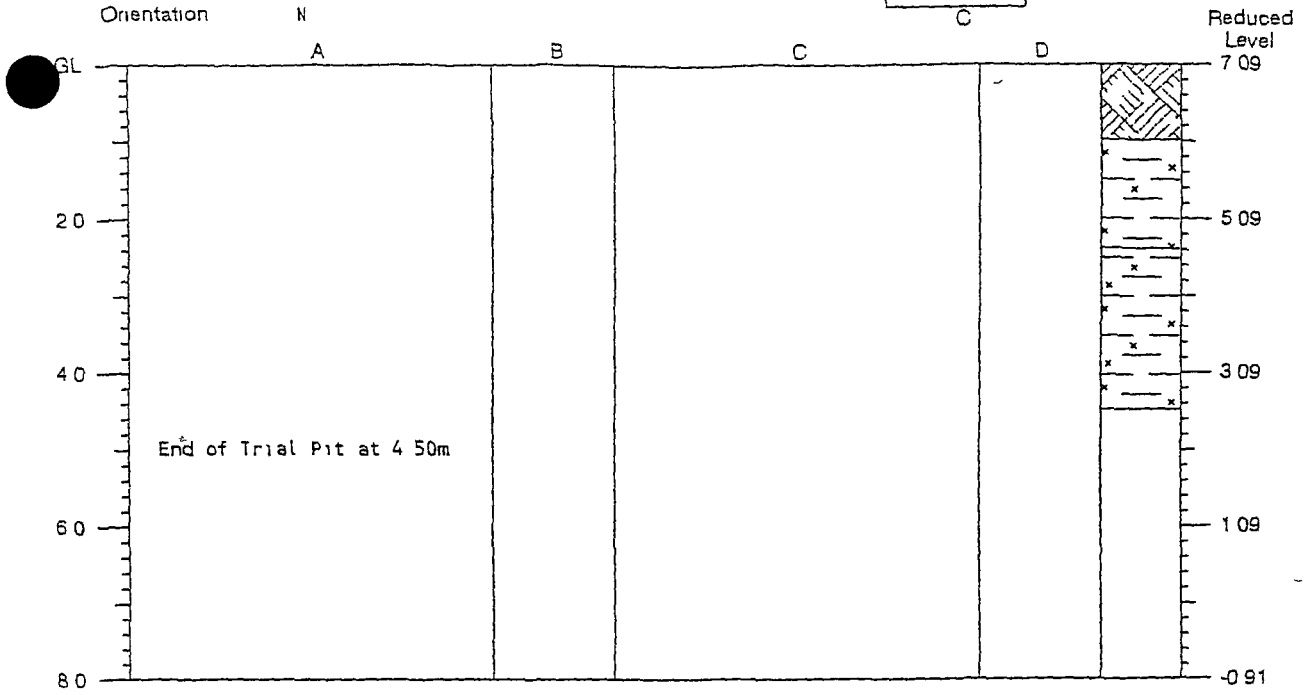
Contract 150055

Trial Pit TP25

Dimensions 2 1x1 1

Orientation N





Strata

Depth (m)	No	Description
0 00 1 00	1	Firm to locally stiff brown to dark brown CLAY (Topsoil) with rootlets
1 00 2 40	2	Firm to stiff blue grey to grey locally dark brown to brown CLAY
2 40 4 50	3	Stiff to very stiff blue grey to silver blue grey CLAY Becoming CLAY/SILT below 3 10m

Samples and Tests

Depth (m)	Type	Results
0 20	D	
0 50	D	
1 00	B	

Date of Excavation 06/04/00
Equipment JCB 3CX
Stability Stable

Groundwater
No Struck Behaviour
Not encountered during excavation

Ground Level 7 09 m OD
Coordinates 331691 20 mE
189333 61 mN

Logged by KH
Checked by KG

Remarks Radiation Detector 9 counts per second
Trial pit backfilled and compacted with arisings on completion

See key sheet and appendices for explanations

Form 2/0

Trial Pit Record

Exploration Associates

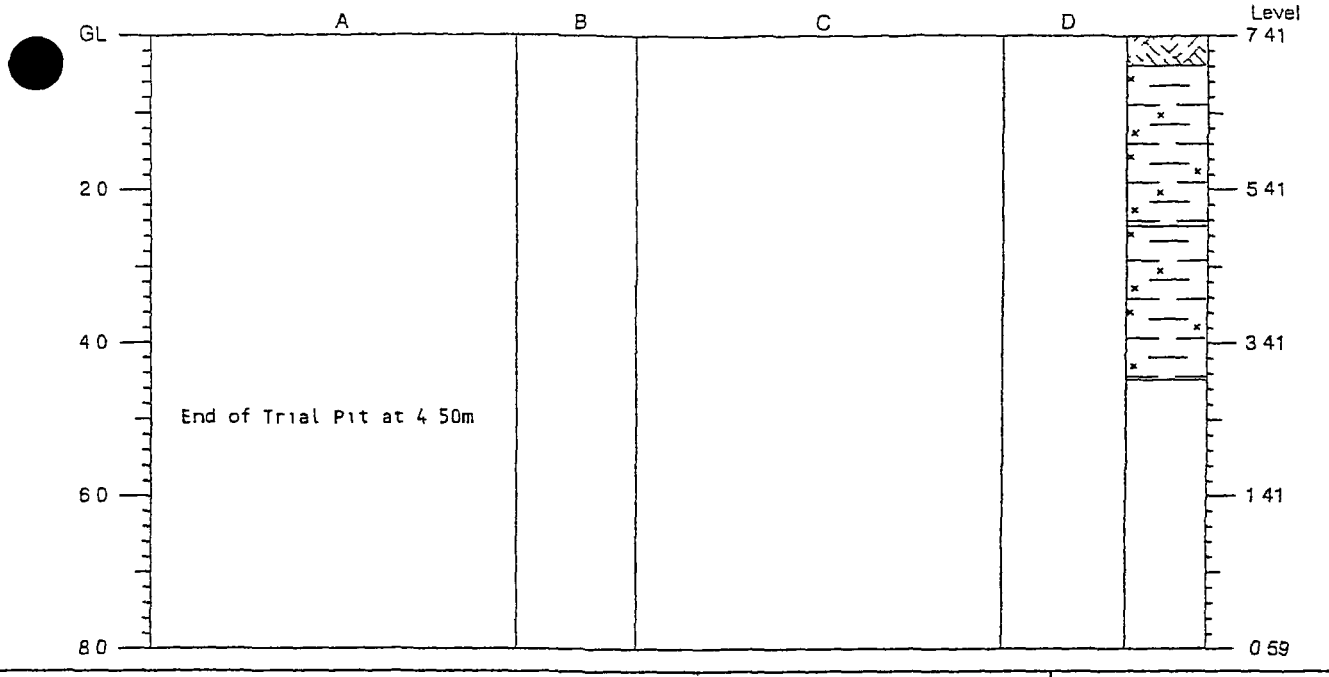
Project
Durham Road Schools PFI Project, Newport
Newport County Borough Council

Contract 150055

Trial Pit TP26

Dimensions 2 6x1 2

Orientation N



Strata

Depth (m)	No	Description
0 00-0 40	1	Soft to firm dark grey to brown grey CLAY (Topsoil) with rootlets
0 40-2 50	2	Firm to stiff red brown to brown occasionally grey to dark grey CLAY
2 50 4 50	3	Firm to stiff blue grey to silver blue CLAY

Samples and Tests

Depth (m)	Type	Results
0 20	D	
0 40	B	
0 50	D	
1 50	D	
2 50	B	
2 50	D	
3 50	D	
4 50	D	

Date of Excavation 06/04/00
Equipment JCB 3CX
Stability Stable

Groundwater
No Struck Behaviour
Not encountered during excavation

Ground Level 7 41 m OD
Coordinates 331689 23 mE
189281 70 mN

Logged by KH
Checked by

Remarks Radiation Detector 11 counts per second
Trial pit backfilled and compacted with arisings on completion

See key sheet and appendices for explanations

Form 2/0

Trial Pit Record

Exploration Associates

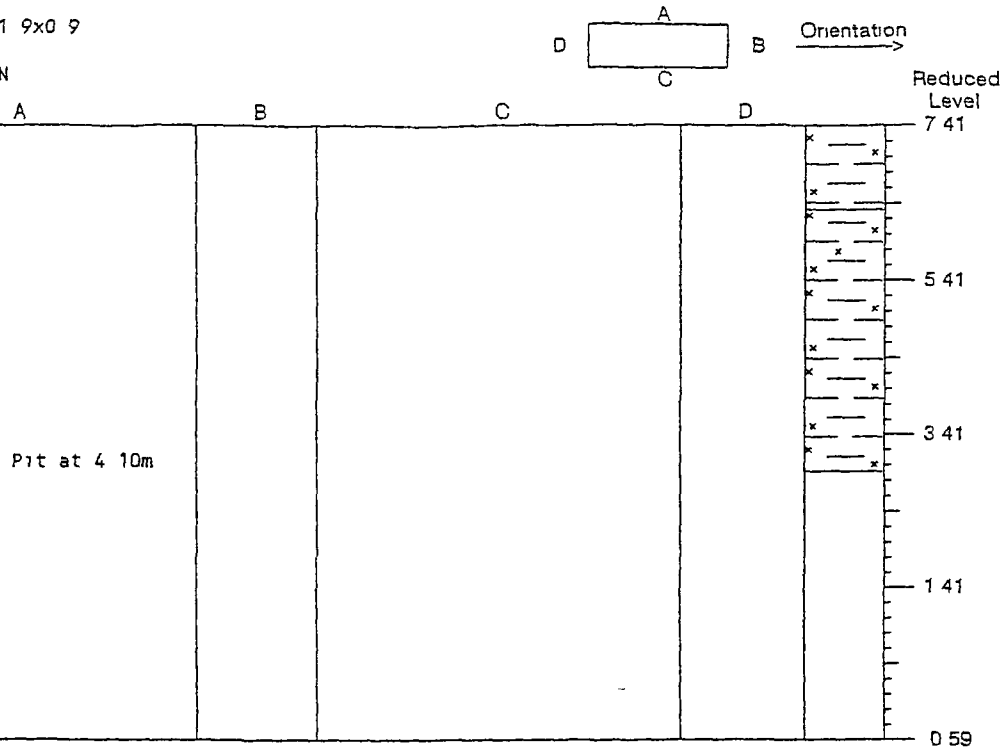
Project
Durham Road Schools PFI Project, Newport
Newport County Borough Council

Contract 150055

Trial Pit TP27

Dimensions 1 9x0 9

Orientation N



Strata

Depth (m)	No	Description
0 00 1 10	1	MADE GROUND Firm to stiff red brown to brown slightly sandy gravelly clay Gravel is angular to subangular medium to coarse of brick and occasional glass fragments
1 10 4 50	2	Soft to firm dark grey to grey CLAY Becoming stiff and CLAY/SILT with depth

Samples and Tests

Depth (m)	Type	Results
0 20	D	
0 50	D	
1 10	B	
1 50	D	
2 50	D	
3 50	D	
4 50	D	

Date of Excavation 06/04/00
Equipment JCB 3CX
Stability Stable

Groundwater

No	Struck	Behaviour
1	3 10	

Ground Level 7 41 m OD
Coordinates 331747 07 mE
189283 26 mN

Logged by KH
Checked by

Remarks Radiation Detector 5 counts per second
Trial pit backfilled and compacted with arisings on completion

See key sheet and appendices for explanations

Form 2/0

Trial Pit Record

Exploration Associates

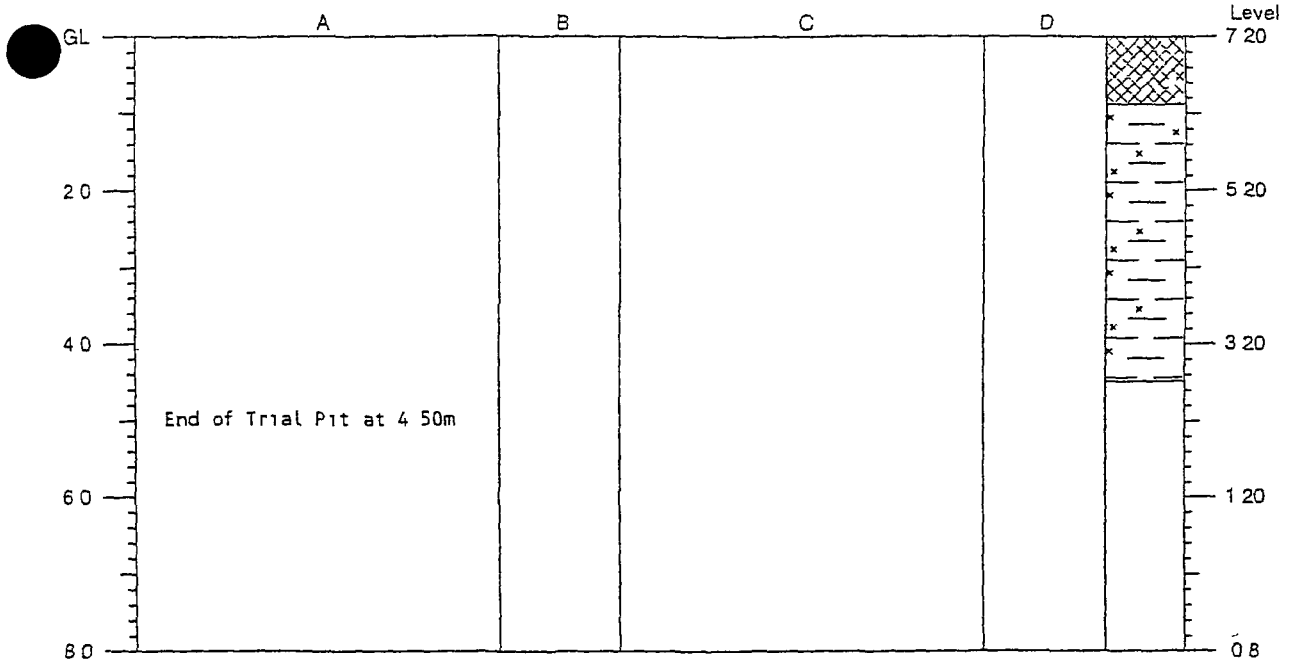
Project
Durham Road Schools PFI Project Newport
Newport County Borough Council

