Defence Infrastructure Organisation Land Quality Assessment Combined Phase 1 & Phase 2 GPSS Portfolio: Turriff Former Petroleum Storage Depot

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Defence Infrastructure Organisation

Land Quality Assessment

Combined Phase 1 And 2

GPSS Portfolio: Turriff Former Petroleum Storage Depot

Final

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Land Quality Statement

Introduction and Terms of Reference

Atkins Limited (Atkins) was instructed by the Defence Infrastructure Organisation (DIO) branch of the Ministry of Defence (MOD) to carry out a Combined Phase 1 and 2 Land Quality Assessment (LQA) of the Government Pipelines and Storage System, Portfolio: Turriff Petroleum Storage Depot (PSD), hereafter called the Site, under contract FTS3/ELMG/101 between Atkins and DIO. This Combined Phase 1/2 LQA is required to assess the environmental quality of the Site and evaluate potential environmental liabilities from contamination associated with the Site.

Site Location and Surrounding Land Use

The Site is situated either side of Station Road (A947, Turriff to Oldmeldrum trunk road) approximately 400m to the south of the town of Turriff in Aberdeenshire. The Site occupies an area of approximately 1.85-hectares and is split into i) Area 1 which is approximately 0.9-hectares and is to the north-east of the A947 and south-east of an agricultural depot. Area 1 was formerly the road loading gantry, various other service buildings, pump houses and the area formerly occupied by the rail sidings and rail loading gantry; and ii) Area 2 which is approximately 0.95-hectares and to the south-west of the A947 and includes located four former aboveground storage tanks (ASTs) for fuel.

Surrounding land is predominantly agricultural land (arable) to the north-east, north-west, west and southwest, residential properties close to the north-west boundary of Area 1, with an agricultural machinery depot between Area 1 and Area 2 and Millmoss Farm to the south-east of Area 1.

Site Description

The Site was previously used for the storage and distribution of aviation fuel. Area 1, to the north-east of the A947, includes former rail and road loading areas, gatehouse, mess room, office building, three aboveground storage tanks (ASTs), two underground storage tanks (UST), a lube oil pump house, a spirit pump house, a hose exchange pit, septic tank and interceptor. Area 2, to the south-west of the A947 includes fire house, four ASTs, interceptor and pipe manifold. An underground pipeline connected the ASTs on Area 2 with the infrastructure on Area 1.

Site History

Historic maps show that the Site was agricultural land until it was developed as a PSD in the 1950s. Operations included the storage of aviation fuel and lube oil in underground and aboveground tanks, together with road and rail loading. The Site was mothballed in 1992.

Environmental Setting

Published information indicates the Site is underlain by variable Superficial Deposits including Alluvium, Glaciofluvial Deposits and Devensian Till. Bedrock is shown to be either the Gardenstown Conglomerate Formation or MacDuff Formation (psammite and pelite). Site-specific information from Atkins' Phase 2 LQA indicates that Made Ground is present to 2.3m below ground level (bgl) resting on Superficial Deposits (clay, sand, gravel, silt) to 4.2 and 6mbgl underlain by sandstone bedrock.

Bedrock and Superficial Deposits are aquifers and the Site is in a drinking water protection zone. Groundwater has been identified in the natural strata at 1.8 and 2.12mbgl.

The Burn of Turriff, which flows to the north-west is approximately 100m to the north-east and east of Area 1.

Site Sensitivity

Receptors	Sensitivity	Summary Description
Groundwater High Groundwater sensitivity is considered to be high because of the u Ythan Valley Sand and Gravel groundwater body		Groundwater sensitivity is considered to be high because of the underlying Upper Ythan Valley Sand and Gravel groundwater body
Surface Waters Medium to High Surface water sensitivity is considered to be medium Burn of Turriff which is likely to be in hydraulic contin the Site. The Burn of Turriff has an associated prote for freshwater fish		Surface water sensitivity is considered to be medium to high because of the adjacent Burn of Turriff which is likely to be in hydraulic continuity with groundwater underlying the Site. The Burn of Turriff has an associated protected area of the River Deveron for freshwater fish
Flora/Fauna	Low	Ecological sensitivity is considered to be low because there are no designated ecological systems on or within 1km of the Site.

Potential Sources of Contamination

Based on the information reviewed as part of Atkins' Phase 1 LQA, potential sources of contamination were identified and a preliminary conceptual site model (CSM) developed, together with potential contaminant linkages (PCLs) or source-receptor-pathway linkages. Potential on-site sources were considered to include potential leaks/spills of hydrocarbons from former tanks, pipework, road and rail loading areas and infrastructure.

On- and off-site humans, groundwater, surface water, donkeys and property (buildings and infrastructure) were identified as potential receptors to the sources of contamination listed above and the PCLs were subject to a preliminary qualitative environmental risk assessment.

Phase 2 Site Investigation

PCLs related directly to past Site operations and considered to pose a potential moderate or high risk were investigated as part of the Phase 2 LQA. This comprised the advancing of three dynamic boreholes to 10mbgl installed with combined groundwater/ground gas monitoring installations and 13 window samples to 5mbgl. Samples of soil and groundwater were analysed for Total Petroleum Hydrocarbons (TPH), Polycyclic Aromatic Hydrocarbons (PAHs), benzene, toluene, ethyl benzene, xylenes (BTEX), MTBE, tetraethyl and tetramethyl lead and asbestos. A generic quantitative risk assessment (GQRA) for human, controlled waters and property receptors was carried out by comparison of soil and water concentration data with generic assessment criteria (GAC) for human receptors and groundwater concentration data with minimum reporting values (MRV) and resource protection values (RPV) for the groundwater receptor and environmental quality standards (EQS) for the surface water receptor. Ground gas results were assessed for human and property receptors.

No asbestos containing material was detected in the soil samples analysed. None of the contaminants detected in the soil and groundwater samples analysed were above the human health GAC for commercial land use.

In addition, no contaminants were identified above the laboratory method detection limit, MRV/RPV and EQS in the groundwater samples analysed.

The Site Characteristic Situation (CS) for carbon dioxide and for methane was CS1.

Environmental Risk Assessment

Based on the Phase 2 Site Investigation and subsequent GQRA, an environmental risk assessment of the PCLs identified has been carried out and is summarised below.

 A moderate risk has been identified to current/future construction/maintenance workers from contaminants in soil and groundwater even if they do not exceed the GAC because they may be in direct contact with contaminants when they are required to excavate and handle soil. However, this will be reduce to low risk if robust risk assessments are carried out to identify appropriate personnel protective equipment and suitable working methods to protect these receptors, in accordance with current guidance and recommended good working practices;

- A low risk has been identified to current/future on-site human receptors from the contamination detected in the soil/groundwater;
- a low risk has been identified to current/future off-site human receptors from the contamination detected in the soil/groundwater;
- a low risk has been identified to groundwater from the contamination detected in the soil/groundwater;
- a low risk has been identified to surface water from the contamination detected in the soil/groundwater;
- a low risk has been identified to current/future on-site human receptors from the methane/carbon dioxide detected;
- a low risk has been identified to current/future off-site human receptors from the methane/carbon dioxide detected;
- a negligible risk has been identified to on-site property from the contamination detected in the soil/groundwater and from the methane detected; and
- a negligible risk has been identified to off-site property from the contamination detected in the soil/groundwater and from the methane detected.

It should be noted that the assessment of ground gas and groundwater risks has been based on one round of monitoring only and the high groundwater level in the monitoring boreholes may have influenced the ground gas results. However, no particular ground gas sources were identified and as such, on the balance of probabilities, the ground gas CS is unlikely to change if further monitoring was to be carried out.

Identified risks to groundwater could increase or decrease based on further monitoring.

Overall Land Quality and Suitability for Redevelopment

Based on the Combined Phase 1/2 LQA carried out, the Site is considered suitable for use as a PSD (i.e. commercial/industrial), although it should be noted that assessment of ground gas and groundwater associated risks are based on only one round of monitoring.

1. Introduction

1.1. Terms of Reference

The Defence Infrastructure Organisation (DIO) commissioned Atkins Limited (Atkins) to undertake a Combined Phase 1 and 2 Land Quality Assessment (LQA) of sites in the Government Pipelines and Storage System (GPSS) Portfolio under contract FTS3/ELMG/099 between Atkins and DIO. The GPSS is a UK pipeline system run by the Oil and Pipelines Agency (OPA) for the Ministry of Defence (MOD) and consists of approximately 2,500km of pipeline and associated facilities. The network, interconnected with several private networks, was constructed before WW2 to supply fuel for Operation Pluto.

This report relates to the Turriff Petroleum Storage Depot (PSD), hereafter also called the Site. The Site was used for the storage and distribution of aviation fuel but was mothballed circa 1992 and is now inactive and non-operational.

1.2. Objectives

It is MOD policy to undertake a voluntary programme to 'assess land quality across the defence estate' to 'provide a proper knowledge of the condition of the estate and ensure that it is 'suitable for use' and not causing harm to the environment. Where it is identified that unacceptable risk is posed by the presence of contamination, action must be taken to reduce and control the risks to an acceptable level. The MOD has implemented the LQA process to achieve this aim and undertakes phased investigations where potential risks are identified to human and environmental receptors from contamination. This process is described in the DIO Practitioner Guide 07/12¹.

Objectives of this LQA are to determine potential environmental liabilities associated with each Site in the portfolio as part of the GPSS divestiture programme.

1.3. Methodology

The initial phase of the LQA process is the Phase 1 LQA (Desk Study) which develops a preliminary conceptual site model (CSM). The CSM describes the relationships between contaminants, pathways and receptors and identifies potential contaminant linkages (PCLs) where a source, pathway and receptor linkage is considered to exist. Based on the preliminary CSM and PCLs, potential unacceptable contamination risks associated with the Site can be identified. The Phase 2 LQA (Site/Ground Investigation) is carried out to investigate the PCLs and update the preliminary CSM.

This LQA Report sets out the factual information and other evidence gathered through a combined desk based assessment and site investigation relating to the environmental condition of the Site. The report establishes the overall Site condition by identifying and investigating PCLs and providing an appraisal of environmental risks, identifying potential unacceptable contamination risks and the interaction of those risks with the surrounding environment. This has informed potential environmental liabilities from contamination associated with the Site.

It is understood that the Site is effectively mothballed, with fuel storage and loading facilities now inactive. At this stage, proposed future use has not been identified. Therefore, for the purposes of the LQA, Atkins has assumed that proposed future use will remain the same as past use (PSD) and potential risks have been assessed for commercial and industrial end-use scenarios only.

¹ Contaminated Land Management: Land Quality Assessment (LQA) Management Guide, 07/12, Estates Strategy and Policy Group, January 2013

1.4. Scope of Work and Sources of Information

The following has been carried out:

- Phase 1 Desk Study comprising:
 - review of the Envirocheck Report² from the Landmark Information Group, including _ historical maps. Historical maps are presented in Appendix A and the Envirocheck Report is presented in Appendix B;
 - review of current topographic Ordnance Survey (OS) map; -
 - review of published geology including the Geology Datasheet included with the Envirocheck Report in Appendix B which is based on the British Geological Survey (BGS) geology map of Turriff³;
 - review of the BGS Geoindex website⁴;
 - review of the Scottish Environment Protection Agency⁵ and Aberdeenshire District Council⁶ websites:
 - review of the Multi-Agency Geographic Information for the Countryside (MAGIC) website⁷:
 - review of the Historic Scotland⁸ and the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS)⁹websites;
 - review of the Scottish Natural Heritage¹⁰ website; -
 - Information provided by the Site including; Drainage and Water Plan 2384-3 (1943) summarised throughout this report;
 - request for information from and discussion with Costain (Site Facility Management Company) and the OPA regarding building layout and use, past operations, below and aboveground tanks and pipework, drums storage areas (including petrol, oil and lubricant stores), waste arisings, handling and storage, water source and use, wastewater streams, treatment (for example, interceptors), and discharges, asbestos containing material, polychlorinated biphenyls (PCBs) in equipment and past pollution incidents. It should be noted that a water and drainage plan were provided but no existing reports were available for review from the OPA, DIO or Costain; and
 - Site Reconnaissance by Atkins and Costain (Facility Management Company) on 17th September 2012 to carry out a detailed inspection of the Site and identify potential locations for and constraints associated with the Phase 2 Site Investigation. A photographic record of the Site Reconnaissance is included in Appendix C;
- Phase 2 Site Investigation comprising:
 - Project Set-up and Preparation. This has included all aspects of project set up and preparation for the works and preparation and agreement of the Design Brief/Method Statement for the site investigation works, and
 - Site Investigation, the details of which are summarised in Chapter 4 of this report;
- Environmental Risk Assessment, presented in Chapter 5 of this Report; and
- Reporting.

http://bgs.ac.uk

² Envirocheck Report Number 5106238, Landmark Information Group, November 2011
³ Geology Map number S86E of Turriff and Huntly, British Geological Survey, 1998

http://sepa.org.uk/ http://www.aberdeenshire.gov.uk/index.asp

http://www.magic.gov.uk

http://www.historic-scotland.gov.uk/

http://www.rcahms.gov.uk/

http://www.snh.gov.uk

It should be noted that the Phase 1 information indicated that the Site had not been used for MOD activities in the past. As such, Atkins considered that it was not necessary to obtain a Defence Radiological Protection Services (DRPS) Radiological Desk Study Report, explosive ordnance clearance documentation or carry out further enquiries into the potential for burning grounds or MOD specific contaminants to be present.

All work has been carried out with due regard for UK national and regional policies relevant to the assessment and industry standards, guidance and codes of conduct.

1.5. Structure of this Report

This report has been structured as follows:

- Chapter 2 presents the Phase 1 LQA findings including a description of the Site, location and surrounding land, layout, operations and history, together with environmental setting and Site sensitivity, based primarily on information collected as part of the Phase 1 LQA data sources;
- Chapter 3 identifies potential sources of contamination, receptors and pathways based on the Phase 1 LQA data sources and presented the preliminary CSM (PCSM);
- Chapter 4 describes the Phase 2 site investigation carried out and investigation findings;
- Chapter 5 presents the environmental risk assessment and updated CSM; and
- Chapter 6 presents the conclusions of this Combined Phase 1 and Phase 2 LQA.

2. Site Description and Setting

2.1. Site Location

The Site is situated either side of Station Road (A947, Turriff to Oldmeldrum trunk road) approximately 400m to the south of the town of Turriff in Aberdeenshire. The Site is centred at National Grid Reference (NGR) 372877 849076 as shown in Figure 1 (Drawing no. 5106238-DWG-051). The Site occupies an area of approximately 1.85-hectares (18,500m²) and is split into two individual areas:

- Area 1: Area 1 is approximately 0.9-hectares and is to the north-east of the A947 and southeast of an agricultural depot. Area 1 was formerly the road loading gantry, various other service buildings, pump houses and the area formerly occupied by the rail sidings and rail loading gantry; and
- Area 2: Area 2 is approximately 0.95-hectares and to the south-west of the A947 and includes located four former aboveground storage tanks (ASTs) for fuel.

2.2. Surrounding Area

Surrounding land use is a mixture of agricultural (arable); light industrial and residential and the two areas have been considered as one (the Site), as described below:

- North: The A947 (Station Road) is to the north-east of Area 2 and south-west of Area 1 and there are residential properties to the north-west of Area 1, along the A947. A former railway is to the north-east of Area 1 in the shallow valley of the Burn of Turriff. A former landfill is within 50m of Area 1 but now covered with rough vegetation. The Burn of Turriff is approximately 100m to the north and flows from the south-east to north-west. An open area occasionally used for agricultural shows is on the northern side of the Burn;
- East: The former railway is to the east with an area of grassland and two ponds beyond and the Burn of Turriff further to the east. Millmoss Farm is adjacent to the south-east and includes an agricultural nursery and garden centre. Cattle are occasionally grazed at the farm. Agricultural land (arable) lies beyond further east;
- South: The A947 Turriff to Oldmeldrum trunk road continues to the south of the Site with agricultural land (arable) with some woodland beyond;
- West: Agricultural land lies to the west of the Site (Area 2). Little Turriff (residential) is to the north-west, along the A947 and a caravan and camp site are beyond to the north-west; and
- Central: An agricultural machinery depot is between Area 1 and Area 2 on the north-east side of the A947 and sells plant and associated equipment. Various items of equipment were stored, including drums of hydraulic fluid on the north side of the depot in the yard. These were stored on wooden pallets resting on the ground surface (coarse gravel). The yard is adjacent to the boundary of Area 1.