Contract 150055

Trial Pit TP28

Dimensions 2 1x1 3

Orientation N



Strata

Depth (m)	No	Description
0 00 0 90	1	MADE GROUND Loose dark grey brown to black silty sandy clayey ashy gravel of angular to subangular, medium to coarse brick fragments concrete cobbles and boulders
0 90 4 50	2	Soft to firm blue grey to brown locally dark red brown slightly sandy CLAY with strong oily odour and oil staining between 2 00 and 2 50m

Samples and Tests

Depth (m)	Type	Results
0 20	D	
0 50	D	
0 90	B	
1 50	D	
2 50	D	
3 50	D	
4 50	D	

Date of Excavation 06/04/00
Equipment JCB 3CX
Stability Stable

Groundwater

No	Struck	Behaviour
1	0 80	

Ground Level 7 20 m OD
Coordinates 331748 38 mE
189332 31 mN

Logged by KH
Checked by

Remarks Radiation Detector 8 counts per second
Trial pit backfilled and compacted on completion

See key sheet and appendices for explanations

Form 2/0

Trial Pit Record

Exploration Associates

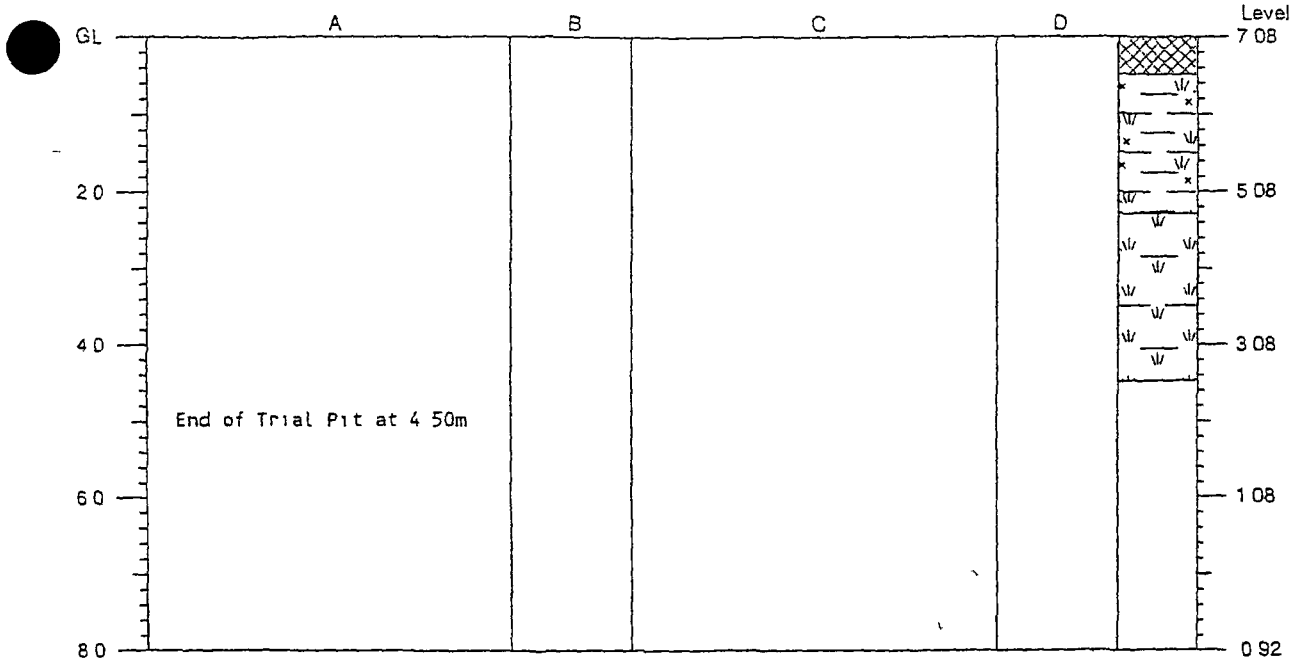
Project
Durham Road Schools PFI Project, Newport
Newport County Borough Council

Contract 150055

Trial Pit TP29

Dimensions 2 6x1 1

Orientation N



Strata

Depth (m)	No	Description
0 00-0 50	1	MADE GROUND Loose dark grey to black locally red brown silty gravelly ashy coarse sand Gravel is angular to subangular fine to coarse clinker and brick fragments
0 50-2 30	2	Firm to stiff blue grey to grey brown CLAY with red brown to brown fibrous peat layers
2 30-4 50	3	Soft to firm dark brown to locally red brown silty clayey PEAT with blue grey to grey clay bands

Samples and Tests

Depth (m)	Type	Results
0 20	D	
0 50	B	
0 50	D	

Date of Excavation 06/04/00
Equipment JCB 3CX
Stability Stable

Groundwater

No	Struck	Behaviour
1	0 50	

Ground Level 7 08 m OD
Coordinates 331795 00 mE
189334 59 mN

Logged by KH
Checked by ne

Remarks Radiation Detector 6 counts per second
Trial pit backfilled and compacted with arisings on completion

See key sheet and appendices for explanations

Form 2/0

Trial Pit Record

Exploration Associates

Project
Durham Road Schools PFI Project, Newport
Newport County Borough Council

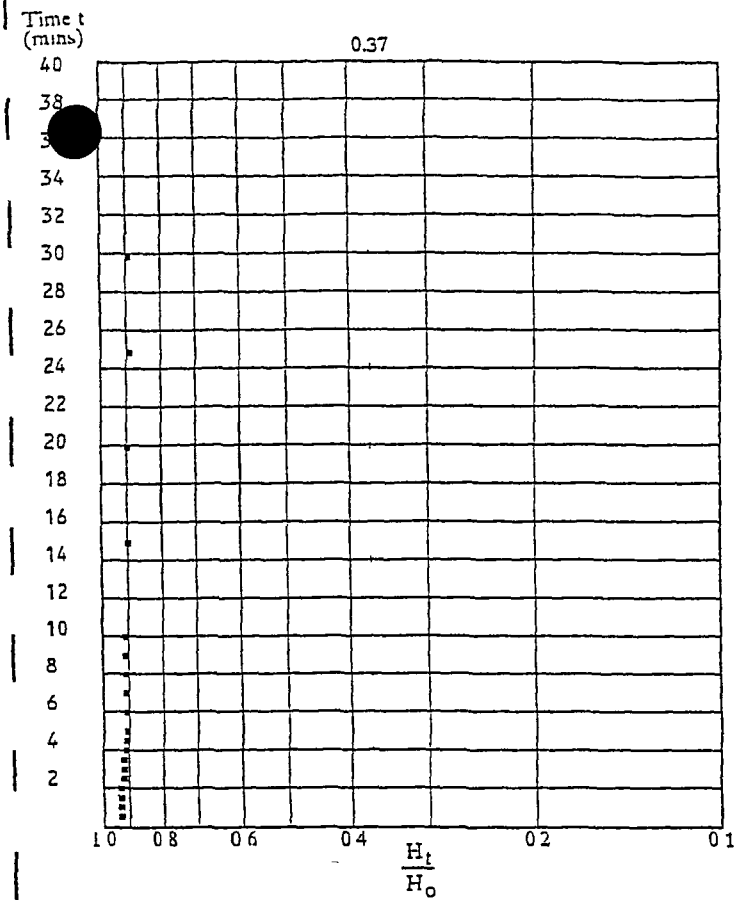
Contract 150055

Trial Pit TP30

ENCLOSURE B

In-Situ Testing

Variable Head Permeability Test Results



Time Elapsed (t) mins	Depth Below Datum at Time t (m)	H_t	$\frac{H_t}{H_o}$
0 00	2 580	0 980	1 000
0 50	2 530	0 930	0 949
1 00	2 530	0 930	0 949
1 50	2 530	-0 930	0 949
2 00	2 530	0 930	0 949
2 50	2 520	0 920	0 939
3 00	2 520	0 920	0 939
3 50	2 520	0 920	0 939
4 00	2 510	0 910	0 929
4 50	2 510	0 910	0 929
5 00	2 510	-0 910	0 929
6 00	2 510	0 910	0 929
7 00	2 510	0 910	0 929
8 00	2 510	0 910	0 929
9 00	2 510	-0 910	0 929
10 00	2 510	0 910	0 929
15 00	2 500	0 900	0 918
20 00	2 500	0 900	0 918
25 00	2 490	0 890	0 908
30 00	2 490	0 890	0 908

Borehole No 1

Date 10/04/00

Type of Test Rising Head

Diameter of Borehole/Piezo Pipe d	0 200	m
Area of Borehole/Standpipe tubing A	0 0314	m^2
Depth to Base of Casing	6 10	m
Depth to Base of Borehole Before Test	6 10	m
Depth to Base of Borehole After Test	6 10	m
Test Section	0 90 - 6 10	m
Test Length L	30 00	m
Diameter of Test Length D	0 200	m
Datum	0 00	

Note Depths given below are measured from Datum

Depth to Standing Water Level	1 60	m
Depth to Induced Water Level	2 58	m

H_o = Differential Head at Start of Test	-0 98	m
H_f = Differential Head at End of Test	-0 89	m
t_f = Time Elapsed at End of Test	30 00	mins

Shape Factor

Based on Figure 7 a f (Cases 1-6) and Figure 8 (Case 7) of BS5930 1981

Case 7 F = 37 86

PERMEABILITY CALCULATION

Time Lag Approach

T = Basic time lag when (H_t/H_o) = 0.37 sec

Permeability k = A/FT = m/sec

General Approach

H_1 selected at t = 2 0 mins (= t_1 = 120 secs)

H_2 selected at t = 25 0 mins (= t_2 = 1500 secs)

Permeability

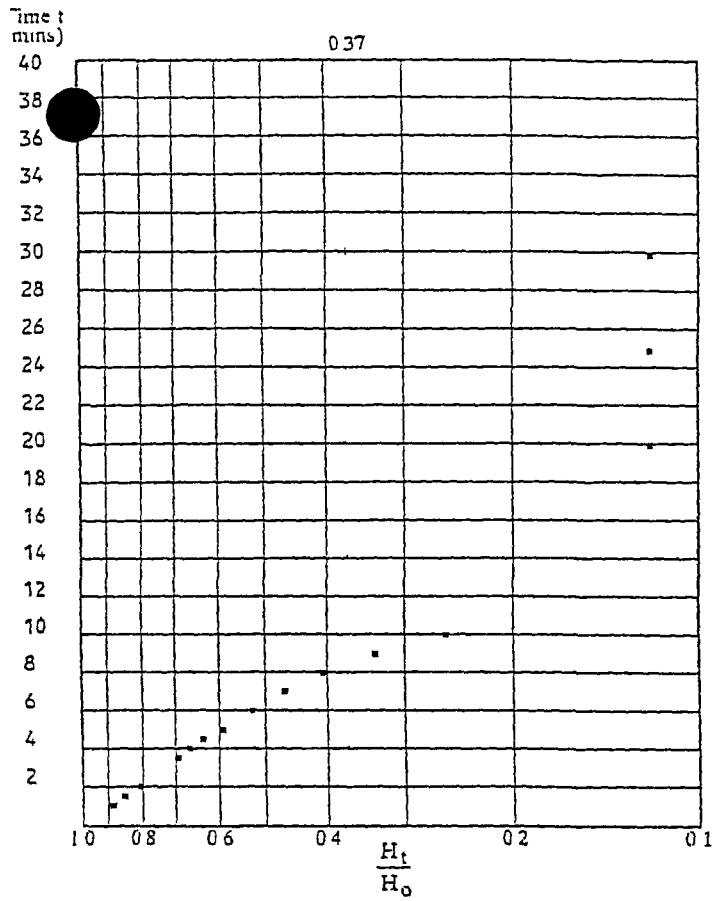
$$k = \frac{A}{F(t_2 - t_1)} \log_e \frac{H_1}{H_2} = 2\ 6 \times 10^{-8} \text{ m/sec}$$

Remarks

Form 5/0

Notation Measurements from Ground Level downwards +ve (upwards ve)

Variable Head Permeability Test	Project: Durham Road Schools PFI Project, Newport Gwent Consultancy	Contract 150055
Exploration Associates		Figure



Time Elapsed (t) mins	Depth Below Datum at Time t (m)	H_t	$\frac{H_t}{H_o}$
0 00	3 270	1 790	1 000
0 50	3 240	1 760	0 983
1 00	3 100	1 620	0 905
1 50	3 030	1 550	0 866
2 00	2 940	1 460	0 816
2 50	2 890	-1 410	0 788
3 00	2 810	1 330	0 743
3 50	2 740	1 260	0 704
4 00	2 690	1 210	0 676
4 50	2 630	1 150	0 642
5 00	2 550	-1 070	0 598
6 00	2 440	0 960	0 536
7 00	2 330	0 850	0 475
8 00	2 220	-0 740	0 413
9 00	2 090	0 610	0 341
10 00	1 950	-0 470	0 263
15 00	1 700	0 220	0 123
20 00	1 700	-0 220	0 123
25 00	1 700	-0 220	0 123
30 00	1 700	0 220	0 123

Borehole No 2

Date 10/04/00

Type of Test Rising Head

Diameter of Borehole/Piezo Pipe d	0 200	m
Area of Borehole/Standpipe tubing A	0 0314	m^2
Depth to Base of Casing	3 00	m
Depth to Base of Borehole Before Test	3 00	m
Depth to Base of Borehole After Test	3 00	m
Test Section	2 8 - 0 8	m
Test Length L	30 00	m
Diameter of Test Length D	0 200	m
Datum	0 00	

Note Depths given below are measured from Datum

Depth to Standing Water Level	1 48	m
Depth to Induced Water Level	3 27	m

H_o = Differential Head at Start of Test	1 79	m
H_f = Differential Head at End of Test	0 22	m
t_f = Time Elapsed at End of Test	30 00	mins

Shape Factor

Based on Figure 7 a f (Cases 1-6) and Figure 8 (Case 7) of BS5930 1981

Case 7 F = 37 86

PERMEABILITY CALCULATION

Time Lag Approach

T = Basic time lag when (H_t/H_o) = 0 37 300 sec

Permeability k = A/FT = 2 8 x 10^{-6} m/sec

General Approach

H_1 selected at t = mins (= t_1 = secs)

H_2 selected at t = mins (= t_2 = secs)

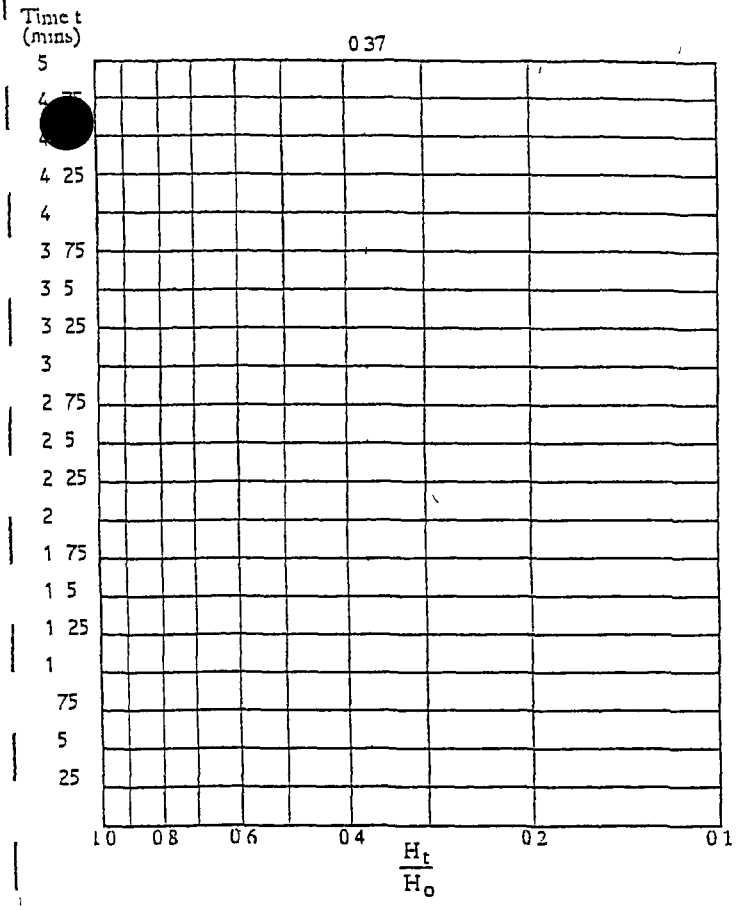
Permeability

$$k = \frac{A}{F(t_2 - t_1)} \log_e \frac{H_1}{H_2} =$$ m/sec

Remarks

Form 5/0 Notation Measurements from Ground Level downwards +ve (upwards ve)

Variable Head Permeability Test	Project: Durham Road Schools PFI Project, Newport Gwent Consultancy	Contract 150055
Exploration Associates		Figure



Time Elapsed (t) mins	Depth Below Datum at Time t (m)	H_t	$\frac{H_t}{H_o}$

Borehole No 3

Date 10/04/00

Type of Test Rising Head

Diameter of Borehole/Piezo Pipe d	0 200	m
Area of Borehole/Standpipe tubing A.	0 0314	m²
Depth to Base of Casing	10 30	m
Depth to Base of Borehole Before Test	10 30	m
Depth to Base of Borehole After Test	10 30	m
Test Section	10 3 6 9	m
Test Length L	30 00	m
Diameter of Test Length D	0 200	m
Datum	0 00	

Note Depths given below are measured from Datum

Depth to Standing Water Level	10 40	m
Depth to Induced Water Level	10 40	m

H_o = Differential Head at Start of Test	0 00	m
H_f = Differential Head at End of Test	0 00	m
t_f = Time Elapsed at End of Test	0 00	mins

Shape Factor

Based on Figure 7 a - f (Cases 1-6) and Figure 8 (Case 7) of BS5930 1981

Case 7 F = 37 86

PERMEABILITY CALCULATION

Time Lag Approach

T = Basic time lag when (H_t/H_o) = 0 37 sec

Permeability k = A/FT = m/sec

General Approach

H_1 selected at t = 0 0 mins (= t_1 = 0 secs)

H_2 selected at t = 0 0 mins (= t_2 = 0 secs)

Permeability

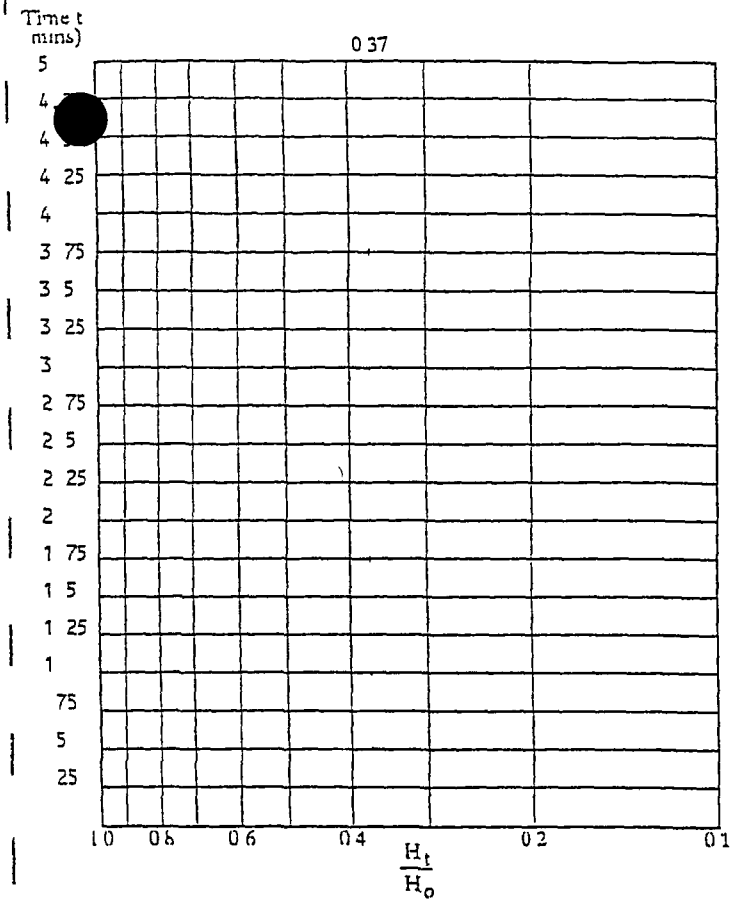
$$k = \frac{A}{F(t_2 - t_1)} \log_e \frac{H_1}{H_2} = 0\,0 \times 10^{8} \text{ m/sec}$$

Remarks Developing borehole for 45 minutes unable to reduce head of water

Form 5/0

Notation Measurements from Ground Level downwards +ve (upwards ve)

Variable Head Permeability Test	Project: Durham Road Schools PFI Project, Newport Gwent Consultancy	Contract 150055
Exploration Associates		Figure



Time Elapsed (t) mins	Depth Below Datum at Time t (m)	H_t	$\frac{H_t}{H_o}$

Borehole No 4

Date 11/04/00

Type of Test Rising Head

Diameter of Borehole/Piezo Pipe d	0 200	m
Area of Borehole/Standpipe tubing A	0 0314	m^2
Depth to Base of Casing	9 20	m
Depth to Base of Borehole Before Test	9 20	m
Depth to Base of Borehole After Test	9 20	m
Test Section	9 2 0 8	m
Test Length L	30 00	m
Diameter of Test Length D	0 200	m
Datum	0 00	

Note Depths given below are measured from Datum

Depth to Standing Water Level	2 08	m
Depth to Induced Water Level	2 08	m

H_o = Differential Head at Start of Test	0 00	m
H_f = Differential Head at End of Test	0 00	m
t_f = Time Elapsed at End of Test	0 00	mins

Shape Factor

Based on Figure 7 a - f (Cases 1-6) and Figure 8 (Case 7) of BS5930 1981

Case 7 F = 37 86

PERMEABILITY CALCULATION

Time Lag Approach

T = Basic time lag when (H_t/H_o) = 0 37 sec

Permeability k = A/FT = m/sec

General Approach

H_1 selected at t = 0 0 mins (= t_1 = 0 secs)

H_2 selected at t = 0 0 mins (= t_2 = 0 secs)

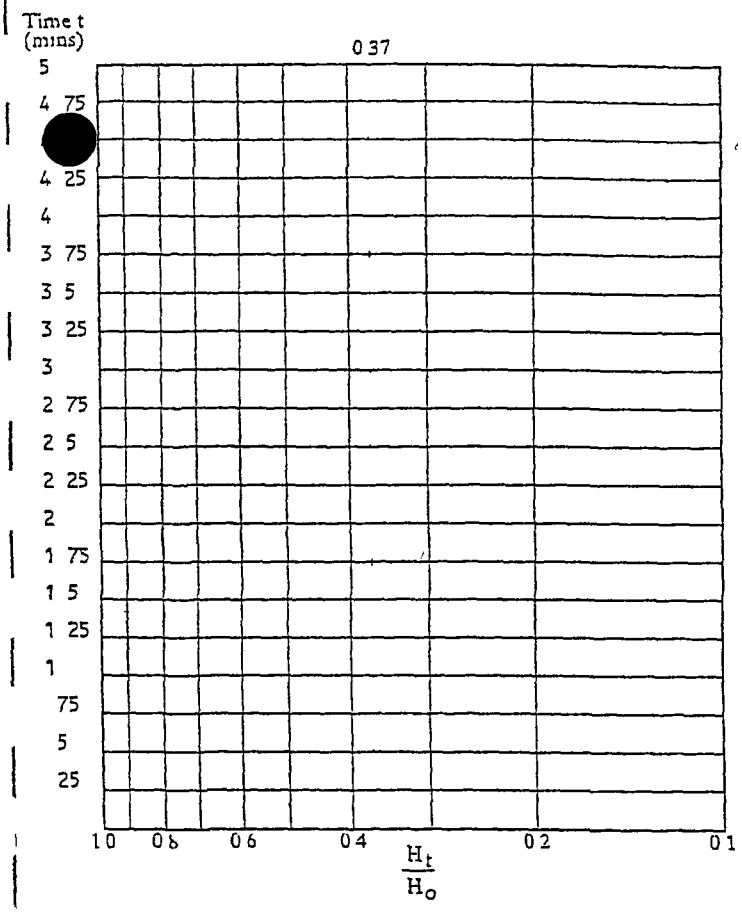
Permeability

$$k = \frac{A}{F(t_2 - t_1)} \log_e \frac{H_1}{H_2} = 0\,0 \times 10^{8} \text{ m/sec}$$

Remarks Developed borehole for 45 minutes unable to reduce head of water

Form 5/0 Notation Measurements from Ground Level downwards +ve (upwards ve)

Variable Head Permeability Test	Project: Durham Road Schools PFI Project, Newport Gwent Consultancy	Contract 150055
Exploration Associates		Figure



Time Elapsed (t) mins	Depth Below Datum at Time t (m)	H_t	$\frac{H_t}{H_o}$

Borehole No 5

Date 11/04/00

Type of Test Rising Head

Diameter of Borehole/Piezo Pipe d	0 200	m
Area of Borehole/Standpipe tubing A	0 0314	m^2
Depth to Base of Casing	7 10	m
Depth to Base of Borehole Before Test	7 10	m
Depth to Base of Borehole After Test	7 10	m
Test Section	7 1 2 70	m
Test Length L	30 00	m
Diameter of Test Length D	0 200	m
Datum	0 00	

Note Depths given below are measured from Datum

Depth to Standing Water Level	2 22	m
Depth to Induced Water Level	2 22	m

H_o = Differential Head at Start of Test	0 00	m
H_f = Differential Head at End of Test	0 00	m
t_f = Time Elapsed at End of Test	0 00	mins

Shape Factor

Based on Figure 7 a - f (Cases 1-6) and Figure 8 (Case 7) of BS5930 1981

Case 7 F = 37 86

PERMEABILITY CALCULATION

Time Lag Approach

T = Basic time lag when (H_t/H_o) = 0 37 sec

Permeability k= A/FT = m/sec

General Approach

H_1 selected at t = 0 0 mins (= t_1 = 0 secs)

H_2 selected at t = 0 0 mins (= t_2 = 0 secs)