There are two landfills within 250m of the Site. These are approximately 11m and 60m to the north-west of Area 2. Both are small in size (equal to or greater than 10,000 and less than 25,000 tonnes per year) comprising inert waste only and the status is dormant (and superseded). The Envirocheck Report states that the landfills occupy the area to the north and north-east of the Site between the Site and the Burn of Turriff. Anecdotal evidence obtained during Atkins' Site Reconnaissance indicates that deposition of material in the landfill to the north of the Site commenced in the mid-1970s with predominantly demolition material from 1980 to 2006. The land was leased from a local farmer and is now rough grass.

2.3. Site Description

The Site description below has been based on review of the data listed in Chapter 1, discussion with Costain/OPA and Atkins' Site Reconnaissance. A photographic record of Atkins' Site Reconnaissance is included in Appendix C. No visual or olfactory indications of potential contamination were noted during Atkins' Site Reconnaissance, with no vegetation dieback or evidence for Made Ground. The Site layout is shown on Figure 2 (Drawing no. 5106238-DWG-052).

2.3.1. Site Activities

Turriff PSD formerly used for the storage and distribution of aviation fuel (kerosene) to RAF Lossiemouth approximately 45km to the north-west via an underground pipeline. The Site has been mothballed and is understood to have been decommissioned in 1992.

Access to both Areas is gained from the A947. Area 1 to the north-east is surrounded by a fence and access is gained via two gates. The first, set back from the A947, does not preclude trespassers but the second, more substantial gate, is present at the former gatehouse.

Area 2 is surrounded by a wire mesh fence and access is via a locked gate from the A947 to the north-east.

Domesticated animals (donkeys) were observed grazing on Area 1 during Atkins' Site Reconnaissance.

Each of the two Areas is described in more detail below.

2.3.2. Area 1

Access is gained to Area 1 from the A947 via a tarmac road. The access road runs south-east from the gatehouse and forms a loop within the Site. The road is surfaced with concrete but the rest of the Site is grass.

A gatehouse and office building are present at the entrance to Area 1 with a mess room adjacent to the gatehouse. These are single story buildings with a pitched roof and ridged concrete panels. It was not possible to access the buildings during Atkins' Site Reconnaissance.

There is a former lube oil pump house (LOPH), spirit pump house (SPH) and hose exchange pit (HEP) in the south of Area 1. The majority of the pipework is routed underground but exposed pipework was noted at various facilities, such as the HEP and former road loading gantry during Atkins' Site Reconnaissance.

The former road loading gantry is present to the north of the office. Painted surfaces were observed to be in poor condition during Atkins' Site Reconnaissance and part of the roof covering of the gantry was corrugated concrete panels, some of which had fallen off and lay broken on the ground. An oil filter was observed to the north of the former road gantry.

There is a break in slope running parallel along the roadway on the north-east side which runs the whole length of Area 1, but is greater and steeper toward the north. This break of slope separates the former rail loading gantry and railway sidings in the north-east from the rest of Area 1.

The former rail loading gantry and railway sidings were along the north-east boundary but no evidence of these former structures was observed during Atkins' Site Reconnaissance and the area is now covered by grass. A flight of stairs leads down from the side of the SPH.

An overhead service is present along the west side of the access road, along the boundary with the agricultural machinery depot.

There are two underground storage tanks (USTs) formerly used for the storage of lube oil. The USTs are located immediately to the south-west of the LOPH, to which they are likely connected via an underground pipeline. No further information could be gathered regarding these ASTs with respect to storage capacity, construction type or age.

Two steel ASTs are present at the former road gantry. One is cylindrical and raised aboveground level on a support and the second is rectangular. Both are within the same, shallow brick bund. A third AST is close to the LOPH. This is of steel construction and rectangular in shape and situated in a shallow brick bund. All three ASTs are estimated to have a similar capacity (approximately 1.5m³). No further information was available on the substances formerly stored in these ASTs.

An interceptor is present to the south-east of the gatehouse. This is concrete lined and appeared to be of a single chamber construction based on Atkins' Site Reconnaissance. All surface drainage is routed through the interceptor. According to the Site Drainage and Water plan, a septic tank (underground, not observed during walkover) is present to the south-east of the office building.

The Site Drainage and Water plan shows that all drainage at Area 1 is routed via the interceptor, with the exception of the septic tank overflow and both the septic tank and interceptor drain to a soakaway located off-site to the north-east of the former railway gantry/sidings via an underground pipe. The soakaway appeared to be formed of coarse rubble and approximately 3m x 3m x 1.8m in size based on Atkins' Site Reconnaissance.

2.3.3. Area 2

Access to Area 2 is from the A947 via a gate. The access leads onto a concrete apron, which was overgrown with grasses at the time of Atkins' Site Reconnaissance. No other roadways were observed across the Site, the majority of which was surfaced by overgrown grass.

A single building is present on Area 2 and is a former fire trailer pumphouse. Access to this building was possible during Atkins' Site Reconnaissance. There was a small trailer and approximately 40 plastic containers (estimated capacity of 15 litres). The nature of the substance within the containers was not established. Some staining was observed on the floor of the pumphouse.

Most of pipework across Area 2 is underground, but large diameter pipes were visible to the south-east of the Site during Atkins' Site Reconnaissance. These indicated the route of the underground pipeline to Area 1. It is understood that this pipeline was replaced around 1991.

There are five ASTs in Area 2. Four of the ASTs are large, circular, brick-built storage tanks, formerly used for the storage of aviation fuel (kerosene). The ASTs are arranged parallel to the A947 and are approximately 15m in diameter and 3m high. These tanks have been assigned numbers T01 - T04 in the absence of official identification. An earth bund is present to the northeast of the four ASTs and runs parallel to the A947. The bund is of an earth construction and is approximately 1m high and covered in grass.

The fifth AST is used to store water as an emergency water supply (EWS). The capacity of AST is 90m³ (20,000 Gallons). The sides of the AST are concrete, but the interior is plastic lined. At the time of Atkins' Site Reconnaissance, some water was present within the AST. The outlet valve is open to allow the egress of rainwater.

An interceptor is present in the north of Area 2, located between the former fire trailer pumphouse and the boundary with the A947. According to the Site Drainage and Water plan, the interceptor drains to a ditch running parallel to the A947. A pollution control sensor was observed at the interceptor during Atkins' Site Reconnaissance.

2.3.4. Summary of Materials Formerly Stored at the Site (Areas 1 and 2)

A summary of the materials formerly stored on the Site is given in Table 2.1, although Atkins understands that no materials are stored currently, with the exception of the containers of unknown substance observed within the former fire trailer pump house in Area 2.

Storage	Material Stored	Capacity	Containment	Bund Details	Status	Comments
UST	Lube oil	2 x capacity unknown	Unknown	Unknown	Disused since 1992	Area 1. Not observed
AST	Kerosene	4 x capacity unknown	Brick-built, unknown	Not observed	Disused since 1992	Area 2. Condition intact
AST	Unknown	3 x 1.5m3 (estimate)	Steel	Brick bund	Disused since 1992	Area 1. Condition intact
AST	Water	1 x 90m3	Concrete/plastic	None	Disused since 1992	Area 2. Condition intact
Drum Stores	Unknown	40 x 15l (estimate)	Within fire trailer pump house	None	Present on Area 2	Staining on floor of fire trailer pump house.

Table 2.1: Summary of Materials Formerly Stored on the Site

2.3.5. Waste

Waste materials generated during operation are not known.

2.3.6. Water

Water would have been provided for domestic/washing/sanitary but no other details are known.

2.3.7. Asbestos and Polychlorinated Biphenyls

Costain/OPA were not able to provide any information on asbestos containing material (ACM) in structures on the Site. It is possible that ACM is present in the roofing material of the gatehouse and office building of Area 1 and anecdotal evidence from Site staff suggests that ACMs may be present within the former fire trailer pump house building fabric. Costain/OPA have not been able to confirm whether PCBs are present in electrical equipment.

2.4. Site History

The Site appears to have been used as a PSD since around the late 1950s and has been inactive since 1992. Prior to its development, the Site appears to be principally used for agriculture.

2.4.1. On-Site

On-site history is summarised as follows:

- The 1870-1871 maps show the Site as agricultural land. The route of the present day A947 (Station Road) is also shown;
- Development of the Site is first shown in the 1959 (1:10,000 scale) map with the appearance of the roadway and some structures on Area 1;
- The 1964-1965 (1:2,500) map shows both Area 1 and Area 2 fully developed and labelled as 'Works'. The railway sidings are now present on Area 1 and the five ASTs and earth bund are shown on Area 2; and
- The 1975 map shows that the rail sidings within Area 1 have been removed. Thereafter, the layout remains the same as the present day.

2.4.2. Surrounding Area

Off-site history is summarised as follows:

• The 1870-1871 maps show the MacDuff to Aberdeen section of railway and embankment along the north-east boundary. Turriff Steam Mill (Corn) is approximately 100m to the north-west. A spring, well and reservoir are also shown to the north-west within 100m. Turriff Station (railway) is shown further to the north-west. Millmoss is to the south where two wells and a sluice are shown. Agricultural land is to the west. The Burn of Turriff flows south-east to north-west into an area of marsh to the north;

- By 1903, there has been expansion of Turriff Mill and Millmoss, with additional buildings shown. Little Turriff has expanded to the north-west of the Site;
- The 1926 map shows continued development with additional buildings in the surrounding area and the expansion of Turriff and Little Turriff. A residential property is now present at the northern Site boundary;
- The 1964-1966 map shows the area between Area 1 and Area 2 has been developed, but the function of the area is not shown. Two glasshouses labelled as 'Millmoss Nurseries' (agricultural) are shown to the south. The town of Turriff has continued to expand, particularly to the south;
- The area between Areas 1 and 2 is labelled in 1975 as a 'filling station'. The mainline railway to the north and north-east of the Site is shown as dismantled. The Mill to the north is now labelled as disused (in subsequent maps this is labelled as 'Works', and then 'The Auld Mill'). 'Tanks' are show approximately 50m to the north-west;
- The 1979-1984 map shows that the filling station between Area 1 and Area 2 is no longer labelled but the building has expanded in size when compared with the previous map. A caravan site is shown north of Little Turriff and an additional building is shown at Millmoss, to the south; and
- The 2012 map shows two ponds to the east of the Site indicating that they were constructed sometime between 2006 and 2012.

2.5. Environmental Setting and Site Sensitivity

2.5.1. Topography

The elevation of Area 1 ranges from approximately 40m to 45m above ordnance datum (AOD) and the elevation of Area 2 ranges from 45m to 55mAOD. The Area 1 access road slopes down to the main part of Area 1, which is relatively flat. The area of the former rail loading gantry and rail sidings has an elevation approximately 1m below the main part of Area 1, separated by a break of slope.

Area 2 slopes down from the south-west boundary to the north-east boundary with Station Road. The four ASTs are built into this slope to be level and a small (<1m) high earth bund runs along the north-eastern boundary.

2.5.2. Geology

Published geology indicates the Site is underlain by:

- Superficial Deposits: These are likely to consist of multiple types. Alluvium associated with the river flood plain consisting of clays, silts, sands and gravels is to the north of the Site. Glaciofluvial Deposits consisting of gravels, sands and silts are present beyond the Alluvium. Devensian Till may be to the south and under Area 2;
- Bedrock: The Site lies on a fault line between two dominant bedrock types. The Gardenstown Conglomerate Formation of Middle Old Red Sandstone is to the east. The MacDuff Formation is to the west and is of the Southern Highland Group consisting of psammite and pelite.

No Made Ground is shown to be present.

2.5.3. Hydrogeology

2.5.3.1. Aguifer and Soil Classification

According to the SEPA Superficial Aquifer Map¹¹, the Superficial Aquifer under the Site is dominated by intergranular flow, is of low to high productivity and is overlain by soil of moderate to high leaching potential.

Hydrogeology of underlying strata can be summarised as a minor or moderately permeable aquifer with fractured or potentially fractured rocks that do not have a high primary permeability.

The Hydrogeological Map of Scotland¹² indicates that the Site is underlain by concealed aquifers, aquifers of limited potential, regions without significant groundwater consisting of Quaternary river and coastal alluvium. These are described as fine-grained sand silts and clays with occasional sand and cobble deposits. Borehole yields are, for the most part, small (1 to 2l/s). Groundwater chemistry is variable, though mineralisation is generally weak.

It is possible that local flow direction may be to the north or north-east towards the Burn of Turriff beyond the northern boundary of the Site.

According to the SEPA River Basin Management Plan (RBMP) interactive map¹³ the groundwater body on which the Site is situated is the Upper Ythan Valley Sand and Gravel groundwater body, which was classified as having an overall status as Poor (high confidence) in 2008. The quality of the groundwater has been classified as Poor (high confidence) and the quantity of groundwater has been classified as Good (high confidence). There is no trend for pollutants for this water body.

Overall environmental objectives for this groundwater body are for chemistry to be classified with a good status by 2015 and for quantitative status to be maintained at a good classification.

2.5.3.2. Abstractions, Discharges and Drinking Water Protection Zone

There are no current, licensed groundwater abstractions or consents to discharge to ground on within 500m of the Site. However, there are four current discharge consents to ground within 500m to 1km related to the use septic tanks.

According to the SEPA RBMP, the Site is within a drinking water protection zone.

2.5.3.3. Pollution Incidents to Groundwater

There are no recorded pollution incidents to groundwater on or within 1km of the Site.

2.5.4. Hydrology

The nearest water course is the Burn of Turriff which flows from south-east to north-west approximately 100m to the north-east and east of the Site (closest point). The Burn flows into to the River Deveron approximately 1.7km to the north-west of the Site. The River Deveron flows north before discharging into the North Sea approximately 15km to the north of the Site.

According to the SEPA RBMP, the Burn of Turriff is classified as having an overall status of 'bad' (medium confidence in 2008) with overall ecological status of 'bad' and overall chemical status of 'pass'. The environmental objective for this water body is for good status to be achieved before 2027.

The River Deveron, into which the Burn of Turriff flows, is protected for freshwater fish.

Two ponds are present approximately 50-100m to the east of the Site running parallel to the Burn of Turriff and are likely to be in continuity with the underlying groundwater.

2.5.5. **Abstractions and Discharges**

There are no current, licensed surface water abstractions on or within 1km of the Site. There are twenty two current, licensed discharge consents related to surface water within 1km of the Site,

 ¹¹ Superficial Aquifers map, SEPA, 2004
 ¹² The Hydrogeological Map of Scotland, 1:625,000, British Geological Survey, 1988

¹³ http://gis.sepa.org.uk/rbmp/

two within 250m of the Site, five between 250 and 500m and the remaining fifteen within 500m to 1km of the Site.

The discharge consents within 250m of the Site relate to septic tanks linked to the Mill of Turriff cottage, to the north of the Site and to the Grain Mill House approximately 193m north-west of the Site.

2.5.6. Pollution Incidents to Surface Water

There are no recorded pollution incidents to surface water on or within 1km of the Site.

2.5.7. Flood Risk

The Site is not within a flood area, but areas immediately to the north of the Site and up to the northern Site boundary, along the Burn of Turriff are noted to have the potential of flooding up to 2m estimated 100yr depth. The SEPA interactive flood map¹⁴ indicates that the Site is not at risk from flooding from the Burn from an event with a 1:200 return period.

2.5.8. Other Environmental Information

There are no designated ecological systems on or within 1km of the Site.

The Health Protection Agency¹⁵ (HPA) states that the Site lies within two areas of Radon probability. It would appear that areas within the north and east of Area 1 are within a low probability radon area with <1% of homes being above the action area. Areas within the south and west of Area 2 are within a probability of between 1 to 3% of homes being above the action level.

According to historical information, a former fuel station was present between Areas 1 and 2. The nearest current fuel station is located approximately 342m north-west of the Site.

2.6. Site Sensitivity

2.6.1. Groundwater

Groundwater sensitivity is considered to be high because of the underlying Upper Ythan Valley Sand and Gravel groundwater body.

2.6.2. Surface Water

Surface water sensitivity is considered to be medium to high because of the Burn of Turriff to the north-east which is likely to be in hydraulic continuity with groundwater underlying the Site. The Burn of Turriff has an associated protected area of the River Deveron for freshwater fish.