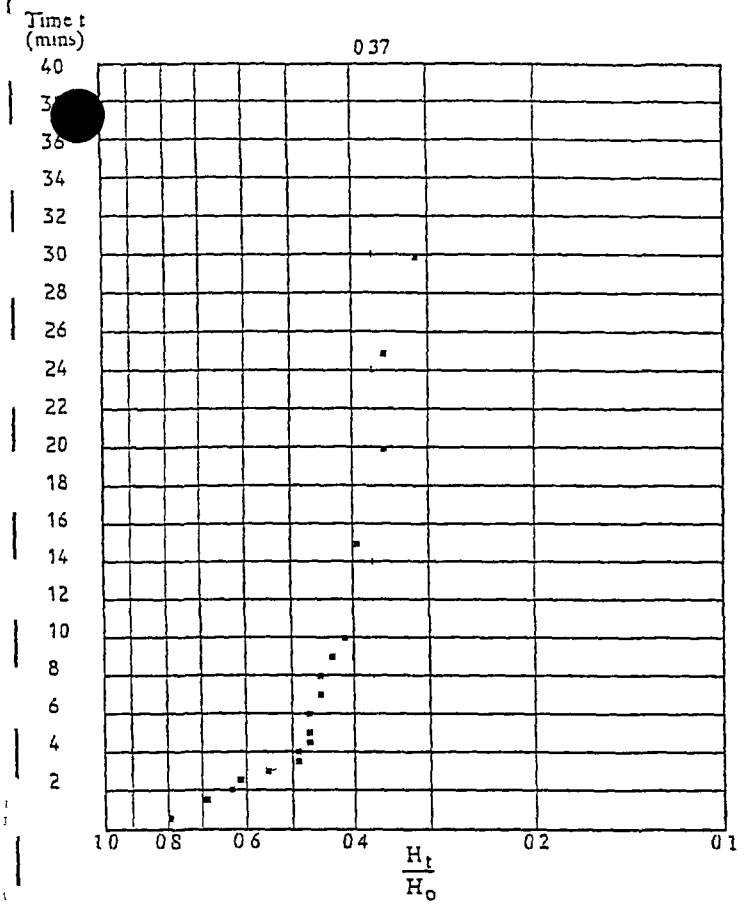
Permeability

$$k = \frac{A}{F(t_2 - t_1)} \log_e \frac{H_1}{H_2} = 0\ 0 \times 10^{-8} \text{ m/sec}$$

Remarks Developed for 45 minutes unable to reduce head

Form 5/0 Notation Measurements from Ground Level downwards +ve (upwards ve)

Variable Head Permeability Test	Project: Durham Road Schools PFI Project, Newport Gwent Consultancy	Contract 150055
Exploration Associates		Figure



Time Elapsed (t) mins	Depth Below Datum at Time t (m)	H_t	$\frac{H_t}{H_o}$
0 00	3 050	0 500	1 000
0 50	2 950	0 400	0 800
1 00	2 920	-0 370	0 740
1 50	2 900	0 350	0 700
2 00	2 870	0 320	0 640
2 50	2 860	0 310	0 620
3 00	2 830	0 280	0 560
3 50	2 800	-0 250	0 500
4 00	2 800	-0 250	0 500
4 50	2 790	0 240	0 480
5 00	2 790	0 240	0 480
6 00	2 790	0 240	0 480
7 00	2 780	0 230	0 460
8 00	2 780	-0 230	0 460
9 00	2 770	-0 220	0 440
10 00	2 760	0 210	0 420
15 00	2 750	0 200	0 400
20 00	2 730	-0 180	0 360
25 00	2 730	-0 180	0 360
30 00	2 710	-0 160	0 320

Borehole No 6

Date 11/04/00

Type of Test Rising Head

Diameter of Borehole/Piezo Pipe d	0 200	m
Area of Borehole/Standpipe tubing A	0 0314	m^2
Depth to Base of Casing	3 00	m
Depth to Base of Borehole Before Test	3 00	m
Depth to Base of Borehole After Test	3 00	m
Test Section	3 0 0 8	m
Test Length L	30 00	m
Diameter of Test Length D	0 200	m
Datum.	0 00	

Note Depths given below are measured from Datum

Depth to Standing Water Level	2 55	m
Depth to Induced Water Level	3 05	m

H_o = Differential Head at Start of Test	0 50	m
H_f = Differential Head at End of Test	0 16	m
t_f = Time Elapsed at End of Test	30 00	mins

Shape Factor

Based on Figure 7 a - f (Cases 1 6), and Figure 8 (Case 7) of BS5930 1981

Case 7 F = 37 86

PERMEABILITY CALCULATION

Time Lag Approach

T = Basic time lag when (H_t/H_o) = 0 37 sec

Permeability k = A/FT = m/sec

General Approach

H_1 selected at t = 2 0 mins (= t_1 = 120 secs)

H_2 selected at t = 25 0 mins (= t_2 = 1500 secs)

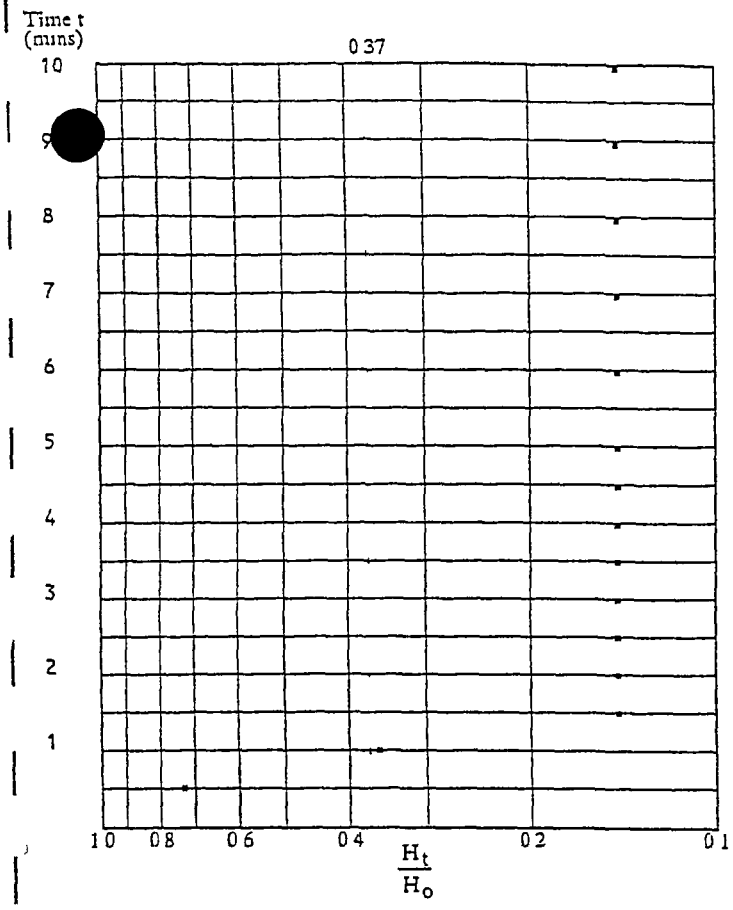
Permeability

$$k = \frac{A}{F(t_2 - t_1)} \log_e \frac{H_1}{H_2} = 3\,5 \times 10^{-7} \text{ m/sec}$$

Remarks Deveolping took 20 minutes to drain borehole dry

Form 5/0 Notation Measurements from Ground Level downwards +ve (upwards - ve)

Variable Head Permeability Test	Project: Durham Road Schools PFI Project, Newport Gwent Consultancy	Contract 150055
Exploration Associates		Figure



Time Elapsed (t) mins	Depth Below Datum at Time t (m)	H_t	$\frac{H_t}{H_o}$
0 00	1 230	0 880	1 000
0 50	1 000	-0 650	0 739
1 00	0 670	-0 320	0 364
1 50	0 480	-0 130	0 148
2 00	0 480	0 130	0 148
2 50	0 480	0 130	0 148
3 00	0 480	0 130	0 148
3 50	0 480	0 130	0 148
4 00	0 480	0 130	0 148
4 50	0 480	0 130	0 148
5 00	0 480	-0 130	0 148
6 00	0 480	-0 130	0 148
7 00	0 480	0 130	0 148
8 00	0 480	0 130	0 148
9 00	0 480	-0 130	0 148
10 00	0 480	-0 130	0 148

Borehole No 7

Date 11/04/00

Type of Test Rising Head

Diameter of Borehole/Piezo Pipe d	0 200	m
Area of Borehole/Standpipe tubing A	0 0314	m²
Depth to Base of Casing	7 90	m
Depth to Base of Borehole Before Test	7 90	m
Depth to Base of Borehole After Test	7 90	m
Test Section	7 9 1 50	m
Test Length L	30 00	m
Diameter of Test Length D	0 200	m
Datum	0 00	

Note Depths given below are measured from Datum

Depth to Standing Water Level	0 35	m
Depth to Induced Water Level	1 23	m

H_o = Differential Head at Start of Test	-0 88	m
H_f = Differential Head at End of Test	0 13	m
t_f = Time Elapsed at End of Test	10 00	mins

Shape Factor

Based on Figure 7 a - f (Cases 1-6), and Figure 8 (Case 7) of BS5930 1981

Case 7 F = 37 86

PERMEABILITY CALCULATION

Time Lag Approach

T = Basic time lag when (H_t/H_o) = 0.37 sec

Permeability k = A/FT = m/sec

General Approach

H_1 selected at t = 1 0 mins (= t_1 = 60 secs)

H_2 selected at t = 9 0 mins (= t_2 = 540 secs)

Permeability

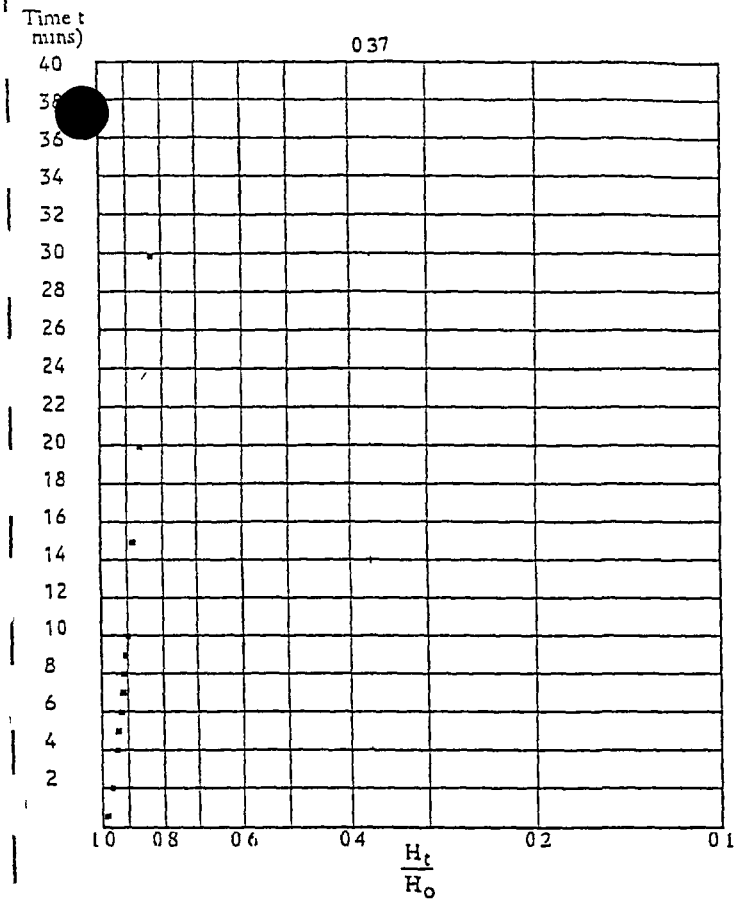
$$k = \frac{A}{F(t_2 - t_1)} \log_e \frac{H_1}{H_2} = 1\ 6 \times 10^{-6} \text{ m/sec}$$

Remarks

Form 5/0

Notation Measurements from Ground Level downwards +ve (upwards - ve)

Variable Head Permeability Test	Project: Durham Road Schools PFI Project, Newport Gwent Consultancy	Contract 150055
Exploration Associates		Figure



Time Elapsed (t) mins	Depth Below Datum at Time t (m)	H_t	$\frac{H_t}{H_o}$
0 00	6 370	3 410	1 000
0 50	6 350	3 390	0 994
1 00	6 320	-3 360	0 985
1 50	6 300	-3 340	0 979
2 00	6 290	-3 330	0 977
2 50	6 270	3 310	0 971
3 00	6 260	-3 300	0 968
3 50	6 250	-3 290	0 965
4 00	6 230	3 270	0 959
4 50	6 220	3 260	0 956
5 00	6 210	3 250	0 953
6 00	6 180	3 220	0 944
7 00	6 160	3 200	0 938
8 00	6 140	-3 180	0 933
9 00	6 120	-3 160	0 927
10 00	6 100	-3 140	0 921
15 00	6 030	-3 070	0 900
20 00	5 950	-2 990	0 877
25 00	5 890	-2 930	0 859
30 00	5 820	-2 860	0 839

Borehole No 8

Date 12/04/00

Type of Test Rising Head

Diameter of Borehole/Piezo Pipe d		0 200	m
Area of Borehole/Standpipe tubing A.		0 0314	m^2
Depth to Base of Casing		10 20	m
Depth to Base of Borehole Before Test		10 20	m
Depth to Base of Borehole After Test		10 20	m
Test Section	1 80	10 20	m
Test Length L		8 40	m
Diameter of Test Length D		0 200	m
Datum		0 00	

Note Depths given below are measured from Datum

Depth to Standing Water Level	2 96	m
Depth to Induced Water Level	6 37	m

H_o = Differential Head at Start of Test 3 41 m

H_f = Differential Head at End of Test 2 86 m

t_f = Time Elapsed at End of Test 30 00 mins

Shape Factor

Based on Figure 7 a - f (Cases 1-6) and Figure 8 (Case 7) of BS5930 1981

Case 7 F = 13 60

PERMEABILITY CALCULATION

Time Lag Approach

T = Basic time lag when (H_t/H_o) = 0 37 sec

Permeability k= A/FT = m/sec

General Approach

H_1 selected at t = 2 0 mins (= t_1 = 120 secs)

H_2 selected at t = 25 0 mins (= t_2 = 1500 secs)