2.6.3. Ecological Systems

Ecological sensitivity is considered to be low because there are no designated ecological receptors on or within 1km of the Site.

¹⁴ http://go.mappoint.net/sepa/

¹⁵ Health Protection Agency http://www.hpa.org.uk

3. Preliminary Conceptual Site Model

3.1. Potential Sources of Contamination

3.1.1. Current On-site Activities/Operations

The Site has been inactive since 1992 with the tanks and buildings emptied and decommissioned. The Site is secure and no active infrastructure is present within the Site boundaries. Therefore, no current potentially contaminative on-site sources have been identified.

3.1.2. Historic On-site Activities/Operations

Aviation fuel was stored at the Site from when it was first developed in the late 1950s until it was decommissioned in 1992. Potential sources are shown on Figure 2 (Drawing no. 5106238-DWG-052) and are considered to include:

- 1. Former rail loading gantry and interceptor in Area 1 (hydrocarbons).
- 2. Former road loading gantry and two adjacent ASTs in Area 1 (hydrocarbons).
- 3. AST, two lube oil USTs and adjacent LOPH in Area 1 (hydrocarbons).
- 4. SPH and HEP in the south of Area 1 (hydrocarbons).
- 5. Four former ASTs in Area 2 plus pipe manifold associated with the underground pipeline to Area 1 (hydrocarbons).
- 6. Former interceptor in Area 2 (hydrocarbons).

3.1.3. Current Off-site Activities/Operations

7. The currently operational agricultural machinery depot is located between Area 1 and Area 2. At the time of Atkins' Site Reconnaissance, drums of hydraulic fluid were observed stored directly on the permeable surface of the storage yard, immediately adjacent to (and suspected hydraulically up-gradient from) Area 1 (hydrocarbons).

Millmoss Farm to the south of Area 1 is labelled as a nursery (agricultural) from 1964-1966 and is currently in use as a garden centre and active farm. There was no evidence for contaminative activities during Atkins' Site Reconnaissance and as such, Millmoss Farm is considered unlikely to be a potentially contaminative activity which could give rise to contaminants in, on or under the land at the Site.

3.1.4. Historic Off-site Activities/Operations

- 8. Former fuel filling station: A fuel filling station was noted to be formerly present on the current agricultural machinery depot between Areas 1 and 2. There is the possibility of historic fuel spillage and leakage of fuels during operation (hydrocarbons).
- 9. Former railway: A mainline railway that ran along the north-eastern boundary of Area 1 operated until the mid-1970s and was constructed sometime before 1870 (hydrocarbons, asbestos from brakes, inorganic contaminants from fill material).
- 10. Landfill: A landfill (inactive) is present to the north of Area 1 and a potential source of leachate and ground gas if generated.
- 11. Former Corn Mill/Works: A historic Steam Corn Mill and reservoir were present to the northeast, disused by 1975 but subsequently marked as 'Works' between 1988 and 1995. Thereafter it was labelled as 'The Auld Mill'. The mill/works could be a source of contaminants (fuels, oils and heavy metals). Contaminants deposited during the operation of the Mill/Works may have migrated to or been deposited near the Site.

3.2. Potential Receptors

3.2.1. Human Receptors

Potential, current on-site human receptors include occasional facility management staff or visitors (key holders) who are on-site for a limited period of time. The potential, future on-site human receptors will either remain the same as current or comprise workers at and visitors to the Site if it is re-opened, together with construction workers.

These potential current/future on-site human receptors could be exposed to potential contamination by the following pathways:

- dermal contact with contaminants in soil, soil-derived dust and entrained in surface water runoff from areas where soil (and contaminant) is exposed and in shallow groundwater if excavation takes place below the groundwater table;
- ingestion of contaminants in soil, soil-derived dust and entrained in surface water run-off from areas where soil (and contaminant) is exposed and in shallow groundwater if excavation takes place below the groundwater table;
- inhalation of contaminants in soil-derived dust from areas where soil (and contaminant) is exposed; and
- inhalation of vapours/ground gas.

Potential current/future off-site human receptors include occupants of houses to the north-west, workers at and visitors to the agricultural machinery depot to the west of Area 1 and east of Area 2, Millfoss Farm to the south-east of Area 1 and farm workers and public on adjacent farm land. These potential current/future off-site human receptors could be exposed to potential contamination by the following pathways:

- dermal contact with contaminants in windblown, soil-derived dust and entrained in surface water run-off from areas where soil (and contaminant) is exposed and in migrating groundwater if off-site excavation takes place below the groundwater table;
- ingestion of contaminants in windblown, soil-derived dust and entrained in surface water runoff from areas where soil (and contaminant) is exposed and in migrating groundwater if offsite excavation takes place below the groundwater table;
- inhalation of contaminants in windblown, soil-derived dust from areas where soil (and contaminant) is exposed; and
- inhalation of migrating vapours/ground gas.

3.2.2. Water Environment Receptors

Groundwater in the Superficial Deposits and Bedrock is a potential receptor by leaching of contaminants from the unsaturated soil zone to groundwater and migration of light non aqueous phase liquid (LNAPL).

The Burn of Turriff is a potential surface water receptor by discharge of contaminants in surface water run-off and laterally migrating groundwater and LNAPL.

3.2.3. Ecological Receptors

No designated ecological receptors have been identified on or within 1km of the Site.

3.2.4. Other Receptors

Donkeys were grazing on Area 1 during Atkins' Site Reconnaissance. These on-site receptors could be exposed by:

 dermal contact with contaminants in soil, soil-derived dust and entrained in surface water runoff;

- ingestion of contaminants in grass, soil, soil-derived dust and entrained in surface water runoff;
- inhalation of contaminants in soil-derived dust; and
- inhalation of vapours/ground gas.

3.2.5. Property Receptors

On-site buildings/infrastructure are a potential current/future property receptor by direct contact with contaminants in soil and shallow groundwater and accumulation of ground gas.

Off-site property (buildings/infrastructure) of the agricultural depot and Millfoss Farm are potential receptors by direct contact with contaminants in migrating shallow groundwater and accumulation of migrating ground gas.

3.3. Preliminary Phase 1 Environmental Risk Assessment

3.3.1. Introduction

An environmental risk has been carried out following current best practice and industry guidance. Definitions of probability and consequence have been based on guidance in the DIO Practitioners Guide 07/12 and are summarised in Appendix D. A combination of probability and consequence produces a risk level based on the risk evaluation and likely action required. The DIO Practitioners Guide 07/12 provides seven categories of risk as shown in Appendix D. The land contamination risk, which is a function of the probability and the consequence, can then be defined using the risk matrix in Appendix D.

Based on the information reviewed as part of Atkins' Phase 1 LQA, potential sources of contamination have been identified and a preliminary CSM developed, together with PCLs or source-receptor-pathway linkages. The preliminary CSM is summarised in Table 3.1 and shown on Figure 3 (Drawing no. 5106238-DWG-053).

A preliminary environmental risk assessment for the Site has been carried out and the potential sources of contamination identified at the Site are considered to pose a:

- moderate risk to current/future workers/visitors on-site;
- moderate/low risk to current/future off-site human receptors;
- moderate risk to current/future construction/maintenance workers on-site;
- high risk to groundwater;
- moderate risk to surface water;
- moderate/low risk to on-site property;
- moderate/low risk to off-site property; and
- negligible risk to on-site donkeys.

3.4. Preliminary Conceptual Site Model for Investigation

Atkins' site investigation forming the Phase 2 LQA, in particular the chemical analysis suite selected, has focussed on those sources associated with the Site's operation as a PSD, specifically petroleum products because these are considered to be the principal potential contaminants at the Site and those considered to potentially pose a risk.

Analysis for metals and other inorganic compounds which could be present in, for example, Made Ground, did not form part of Atkins' proposed scope of work in our bid and as such, has not been carried out. This is also the case for contaminants associated with potential off-site sources of contamination which are also excluded from the Phase 2 LQA site investigation design. The

objective of the Phase 2 LQA has been to focus on the potential risks and potential environmental liability posed by the Site operations and off-site sources are considered to be the liability of the off-site polluter.

Therefore, Sources 7 to 11 have not been investigated as part of the Phase 2 LQA. The preliminary qualitative environmental risk assessment has identified a negligible risk to the on-site donkeys being grazed, especially since these receptors could be removed to mitigate the potential risk. Therefore, these receptors have not been investigated as part of the Phase 2 LQA on this basis.

Table 3.1: Preliminary	/ Conceptual	Site Model
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Source of Contamination	Receptors	Pathways
Historic On-site Activities/Operations	Humans On-site: Current/Future Facility Management Workers/Farm Workers Future Site Workers/Visitors (if Site is reopened) Current/Future Construction/Maintenance Workers	Dermal contact with contaminants in soil, soil-derived dust and entrained in surface water run-off from areas where soil (and contaminant) is exposed and in shallow groundwater if excavation takes place below the groundwater table. Ingestion of contaminants in soil, soil-derived dust and entrained in surface water run-off from areas where soil (and contaminant) is exposed and in shallow groundwater if excavation takes place below the groundwater table. Inhalation of contaminants in soil-derived dust from areas where soil (and contaminant) is exposed. Inhalation of vapours/ground gas.
 Former rail loading gantry and interceptor in Area 1 (hydrocarbons). Former road loading gantry and two adjacent ASTs in Area 1 (hydrocarbons). AST, two lube oil USTs and adjacent LOPH in Area 1 (hydrocarbons). SPH and HEP in the south of Area 1 (hydrocarbons). Four former ASTs in Area 2 plus pipe manifold associated with the underground pipeline to Area 1 (hydrocarbons). 	Humans Off-site Current/Future occupants of and visitors to the houses to the north-west, workers at and visitors to the agricultural machinery depot to the west of Area 1 and east of Area 2, Millfoss Farm to the south-east of Area 1 and farm workers and public on adjacent farm land	Dermal contact with contaminants in windblown, soil-derived dust and entrained in surface water run-off from areas where soil (and contaminant) is exposed and in migrating groundwater if off-site excavation takes place below the groundwater table Ingestion of contaminants in windblown, soil-derived dust and entrained in surface water run-off from areas where soil (and contaminant) is exposed and in migrating groundwater if off-site excavation takes place below the groundwater table. Inhalation of contaminants in windblown, soil-derived dust from areas where soil (and contaminant) is exposed. Inhalation of migrating vapours/ground gas.
6. Former interceptor in Area 2 (hydrocarbons). Current/Historic Off-site Activities/Operations	Groundwater	Leaching of contaminants from the unsaturated soil zone to groundwater and migration of LNAPL.
 Currently operational agricultural machinery depot located between Area 1 and Area 2. Former fuel filling station between Areas 1 and 2. 	Surface Water Burn of Turriff	Discharge of contaminants in laterally migrating groundwater and discharge of LNAPL.
9. Former railway along the north-eastern boundary of Area 1.	Property On-site (buildings/infrastructure)	Direct contact with contaminants in soil/groundwater. Accumulation of migrating ground gas into the buildings and enclosed spaces.
11. Former Corn Mill/Works.	Property Off-site (buildings/infrastructure)	Direct contact with contaminants in migrating groundwater. Accumulation of migrating ground gas into buildings and enclosed spaces.
	Other Receptors On-site (Donkeys)	Dermal contact with contaminants in soil, soil-derived dust and entrained in surface water run-off from areas where soil (and contaminant) is exposed. Ingestion of contaminants in grass, soil, soil-derived dust and entrained in surface water run-off from areas where soil (and contaminant) is exposed. Inhalation of contaminants in soil-derived dust from areas where soil (and contaminant) is exposed. Inhalation of vapours/ground gas.

Site Investigation 4.

4.1. **Objectives**

The site investigation was undertaken as part of Combined Phase 1/2 LQA to provide site-specific factual data relating to the ground conditions, soil chemistry, groundwater quality, presence of vapours/ground gas and investigation the PCLs identified by the preliminary CSM and preliminary environmental risk assessment.

4.2. Methodology

4.2.1. **General Approach**

Atkins Phase 2 LQA Site Investigation was designed with reference to UK guidance. This included: i) CLR11; ii) British Standard (BS) 10175¹⁶; iii) BS5930¹⁷; iv) R&D Technical Report P5-065/TR¹⁸; v) R&D Technical Report P5-066/TR¹⁹; and vi) CLR4²⁰.

BS10175 suggests a Phase 2 exploratory investigation should be both targeted and non-targeted, the latter typically at 25 to 50m centres adopting a square or herringbone grid as recommended in CLR4. A Phase 3 main investigation should also be both targeted and non-targeted, the latter typically at 10 to 25m centres, again adopting a square or a herringbone grid as recommended in CLR4. The Stage 1 investigation of P5-066/TR suggests 50m centres.

Based on the use of the Site, guidance quoted above and likely constraints in terms of accessible locations, Atkins has adopted an approximate 50 to 100m grid in combination with targeted locations described in Table 4.1 below. The positions of each hole are shown in Figure 4 (Drawing no. 5106238-DWG-054).

Location	Rationale
ABH001	General coverage and targeting Source 3, Source 2 and Source 1 in Area 1.
ABH002	General coverage and targeting Source 5 in Area 2.
ABH003	General coverage and targeting Source 5 in Area 2.
AWS001	General coverage and targeting Source 3 and Source 1 in Area 1.
AWS002	General coverage and targeting Source 2 and Source 1 in Area 1.
AWS003	General coverage and targeting Source 4 and Source 1 in Area 1.
AWS004	General coverage and targeting Source 3 and Source 1 in Area 1.
AWS005	General coverage and targeting Source 1 in Area 1.
AWS006	General coverage and targeting Source 1 in Area 1.
AWS007	General coverage and targeting Source 1 in Area 1. Positioned <0.5m from AWS007 but abandoned because of rapid inflow of water.
AWS007A	General coverage and targeting Source 1 in Area 1. Positioned <0.5m from AWS007 but abandoned because of rapid inflow of water.
AWS008	General coverage and targeting Source 4 and Source 1 in Area 1.
AWS009	General coverage and targeting Source 6 in Area 2.
AWS010	General coverage and targeting Source 5 in Area 2.
AWS011	General coverage and targeting Source 5 in Area 2.
AWS012	General coverage and targeting Source 5 in Area 2.
AWS013	General coverage and targeting Source 5 in Area 2.

Table 4.1: Rationale for the Investigation Locations

¹⁶ British Standard 10175, Investigation of Potentially Contaminated Sites, 2012

¹⁷ BS5930, Code of Practice for Site Investigation, 1999

 ¹⁸ R&D Technical Report P5-065/TR, Technical Aspects of Site Investigation, Environment Agency, 2000
 ¹⁹ R&D Technical Report P5-066/TR, Development of Appropriate Soil Sampling Strategies for Land Contamination, Environment Agency, 2000

²⁰ Contaminated Land Report 4, Sampling Strategies for Contaminated Land, Environment Agency, 1994

The ground investigation was undertaken between the 8th and 10th January 2013 by Geotechnical Engineering Limited (GEL), monitored by a suitably experienced Atkins Environmental Engineer. In summary, the scope of works for the ground investigation comprised:

- Three boreholes (ABH001 to ABH003) by dynamic drilling techniques to a maximum depth of 10m below ground level (bgl) and installed with combined groundwater/gas monitoring installations; and
- Thirteen window samples (AWS001 to AWS013) to a maximum depth of 5mbgl.

Each borehole location was cleared for underground services prior to drilling by a utility clearance company. In addition, a hand-dug pit was excavated to approximately 1.2mbgl before drilling commenced.

4.2.2. Investigation Locations and General Details

Locations of the window sample boreholes were surveyed to National Grid co-ordinates and elevations to Ordnance Datum by GEL. The locations of exploratory holes are presented in Figure 4 (Drawing no. 5106238-DWG-054). The borehole records are presented in the GEL Factual Site Investigation Report in Appendix E.

All standpipe installations in the window sample boreholes comprised a 50mm diameter pipe and the screened response zone was surrounded by a gravel filter pack. The top of the installations were completed with bentonite seals and concrete, with a lockable steel cover flush with ground surface. Installation construction details are provided on the borehole records in Appendix E.

Material excavated from the window sample locations was replaced in the holes in the order in which it was removed (where possible) on completion of logging and sampling.

4.2.3. Soil Sampling

The sampling strategy was designed to obtain representative soil samples from each stratum encountered. Representative soil samples were stored in containers under appropriate conditions prior to onward transmission to the laboratory, with chain of custody documentation for environmental samples.

Soil samples were recovered from all exploratory holes advanced on the Site. Typically samples were recovered at 0.3m, 0.5m and 1mbgl with further samples every metre and/or at change of strata. Additional samples were taken if any visual or olfactory evidence of contamination was observed. Soil samples comprised one 250ml and one 60ml glass jars which were kept in cool boxes and were dispatched to the appointed, accredited chemical analysis laboratory, i2 Analytical, under chain of custody conditions within 48 hours of sampling.

4.2.4. Groundwater Monitoring

Groundwater levels were recorded during the investigation by a GEL Engineer. Groundwater samples were obtained on 5th February 2013 by GEL as part of a post works monitoring exercise to determine the quality of the groundwater.

Depth to groundwater and the presence/absence (and thickness) of LNAPL were recorded using an interface probe. If no LNAPL was noted, each well was purged of up to three wells volumes prior to sampling. Representative water samples were taken immediately on completion of purging and placed in laboratory provided containers under appropriate conditions prior to onward transmission to the laboratory, with chain of custody documentation.

Samples were obtained from ABH001 and ABH002 but ABH003 was dry and no sample could be taken.

4.2.5. Vapour/Ground Gas Monitoring

Soil vapour monitoring was undertaken during the ground investigation on each environmental sample collected. The soil vapour monitoring was recorded using a Mini-Rae 2000 calibrated with 100 parts per million (ppm) isobutylene. This instrument is designed to give an indication of the

presence and semi-quantitative concentration of volatile organic compounds (VOCs) in the soil vapour.

Monitoring was undertaken after the samples had been collected and placed within the sampling jars allowing for potential vapours to accumulate within the headspace of the sampling jars. The peak value in ppm was recorded and is included on the borehole records presented within Appendix E.

Ground gas monitoring was undertaken as part of a post works monitoring programme on 5th February 2013 by GEL for methane, carbon dioxide, carbon monoxide, hydrogen sulphide, oxygen and flow rate. Ground gas was monitored using a GA-2000. Ground gas monitoring results are presented in Appendix E.

4.2.6. Laboratory Analysis

Soil and groundwater samples collected during the investigation were dispatched to and received by I2 Analytical Ltd within 48 hours of sampling. Thirty-four soil and two groundwater samples were scheduled for testing as described below.

Soil Testing Suite – List of Contaminants

- Total Petroleum Hydrocarbons (TPH) Criteria Working Group (CWG);
- USEPA 16 Polycyclic Aromatic Hydrocarbons (PAHs);
- Benzene, Toluene, Ethylbenzene And Xylenes (BTEX) and MTBE;
- Tetramethyl Lead;
- Tetraethyl Lead;
- pH;
- Fraction of Organic Carbon (FOC); and
- Asbestos Screen.

Water Testing Suite - List of Contaminants

- TPH CWG;
- USEPA 16 PAHs;
- BTEX and MTBE;
- pH;
- Tetramethyl Lead; and
- Tetraethyl Lead.

The testing suite selected, as indicated in Atkins original proposal, focussed specifically on the principal contaminants likely to be associated with a PSD as demonstrated by the suite described above, together with soil parameters (FOC) and asbestos because of the potential from the former rail activities and Atkins standard procedures requires analysis of all samples for asbestos as a matter of course. Analysis for metals and other inorganic compounds did not form part of Atkins' proposed scope of work and as such, has not been carried out.

Copies of the laboratory results for soil and groundwater analyses are presented in Appendix F.

4.3. Investigation Findings

4.3.1. Topsoil

No distinguishable topsoil stratum was identified in any of the exploratory holes drilled. In all cases grass was present on the surface, underlain by a very thin layer of organic silt with frequent rootlets and gravels.

4.3.2. Made Ground

Made Ground was encountered in all of the exploratory hole locations in Area 1 (ABH001 and AWS001 to AWS008) and ranged in thickness from 0.2 to 2.3m. It was described as brown, locally clayey, sandy, gravelly silt in all exploratory holes except AWS003 to AWS007 in the former rail sidings in Area 1 where it was described as grey or black, slightly sandy, ash gravel.

Made Ground was not encountered in any of the exploratory hole locations in Area 2 (ABH002 to ABH003 and AWS009 to AWS013).

Soil vapour headspace readings above 1ppm in Made Ground and visual/ olfactory evidence of potential contamination are summarised in Table 4.2.

Location	Sample Depth (mbgl)	Stratum Description	Soil Vapour Result (ppm)
AWS003	0.3	Gravelly SAND with rare ASH	6.9
AWS003	0.5	Gravelly SAND (strong hydrocarbon type odour)	590.0
AWS003	1.0	Gravelly SAND (strong hydrocarbon type odour)	692.0
AWS003	2.0	Gravelly Sandy SILT (faint type hydrocarbon odour)	6.5
AWS004	1.0	Gravelly SILT (strong type hydrocarbon odour)	1.4

Table 4.2: Soil Vapour Readings above 1ppm in Made Ground

AWS003 is located in the south-east of Area 1 in Source 4 (SPH and HEP) but also at the southern most extent of Source 1 (former rail loading area). AWS004 is also located in Source 1.

4.3.3. Superficial Deposits

Superficial Deposits were encountered within all exploratory holes except AWS007/7A which was terminated in Made Ground at 0.65mbgl because of strong ingress of water.

Superficial Deposits were variable but generally consisted of sandy, gravelly clays or silts with the fines content decreasing with depth. Bands of uniform sand or gravels were encountered at varying depths.

Superficial Deposits were encountered between ground level to maximum depth of 6.0mbgl (ABH001), with a thickness ranging between 4.2m and 5.2m.

Soil vapour headspace readings above 1ppm in Superficial Deposits and visual/olfactory evidence of potential contamination are summarised in Table 4.3.

Table 4.3: Soil	Vapour Results above	1ppm in Superficial Deposits	

Location	Sample Depth (mbgl)	Stratum Description	Soil Vapour Result (ppm)
ABH002	3.0	Gravelly SAND	1.4
ABH002	3.5	Gravelly SAND	3.1
AWS002	0.5	SAND	9.3
AWS002	1.0	Sandy Gravelly SILT	3.6
AWS002	2.0	Gravelly Sandy SILT	2.7
AWS002	3.0	SAND	5.5
AWS005	1.2	Gravelly Sandy CLAY	1.8
AWS005	1.8	Gravelly SILT (faint hydrocarbon type odour)	198.0
AWS006	1.5	Gravelly SILT (faint hydrocarbon type odour)	2.0
AWS006	3.3	Sandy Clayey GRAVEL	6.1
AWS008	1.5	Gravelly Silty SAND	2.8
AWS008	3.0	Clayey SAND (faint hydrocarbon type odour)	271.0
AWS009	0.5	Gravelly Silty SAND	1.2

AWS009	1.8	Sandy Gravelly CLAY	1.3
AWS011	2.7	Gravelly SILT	1.8

AWS005 and AWS008 are both located in Source 1 (former rail loading area) in Area 1.

4.3.4. Bedrock

Bedrock was encountered within the three boreholes from 4.2mbgl in ABH003 and 6.0mbgl in ABH001. Bedrock was described as brown, weak to medium, Sandstone and a Sandstone Conglomerate.

It was not possible to collect soil vapour readings from bedrock because of absence of fines. However, no visual or olfactory indications of potential contamination were noted.

4.3.5. Groundwater

Groundwater levels measured during drilling are summarised in Table 4.4.

Location	Water Strike (mbgl)	Stratum at Strike	Comments
ABH001	1.37	Clayey locally sandy GRAVEL	Groundwater was not encountered prior to the use of water flush.
ABH002	2.90	Gravelly SAND	Groundwater was not encountered prior to the use of water flush.
ABH003	2.78	Sandy rarely gravelly SILT	Groundwater was not encountered prior to the use of water flush.
AWS001	2.91	Soft slightly gravelly CLAY	Initial rise to 1.72m then no further rise after 20 minutes. Rose to 1.48 after casing removed – possible collapse of hole.
AWS002	2.84	Gravelly SAND	Initial rise to 2.69m. Rose to 1.07m after removing casing – possible collapse of hole.
AWS003	0.40	MADE GROUND Locally gravelly SAND	Initial rise to 0.36m, no further rise after 20 minutes. Dropped to 0.4m after removing casing.
AWS004	Dry	-	Water was not encountered in AWS004 to a depth of 3.35mbgl.
AWS005	2.65	Slightly gravelly sandy SILT.	Initial rise to 1.92m. Rose to 1.62m after removing casing.
AWS006	0.50	MADE GROUND locally silty gravelly SAND.	Rose to 0.42m after 5 minutes and remained constant over period of drilling. Dropped to 0.6m after casing was removed.
AWS007	0.30	MADE GROUND sandy ASH GRAVEL	Attempt made to remove water from hole. Noted to be running in from approximately 0.25mbgl. Wet from surface.
AWS007A	0.20	MADE GROUND sandy ASH GRAVEL	Wet from surface.
AWS008	Dry	-	Water was not encountered to a depth of 3.00mbgl.
AWS009	Dry	-	Water was not encountered in AWS009 to a depth of 2.20mbgl.
AWS010	Dry	-	Water was not encountered in AWS010 to a depth of 1.91mbgl.
AWS011	Dry	-	Water was not encountered in AWS011 to a depth of 3.19mbgl.
AWS012	Dry	-	Water was not encountered in AWS012 to a depth of 3.89mbgl.
AWS013	Dry	-	Water was not encountered in AWS013 to a depth of 2.17mbgl.

Table	4.4:	Water	Observations	during	Excavation/Drilling
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Groundwater was encountered in all of the exploratory holes in Area 1 except AWS004 and AWS008. Water strikes generally occurred within granular material (predominately sands or gravels). The initial water strike occurred at a shallow depth at 1mbgl in AWS003, AWS006, AWS007 and AWS007A. Water inflow at shallow depth restricted investigation in AWS007 and ASWS007A.

The groundwater in Area 2 was only encountered in ABH002 at 2.90mbgl and ABH003 at 2.78mbgl, although not prior to the use of a water flush. Groundwater was not encountered in the window sample boreholes to a maximum depth of 3.89mbgl at AWS012.

Groundwater levels measured during post-site works sampling are summarised in Table 4.5.

Location	Stratum Screened	Depth to Water (mbgl)	Depth to Water (mAOD)
ABH001	Clayey locally sandy gravel and partially into slightly gravelly locally sandy CLAY (Screen depth 1.8m to 2.8mbgl)	1.80	35.28
ABH002	Gravelly SAND with rare cobbles (Screen depth 1m to 2.8mbgl)	2.10	42.00
ABH003	Firm brown gravelly sandy CLAY with bands of sandy CLAY (Screen depth 1m to 2.3mbgl)	Dry	-

Table 4.5: Groundwater Levels Recorded during Groundwater Sampling

LNAPL was not identified during the one monitoring round undertaken, but monitored water levels in ABH001 were close to the top of the screened level, although were well within the response zone in ABH002.

No visual or olfactory evidence of contamination was noted during groundwater monitoring. It has not been possible to confirm groundwater flow because groundwater was only recorded in ABH001 and ABH002 during post works monitoring, although flow is likely to be to the north-east/east towards the Burn of Turriff.

4.3.6. Ground Gas

Ground gas monitoring was carried out on the 5th February 2013 by a GEL Engineer. The maximum values recorded are summarised in Table 4.6

Location	Carbon Dioxide (%)	Methane (%)	Oxygen (%)	Hydrogen Sulphide (ppm)	Carbon Monoxide (ppm)	VOC (ppm)	Flow (l/hr)	Barometric Pressure (mb)	Relative Pressure (mm H₂O)
ABH001	<0.1	<0.1	20.5	<0.1	<0.1	<0.1	<0.1	972	<0.1
ABH002	0.2	<0.1	20.4	<0.1	<0.1	<0.1	<0.1	971	<0.1
ABH003	1.3	<0.1	16.6	<0.1	<0.1	<0.1	<0.1	972	<0.1

 Table 4.6: Summary of Ground Gas Monitoring

No flow was recorded in any of the three installations and ground gas monitoring took place when atmospheric pressure was below 1,000mb.

Carbon dioxide was slightly above the instrument detection limit in ABH002. However, the groundwater level in ABH001 was at the top of the response zone and ground gas flow regime is unlikely to be representative.

4.3.7. Chemical Analysis

The results of laboratory analysis carried out on samples of soil and groundwater are presented in full in Appendix F and discussed in Chapter 5.

Assessment of Risks 5.

5.1. Introduction

Based on information obtained by this Phase 2 LQA, the preliminary CSM and PCLs have been investigated further. PCLs relating to human health, controlled waters and property have been subject to the generic guantitative risk assessment (GQRA) described in this Chapter. This has comprised comparison of detected concentrations in soil and water with a set of generic assessment criteria (GAC).

5.2. Tier 2 Generic Quantitative Risk Assessment

A Tier 2 GQRA of identified receptors has been carried out using information from this Phase 2 Site Investigation.

5.2.1. **Human Receptors**

5.2.1.1. Selection of Generic Assessment Criteria

Detailed guidance on human health risk assessment is available in Science Report (SR) 2²¹, SR3²², SR4²³ and the Contaminated Land Exposure Assessment (CLEA) Model²⁴. Atkins GQRA for current and future human receptors has compared soil concentration data with GAC to identify whether a potential risk is posed by the contaminant concentrations detected. The GAC considered include:

- Soil Guideline Values: The Environment Agency in England has an ongoing programme of publication of Soil Guideline Values (SGVs). SGVs are trigger values for screening out low risk areas of land contamination. They give an indication of representative average concentrations of chemicals in soil below which the long-term health risks are likely to be minimal. SGVs have been published for arsenic, cadmium, mercury, nickel, selenium, benzene, toluene, ethylbenzene and xylenes (BTEX), phenols and dioxins, furans and dioxinlike PCB substances for residential, allotments and commercial land-uses. The SGVs have been developed for a sandy loam soil with 6% soil organic matter (SOM) content; and
- Atkins' Soil Screening Values: Atkins has derived a set of Soil-Screening Values (SSVs) to • supplement the SGVs following the CLEA Model. Atkins'-derived SSVs are available for the CLEA standard land-uses for a wider range of typical indicator contaminants. SSVs have also been derived for a sandy soil with 1% SOM and for parks, playing fields and open spaces.
- Atkins' Water Screening Values: Atkins has derived a set of Water Screening Values (WSV) using the RBCA Toolkit model. The values are based on groundwater at 1mbgl and a sand soil and are available for a commercial and a residential receptor.

The SGVs/SSVs/WSVs for a commercial land have been adopted to assess the current and future Site use.

SOM is defined as 'the fraction of the soil composed of organic matter. It consists of plant and animal remains in varying stages of decomposition'. The presence of SOM is important in determining the fate and behaviour of a number of organic contaminants such as polycyclic aromatic hydrocarbons (PAHs) and chlorinated solvents. The mobility of these contaminants decreases with increasing SOM. Generally, the greater the SOM content the greater the sorptive capacity of the soil. Based on soil results, the geometric mean SOM for the Area 1 has been calculated at 0.41% and the mean SOM for Area 2 has been calculated as 0.77%. The mean SOM for both Areas combined is 0.55%.

²¹ Science Report SC050021/SR2, Human Health Toxicological Assessment of Contaminants in Soil, Environment Agency, 2009

 ²⁵ Science Report SC050021/SR3, Updated Technical Background to the CLEA Model, Environment Agency, 2009
 ²³ Science Report SC050021/SR4, CLEA Model Software (Version) Handbook, Environment Agency, 2009

²⁴ CLEA Software Version 1.04, Environment Agency, 2009

Soil types in Area 1 ranged from gravel to sandy or gravelly clay and in Area 2 from sand to bands of clay.

Therefore, Atkins'-derived SSVs for 1% SOM and a sandy soil have been used as GAC in the first instance, together with the SGVs for contaminants which do not change with soil type and SOM.

There are no GAC for off-site human receptors and as such, these cannot be assessed, although the GAC for the on-site human receptors may be protective of the off-site human receptors.

Construction/maintenance workers involved with Site development may have direct contact with soils, but this cannot be formally assessed through this GQRA because the mode and duration of exposure are different to the scenarios used in determining GAC.