Permeability

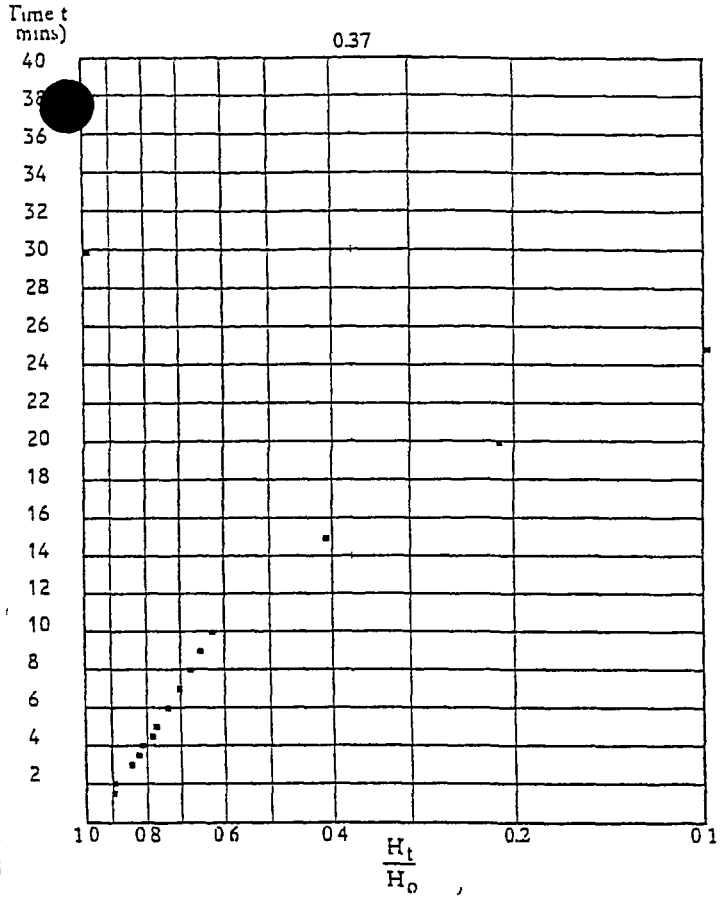
$$k = \frac{A}{F(t_2 - t_1)} \log_e \frac{H_1}{H_2} = 2\ 1 \times 10^{-7} \text{ m/sec}$$

Remarks

Form 5/0

Notation Measurements from Ground Level downwards +ve (upwards ve)

Variable Head Permeability Test	Project: Durham Road Schools PFI Project, Newport Gwent Consultancy	Contract 150055
Exploration Associates		Figure



Time Elapsed (t) mins	Depth Below Datum at Time t (m)	H_t	$\frac{H_t}{H_o}$
0 00	3 480	-2 670	1 000
0 50	3 410	2 600	0 974
1 00	3 320	2 510	0 940
1 50	3 250	2 440	0 914
2 00	3 240	2 430	0 910
2 50	3 140	2 330	0 873
3 00	3 090	-2 280	0 854
3 50	3 030	2 220	0 831
4 00	3 000	2 190	0 820
4 50	2 920	2 110	0 790
5 00	2 890	2 080	0 779
6 00	2 800	1 990	0 745
7 00	2 720	1 910	0 715
8 00	2 640	1 830	0 685
9 00	2 570	1 760	0 659
10 00	2 500	1 690	0 633
15 00	1 920	1 110	0 416
20 00	1 390	0 580	0 217
25 00	1 080	0 270	0 101
30 00	0 800	0 010	-0 004

Borehole No 9

Date 11/04/00

Type of Test Rising Head

Diameter of Borehole/Piezo Pipe d	0 200	m
Area of Borehole/Standpipe tubing A	0 0314	m^2
Depth to Base of Casing	7 90	m
Depth to Base of Borehole Before Test	7 90	m
Depth to Base of Borehole After Test	7 90	m
Test Section	7 9 - 1 5	m
Test Length L	30 00	m
Diameter of Test Length D	0 200	m
Datum	0 00	

Note Depths given below are measured from Datum

Depth to Standing Water Level	0 81	m
Depth to Induced Water Level	3 48	m

H_o = Differential Head at Start of Test	-2 67	m
H_f = Differential Head at End of Test.	0 01	m
t_f = Time Elapsed at End of Test	30 00	mins

Shape Factor

Based on Figure 7 a f (Cases 1-6), and Figure 8 (Case 7) of BS5930 1981

Case 7 F = 37 86

PERMEABILITY CALCULATION

Time Lag Approach

T = Basic time lag when (H_t/H_o) = 0 37 420 sec

Permeability k = A/FT = 2 0 x 10^{-6} m/sec

General Approach

H_1 selected at t = mins (= t_1 = secs)

H_2 selected at t = mins (= t_2 = secs)

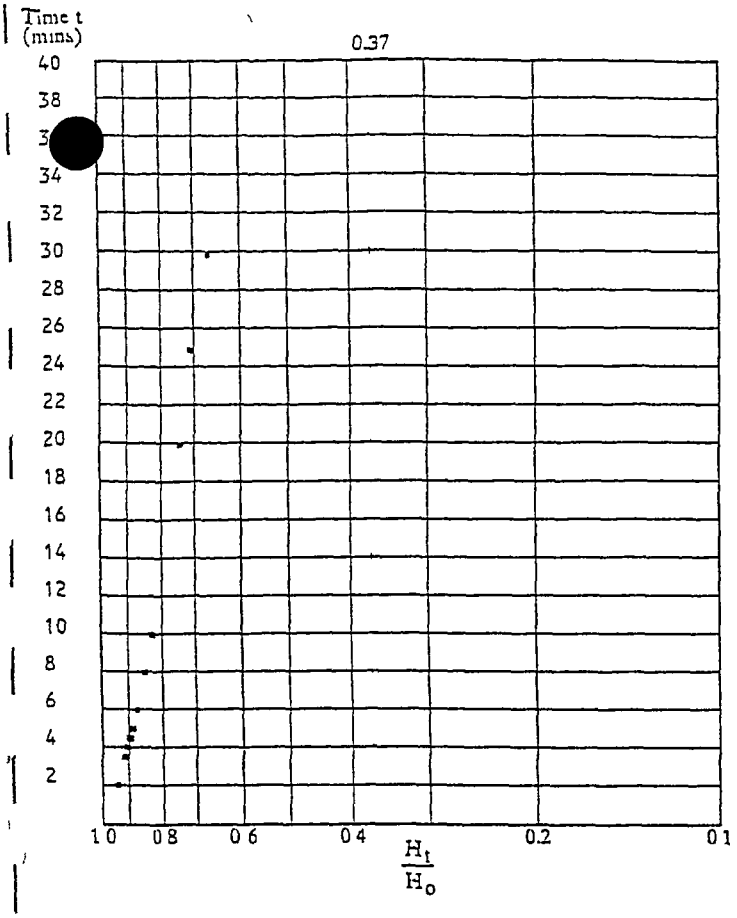
Permeability

$$k = \frac{A}{F(t_2 - t_1)} \log_e \frac{H_1}{H_2} = \quad \text{m/sec}$$

Remarks

Form 5/0 Notation Measurements from Ground Level downwards +ve (upwards ve)

Variable Head Permeability Test	Project: Durham Road Schools PFI Project, Newport Gwent Consultancy	Contract 150055
Exploration Associates		Figure



Time Elapsed (t) mins	Depth Below Datum at Time t (m)	H_t	$\frac{H_t}{H_o}$
0 00	5 550	4 200	1 000
0 00	5 510	4 160	0 990
1 00	5 460	4 110	0 979
1 50	5 410	4 060	0 967
2 00	5 380	4 030	0 960
2 50	5 340	3 990	0 950
3 00	5 300	3 950	0 940
3 50	5 270	3 920	0 933
4 00	5 240	3 890	0 926
4 50	5 200	3 850	0 917
5 00	5 160	3 810	0 907
6 00	5 100	-3 750	0 893
7 00	5 040	-3 690	0 879
8 00	4 980	-3 630	0 864
9 00	4 930	-3 580	0 852
10 00	4 880	-3 530	0 840
15 00	4 650	-3 300	0 786
20 00	4 510	3 160	0 752
25 00	4 380	-3 030	0 721
30 00	4 190	2 840	0 676

Borehole No 10

Date 12/04/00

Type of Test Rising Head

Diameter of Borehole/Piezo Pipe d	0 200	m
Area of Borehole/Standpipe tubing A	0 0314	m^2
Depth to Base of Casing	9 10	m
Depth to Base of Borehole Before Test	9 10	m
Depth to Base of Borehole After Test	9 10	m
Test Section	9 1 1 8	m
Test Length L	30 00	m
Diameter of Test Length D	0 200	m
Datum	0 00	

Note Depths given below are measured from Datum

Depth to Standing Water Level	1 35	m
Depth to Induced Water Level	5 55	m

H_o = Differential Head at Start of Test	4 20	m
H_f = Differential Head at End of Test	2 84	m
t_f = Time Elapsed at End of Test	30 00	mins

Shape Factor

Based on Figure 7 a f (Cases 1-6), and Figure 8 (Case 7) of BS5930 1981

Case 7 F = 37 86

PERMEABILITY CALCULATION

Time Lag Approach

T = Basic time lag when (H_t/H_o) = 0 37 sec

Permeability k = A/FT = m/sec

General Approach

H_1 selected at t = 2 0 mins (= t_1 = 120 secs)

H_2 selected at t = 25 0 mins (= t_2 = 1500 secs)

Permeability

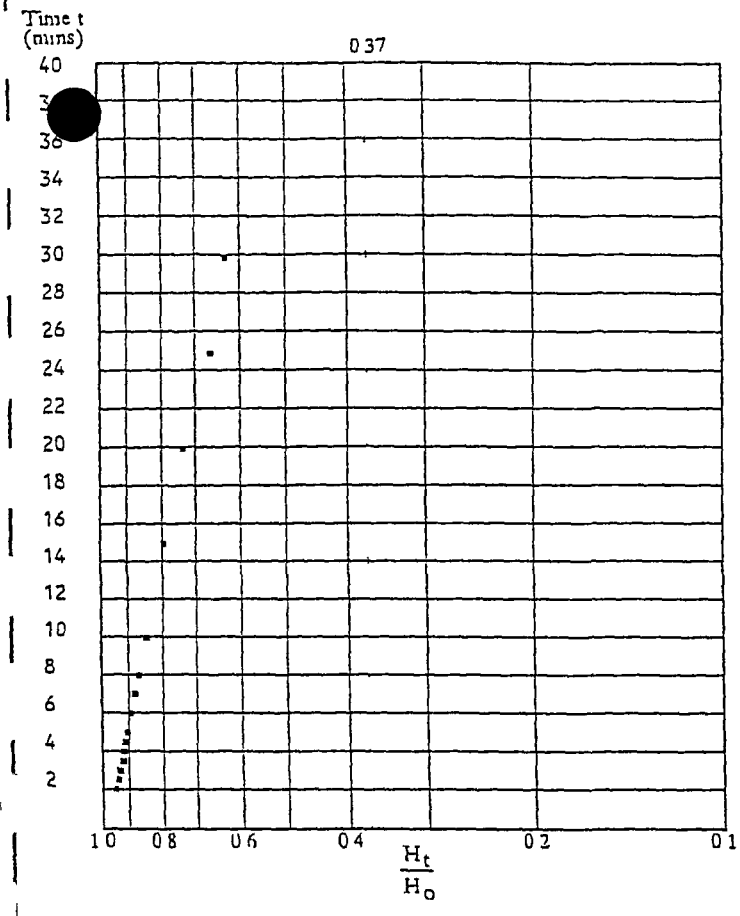
$$k = \frac{A}{F(t_2 - t_1)} \log_e \frac{H_1}{H_2} = 1\ 7 \times 10^{-7} \text{ m/sec}$$

Remarks

Form 5/0

Notation Measurements from Ground Level downwards +ve (upwards ve)

Variable Head Permeability Test	Project: Durham Road Schools PFI Project, Newport Gwent Consultancy	Contract 150055
Exploration Associates		Figure



Time Elapsed (t) mins	Depth Below Datum at Time t (m)	H_t	$\frac{H_t}{H_o}$
0 00	3 800	-3 210	1 000
0 50	3 760	3 170	0 988
1 00	3 730	-3 140	0 978
1 50	3 710	-3 120	0 972
2 00	3 690	3 100	0 966
2 50	3 660	-3 070	0 956
3 00	3 640	3 050	0 950
3 50	3 610	3 020	0 941
4 00	3 600	3 010	0 938
4 50	3 580	2 990	0 931
5 00	3 560	-2 970	0 925
6 00	3 520	-2 930	0 913
7 00	3 470	2 880	0 897
8 00	3 430	-2 840	0 885
9 00	3 390	2 800	0 872
10 00	3 350	-2 760	0 860
15 00	3 160	2 570	0 801
20 00	2 980	2 390	0 745
25 00	2 750	-2 160	0 673
30 00	2 640	-2 050	0 639

Borehole No 11

Date 11/04/00

Type of Test Rising Head

Diameter of Borehole/Piezo Pipe d	0 200	m
Area of Borehole/Standpipe tubing A	0 0314	m^2
Depth to Base of Casing	6 20	m
Depth to Base of Borehole Before Test	6 20	m
Depth to Base of Borehole After Test	6 20	m
Test Section	6 2 0 8	m
Test Length L	30 00	m
Diameter of Test Length D	0 200	m
Datum	0 00	

Note Depths given below are measured from Datum

Depth to Standing Water Level	0 59	m
Depth to Induced Water Level	3 80	m

H_o = Differential Head at Start of Test	-3 21	m
H_f = Differential Head at End of Test	2 05	m
t_f = Time Elapsed at End of Test	30 00	mins

Shape Factor

Based on Figure 7 a - f (Cases 1 6) and Figure 8 (Case 7) of BS5930 1981

Case 7 F = 37 86

PERMEABILITY CALCULATION

Time Lag Approach

T = Basic time lag when $(H_t/H_o) = 0.37$ sec

Permeability k = A/FT = m/sec

General Approach

H_1 selected at t = 2 0 mins (= t_1 = 120 secs)