5.2.1.2. Comparison of Soil Concentration Data with Generic Assessment Criteria

No ACM or asbestos fibres were identified in the soil samples analysed. The contaminants analysed were below either the laboratory method detection limit (MDL) or respective GAC in the 34 soil samples tested. The results are summarised in Table 5.1.

Contaminant	GAC (mg/kg)	Minimum Value (mg/kg)	Maximum Value (mg/kg)	Location of Maximum Value
Naphthalene	8180	< 0.05	< 0.05	All below the MDL
Acenaphthylene	109000	<0.20	<0.20	All below the MDL
Acenaphthene		< 0.10	< 0.10	All below the MDL
Fluorene	66800	<0.20	<0.20	All below the MDL
Phenanthrene	-	< 0.20	< 0.20	All below the MDL
Anthracene	536000	< 0.10	< 0.10	All below the MDL
Fluoranthene	72300	< 0.20	< 0.20	All below the MDL
Pyrene	54200	< 0.20	< 0.20	All below the MDL
Benzo(a)anthracene	131	< 0.20	< 0.20	All below the MDL
Chrysene	14000	< 0.05	< 0.05	All below the MDL
Benzo(b)fluoranthene	142	< 0.10	< 0.10	All below the MDL
Benzo(k)fluoranthene	1430	< 0.20	< 0.20	All below the MDL
Benzo(a)pyrene	14.3	< 0.10	< 0.10	All below the MDL
Indeno(1,2,3-cd)pyrene	142	< 0.20	< 0.20	All below the MDL
Dibenz(a,h)anthracene	14.3	<0.20	<0.20	All below the MDL
Benzo(ghi)perylene	1440	< 0.05	< 0.05	All below the MDL
Speciated Total EPA-16 PAHs	-	< 1.6	< 1.6	All below the MDL
Benzene	13.1	<0.001	<0.001	All below the MDL
Toluene	414,000	<0.001	<0.001	All below the MDL
Ethylbenzene	180,000	<0.001	<0.001	All below the MDL
Xylenes (p) Xylenes (o) Xylenes (m)	279,000 296,000 276,000	<0.001	<0.001	All below the MDL
MTBE (Methyl Tertiary Butyl Ether)	0.001	<0.001	<0.001	All below the MDL
TPH-CWG - Aliphatic C5 - C6	≤ 1 kg/kg	<0.10	<0.10	All below the MDL
TPH-CWG – Aliphatic C6 -EC8	≤ 1 kg/kg	<0.10	<0.10	All below the MDL
TPH-CWG - Aliphatic C8 - C10	167000	<0.10	130	AWS003 0.5m bgl
TPH-CWG - Aliphatic C10 - C12	171000	< 1.0	190	AWS003 0.5m bgl
TPH-CWG - Aliphatic C12 -C16	171000	< 2.0	530	AWS003 0.5m bgl
TPH-CWG - Aliphatic C16 - C21	≤ 1 kg/kg	< 8.0	12	AWS003 0.5m bgl
TPH-CWG - Aliphatic C21 - C35	≤ 1 kg/kg	< 8.0	< 8.0	All below the MDL

Table 5.1: Soil Data Summary

Contaminant	GAC (mg/kg)	Minimum Value (mg/kg)	Maximum Value (mg/kg)	Location of Maximum Value
TPH-CWG - Aromatic C5 -C7	13.1	<0.10	<0.10	All below the MDL
TPH-CWG - Aromatic C7 - C8	414000	<0.10	<0.10	All below the MDL
TPH-CWG - Aromatic C8 - C10	58600	<0.10	15	AWS003 0.5m bgl
TPH CWG - Aromatic C10 – C12	68300	<0.10	36	AWS003 0.5mbgl
TPH-CWG - Aromatic C12 - C16	68400	< 1.0	36	AWS003 0.5m bgl
TPH-CWG - Aromatic C16 - C21	28400	< 2.0	120	AWS003 0.5m bgl
TPH-CWG - Aromatic C21 - C35	28400	< 10.0	< 10.0	All below the MDL
TPH-CWG - Aromatic C21 - C35	28400	< 10.0	< 10.0	All below the MDL
Tetraethyl Lead	-	< 0.01	< 0.01	All below the MDL
Tetramethyl Lead	-	< 0.01	< 0.01	All below the MDL

Soil vapour readings above 100ppm were recorded in AWS003, at 0.5 (590ppm) and 1mbgl (692ppm) in Made Ground, associated with hydrocarbon type odours and oily sheen from 0.4 to 1.7mbgl. However, no volatile contaminants were identified above either the laboratory MDL or GAC and soil vapour readings had dropped to 6.5ppm at 2mbgl.

Made Ground in AWS004 had a strong type hydrocarbon odour from 0.15 to 0.7mbgl, although TPH concentrations were below the MDL and the highest soil vapour reading was 1.3ppm at 1.0mbgl.

Both of these exploratory holes are located in Sources 1, 3 and 4 of Area 1.

Soil vapour readings above 100ppm in Superficial Deposits were noted in AWS005 at 1.8mbgl (198ppm) and ASW008 at 3mbgl (271ppm) in Area 1, both associated with hydrocarbon type odours, although no volatile contaminants were identified above the laboratory MDL.

Therefore, the soil vapour readings detected do not appear to be indicative of VOC contamination in the soil samples as demonstrated by the laboratory results obtained.

5.2.1.3. Comparison of Water Concentration Data with Generic Assessment Criteria

Potentially volatile contaminants in the groundwater samples analysed did not exceed the respective laboratory MDL and were all below Atkins' commercial WSV.

5.2.1.4. Ground Gas

These results have been assessed using the Modified Wilson & Card²⁵ Risk Classification Ground Gas Screening Value (GSV) to derive a characteristic situation (CS). The Site CS for carbon dioxide and methane is CS1 which represents very low risk. CIRIA 665 recommends that consideration be given to increasing the CS if concentrations of methane are detected above 1% and carbon dioxide above 5% which is not the case on this Site.

5.2.2. Water Environment Receptors

GQRA for the water environment has comprised:

- Comparison of detected concentrations of contaminants in groundwater with the assessment criteria set out in SEPA's Position Statement WAT-PS-10-01²⁶ and in accordance with their guidance on Water Pollution Arising from Land Containing Chemical Contaminants²⁷, to assess the potential risk posed to the existing quality of the groundwater receptor;
- Comparison of detected concentrations of contaminants in groundwater with the Environmental Standards set out in SEPA's Supporting Guidance WAT-SG-53²⁸ for freshwater to assess the potential risk posed to the surface water receptors because migration

²⁵ Assessing Risks posed by Hazardous Ground gases into Buildings, Wilson and Card, CIRIA 665, 2007

 ²⁶ SEPA, 2011, Position Statement WAT-PS-10-01, Assigning groundwater assessment criteria for pollutant inputs
 ²⁷ SEPA, 2012, Water Pollution Arising from Land Containing Chemical Contaminants, 2nd Edition

²⁸ SEPA, 2010, Supporting Guidance (WAT-SG-53) Environmental Standards for Discharges to Surface Waters

in groundwater and discharge to surface water is a potential pathway. These consist of the environmental quality standards (EQS); and

• Where no authoritative assessment criteria are available, the laboratory limit of detection (LOD) is used for assessing risk to groundwater or surface waters.

5.2.2.1. Comparison of Groundwater Quality Data with Generic Assessment Criteria

All contaminants were below the respective MDL, MRV/RPV (groundwater) and/or EQS (surface water), although the laboratory MDL for the sum of benzo(ghi)perylene and Indeno(1,2,3-cd)pyrene ($0.02\mu g/l$) was greater than the EQS of $0.002\mu g/l$.

5.2.3. Property Receptors

The Site CS is CS1 (very low risk) for methane, using the Modified Wilson & Card Risk Classification. It should be noted that groundwater levels in the monitoring wells were close to or above the top of the screened section and the readings may not be representative.

5.2.4. Asbestos in Buildings

Atkins has not been provided with a copy of the Site asbestos register for review. It should be noted that for the purposes of this Phase 2 LQA, asbestos within Site structures and other contaminants in buildings is not considered to represent a land contamination issue and as such is beyond the scope of this report.

However, the potential for asbestos to be present in soil is considered to represent a land contamination issue and has been discussed earlier in this chapter.

5.3. Risk Assessment Summary

5.3.1. Summary

A Tier 2 GQRA of the PCLs identified at the Site has been carried out based on collection of empirical data from the Site Investigation and information gained during the Phase 1 and Phase 2 LQA process.

No ACM or asbestos fibres were detected in the soil samples analysed. None of the contaminants detected in the soil and groundwater samples analysed were above the human health GAC for commercial land use.

In addition, no contaminants were identified above the laboratory MDL, MRV/RPV and EQS in the groundwater samples analysed.

The Site CS for carbon dioxide and methane is CS1 which represents a very low risk.

It should be noted that the assessment of ground gas and groundwater risks has been based on one round of monitoring only. No particular ground gas sources were identified and as such, on the balance of probabilities, the ground gas CS is unlikely to change if further monitoring was to be carried out.

However, identified risks to groundwater could increase or decrease based on further monitoring.

5.3.2. Risk Assessment

An environmental risk assessment has been carried out as described in Chapter 2 and presented in Appendix D. The Phase 2 environmental risk assessment for the Site is summarised in Table 5.2 and the sources, pathways and receptors reviewed in the assessment are indicated on the CSM presented as Figure 3 (Drawing no. 5106238-DWG-053).

Table 5.2: Land Quality Assessment Environmental Risk Assessment Summary Table

Source	Potential Contaminant	Potential Receptor	Potential Pathway	Associated Hazard	Potential Consequence	Likelihood (Probability) Of Contaminant Receptor Linkage	Potential Significance
Contaminants in soil/shallow groundwater across the Site	Range of organic/inorganic contaminants	Current/Future Construction/maintenance Workers	Dermal Contact Inhalation Ingestion	Health risk	Medium	Likely On-site construction/maintenance workers may be in direct contact with contaminants because they may be required to excavate and handle soil. Unlikely Robust risk assessment is required to identify appropriate personnel protective equipment and suitable working methods to protect these receptors, in accordance with current guidance and recommended good working practices.	Moderate Risk reduced to Low Risk
Historic On-site Activities/Operations 1. Former rail loading gantry and interceptor in Area 1 (hydrocarbons). 2. Former road loading gantry and two adjacent ASTs in Area 1 (hydrocarbons).	Hydrocarbons in soil and groundwater	Humans On-site: Current/Future Facility Management Workers Future Site Workers/Visitors (if Site is reopened)	Dermal Contact Inhalation Ingestion	Health risk	Mild	Low Only discrete olfactory evidence of contamination at the Site. No evidence of spill stains or odours at surface. No ACM was identified in the soil samples analysed. Contaminants in the soil samples analysed were either below the laboratory MDL or the commercial/industrial land-use GAC. Contaminants in the water samples analysed did not exceed Atkins commercial (or residential) WSV.	Low Risk
		Humans Off-site Current/Future occupants of and visitors to the houses to the north- west, workers at and visitors to the agricultural machinery depot to the west of Area 1 and east of Area 2, Millfoss Farm to the south-east of Area 1 and farm workers and public on adjacent farm land.	Dermal Contact Inhalation Ingestion	Health risk	Mild	Low Only discrete olfactory evidence of contamination noted. No evidence of spill stains or odours at surface. No ACM was identified in the soil samples analysed. Contaminants in the soil samples analysed were either below the laboratory MDL or the commercial/industrial land-use GAC. Contaminants in the water samples analysed did not exceed Atkins commercial (or residential) WSV. In addition, Site surfaces are hardstanding or well vegetated, minimising windblown soil-derived dust. Surface water run-off will be soak into the ground or be intercepted by Site drains. Off-site human receptors are most likely not down hydraulic gradient from the Site.	Low Risk
in Area 1 (hydrocarbons). 4. SPH and HEP in the south of Area 1 (hydrocarbons). 5. Four former ASTs in Area 2 plus pipe manifold associated with the underground		Groundwater	Leaching from soil Migration of LNAPL Migration of contaminants in groundwater	Pollution of Aquifer	Mild	Low No LNAPL or visual/olfactory indications of contamination were detected. No contaminants were identified above the laboratory MDL in the groundwater samples analysed. However, this is based on one round of monitoring of shallow groundwater only.	Low Risk
pipeline to Area 1 (hydrocarbons). 6. Former interceptor in Area 2 (hydrocarbons).		Surface Water Burn of Turriff	Discharge of LNAPL Discharge of contaminants in base flow	Pollution of sensitive watercourse	Mild	Low No LNAPL or visual/olfactory indications of contamination were detected. No contaminants were identified above the laboratory MDL in the groundwater samples analysed. However, this is based on one round of monitoring of shallow groundwater only.	Low Risk
		Property On-site (buildings/infrastructure)	Direct contact with hydrocarbons in soil/water	Damage to materials	Minor	Unlikely Although TPH was detected in the soil, hydrocarbons only tend to be an issue if concrete is being poured which is not the case at the Site. No LNAPL was detected. No contaminants were identified above the laboratory MDL in the groundwater samples analysed.	Negligible Risk
		Property Off-site (buildings/infrastructure)	Direct contact with hydrocarbons in migrating groundwater	Damage to materials	Minor	Unlikely No LNAPL was detected. No contaminants were identified above the laboratory MDL in the groundwater samples analysed. Off-site property (buildings/infrastructure) receptors are most likely not down hydraulic gradient from the Site.	Negligible Risk
	Methane/Carbon Dioxide	Humans On-site: Current/Future Site Workers/Visitors	Inhalation	Health Risk	Mild	Low The Site CS for methane is CS1 and carbon dioxide is CS1 (very low risk). However, this is based on one round of monitoring	Low Risk
Ground Gas		Humans Off-site Current/Future occupants of and visitors to the houses to the north- west, workers at and visitors to the agricultural machinery depot to the west of Area 1 and east of Area 2, Millfoss Farm to the south-east of Area 1 and farm workers and public on adjacent farm land.	Inhalation	Health Risk	Mild	Low The Site CS for methane is CS1 and carbon dioxide is CS1 (very low risk). However, this is based on one round of monitoring	Low Risk
	Methane	Property On-site (buildings/infrastructure)	Accumulation (methane only)	Damage to buildings	Minor	Unlikely The Site CS for methane is CS1 (very low risk). However, this is based on one round of monitoring.	Negligible Risk
		Property Off-site (buildings/infrastructure)	Accumulation (methane only)	Damage to buildings	Minor	Unlikely The Site CS for methane is CS1 (very low risk). However, this is based on one round of monitoring.	Negligible Risk

6. Conclusions

6.1. Overall Land Quality

Historic maps show that the Site was agricultural land until it was developed as a PSD in the 1950s. Operations included the storage of aviation fuel and lube oil in underground and aboveground tanks, together with road and rail loading. The Site was mothballed in 1992.

Atkins Phase 1 LQA identified a number of historic, on-site potentially contaminative activities from past operations including potential leaks/spills of hydrocarbons from former tanks, pipework, road and rail loading areas and infrastructure. The Phase 2 Site Investigation carried out targeted potential sources and has indicated that the Site is underlain by Made Ground to 2.3mbgl resting on Superficial Deposits (clay, sand, gravel, silt) to 4.2 and 6mbgl underlain by sandstone bedrock.

Groundwater monitoring has identified shallow groundwater in the Superficial Deposits at 1.8 and 2.1mbgl.

No ACM or asbestos fibres were detected in the soil samples analysed. Elevated soil vapour headspace readings were recorded in AWS003, ASWS005 and AWS008. However, none of the contaminants detected in the soil and groundwater samples analysed were above the human health GAC for commercial land use.

In addition, no contaminants were identified above the laboratory MDL, MRP/RPV and EQS in the groundwater samples analysed. The Site CS for methane and carbon dioxide is CS1 which represents a very low risk

6.2. Environmental Risks

The environmental risk assessment is summarised below:

- A moderate risk has been identified to current/future construction/maintenance workers from contaminants in soil and groundwater even if they do not exceed the GAC because they may be in direct contact with contaminants when they are required to excavate and handle soil. However, this will be reduce to low risk if robust risk assessments are carried out to identify appropriate personnel protective equipment and suitable working methods to protect these receptors, in accordance with current guidance and recommended good working practices;
- A low risk has been identified to current/future on-site human receptors from the contamination detected in the soil/groundwater;
- a low risk has been identified to current/future off-site human receptors from the contamination detected in the soil/groundwater;
- a low risk has been identified to groundwater from the contamination detected in the soil/groundwater;
- a low risk has been identified to surface water from the contamination detected in the soil/groundwater;
- a low risk has been identified to current/future on-site human receptors from the methane/carbon dioxide detected;
- a low risk has been identified to current/future off-site human receptors from the methane/carbon dioxide detected;
- a negligible risk has been identified to on-site property from the contamination detected in the soil/groundwater and from the methane detected; and
- a negligible risk has been identified to off-site property from the from the contamination detected in the soil/groundwater and from the methane detected.