H_2 selected at t = 25 0 mins (= t_2 = 1500 secs)

Permeability

$$k = \frac{A}{F(t_2 - t_1)} \log_e \frac{H_1}{H_2} = 2\ 2 \times 10^{-7} \text{ m/sec}$$

Remarks

Form 5/0

Notation Measurements from Ground Level downwards +ve (upwards ve)

Variable Head Permeability Test	Project: Durham Road Schools PFI Project, Newport Gwent Consultancy	Contract 150055
Exploration Associates		Figure

ENCLOSURE C

Radiation Survey Results

Radiation Survey Results	RS1

Results of radiation survey carried out using a hand held scintillation detector

Survey carried out on 23 March 2000

Points over the site were surveyed on a 25m square grid, the origin of the grid being the north east corner of the site, adjacent to BH1 Measurements were taken at the ground surface and are quoted in counts/second

North ↑

Readings in counts/second

Measurements west from BH1 →

Measurements south from BH1 ↓	0m	25m	50m	75m	100m	125m	150m
0m	7	3	4	7	6	7	8
25m	5	7	8	8	7	5	7
50m	7	6	7	8	6	8	8
75m	8	5	7	8	7	7	8
100m	7	8	8	8	7	7	8
125m	8	6	7	8	9	8	8
150m	8	6	8	6	7	6	6
175m	7	7	6	9	8	8	8
200m	6	6	6	5	5	8	8
225m	7	5	6	5	7	5	7
250m	6	7	5	6	5	6	9
275m	6	6	8	9	9	9	10
300m	6	7	9	8	9	9	9
325m	7	6	8	8	9	10	6
350m	5	9	10	9	9	9	7
375m	9	9	9	9	9	8	10
400m	8	8	8	8	9	9	9
425m	9	9	8	8	8	6	8
450m	5	5	6	6	6	7	8

River Usk ↕

Exploration Associates	Project: Durham Road Schools PFI, Newport	Contract. 150055
		Figure RS1

ENCLOSURE D

Gas/Groundwater Level Monitoring Results

Date 10/04/00
Operator K Hughes

Equipment Used	GI Infrared Gas Analyser			

Survey Information	

BH	Water level (m)	O2 (%v/v)	CH4 (%v/v)	Co2 (%v/v)	H2S ppm	MB
BH 3	4 30	20 1	0 0	0 7	0	993
BH 5	2 22	20 2	0 0	0 2	0	992
BH 2	1 48	18 4	0 0	1 9	0	992
BH 1	3 60	12 1	0 0	7 1	0	991

Remarks

The concentrations of gases recorded above are subject to the accuracy as specified by the manufacturer of the instrument adopted If concentration accuracies of less than +/- 2% are required it is recommended that gas samples are recovered and laboratory analyses are undertaken

Gas Monitoring Record	Project	Contract	150055
Exploration Associates	Durham Road Schools PFI Newport	Figure	GM1/1

Date 11/04/00
Operator K Hughes

Equipment Used	GI Infrared Gas Analyser			

Survey Information	

BH	Water level (m)	O2 (%v/v)	CH4 (%v/v)	Co2 (%v/v)	H2S ppm	MB
BH 6	2 00	19 6	0 0	1 6	0	996
BH 4	2 08	18 7	0 0	2 0	0	994
BH 7	0 35	20 1	0 0	0 2	0	994
BH 9	0 81	20 2	0 0	0 1	0	991
BH 11	0 59	20 4	0 0	0 1	0	990

Remarks

The concentrations of gases recorded above are subject to the accuracy as specified by the manufacturer of the instrument adopted If concentration accuracies of less than +/- 2% are required it is recommended that gas samples are recovered and laboratory analyses are undertaken

Gas Monitoring Record	Project	Contract	150055
Exploration Associates	Durham Road Schools PFI Newport	Figure	GM1/2

Date 12/04/00
Operator K Hughes

Equipment Used	GI Infrared Gas Analyser

Survey Information

BH	Water level (m)	O2 (%v/v)	CH4 (%v/v)	Co2 (%v/v)	H2S ppm	MB
BH 8	2 96	15 0	6 4	3 1	0	988
BH 10	1 35	19 2	2 6	1 4	0	988

Remarks

The concentrations of gases recorded above are subject to the accuracy as specified by the manufacturer of the instrument adopted If concentration accuracies of less than +/- 2% are required, it is recommended that gas samples are recovered and laboratory analyses are undertaken

Gas Monitoring Record	Project	Contract: 150055
Exploration Associates	Durham Road Schools PFI Newport	Figure GM1/3

Date 18/04/00
Operator D Price

Equipment Used	GI Infrared Gas Analyser			

Survey Information	

BH	Water level (m)	O2 (%v/v)	CH4 (%v/v)	Co2 (%v/v)	H2S ppm	Flow (l/min)	MB	
BH1	2 68	14 4	0 0	8 5	3 5	0 7	980	
BH2	1 09	17 4	0 0	1 9	0 0	0 7	980	
BH3	4 20	19 2	0 0	1 1	0 0	0 1	980	
BH4	2 09	17 6	0 0	2 7	0 0	0 5	980	
BH5	2 23	19 5	0 0	1 9	2 6	0 2	980	
BH6	2 48	19 4	0 0	1 1	2 4	1 4	980	
BH7	0 40	19 3	0 0	0 3	1 7	1 7	980	
BH8	2 25	14 6	0 0	1 2	1 4	0 1	980	
BH9	0 73	17 2	0 5	2 6	0 0	0 2	980	
BH10	1 35	20 5	0 0	0 0	1 3	0 4	980	
BH11	0 31	20 5	0 0	0 0	1 2	0 1	980	

Remarks

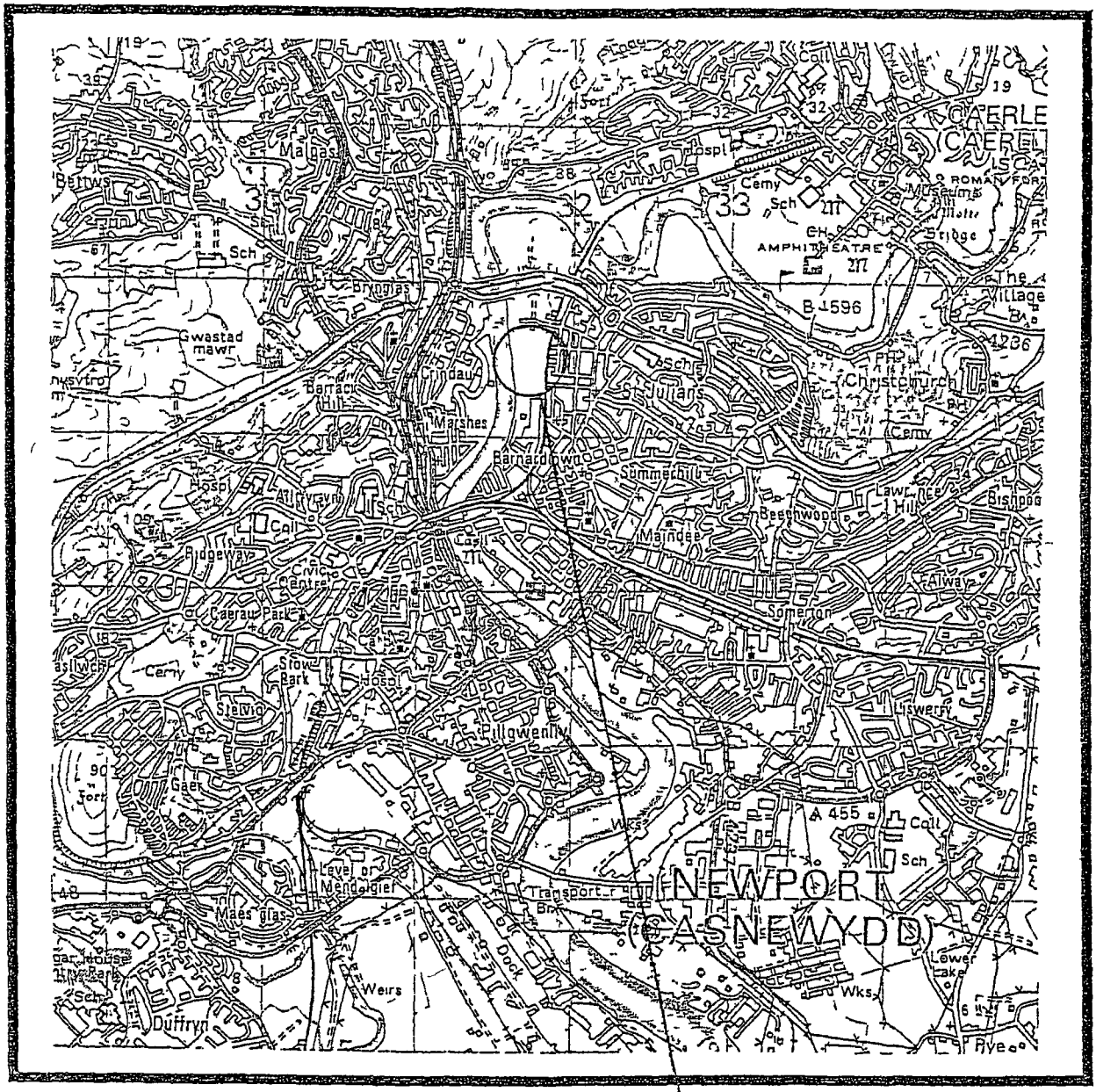
The concentrations of gases recorded above are subject to the accuracy as specified by the manufacturer of the instrument adopted If concentration accuracies of less than +/ 2% are required it is recommended that gas samples are recovered and laboratory analyses are undertaken

Gas Monitoring Record	Project	Contract 150055
Exploration Associates	*Durham Road Schools PFI Newport*	Figure GM2

ENCLOSURE E

Drawings

Site Location Plan	1
Exploratory Hole Location Plan	2



Site Location Plan	Project Durham Road Schools PFI Project, Newport Gwent Consultancy	Contract 150055
Exploration Associates		Drawing 1

APPENDIX

General Notes

General Notes

These notes, which accompany the ground investigation report, are intended to assist the user of the information contained in the report They point out some inevitable shortcomings of any ground investigation and do not constitute a disclaimer of responsibility for the results obtained by Exploration Associates Limited

1 The information in this report is based on the ground conditions encountered during the ground investigation work and the results of any field and laboratory testing The exploratory records describe the ground conditions at their specific locations and should not be regarded as representative of the ground as a whole

2 Ground investigations are performed by the company in general accordance with the recommendations in BS 5930 (1981) "Code of Practice for Site Investigations" The testing of soils, rocks and aggregates generally follow the recommendations of BS 1377 (1990) "Methods of test for soils for Civil Engineering Purposes", the International Society of Rock Mechanics (Brown, 1981) "Rock characterisation, testing and monitoring, ISRM suggested methods", and BS 812 (1975) "Methods of sampling and testing of mineral aggregates, sands and filters", respectively

3 The primary purpose of ground investigation boreholes and trial pits is to probe the stratified sequences of soil and/or rock From the results of these probings no conclusions should be drawn concerning the presence of size, lithological nature and numbers per unit volume of ground of cobbles and boulders in soil types such as glacial till (boulder clay)

4 When cable percussion boring techniques are used in superficial and drift deposits some mixing of thin-layered soils inevitably occurs If strong randomly-occurring pieces of rock are encountered in soil material then the rock may be either pushed aside or penetrated and broken up in which case the arisings that are recovered may not be indicative of the nature of the material in situ

5 Rotary drilling techniques may sometimes be used for drilling through superficial deposits and rocks in order to provide a very general indication of the nature of the ground Where open-hole methods have been used for the ground investigation the description of the ground is based on the cuttings recovered from the flushing medium and the rate of progress in advancing the hole Descriptions of strata and the depths of changes in strata may not be accurate under these conditions

6 Groundwater conditions noted during boring may be subject to change through seasonal and/or other effects such as, for example, boring and constructional excavation When a groundwater inflow is encountered during boring, work on the hole is suspended, typically for 20 minutes, and any change in level is recorded The groundwater level recorded on resumption of boring may not be the natural pre-boring standing water level When piezometers are installed in boreholes the reported groundwater levels may also be subject to variation due to seasonal and/or other effects

7 The factual information contained within the ground investigation report should not be used for any purpose other than for the development project for which it was prepared unless a check has been carried out on its applicability Where the ground investigation report contains an interpretation of the factual information that interpretation must be considered in the context of the stated development proposals and should not be used in any other context

8 This report is for the use of the person or organisation that commissioned the work Exploration Associates Limited accepts no responsibility if the information is used by any other party The information is the property and copyright of the person or organisation that commissioned the investigation It should not be reproduced or transmitted in any form without the owner's written permission

APPENDIX E - Chemical Analysis Results - Soils

ICRCL 59/83 (2nd Edition), Contaminant Groups			GROUP A: Contaminants which pose hazards to health						GROUP B: Contaminants which are phytotoxic				Contaminants associated with former Coal Carbonization sites											
Exploratory Hole	Depth (mbgl)	Soil Type	Arsenic (mg/kg)	Cadmium - Total (mg/kg)	Chromium - Total (mg/kg)	Lead - Total (mg/kg)	Mercury - Total (mg/kg)	Selenium - Total (mg/kg)	Boron - Water Soluble (mg/kg)	Copper - Total (mg/kg)	Nickel - Total (mg/kg)	Zinc - Total (mg/kg)	*Cyanide - Total (mg/kg)	Phenol - Monohydric (mg/kg)	Sulphide - dwt (mg/kg)	Sulphate (SO4) - Water Soluble, 2:1 extract (mg/kg)	Sulphur - Free (mg/kg)	pH Value (Units)	*Total Poly. Aromatic Hydrocarbons (mg/kg)	Asbestos	Mineral Oils & Grease (mg/kg)	Chloride (mg/kg)	TPH by GC FID (mg/kg)	Calorific Value (J/g)
			+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TP1	0.40	MG	32	<1	36	247	0.7	<1	1.0	236	62	409	-	-	-	5900	-	7.44	-	-	-	-	-	-
TP2	1.50	MG	82	2	34	631	0.8	2	2.1	173	75	845	<1	<1	<20	91	60.3	7.41	36.04	Absent	-	-	<5	1267
TP3	2.50	MG	88	2	39	2810	0.3	2	2.5	701	95	1250	-	-	-	103	-	7.26	12.57	-	<19	-	<6	-
TP4	1.50	MG	53	55	29	327	0.2	6	1.3	214	67	664	<1	<1	-	141	-	7.47	47.19	Absent	-	-	-	-
TP5	0.50	MG	22	<1	25	370	0.8	<1	1.3	57	29	159	<1	<1	-	66	-	11.06	127.39	-	86	-	-	-
TP6	0.50	MG	36	<1	45	663	2	<1	0.7	287	108	474	22	<1	-	39	-	7.47	129.52	Present	-	20	-	718
TP7	1.50	MG	35	<1	41	2290	2.7	<1	0.9	201	74	1400	<1	<1	-	46	-	7.51	155.86	Absent	-	-	-	-
TP8	0.50	MG	43	<1	33	306	0.1	<1	1.1	190	87	331	1	<1	-	42	-	6.60	-	Absent	-	<10	-	-
TP8	2.50	MG	26	<1	51	273	0.3	<1	4.1	91	63	276	-	-	-	445	-	7.33	5.29	-	44.1	-	<5	-
TP12	1.50	MG	67	<1	37	415	0.6	3	2.2	380	99	899	<1	<1	-	661	-	7.08	160.96	-	292	65	-	-
TP13	0.50	MG	-	-	-	-	-	-	-	-	-	-	-	-	<20	-	46.9	-	-	Present	-	-	-	-
TP13	2.50	MG	12	4	20	71	<0.1	<1	1.8	35	21	179	<1	<1	-	167	-	9.35	40.04	-	49.8	240	-	-
TP14	0.40	MG	16	<1	86	111	0.2	<1	0.3	71	61	170	-	-	-	3570	-	7.88	-	-	<19	-	-	-
TP15	1.50	MG	23	<1	93	269	0.5	<1	1.3	198	55	322	<1	<1	<20	32	74.6	7.33	274.35	Absent	-	-	-	552
TP16	0.50	MG	26	<1	21	546	0.2	1	0.7	8600	74	537	<1	<1	-	54	-	6.69	15.88	-	-	30	-	-
TP16	2.50	ALL	6	<1	27	35	<0.1	<1	1.4	29	21	76	-	-	-	45	-	7.43	-	-	-	-	-	-
TP17	0.50	MG	17	<1	21	766	0.7	<1	0.6	183	44	322	-	-	-	29	-	7.97	-	-	-	-	-	-
TP17	2.50	MG	24	<1	43	275	2.2	<1	5.7	74	39	269	<1	<1	<20	291	44.1	7.93	27.03	Absent	1820	185	<5	221
TP17	3.50	MG	25	<1	45	307	1.4	<1	7.6	51	39	225	-	-	-	396	-	7.81	-	-	-	-	-	-
TP18	1.50	MG	10	<1	25	91	0.1	<1	1.3	11600	89	162	<1	<1	<20	91	<10	8.36	4.16	Present	373	25	-	135
TP18	3.50	MG	21	<1	50	146	0.3	<1	6.1	1120	53	260	-	-	-	81	-	7.37	-	-	-	-	-	-
TP19	0.50	MG	4	<1	47	26	<0.1	<1	0.5	18	51	80	<1	<1	<20	43	37.4	8.06	243.51	Absent	-	15	-	-
TP19	2.50	ALL	11	<1	41	102	0.2	<1	1.7	116	42	127	-	-	-	172	-	8.84	-	-	-	-	-	-
TP20	0.50	MG	17	<1	26	123	0.1	<1	3.2	54	29	105	-	-	<20	145	168	10.82	-	Absent	311	395	-	-
TP20	1.50	MG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13.55	-	-	-	-	-
TP20	3.50	MG	17	<1	58	40	<0.1	<1	2.5	18	52	174	<1	2	-	72	-	8.45	-	-	-	-	-	-
TP21	1.50	MG	60	1	44	410	47.2	<1	0.7	1320	92	1750	1	5	-	53	-	7.14	41.11	Present	-	-	-	-
TP22	0.50	MG	12	<1	14	31	0.1	<1	0.5	36	24	86	<1	<1	-	29	-	8.37	7.48	-	-	30	-	235
TP23	0.50	ALL	13	<1	58	38	<0.1	<1	2.1	11	40	115	<1	<1	<20	14	48.1	8.02	-	-	-	-	-	-
TP24	0.50	ALL	12	<1	50	29	0.1	<1	1.9	17	43	101	-	-	-	18	-	7.33	-	-	-	40	-	-
TP25	1.50	MG	25	<1	34	239	0.5	<1	1.2	53	31	144	<1	<1	-	393	-	10.45	20.49	Absent	-	-	-	231
TP26	0.50	ALL	26	<1	41	128	0.4	<1	1.4	40	40	164	-	-	-	36	-	6.39	-	-	-	20	-	-
TP27	1.50	ALL	13	<1	55	35	<0.1	<1	1.8	15	46	100	-	-	-	18	-	7.91	-	-	-	-	-	-
TP28	0.50	MG	10	<1	55	32	<0.1	<1	0.9	13	43	110	<1	<1	<20	27	41.6	7.86	1.60	Absent	-	10	-	-
TP29	0.50	MG	18	<1	42	50	<0.1	<1	1.1	24	36	113	<1	<1	<20	82	40.9	8.21	-	Absent	-	80	-	67
TP29	2.50	ALL	18	<1	51	30	<0.1	<1	1.6	13	40	104	-	-	-	93	-	8.46	8.88	-	<19	-	<5	-
TP30	0.50	MG/ALL	13	<1	60	30	<0.1	<1	2.8	14	39	88	<1	<1	-	23	-	7.33	-	-	-	-	-	-
BH1	1.00 - 1.20	MG	57	<1	30	411	0.7	<1	0.9	115	54	408	<1	<1	-	42	-	7.77	-	Absent	-	-	-	-
BH2	2.40	MG/ALL	28	<1	55	208	0.4	<1	5.5	64	41	318	-	-	-	390	-	7.66	-	-	-	-	-	-
BH3	0.80 - 1.10	MG	43	<1	49	1620	1.4	1	0.7	255	78	973	-	-	-	58	-	7.29	-	Absent	-	20	-	925
BH4	0.80 - 1.10	MG	60	<1	31	510	<0.1	2	0.8	250	102	566	-	-	-	37	-	6.17	-	-	-	-	-	-
BH5	0.30 - 0.60	MG	19	<1	22	45	<0.1	<1	0.2	167	57	118	-	-	-	44	-	7.48	-	Absent	-	-	-	935
BH7	0.20 - 0.50	MG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Absent	-	-	-	-
BH8	0.20 - 0.50	MG	16	<1	47	68	0.1	<1	0.5	27	40	153	<1	<1	-	69	-	9.82	-	-	-	-	-	-
BH9	0.50	MG/ALL	15	<1	52	50	0.1	<1	1.2	20	39	99	-	-	-	12600	-	8.08	-	-	-	-	-	-
BH10	0.70 - 1.00	MG	61	<1	33	182	0.3	<1	0.7	39	35	268	-	-	-	68	-	8.28	-	Absent	-	-	-	-
BH11	0.40	ALL	23	<1	50	124	1	<1	3.2	55	46	177	-	-	-	46100	-	7.47	-	-	-	-	-	-

Notes

* = Reference value for Free Cyanide set within ICRCL 59/83 (2nd edition) has been used in the evaluation of the analysis result.

\+ = No Reference Value for this parameter has been set.

\- = Measurements of this parameter have not been undertaken.

MG = Made Ground

ALL = *Alluvium*

\# = Value for Total Poly Aromatic Hydrocarbons is the summation of 16 No. individual compounds for which tests have been undertaken (Acenapthene, Acenapthylene, Anthracene, Benz[a]anthracene, Benz[k]fluoranthene, Benzo[a]pyrene, Benzo[b]fluoranthene, Benzo[ghi]perylene, Chrysene, Dibenz[a]anthracene, Fluoranthene, Fluorene, Indo[123-cd]pyrene, Naphthalene, Phenanthrene, Pyrene)

			ICRCL 59/83 (2nd Edition), Contaminant Groups: GROUP A: Contaminants which pose hazards to health						GROUP B: Contaminants which are phytotoxic				Contaminants associated with former Coal Carbonisation sites											
			Arsenic (mg/kg)	Cadmium - Total (mg/kg)	Chromium - Total (mg/kg)	Lead - Total (mg/kg)	Mercury - Total (mg/kg)	Selenium - Total (mg/kg)	Boron - Water Soluble (mg/kg)	Copper - Total (mg/kg)	Nickel - Total (mg/kg)	Zinc - Total (mg/kg)	*Cyanide - Total (mg/kg)	Phenol - Monohydric (mg/kg)	Sulphide - det (mg/kg)	Sulphate (SO4) - Water Soluble, 2:1 extract (mg/kg)	Sulphur - Free (mg/kg)	pH Value (Units)	¹Total Poly Aromatic Hydrocarbons (mg/kg)	Asbestos	Mineral Oils & Grease (mg/kg)	Chloride (mg/kg)	TPH by GC FID (mg/kg)	Calorific Value (J/g)
ICRCL Threshold Level - domestic gardens, allotments			10	3	600	500	1	3	+	+	+	+	+	5	+	+	+	+	+	+	+	+	+	+
ICRCL Threshold Level - parks, playing fields, open space			40	15	1000	2000	20	6	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ICRCL Threshold Level - Any uses where plants are to be grown			+	+	+	+	+	+	3	130	70	300	+	+	+	+	+	+	+	+	+	+	+	+
ICRCL Threshold Level - domestic gardens, allotments and landscaped areas			+	+	+	+	+	+	+	+	+	+	25	+	+	2000	+	<5	+	+	+	+	+	+
ICRCL Threshold Level - domestic gardens, allotments and play areas			+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50	+	+	+	+	+
ICRCL Threshold Level - Landscaped areas, buildings, hard cover			+	+	+	+	+	+	+	+	+	+	+	5	+	+	+	+	1000	+	+	+	+	+
ICRCL Threshold Level - buildings and hard cover			+	+	+	+	+	+	+	+	+	+	100	+	+	2000	+	No Limit	+	+	+	+	+	+
ICRCL Threshold Level - for all proposed uses			+	+	+	+	+	+	+	+	+	+	+	+	250	+	5000	+	+	+	+	+	+	+
Exploratory Hole	Depth (mbgl)	Soil Type																						
SPORTS STADIUM & RECREATIONAL GROUND																								
TP1	0.40	MG	32	<1	36	247	0.7	<1	1.0	236	62	409	-	-	-	5900	-	7.44	-	-	-	-	-	-
TP2	1.50	MG	82	2	34	631	0.8	2	2.1	173	75	845	<1	<1	<20	91	60.5	7.41	36.04	Absent	-	-	<5	1267
TP3	2.50	MG	88	2	39	2810	0.3	2	2.5	701	95	1250	-	-	-	103	-	7.26	12.57	-	<19	-	<6	-
TP4	1.50	MG	53	55	29	327	0.2	6	1.3	214	67	664	<1	<1	-	141	-	7.47	47.19	Absent	-	-	-	-
TP5	0.50	MG	22	<1	25	370	0.8	<1	1.3	57	29	159	<1	<1	-	66	-	11.06	127.39	-	86	-	-	-
TP6	0.50	MG	36	<1	45	663	2	<1	0.7	287	108	474	22	<1	-	39	-	7.47	129.52	Present	-	20	-	718
TP7	1.50	MG	35	<1	41	2290	2.7	<1	0.9	201	74	1400	<1	<1	-	46	-	7.51	155.86	Absent	-	-	-	-
TP8	0.50	MG	43	<1	33	306	0.1	<1	1.1	190	87	331	1	<1	-	42	-	6.60	-	Absent	-	<10	-	-
TP8	2.50	MG	26	<1	51	273	0.3	<1	4.1	91	63	276	-	-	-	445	-	7.33	5.29	-	44.1	-	<5	-
TP12	1.50	MG	67	<1	37	415	0.6	3	2.2	380	99	899	<1	<1	-	661	-	7.08	160.96	-	292	65	-	-
TP13	0.50	MG	-	-	-	-	-	-	-	-	-	-	-	-	<20	-	46.9	-	-	Present	-	-	-	-
TP13	2.50	MG	12	4	20	71	<0.1	<1	1.8	35	21	179	<1	<1	-	167	-	9.35	40.04	-	49.8	240	-	-
TP14	0.40	MG	16	<1	86	111	0.2	<1	0.3	71	61	170	-	-	-	3570	-	7.88	-	-	<19	-	-	-
TP15	1.50	MG	23	<1	93	269	0.5	<1	1.3	198	55	322	<1	<1	<20	32	74.6	7.33	274.35	Absent	-	-	-	552
TP16	0.50	MG	26	<1	21	546	0.2	1	0.7	8600	74	537	<1	<1	-	54	-	6.69	15.88	-	-	30	-	-
TP17	0.50	MG	17	<1	21	766	0.7	<1	0.6	183	44	322	-	-	-	29	-	7.97	-	-	-	-	-	-
TP17	2.50	MG	24	<1	43	275	2.2	<1	5.7	74	39	269	<1	<1	<20	291	44.1	7.93	27.03	Absent	1820	185	<5	221
TP17	3.50	MG	25	<1	45	307	1.4	<1	7.6	51	39	225	-	-	-	396	-	7.81	-	-	-	-	-	-
TP18	1.50	MG	10	<1	25	91	0.1	<1	1.3	11600	89	162	<1	<1	<20	91	<10	8.36	4.16	Present	373	25	-	135
TP18	3.50	MG	21	<1	50	146	0.3	<1	6.1	1120	53	260	-	-	-	81	-	7.37	-	-	-	-	-	-
TP19	0.50	MG	4	<1	47	26	<0.1	<1	0.5	18	51	80	<1	<1	<20	43	37.4	8.06	243.51	Absent	-	15	-	-
TP20	0.50	MG	17	<1	26	123	0.1	<1	3.2	54	29	105	-	-	<20	145	168	10.82	-	Absent	311	395	-	-
TP20	1.50	MG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13.55	-	-	-	-	-
TP20	3.50	MG	17	<1	58	40	<0.1	<1	2.5	18	52	174	<1	2	-	72	-	8.45	-	-	-	-	-	-
TP21	1.50	MG	60	1	44	410	47.2	<1	0.7	1320	92	1750	1	5	-	53	-	7.14	41.11	Present	-	-	-	-
BH1	1.00 - 1.20	MG	57	<1	30	411	0.7	<1	0.9	115	54	408	<1	<1	-	42	-	7.77	-	Absent	-	-	-	-
BH3	0.80 - 1.10	MG	43	<1	49	1620	1.4	1	0.7	255	78	973	-	-	-	58	-	7.29	-	Absent	-	20	-	925
BH4	0.80 - 1.10	MG	60	<1	31	510	<0.1	2	0.8	250	102	566	-	-	-	37	-	6.17	-	-	-	-	-	-
BH5	0.30 - 0.60	MG	19	<1	22	45	<0.1	<1	0.2	167	57	118	-	-	-	44	-	7.48	-	Absent	-	-	-	935
BH2	2.40	MG/ALL	28	<1	55	208	0.4	<1	5.5	64	41	318	-	-	-	390	-	7.66	-	-	-	-	-	-
TP16	2.50	ALL	6	<1	27	35	<0.1	<1	1.4	29	21	76	-	-	-	45	-	7.43	-	-	-	-	-	-
TP19	2.50	ALL	11	<1	41	102	0.2	<1	1.7	116	42	127	-	-	-	172	-	8.84	-	-	-	-	-	-
COMPTON WEBB SITE & RIVERSIDE EMBANKMENT																								
TP22	0.50	MG	12	<1	14	31	0.1	<1	0.5	36	24	86	<1	<1	-	29	-	8.37	7.48	-	-	30	-	235
TP25	1.50	MG	25	<1	34	239	0.5	<1	1.2	53	31	144	<1	<1	-	393	-	10.45	20.49	Absent	-	-	-	231
TP28	0.50	MG	10	<1	35	32	<0.1	<1	0.9	13	43	110	<1	<1	<20	27	41.6	7.86	1.60	Absent	-	10	-	-
TP29	0.50	MG	18	<1	42	50	<0.1	<1	1.1	24	36	113	<1	<1	<20	82	40.9	8.21	-	Absent	-	80	-	67
BH7	0.20 - 0.50	MG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Absent	-	-	-	-
BH8	0.20 - 0.50	MG	16	<1	47	68	0.1	<1	0.5	27	40	153	<1	<1	-	69	-	9.82	-	-	-	-	-	-
BH10	0.70 - 1.00	MG	61	<1	33	182	0.3	<1	0.7	39	35	268	-	-	-	68	-	8.28	-	Absent	-	-	-	-
TP30	0.50	MG/ALL	13	<1	60	30	<0.1	<1	2.8	14	39	88	<1	<1	-	23	-	7.33	-	-	-	-	-	-
BH9	0.50	MG/ALL	15	<1	52	50	0.1	<1	1.2	20	39	99	-	-	-	12600	-	8.08	-	-	-	-	-	-
TP23	0.50	ALL	13	<1	58	38	<0.1	<1	2.1	11	40	115	<1	<1	<20	14	48.1	8.02	-	-	-	-	-	-
TP24	0.50	ALL	12	<1	50	29	0.1	<1	1.9	17	43	101	-	-	-	18	-	7.33	-	-	-	40	-	-
TP26	0.50	ALL	26	<1	41	128	0.4	<1	1.4	40	40	164	-	-	-	36	-	6.39	-	-	-	20	-	-
TP27	1.50	ALL	13	<1	55	35	<0.1	<1	1.8	15	46	100	-	-	-	18	-	7.91	-	-	-	-	-	-
TP29	2.50	ALL	18	<1	51	30	<0.1	<1	1.6	13	40	104	-	-	-	93	-	8.46	8.88	-	<19	-	<5	-
BH11	0.40	ALL	23	<1	50	124	1	<1	3.2	55	46	177	-	-	-	46100	-	7.47	-	-	-	-	-	-