It should be noted that the assessment of ground gas and groundwater risks has been based on one round of monitoring only and the high groundwater level in the monitoring boreholes may have influenced the ground gas results. However, no particular ground gas sources were identified and as such, on the balance of probabilities, the ground gas CS is unlikely to change if further monitoring was to be carried out.

Identified risks to groundwater could increase or decrease based on further monitoring.

6.3. Suitability of Investigated Areas for Continued Use

Based on the Combined Phase 1/2 LQA carried out, the Site is considered suitable for use as a PSD (i.e. commercial/industrial), although it should be noted that assessment of ground gas and groundwater associated risks are based on only one round of monitoring.

The investigation was carried out to assess land quality and the condition of the buildings or contamination within the buildings was not part of that assessment. The potential for release of contamination during building demolition including the removal of tanks has not been considered and appropriate management is required if the buildings/infrastructure are demolished.

In addition, given the inherent limitations of any ground investigation, localised hotspots of contamination may exist between boreholes








Checked

Centre M

Centre M

Authorised for issue

Date

07/13

15/03/13

Date

D-ORD CHECK

PLOT DATE 08.07.2013

REV

N/A

DATE



APPENDICES



Historical Mapping Legends

Ordnance Survey County Series 1:10,560 Other Gravel Pit Sand Pit Pits Crchard Quarry Shingle Marsh Reeds Osiers ter ter ter set Mixed Wood Deciduous Brushwood Fir Furze Rough Pasture Trigonometrical Arrow denotes ۵ flow of water Station + Site of Antiquities Bench Mark T Pump, Guide Post, Well, Spring, . Signal Post Boundary Post .285 Surface Level Sketched Instrumental ----Contour Contour Fenced Fenced Main Roads Minor Roads Un-Fenced Un-Fenced Raised Road Sunken Road Road over Railway over Railway River Railway over Level Crossing Road Road over Road over **River or Canal** Stream Road over = Stream County Boundary (Geographical) County & Civil Parish Boundary Administrative County & Civil Parish Boundary County Borough Boundary (England) Co. Boro. Bdy. County Burgh Boundary (Scotland) Co. Burgh Bdy.

Rural District Boundary

----- Civil Parish Boundary

RD. Bdy.

0	Ordnance Survey Plan 1:10,000						
Enter	Chalk Pit, Clay Pit	0000000	Gravel Pit				
	Sand Pit	$\langle \rangle$	Disused Pit or Quarry				
00000	Refuse or Slag Heap		Lake, Loch or Pond				
	. Dunes		Boulders				
* * *	Coniferous Trees	4 ₄ 4	Non-Coniferous Trees				
φφ	Orchard ∩ ∩ _	Scrub	۱۲ _M Coppice				
ា ា ក	Bracken MUIII.	Heath '	, , , Rough Grassland				
<u></u>	Marsh WV//	Reeds -	-1- Saltings				
	Direc Building	tion of Flow of W	ater				
20000	Sloping Masonry	Pylon 	Electricity Transmission Line				
Cutting	Embankm	ent	Standard Gauge Multiple Track Standard Gauge				
Road ''' Under	"" Road // Lev Over Cross	el Foot sing Bridge	Single Track Siding, Tramway				
			Narrow Gauge				
	- Geographical Co	unty					
	- Administrative Control or County of City	ounty, County Bo	rough				
	Municipal Borous Burgh or District	gh, Urban or Rura Council	al District,				
	Borough, Burgh or County Constituency Shown only when not coincident with other boundaries						
	Civil Parish Shown alternately w	when coincidence of	boundaries occurs				
BP, BS Ch CH FE Sta FB FN	Boundary Post or Stone Church Club House Fire Engine Station Foot Bridge Fountain	Pol Sta Po PO Po PC Po PH Po SB Si Spr Si	blice Station sst Office ublic Convenience ublic House gnal Box pring				
GP	Guide Post	тсв те	elephone Call Box				
MP MS	Mile Post Mile Stone	TCP TO W W	elephone Call Post rell				

	Gravel Pit		Refuse tip or slag heap
	Rock	, , , , , , , , , , , , , , , , , , ,	Rock (scattered)
	Boulders	· · ·	Boulders (scattered)
2322	Shingle	Mud	Mud
Sand	Sand		Sand Pit
1111111	Slopes	differen Lilling	Top of cliff
	General detail		Underground detail
	- Overhead detail	-++++++++++++++++++++++++++++++++++++++	Narrow gauge railway
	Multi-track railway		Single track railway
••	County boundary (England only)		Civil, parish or community boundary
	District, Unitary, Metropolitan, London Borough boundary		Constituency boundary
۵ ^۵ **	Area of wooded vegetation	°° °°	Non-coniferous trees
۵ ۵	Non-coniferous trees (scattered)	** **	Coniferous trees
* *	Coniferous trees (scattered)	<u>₽</u>	Positioned tree
	Orchard	g g	Coppice or Osiers
.aī., .aī.	Rough Grassland	aMite aMite	Heath
0n	Scrub	a <u>M</u> e a <u>M</u> e	Marsh, Salt Marsh or Reeds
S	Water feature	44	Flow arrows
MHW(S)	Mean high water (springs)	MLW(S)	Mean low water (springs)
	Telephone line (where shown)	+-	Electricity transmission line (with poles)
€- BM 123.45 m	Bench mark (where shown)	Δ	Triangulation station
	Point feature (e.g. Guide Post or Mile Stone)		Pylon, flare stack or lighting tower
÷	Site of (antiquity)		Glasshouse
	General Building		Important Building

1:10,000 Raster Mapping



Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Banffshire	1:10,560	1871	2
Aberdeenshire	1:10,560	1873 - 1874	3
Aberdeenshire	1:10,560	1902 - 1903	4
Aberdeenshire	1:10,560	1928	5
Aberdeenshire	1:10,560	1938	6
Ordnance Survey Plan	1:10,000	1959	7
Ordnance Survey Plan	1:10,000	1970	8
Ordnance Survey Plan	1:10,000	1987	9
Ordnance Survey Plan	1:10,000	1989	10
Ordnance Survey Plan	1:10,000	1995	11
10K Raster Mapping	1:10,000	2006	12
10K Raster Mapping	1:10,000	2012	13

Historical Map - Slice A



Order Details

Order Number: Customer Ref: National Grid Reference: Slice: Site Area (Ha): Search Buffer (m):	41002256 5106238 372920, 84 A 2.9 1000	_1_1 49090	
Site Details Turriff, AB53 8BJ			
Landma	rk	Tel: Fax: Web:	0844 844 9952 0844 844 9951 www.envirocheck.co.uk
A Landmark Information Group	Service v47.0	24-Aug-2	2012 Page 1 of 13









Aberdeenshire Published 1902 - 1903 Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 12,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:0,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.







Aberdeenshire Published 1928 Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840°s. In 1854 the 1:2,50° scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940°s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:0,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.



















1	Historical Mapping Legends	5	Envire check
Ordnance Survey County Series and Ordnance Survey Plan 1:2,500	Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250	Large-Scale National Grid Data 1:2,500 and 1:1,250	Historical Mapping & Photography included:
Quarry Gravel Pit Sand Pit Clay Pit Shingle Refuse Heap Sloping Masonry Flat Rock Marsh Reeds Osiers Marsh Fuze Wood	Inactive Quarry, Chalk Pit or Clay Pit Rock Slopes Cliff Cliff Clay Clay Clay Clay Pit Clay Clay Clay Pit Clay Clay Clay Clay Clay Clay Clay Clay	Cliff Top Top Cliff Top Image: Source of the	Mapping Type Scale Date Pg Aberdeenshire 1:2,500 1870 - 1871 2 Aberdeenshire 1:2,500 1901 3 Aberdeenshire 1:2,500 1901 3 Aberdeenshire 1:2,500 1901 3 Aberdeenshire 1:2,500 1901 3 Aberdeenshire 1:2,500 1926 4 Ordnance Survey Plan 1:2,500 1964 - 1966 5 Ordnance Survey Plan 1:2,500 1975 - 6 6 Additional SIMs 1:2,500 1979 - 1984 7 Additional SIMs 1:2,500 1979 - 1984 7 Additional SIMs 1:2,500 1985 - 1990 8 Large-Scale National Grid Data 1:2,500 1995 - 9 10
Mixed Wood Brushwood Orchard	Top Sloping Archway 分型 Non-Coniferous Tree (surveyed) 余量 Coniferous Tree (surveyed) 公平 Non-Coniferous Trees (not surveyed) 未載 Coniferous Trees (not surveyed)	(not surveyed) Crohard Tree Coppice, Serub Coppice, Coppice, Cosier Cosier Cosier Cosier Colvert Colvert	
△ Trig. Station 507 △ Altitude at Trig. Station B.M. 325 9 ↑ Bench Mark 342 + Surface Level ← Arrow denotes flow of water ↓ Antiquities (site of) Cutting ↓ Embankment Failway crossing Road Level Crossing Level Crossing Road crossing Railway Failway crossing ↓ ↓ Failway crossing ↓ ↓ Failway crossing Bad over Bad over		Image: Direction of water flow	Historical Map - Segment A13
River or Canal single stream River or Canal River or Canal single stream River or Canal County Boundary (Geographical) County & Civil Parish Boundary +-+++ Administrative County & Civil Parish Boundary Co. Boro. Bdy. County Borough Boundary (England) Co. Burgh Bdy. County Burgh Boundary (Scotland) BP BS Boundary Postor Stone P.C.B Police Call Box B.R. Bridle Road P Pump E.P Electricity Pylon S.P Signal Post F.B. Foot Bridge SL Sluice F.P. Foot Path Sp. Spring G.P Guide Post or Board Tr.C.B Telephone Call Box M.S Mile Stone Tr. Trough M.P.M.R. Mooring Post or Ring W Well	Symbol marking point where boundary mereing changes BH Beer House P Pillar, Pole or Post BP, BS Boundary Post or Stone PO Post Office Cn, C Capstan, Crane PC Public Convenience Chy Chimney PH Public House D Fn Drinking Fountain Pp Pump EIP Electricity Pillar or Post SB, S Br Signal Post or Bridge FAP Fire Alarm Pillar SP, SL Signal Post or Light FB Foot Bridge Spr Spring GP Guide Post Tk Tank or Track H Hydrant or Hydraulic TCB Telephone Call Box LC Level Crossing TC Telephone Call Post MP Mile Post or Mooring Post WPt, WrT. Water Point, Water Tap MS Mile Stone W W NTL Normal Tidal Limit Wd Pp Wind Pump	Bks Barracks P Pillar, Pole or Post Bty Battery PO Post Office Cemy Cemetery PC Public Convenience Chy Chimmey Pp Pump Cis Clstern Ppg Sta Pumping Station Dismtd Rly Dismantled Railway PW Place of Worship El Gen Sta Electricity Generating Sewage Ppg Sta Sewage pumping Station El P Electricity Fole, Pillar SB, S Br Signal Boxor Bridge El Sub Sta Electricity Sub Station SP, SL Signal Postor Light FB Filter Bed Spr Spring Fn J D Fn Fountain / Drinking Ftn. Tk Tank or Track Gas Gov Gas Vee Compound Tr Trough GVC Gas Governer Wd Pp Wind Pump GP Guide Post WrPt WrT Water Point, Water Tap MH Manhole Wks Works (building or area)	Order Details Order Number: 41002256_1_1 Customer Ref: 5106238 National Grid Reference: 372920, 849090 Slice: A Site Area (Ha): 2.9 Search Buffer (m): 100 Site Details Turriff, AB53 8BJ Turriff, AB53 8BJ Tel: 0844 844 9952 Fax: 0844 844 9951 Web: Web: www.envirocheck.co.uk A Landmark Information Group Service v47.0 24-Aug-2012 Page 1 of 10

Т











Ordnance Survey Plan Published 1975

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





Historical Map - Segment A13



Order Details 41002256_1_1 5106238 National Grid Reference: 372920, 849090 А Site Area (Ha): Search Buffer (m): 2.9 100 Site Details Turriff, AB53 8BJ **Landmark** 0844 844 9952 Tel: Fax: 0844 844 9951 Web: www.envirocheck.co.uk





Additional SIMs Published 1979 - 1984

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









41002256_1_1 5106238 National Grid Reference: 372920, 849090 А 2.9 100 **Landmark*** 0844 844 9952 Tel: Fax: 0844 844 9951 Web: www.envirocheck.co.uk

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Large-Scale National Grid Data Published 1995

Source map scale - 1:2,500

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



Tel: Fax:

Web:

0844 844 9952

0844 844 9951

www.envirocheck.co.uk

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Large-Scale National Grid Data Published 1996

Source map scale - 1:2,500

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





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APPENDIX B



Envirocheck® Report:

Datasheet

Order Details:

Order Number: 41002256_1_1

Customer Reference: 5106238

National Grid Reference: 372920, 849090

Slice:

Site Area (Ha): 2.9 Search Buffer (m): 1000

Site Details:

Turriff AB53 8BJ

Client Details:

Mr I McBurnie Atkins Ltd The Axis 10 Holliday Street Birminghan B1 1TF

Prepared For:

Defence Infrastructure Organisation Kingston Road Sutton Coldfield West Midlands B75 7RL



Report Section	Page Number			
Summary	-			
Agency & Hydrological	1			
Waste	10			
Hazardous Substances	12			
Geological	13			
Industrial Land Use	25			
Sensitive Land Use	28			
Data Currency	29			
Data Suppliers	33			
Useful Contacts	34			

Introduction

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

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

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Report Version v47.0

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Agency & Hydrological					
Contaminated Land Register Entries and Notices					
Discharge Consents	pg 1		2	6	20
Enforcement and Prohibition Notices					
Integrated Pollution Controls					
Integrated Pollution Prevention And Control					
Local Authority Integrated Pollution Prevention And Control					
Local Authority Pollution Prevention and Controls					
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature	pg 7	Yes			
Pollution Incidents to Controlled Waters					
Prosecutions Relating to Authorised Processes					
Prosecutions Relating to Controlled Waters					
Registered Radioactive Substances					
River Quality	pg 8		1		
Substantiated Pollution Incident Register					
Water Abstractions					
Water Industry Act Referrals					
Groundwater Vulnerability	pg 8	Yes	n/a	n/a	n/a
Source Protection Zones					
River Flood Data (Scotland)	pg 8		Yes	n/a	n/a
Waste					
BGS Recorded Landfill Sites					
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)					
Local Authority Recorded Landfill Sites					
Registered Landfill Sites	pg 10		2		
Registered Waste Transfer Sites					
Registered Waste Treatment or Disposal Sites	pg 11				1
Hazardous Substances					
Control of Major Accident Hazards Sites (COMAH)	pg 12	1			
Explosive Sites					
Notification of Installations Handling Hazardous Substances (NIHHS)					
Planning Hazardous Substance Consents					
Planning Hazardous Substance Enforcements					

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Geological					
BGS 1:625,000 Solid Geology	pg 13	Yes	n/a	n/a	n/a
BGS Estimated Soil Chemistry	pg 13	Yes	Yes	Yes	Yes
BGS Recorded Mineral Sites	pg 22			3	3
BGS Urban Soil Chemistry					
BGS Urban Soil Chemistry Averages					
Brine Compensation Area			n/a	n/a	n/a
Coal Mining Affected Areas			n/a	n/a	n/a
Mining Instability			n/a	n/a	n/a
Man-Made Mining Cavities					
Natural Cavities					
Non Coal Mining Areas of Great Britain	pg 23	Yes		n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 23	Yes	Yes	n/a	n/a
Potential for Compressible Ground Stability Hazards	pg 23	Yes		n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 24	Yes	Yes	n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 24	Yes	Yes	n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 24	Yes	Yes	n/a	n/a
Radon Potential - Radon Affected Areas	pg 24	Yes	n/a	n/a	n/a
Radon Potential - Radon Protection Measures	pg 24	Yes	n/a	n/a	n/a
Industrial Land Use					
Contemporary Trade Directory Entries	pg 25		2	5	19
Fuel Station Entries	pg 27			1	2

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Sensitive Land Use					
Areas of Adopted Green Belt					
Areas of Unadopted Green Belt					
Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves					
Marine Nature Reserves					
National Nature Reserves					
National Parks					
National Scenic Areas					
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones	pg 28	1			
Ramsar Sites					
Sites of Special Scientific Interest					
Special Areas of Conservation					
Special Protection Areas					


Map ID		Details (Estimated Distance From Site	Contact	NGR
1	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	S Mill Of Turriff Ltd Not Given Oatmeal Mill And Cottage, Mill Of Turriff, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/73/92 Not Supplied 26th October 1973 Not Supplied Septic tank Freshwater Stream/River Idoch Water Not Supplied Located by supplier to within 100m	A13NW (N)	3	1	372900 849200
2	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	Grampian Regional Council Not Given Grain Mill Housing, Station Road, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/95/47/S Not Supplied Not Supplied 12th July 1995 Not Supplied Discharge Of Other Matter-Surface Water Freshwater Stream/River Burn Of Turriff Not Supplied Located by supplier to within 100m	A13NW (NW)	193	1	372780 849350
3	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	Grampian Regional Council Not Given Storm Tank At Brodies Den, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/78/3 Not Supplied Not Supplied 2nd June 1978 Not Supplied Storm Sewage Freshwater Stream/River Gasey Burn Not Supplied Located by supplier to within 100m	A18SW (N)	292	1	372900 849490
4	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	Turriff Town Council Not Given Lower Haughs Storm Overflow, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/74/6 Not Supplied Not Supplied 6th January 1975 Not Supplied Storm Sewage Freshwater Stream/River Gassie Burn Not Supplied Located by supplier to within 100m	A18SW (N)	336	1	372850 849530



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
5	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	Grampian Regional Council Not Given Housing Development, Victoria Terrace, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/95/4/S/R Not Supplied Not Supplied 18th May 1995 Not Supplied Discharge Of Other Matter-Surface Water Freshwater Stream/River Gasey Burn Not Supplied Located by supplier to within 100m	A18SW (NW)	392	1	372700 849535
5	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Environment: Receiving Water: Status: Positional Accuracy:	Grampian Regional Council Not Given Sheltered Housing Development, Victoria Terrace, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/88/7* Not Supplied Not Supplied 14th March 1988 Not Supplied Discharge Of Other Matter-Surface Water Freshwater Stream/River Brodies Burn Not Supplied Located by supplier to within 100m	A18SW (NW)	396	1	372700 849540
6	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	Turriff Town Council Not Given Turriff Sewage Treatment Works, The Den Overflow Scottish Environment Protection Agency, North Region Deveron D/70/58 Not Supplied Not Supplied 30th July 1970 Not Supplied Storm Sewage Freshwater Stream/River Idoch Water Not Supplied Located by supplier to within 100m	A18SE (N)	415	1	373000 849600
7	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	Mr & Mrs J Angus Not Given New House, Bridgend, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/89/15 Not Supplied Not Supplied 10th May 1989 Not Supplied Septic tank Onto Land Not Supplied Not Supplied Located by supplier to within 100m	A12NE (W)	496	1	372300 849200



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Discharge Consents					
8	Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	W G Hutcheon Not Given Boggieshalloch, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/72/164 Not Supplied Not Supplied 10th July 1972 Not Supplied Agricultural effluents Freshwater Stream/River Tributary Of Idoch Water Not Supplied Located by supplier to within 100m	A9NW (SE)	520	1	373300 848600
8	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	S W G Hutcheon Not Given Boggieshalloch, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/72/163 Not Supplied Not Supplied 10th July 1972 Not Supplied Septic tank Freshwater Stream/River Tributary Of Idoch Water Not Supplied Located by supplier to within 100m	A9NW (SE)	524	1	373300 848595
9	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Environment: Receiving Water: Status: Positional Accuracy:	S North Of Scotland Water Authority Not Given Turriff Sewerage System, Haughs To Putachie, Manhole I , TURRIFF Scottish Environment Protection Agency, North Region Deveron D/97/17/S(E) Not Supplied 30th October 1997 Not Supplied Storm /emergency overflow Freshwater Stream/River Gasey Burn Not Supplied Located by supplier to within 100m	A17SE (NW)	536	1	372410 849480
10	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	J Macbain & Sons Not Given Lower Smiddyseat, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/73/43 Not Supplied 26th March 1973 Not Supplied Septic tank Freshwater Stream/River Idoch Water Not Supplied Located by supplier to within 100m	A14NE (E)	539	1	373600 849100



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Discharge Consents	5				
10	Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	J Macbain & Sons Not Given Lower Smiddyseat, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/73/44 Not Supplied Not Supplied 26th March 1973 Not Supplied Agricultural effluents Freshwater Stream/River Tributary Of Idoch Water Not Supplied Located by supplier to within 100m	A14NE (E)	539	1	373600 849095
11	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	Grampian Regional Council Not Given Housing Development, Balmellie Road, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/95/2/S/R Not Supplied Not Supplied 18th May 1995 Not Supplied Discharge Of Other Matter-Surface Water Freshwater Stream/River Colly Stripe Not Supplied Located by supplier to within 100m	A19SW (NE)	610	1	373500 849495
11	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	Grampian Regional Council Not Given Housing Development At, Balmellie Road, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/86/35/A* Not Supplied Not Supplied 3rd February 1987 Not Supplied Discharge Of Other Matter-Surface Water Freshwater Stream/River Colly Stripe Not Supplied Located by supplier to within 100m	A19SW (NE)	614	1	373500 849500
12	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	S Banff & Buchan Dist Council Not Given Sports Centre, Playing Fields, Queens Road, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/93/31/S Not Supplied Not Supplied 13th May 1993 Not Supplied Discharge Of Other Matter-Surface Water Freshwater Stream/River Burn Of Turriff Not Supplied Located by supplier to within 100m	A12NW (W)	627	1	372220 849370



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
13	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Environment: Receiving Water: Status: Positional Accuracy:	s Mr & Mrs J Hutcheon Not Given New House, Lower Smiddyseat, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/94/21/U Not Supplied Not Supplied 26th April 1994 Not Supplied Septic tank Groundwater Not Supplied Not Supplied Located by supplier to within 100m	A14NE (E)	683	1	373730 849210
14	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	s R F Maxwell Not Given Upperton Of Gask, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/73/69 Not Supplied Not Supplied 26th March 1973 Not Supplied Agricultural effluents Freshwater Stream/River Tributary Of Idoch Water Not Supplied Located by supplier to within 100m	A7SE (SW)	695	1	372500 848400
14	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	R F Maxwell Not Given Upperton Of Gask, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/73/68 Not Supplied Not Supplied 26th March 1973 Not Supplied Septic tank Freshwater Stream/River Tributary Of Idoch Water Not Supplied Located by supplier to within 100m	A7SE (SW)	699	1	372500 848395
15	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	s Mr Alistair Garnett Not Given New Dwellinghouse, Balquholly, AUCHTERLESS Scottish Environment Protection Agency, North Region Ythan Y/91/71/U Not Supplied Not Supplied 22nd August 1991 Not Supplied Septic tank Groundwater Not Supplied Not Supplied Not Supplied Located by supplied to within 100m	A17SW (NW)	715	1	372240 849560



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
16	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	Mr A Davidson Not Given New House, Smiddyseat, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/96/18/U Not Supplied Not Supplied 28th March 1996 Not Supplied Septic tank Groundwater Not Supplied Not Supplied Act Supplied Not Supplied Located by supplier to within 100m	A14NE (E)	733	1	373770 849260
17	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Environment: Receiving Water: Status: Positional Accuracy:	S Turriff Town Council Not Given Turriff Sewage Treatment Works, Gas Works Overflow Scottish Environment Protection Agency, North Region Deveron D/70/59 Not Supplied Not Supplied 30th July 1970 Not Supplied Storm Sewage Freshwater Stream/River Idoch Water Not Supplied Located by supplier to within 100m	A17SE (NW)	773	1	372300 849700
18	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	A Singer Not Given Findon Croft, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/81/45 Not Supplied Not Supplied 9th October 1981 Not Supplied Septic tank Freshwater Stream/River Colley Strype Not Supplied Located by supplier to within 100m	A19SE (NE)	909	1	373800 849600
19	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	David A Meldrum Not Given New House, Middletack, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/91/17/U Not Supplied Not Supplied 14th February 1991 Not Supplied Septic tank Groundwater Not Supplied Not Supplied Located by supplier to within 100m	A11SE (W)	958	1	371840 848940



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Discharge Consent					
20	Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type:	Harbro Farm Sales Ltd Not Given Lower Smiddyseat, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/79/7 Not Supplied Not Supplied 31st July 1979 Not Supplied Septic tank	A15NW (E)	966	1	374000 849300
	Environment: Receiving Water: Status: Positional Accuracy:	Tributary Of Colly Stripe Not Supplied Located by supplier to within 100m				
	Discharge Consent					
20	Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	P W Kenyon Not Given Lower Smiddyseat, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/88/1/A Not Supplied Not Supplied 21st March 1988 Not Supplied Trade Effluent Ditch A Ditch Tributary Of The Colp Burn Not Supplied Located by supplier to within 100m	A15NW (E)	989	1	374030 849270
	Discharge Consent					
21	Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	Turriff Town Council Not Given Turriff Sewage Treatment Works, Putachie Overflow Scottish Environment Protection Agency, North Region Deveron D/70/60 Not Supplied Not Supplied 30th July 1970 Not Supplied Storm Sewage Freshwater Stream/River Idoch Water Not Supplied Located by supplier to within 100m	A17NW (NW)	981	1	372100 849800
22	Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	Mr J Ironside Not Given New House, Eastside, Kinnermit, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/89/20 Not Supplied Not Supplied 12th June 1889 Not Supplied Septic tank Onto Land Not Supplied Not Supplied Not Supplied Located by supplier to within 100m	A11SE (W)	987	1	371800 849030
	Nearest Surface Wa	ter Feature				
	Nearest Jurrate Wa		A13SW (SW)	0	-	372894 849067



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	River Quality Name: GQA Grade: Reach: Estimated Distance	Not Supplied River Quality A Not Supplied Not Supplied	A13SW (S)	78	2	372875 848905
	Flow Rate: Flow Type: Year:	Not Supplied Not Supplied 1990				
	Groundwater Vulne	erability				
	Geological Classification: Soil Classification: Map Sheet:	Minor or Moderately Permeable Aquifer - Fractured or potentially fractured rocks which do not have a high primary permeability or other formations of variable permeability Not classified Map of Scotland	A13SW (W)	0	2	372919 849086
	Drift Deposits	1:625,000				
	River Flood Data (S	(actiond)				
	Type: Flood Plain Type: Source:	Flood Plain Depth 0 -1 Metres 0-1m estimated 100yr flood depth Centre for Ecology and Hydrology	A13NE (N)	72	3	372950 849250
	River Flood Data (S	cotland)				
	Type: Flood Plain Type: Source:	Flood Plain Depth 0 -1 Metres 0-1m estimated 100yr flood depth Centre for Ecology and Hydrology	A13NE (NE)	91	3	373050 849200
	River Flood Data (S	cotland)				
	Type: Flood Plain Type: Source:	Flood Plain Depth 1 - 2 Metres 1-2m estimated 100yr flood depth Centre for Ecology and Hydrology	A13NE (E)	93	3	373150 849100
	River Flood Data (S					
	Type: Flood Plain Type: Source:	Flood Plain Depth Greater than 2 Metres over 2m estimated 100yr flood depth Centre for Ecology and Hydrology	A13NE (NE)	101	3	373000 849250
	River Flood Data (S	cotland)				
	Type: Flood Plain Type: Source:	Flood Plain Depth Greater than 2 Metres over 2m estimated 100yr flood depth Centre for Ecology and Hydrology	A13NW (N)	102	3	372919 849300
	River Flood Data (S	cotland)				
	Type: Flood Plain Type: Source:	Flood Plain Depth Greater than 2 Metres over 2m estimated 100yr flood depth Centre for Ecology and Hydrology	A13NE (NE)	122	3	373100 849200
	River Flood Data (S	cotland)				
	Type: Flood Plain Type: Source:	Flood Plain Depth 1 - 2 Metres 1-2m estimated 100yr flood depth Centre for Ecology and Hydrology	A13SE (E)	138	3	373200 849086
	River Flood Data (S	cotland)				
	Type: Flood Plain Type: Source:	Flood Plain Depth 0 -1 Metres 0-1m estimated 100yr flood depth Centre for Ecology and Hydrology	A13NE (NE)	141	3	373100 849250
	River Flood Data (S	cotland)				
	Type: Flood Plain Type: Source:	Flood Plain Depth 1 - 2 Metres 1-2m estimated 100yr flood depth Centre for Ecology and Hydrology	A13NE (N)	142	3	373000 849300
	River Flood Data (S	cotland)				
	Type: Flood Plain Type: Source:	Flood Plain Depth 1 - 2 Metres 1-2m estimated 100yr flood depth Centre for Ecology and Hydrology	A13NW (N)	152	3	372919 849350
	River Flood Data (S	cotland)				
	Type: Flood Plain Type: Source:	Flood Plain Depth Greater than 2 Metres over 2m estimated 100yr flood depth Centre for Ecology and Hydrology	A13NW (N)	160	3	372850 849350
	River Flood Data (S	cotland)				
	Type: Flood Plain Type: Source:	Flood Plain Depth 0 -1 Metres 0-1m estimated 100yr flood depth Centre for Ecology and Hydrology	A13NE (NE)	171	3	373050 849300



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	River Flood Data (tiver Flood Data (Scotland)				
	Type: Flood Plain Type: Source:	Flood Plain Depth 1 - 2 Metres 1-2m estimated 100yr flood depth Centre for Ecology and Hydrology	A13SE (E)	189	3	373250 849050
	River Flood Data (River Flood Data (Scotland)				
	Type: Flood Plain Type: Source:	Flood Plain Depth 0 -1 Metres 0-1m estimated 100yr flood depth Centre for Ecology and Hydrology	A14SW (E)	249	3	373300 849000



Waste

Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Local Authority Lan	dfill Coverage				
	Name:	Aberdeenshire Council - Has no landfill data to supply		0	9	372919 849086
	Registered Landfill	Sites				
23	Licence Holder: Licence Reference: Site Location: Licence Easting: Licence Northing: Operator Location: Authority: Site Category: Max Input Rate: Waste Source Restrictions: Status: Dated: Preceded By Licence: Superseded By Licence: Positional Accuracy: Boundary Accuracy: Authorised Waste	Aberdeenshire Council WML/N/20036/97 Millmoss Inert Landfill, Little Turriff, Turriff, Aberdeenshire Not Supplied Woodhill House, Westburn Road, Aberdeen, Aberdeenshire, Ab16 5gb Scottish Environment Protection Agency - North Region, Aberdeen Office Landfill Small (Equal to or greater than 10,000 and less than 25,000 tonnes per year) No known restriction on source of waste Site dormant 31st October 1997 WMR/16 Not Given Positioned by the supplier Moderate Inactive Waste Consisting Of Max.Waste Permitted By Licence Uncontam. Brick/Stone/Concrete Rubble Uncontam. Brick/Stone/Concrete Rubble Liquid Wastes Spec.Waste (Epa'90:S62/1996 Regs)	A13NE (NE)	11	4	372976 849159
	Pagistared Landfill	Sites				
24	Licence Holder: Licence Reference: Site Location: Licence Easting: Licence Easting: Licence Northing: Operator Location: Authority: Site Category: Max Input Rate: Waste Source Restrictions: Status: Dated: Preceded By Licence: Superseded By Licence: Positional Accuracy: Boundary Accuracy: Authorised Waste Prohibited Waste	Banff & Buchan D.C. WMR/16 Adj. Caravan Site, Little Turriff, Turriff, Aberdeenshire 373000 849200 The Town House, Low Street, Banff, Aberdeenshire, Ab4 1ay Scottish Environment Protection Agency - North Region, Aberdeen Office Landfill - with civic amenity Small (Equal to or greater than 10,000 and less than 25,000 tonnes per year) Some restriction on source of waste Record supersededSuperseded Not Supplied Not Given WML/N/20036/97 Manually positioned to the address or location Not Applicable Builders Rubble Other Inert Material Hazardous Wastes Industrial Wastes	A13NE (NE)	60	4	373000 849200