Notes: [shaded] = Reference Value used in the assessment.
* = Reference value for Free Cyanide set within ICRCL 59/83 (2nd edition) has been used in the evaluation of the analysis result.
\+ = No Reference Value for this parameter has been set.
\- = Measurements of this parameter have not been undertaken.
=Relevant reference value has been exceeded
MG = Made Ground
ALL = Alluvium
¹ = Value for Total Poly Aromatic Hydrocarbons is the summation of 16 No. individual compounds for which tests have been undertaken (Acenaphthene, Acenaphthylene, Anthracene, Benz[a]anthracene, Benz[k]fluoranthene, Benzo[a]pyrene, Benzo[b]fluoranthene, Benzo[ghi]perylene, Chrysene, Dibenz[a]anthracene, Fluoranthene, Fluorene, Indo[123-cd]pyrene, Naphthalene, Phenanthrene, Pyrene)

APPENDIX E - Chemical Analysis Results - Groundwater

		Arsenic (mg/l)	Cadmium - Total (mg/l)	Chromium - Total (mg/l)	Lead - Total (mg/l)	Mercury - Total (µg/l)	Selenium - Total (mg/l)	Boron (mg/l)	Copper - Total (mg/l)	Nickel - Total (mg/l)	Zinc - Total (mg/l)	Cyanide - Total (mg/l)	Phenols - Monohydric (mg/l)	Sulphate (mg/l)	pH Value (units)	Chloride (mg/l)	Ammoniacal Nitrogen (mg/l)	Chemical Oxygen Demand - Total (mg/l)	Biological Oxygen Demand - ATU (mg/l)	Iron (mg/l)	Electrical Conductivity (µS/cm)
Water Supply (Water Quality) Regulations 1989 - Maximum Concentration or Value		0.050	0.005	0.05	0.05	1.00	0.01	2.00	3.00	0.05	5.00	0.05	0.0005	250	+	400	0.5	+	+	0.21	+
Dutch List - Target Value		0.010	0.0004	0.001	0.015	0.00005	+	+	0.015	0.015	0.065	0.005	0.0002	+	+	+	+	+	+	+	+
Dutch List - Intervention Value		0.060	0.006	0.03	0.075	0.0003	+	+	0.075	0.075	0.800	1.500	2.000	+	+	+	+	+	+	+	+
Exploratory Hole	Depth (mbgl)																				
SPORTS STADIUM & RECREATIONAL GROUND																					
BH1 (purged)	-	0.220	<0.007	0.03	1.12	5.05	<0.001	0.45	0.54	0.17	2.03	<0.01	<0.05	72	6.87	18	<0.1	657	<3	63.0	1140
BH2 (purged)	-	0.013	<0.007	<0.01	0.06	0.54	<0.001	0.43	0.04	<0.04	0.18	<0.01	<0.05	65	7.08	78	0.3	291	<3	10.6	1210
BH3 (purged)	-	0.070	<0.007	0.17	<0.50	1.08	<0.001	1.24	0.12	0.30	0.55	<0.01	<0.05	210	7.09	217	0.4	333	<3	91.0	2280
BH4 (purged)	-	0.040	0.007	0.13	0.72	<0.02	<0.001	0.97	0.78	0.63	3.99	<0.01	<0.05	262	6.96	653	9.4	1580	40	274.0	2740
BH5 (purged)	-	0.080	<0.007	0.03	0.43	1.86	<0.001	0.58	0.41	0.07	0.99	<0.01	<0.05	128	7.01	29	0.9	310	<3	47.1	1130
BH6 (purged)	-	0.110	<0.007	0.07	0.41	0.28	<0.001	0.91	0.38	0.27	1.86	<0.01	<0.05	194	7.19	22	0.6	187	<3	106.0	955
COMPTON WEBB SITE & RIVERSIDE EMBANKMENT																					
BH7 (purged)	-	0.090	<0.007	0.08	<0.50	0.12	<0.001	0.10	0.08	0.70	0.92	<0.01	<0.05	48	7.26	48	<0.1	344	<3	87.0	632
BH8 (purged)	-	0.100	<0.007	0.09	0.19	0.32	<0.001	1.30	0.20	0.23	1.17	<0.01	<0.05	139	7.03	2180	1.1	848	18	132.0	6800
BH9 (purged)	-	0.100	0.013	0.27	<0.50	0.14	<0.001	0.32	0.38	0.69	1.54	<0.01	<0.05	94	6.86	894	6.5	411	16	279.0	3300
BH10 (purged)	-	0.120	<0.007	0.06	0.21	0.48	<0.001	0.81	0.25	0.23	1.44	<0.01	<0.05	204	7.02	903	4.4	1230	<20	116.0	3820
BH11 (purged)	-	0.049	<0.007	0.01	0.06	0.35	<0.001	0.21	0.28	0.13	0.71	<0.01	<0.05	74	7.18	99	32.0	460	3.2	29.4	1030

Notes = Reference Value used in the assessment.

\+ = No Reference Value for this parameter has been set.

\- = Measurements of this parameter have not been undertaken.

= Relevent reference value has been exceeded

Appendix E - Chemical Analysis Results - Leachability Tests

			Arsenic - Total (mg/l)	Cadmium - Total (mg/l)	Chromium - Total (mg/l)	Lead - Total (mg/l)	Mercury - Total (µg/l)	Selenium - Total (mg/l)	Boron (mg/l)	Copper - Total (mg/l)	Nickel - Total (mg/l)	Zinc - Total (mg/l)	*Cyanide - Total (mg/l)	Phenol - Monohydric (mg/l)	#Sulphur - Total (mg/l)	Sulphate (mg/l)	pH Value (unit)	Chloride (mg/l)	Ammoniacal Nitrogen (mg/l)	Chemical Oxygen Demand - Total (mg/l)	Electrical Conductivity (µS/cm)
			0.06	0.004	0.03	0.015	0.003		2	0.075	0.075	0.8										
EA Interim Guidance - Disposal of Contaminated Soils (2nd Edition) Leachate Quality Threshold			0.01	0.001	0.05	0.05	1.00	0.01	2.00	0.07	0.04	4.50	0.05	0.0003	150	150	5.5 - 9.5	200	0.50	+	+
Exploratory Hole	Depth (mbgl)	Soil Type																				
SPORTS STADIUM & RECREATIONAL GROUND																						
TP4	2.50	MG	<0.005	<0.007	<0.01	<0.05	<0.02	<0.001	<0.05	<0.01	<0.04	<0.02	<0.01	<0.05	-	85	8.99	-	-	<20	181
TP7	1.50	MG	<0.005	<0.007	<0.01	<0.05	<0.02	<0.001	0.05	<0.01	<0.04	0.08	<0.01	<0.05	2.3	19	8.03	<10	0.20	<20	95
TP8	1.50	MG	<0.005	<0.007	<0.01	<0.05	0.06	<0.001	<0.05	<0.01	<0.04	0.07	<0.01	<0.05	-	12	7.04	-	-	<20	37
TP14	0.40	MG	<0.005	<0.007	<0.01	<0.05	<0.02	<0.001	<0.05	<0.01	<0.04	<0.02	<0.01	<0.05	<1.0	4	7.74	<2	<0.01	<20	44
TP16	1.50	MG	<0.005	<0.007	<0.01	<0.05	<0.02	<0.001	0.06	<0.01	<0.04	<0.02	<0.01	<0.05	1.6	10	7.11	<2	<0.01	<20	30
TP17	2.50	MG	<0.005	<0.007	<0.01	<0.05	0.07	<0.001	0.37	<0.01	<0.04	<0.02	<0.01	<0.05	-	67	8.03	-	-	32	320
TP18	2.50	MG	<0.005	<0.007	<0.01	<0.05	0.33	<0.001	0.21	<0.01	<0.04	0.02	<0.01	<0.05	-	65	7.40	-	-	<20	145
TP19	1.50	MG	<0.005	<0.007	<0.01	<0.05	0.05	<0.001	<0.05	<0.01	<0.04	<0.02	<0.01	<0.05	3.0	13	7.59	<2	0.02	<20	56
TP20	2.50	MG	<0.005	<0.007	<0.01	<0.05	0.04	<0.001	0.12	<0.01	<0.04	<0.02	<0.01	<0.05	2.4	13	7.36	<2	0.05	<20	69
COMPTON WEBB SITE & RIVERSIDE EMBANKMENT																					
TP29	2.50	ALL	<0.005	<0.007	<0.01	<0.05	0.03	<0.001	0.13	<0.01	<0.04	<0.02	<0.01	<0.05	-	29	8.20	-	-	<20	214

Notes = Reference Value used in the assessment.

* = Reference value for Free Cyanide set has been used in the evaluation of the analysis result.

\# = Reference value for Free Sulphur set has been used in the evaluation of the analysis result.

\- = Measurements of this parameter have not been undertaken.

= EA Leachate Quality Threshold has been exceeded.

MG = Made Ground

ALL = Alluvium