Waste

Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
Reg	gistered Waste Tr	reatment or Disposal Sites				
25 Lice Site Ope Autt Site Max Was Res Lice Date Prec Sup Lice Posi Bou Autt	ence Holder: ence Reference: e Location: werator Location: thority: e Category: tx Input Rate: aste Source strictions: ence Status: ted: eence Status: ted: perseded By ence: sitional Accuracy: undary Quality: thorised Waste	J Low WML/27 Priory Stores, Southend, Muiresk, Turriff, Aberdeenshire As Site Address Scottish Environment Protection Agency - North Region, Aberdeen Office Scrapyard Very Small (Less than 10,000 tonnes per year) No known restriction on source of waste Operational as far as is knownOperational 28th July 1994 Not Given Not Given Manually positioned to the road within the address or location Not Supplied General Ferrous Metal Scrap General Non-Ferrous Metal Scrap Lead/Acid Batteries Max.Waste Permitted By Licence Scrap Motor Vehicles Commercial Waste Household Waste Industrial Wastes Special Wastes (As In S17 1980) N.O.S Waste N.O.S.	A7NW (SW)	955	4	372040 848500



Hazardous Substances

Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Control of Major Ac	cident Hazards Sites (COMAH)				
26	Name: Location: Reference: Type: Status: Positional Accuracy:	Oil And Pipelines Agency Turiff, Millmoss, Turiff, Aberdeenshire, AB53 Not Supplied Lower Tier Active Manually positioned within the geographical locality	A13NW (W)	0	5	372876 849093



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid	d Geology				
	Description:	Middle Old Red Sandstone	A13SW (W)	0	6	372919 849086
	BGS Estimated Soil Source: Soil Sample Type: Arsenic	Chemistry British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A13SW (S)	0	7	372919 849000
	Concentration: Cadmium Concentration: Chromium Concentration: Lead Concentration:	no data 60 - 90 mg/kg <150 mg/kg				
	Concentration:	15 - Su Ingikg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A13SW (W)	0	7	372919 849086
	Cadmium Concentration:	no data				
	Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A13SE (E)	0	7	373000 849086
	Concentration: Cadmium	no data				
	Concentration: Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A13NE (NE)	0	7	372944 849098
	Concentration: Cadmium	no data				
	Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A13NW (W)	0	7	372838 849108
	Concentration: Cadmium Concentration:	no data				
	Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel	<150 mg/kg 15 - 30 mg/kg				
		Chamister				
	Source:	British Geological Survey, National Geoscience Information Service	A13SW	12	7	372816
	Soil Sample Type: Arsenic Concentration	Sed <15 mg/kg	(SW)			849033
	Cadmium Concentration:	no data				
	Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg				



	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
BGS Estimated Soil	Chemistry				
Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A13SW (SW)	16	7	372820 849026
Cadmium Concentration:	no data				
Concentration:	<150 mg/kg				
Nickel Concentration:	15 - 30 mg/kg				
BGS Estimated Soil	Chemistry				
Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A13SW (SW)	22	7	372835 849000
Cadmium Concentration:	no data				
Chromium Concentration:	60 - 90 mg/kg				
Nickel Concentration:	< 150 mg/kg 15 - 30 mg/kg				
BGS Estimated Soil	Chemistry				
Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A13NW (NW)	29	7	372864 849203
Arsenic Concentration:	<15 mg/kg				
Concentration: Chromium	60 - 90 ma/ka				
Concentration: Lead Concentration:	<150 mg/kg				
Nickel Concentration:	15 - 30 mg/kg				
BGS Estimated Soil	Chemistry				
Source: Soil Sample Type: Arsenic	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A13SW (SW)	45	7	372806 849000
Concentration: Cadmium	no data				
Concentration: Chromium	60 - 90 mg/kg				
Lead Concentration: Nickel	<150 mg/kg 15 - 30 mg/kg				
Concentration:					
BGS Estimated Soil	Chemistry				
Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A13SE (SE)	51	7	373000 849000
Arsenic Concentration:	<15 mg/kg				
Cadmium Concentration:	no data				
Concentration:	50 - 90 mg/kg				
Nickel Concentration:	15 - 30 mg/kg				
BGS Estimated Soil	Chemistry				
Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A13SE (SE)	56	7	372995 849000
Arsenic Concentration:	<15 mg/kg	(32)			0.0000
Cadmium Concentration:	no data				
Chromium Concentration:	60 - 90 mg/kg				
Nickel Concentration:	< 150 mg/kg 15 - 30 mg/kg				
	BGS Estimated Soil Source: Soil Sample Type: Arsenic Concentration: Cadmium Concentration: Chromium Concentration: Lead Concentration: Nickel Concentration: Concentration: Concentration: Concentration: Cadmium Concentration: Cadmium Concentration: Cadmium Concentration: Lead Concentration: Nickel Concentration: Cadmium Concentration: Cadmium Concentration: Cadmium Concentration: Cadmium Concentration: Nickel Concentration: Cadmium Concentration: Nickel Concentration: Cadmium Concentration: Lead Concentration: Nickel Concentration: Lead Concentrati	Details BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Set Sample Type: Concentration: c41 Concentration: c61 Concentration: c60 on g/kg Concentration: c60 on g/kg Concentration: c61 Ead Concentration: British Geological Survey, National Geoscience Information Service Solition: Solition: British Geological Survey, National Geoscience Information Service Solition: Solition: British Geological Survey, National Geoscience Information Service Solition: Solition: 15 mg/kg Concentration: c61 on g/kg Concentration: c61 on g/kg Concentration: c63 Settimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Solitismic Source: British Geological Survey, National Geoscience Information Service Solitismic Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Source: Source Source: Source	Details References Direction) BGS Estimated Soil Chemistry Art3SW Soil Sample Type: Sed Assenic Art3SW (SW) Concentration: Concent	Details Peteranoc (Compass) Direction Estimated Distance (SW) EGS Estimated Soil Chemistry Gamma modula Concentration: Ead Concentration: Ead Eadmised Soil Chemistry Source: Ead Eadmised Soil Chemistry Ead Ead Eadmised Soil Chemistry Ead Eadmised Soil Chemistry Eadmised Eadmised Soil Chemistry Ead Eadmised Soil Chemistr	Details Reference Estimated prom Site Contact 605 Estimated Soli Chemistry Bittin Coclogical Survey, National Geoscience Information Service Soli Sample Type, Sod Arsenic Concentration: A135W (SW) 16 7 60 Settimated Soli Chemistry no data A135W (SW) 22 7 Concentration: 0 - 80 mg/kg A135W (SW) 22 7 Source: British Coclogical Survey, National Geoscience Information Service Sol Sample Type, Concentration: A135W (SW) 22 7 Source: British Coclogical Survey, National Geoscience Information Service Concentration: A138W (SW) 22 7 Source: British Coclogical Survey, National Geoscience Information Service Concentration: A138W (SW) 23 7 Source: British Coclogical Survey, National Geoscience Information Service Concentration: A138W (SW) 23 7 Source: British Coclogical Survey, National Geoscience Information Service Concentration: A138W (SW) 45 7 Source: British Coclogical Survey, National Geoscience Information Service Concentration: A138W (SW) 45 7 Source: Source: <t< td=""></t<>



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A13SE (SE)	61	7	373000 848995
	Cadmium Concentration:	no data				
	Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A13SW (W)	83	7	372725 849026
	Cadmium Concentration:	no data				
	Concentration:	60 - 90 mg/kg				
	Nickel Concentration:	15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service	A13SW (SW)	102	7	372733 849000
	Arsenic Concentration:	<15 mg/kg				
	Concentration:	60 - 90 mg/kg				
	Concentration: Lead Concentration:	<150 ma/ka				
	Nickel Concentration:	15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A13NE (E)	201	7	373236 849173
	Concentration: Cadmium	no data				
	Concentration: Chromium	60 - 90 mg/kg				
	Lead Concentration:	<150 mg/kg				
	Concentration:	15 - 50 liig/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A18SE (N)	251	7	373000 849429
	Arsenic Concentration:	<15 mg/kg				
	Cadmium Concentration:	no data				
	Concentration:					
	Nickel Concentration:	15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A18SW (N)	259	7	372915 849456
	Arsenic Concentration:	<15 mg/kg				010100
	Cadmium Concentration:	no data				
	Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel	<150 mg/kg 15 - 30 mg/kg				
			1			



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A8NE (S)	281	7	373000 848725
	Cadmium Concentration: Chromium	no data 60 - 90 mg/kg				
	Concentration: Lead Concentration:	<150 mg/kg				
	Nickel Concentration:	15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A12SE (W)	362	7	372436 849000
	Cadmium Concentration:	no data				
	Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A14SW (E)	374	7	373408 848928
	Arsenic Concentration:	<15 mg/kg				
	Concentration: Chromium	60 - 90 ma/ka				
	Concentration: Lead Concentration:	<150 mg/kg				
	Nickel Concentration:	15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A14SW (E)	377	7	373432 849000
	Concentration: Cadmium	no data				
	Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel	<150 mg/kg 15 - 30 mg/kg				
	Concentration:					
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A14SW (E)	378	7	373433 849000
	Arsenic Concentration:	<15 mg/kg				
	Concentration: Chromium	60 - 90 mg/kg				
	Concentration: Lead Concentration:	<150 mg/kg				
	Nickel Concentration:	15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A12SE (W)	402	7	372396 849000
	Arsenic Concentration:	<15 mg/kg				
	Cadmium Concentration:	no data				
	Concentration:	<150 ma/ka				
	Nickel Concentration:	15 - 30 mg/kg				



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A14NW (E)	404	7	373464 849114
	Cadmium Concentration:	no data				
	Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A14SW (E)	415	7	373470 849000
	Cadmium Concentration:	no data				
	Chromium Concentration:	60 - 90 mg/kg				
	Nickel Concentration:	15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A14SW (E)	430	7	373474 848948
	Arsenic Concentration:	<15 mg/kg				
	Concentration:	60 - 90 mg/kg				
	Concentration: Lead Concentration:	<150 ma/ka				
	Nickel Concentration:	15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A14SW (SE)	490	7	373485 848825
	Concentration: Cadmium	no data				
	Concentration: Chromium	60 - 90 mg/kg				
	Lead Concentration:	<150 mg/kg 15 - 30 mg/kg				
	Concentration:					
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A8SE (S)	597	7	373032 848404
	Concentration:	< 15 mg/kg				
	Concentration: Chromium	60 - 90 ma/kg				
	Concentration: Lead Concentration: Nickel	<150 mg/kg 15 - 30 mg/kg				
	Concentration:					
	BGS Estimated Soil	Chemistry			_	
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A8SE (S)	601	7	373000 848393
	Arsenic Concentration: Cadmium	s to trig/kg				
	Concentration: Chromium	60 - 90 ma/kg				
	Concentration: Lead Concentration:	<150 mg/kg				
	Nickel Concentration:	15 - 30 mg/kg				



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A18SE (NE)	630	7	373211 849745
	Cadmium Concentration:	no data				
	Concentration:	50 - 50 mg/kg				
	Nickel Concentration:	15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A18NW (N)	636	7	372921 849833
	Cadmium Concentration:	no data				
	Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A18NW (N)	636	7	372922 849833
	Arsenic Concentration:	<15 mg/kg				
	Cadmium Concentration:					
	Concentration:	60 - 90 mg/kg				
	Nickel Concentration:	15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A12SW (W)	671	7	372160 848855
	Cadmium Concentration:	no data				
	Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel	<150 mg/kg 15 - 30 mg/kg				
	Concentration:					
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A19SW (NE)	713	7	373479 849654
	Arsenic Concentration:	<15 mg/kg				
	Cadmium Concentration:	no data				
	Concentration:	60 - 90 mg/kg				
	Nickel Concentration:	15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A9NW (SE)	756	7	373456 848420
	Arsenic Concentration:	<15 mg/kg				
	Cadmium Concentration:					
	Concentration:					
	Nickel Concentration:	15 - 30 mg/kg				



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A12SW (W)	785	7	372000 849086
	Cadmium Concentration:	no data				
	Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A12SW (W)	791	7	372000 849000
	Cadmium Concentration:	no data				
	Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A12NW (W)	795	7	372000 849221
	Arsenic Concentration:	<15 mg/kg				
	Concentration:					
	Concentration:	stor - so mg/kg				
	Nickel Concentration:	15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A18NW (N)	802	7	372900 850000
	Cadmium Concentration:	no data				
	Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel	<150 mg/kg 15 - 30 mg/kg				
	Concentration:					
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A18NW (N)	802	7	372919 850000
	Arsenic Concentration:	<15 mg/kg				
	Cadmium Concentration:	no data				
	Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A18NE (N)	809	7	373000 850000
	Arsenic Concentration:	<15 mg/kg				
	Cadmium Concentration:	10 data				
	Concentration:	<150 ma/ka				
	Nickel Concentration:	15 - 30 mg/kg				



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A18NE (N)	820	7	373067 850000
	Cadmium Concentration: Chromium	no data 60 - 90 mg/kg				
	Concentration: Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic Concentration: Cadmium	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg no data	A18NE (N)	820	7	373109 849991
	Concentration: Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A18NE (N)	848	7	373174 850000
	Concentration: Cadmium Concentration:	no data				
	Chromium Concentration:	60 - 90 mg/kg				
	Nickel Concentration:	15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A19NW (N)	852	7	373270 849964
	Cadmium Concentration: Chromium	no data 60 - 90 mg/kg				
	Concentration: Lead Concentration:	<150 mg/kg				
	Nickel Concentration:	15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A18NE (N)	862	7	373000 850053
	Arsenic Concentration: Cadmium	<15 mg/kg				
	Concentration: Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A9SW (SE)	866	7	373448 848286
	Concentration: Cadmium Concentration:	no data				
	Chromium Concentration:	60 - 90 mg/kg				
	Nickel Concentration:	< 150 mg/kg 15 - 30 mg/kg				



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A9NE (SE)	866	7	373807 848629
	Cadmium Concentration:	no data $60 - 90 mg/kg$				
	Concentration:	<150 mg/kg				
	Nickel Concentration:	15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A17SW (NW)	913	7	372000 849563
	Cadmium Concentration:	no data				
	Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A15SW (E)	938	7	374000 849086
	Arsenic Concentration:	<15 mg/kg				
	Cadmium Concentration:					
	Concentration:	<150 mg/kg				
	Nickel Concentration:	15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A15SW (E)	941	7	374000 849000
	Cadmium Concentration:	no data				
	Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel	<150 mg/kg 15 - 30 mg/kg				
	Concentration:					
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A19NW (NE)	944	7	373397 850000
	Arsenic Concentration:	<15 mg/kg				
	Cadmium Concentration:	no data				
	Concentration: Lead Concentration:	<150 ma/ka				
	Nickel Concentration:	15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A3NW (S)	985	7	372919 848000
	Arsenic Concentration:	<15 mg/kg				
	Cadmium Concentration:	no data				
	Concentration:	<150 mg/kg				
	Nickel Concentration:	15 - 30 mg/kg				



Map ID		Details		Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A3NW (S)	987	7	372832 848000
	Concentration: Cadmium	no data				
	Concentration: Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel	<150 mg/kg 15 - 30 mg/kg				
	Concentration.					
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A19NW (NE)	988	7	373476 850000
	Concentration: Cadmium	no data				
	Concentration: Chromium	60 - 90 mg/kg				
	Concentration: Lead Concentration: Nickel	<150 mg/kg 15 - 30 mg/ka				
	Concentration:					
	BGS Estimated Soil	Unemistry		004	7	070000
	Source: Soil Sample Type:	Sed	A3NE (S)	991	/	373000 848000
	Arsenic Concentration:	<15 mg/kg				
	Cadmium Concentration:	no data				
	Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg				
	BGS Recorded Mine	aral Sites				
27	Site Name:	Brodie'S Den Gravel Pit	A18SE	374	6	373085
	Location:	, Turriff, Aberdeenshire Ritigh Coological Survey, National Cooscience Information Service	(N)			849522
	Reference:	13564				
	Type: Status:	Ceased Ceased				
	Operator:	Unknown Operator				
	Periodic Type:	Quaternary				
	Geology: Commodity:	Glaciofluvial Deposits Sand and Gravel				
	Positional Accuracy:	Located by supplier to within 10m				
	BGS Recorded Mine	eral Sites				07707
28	Site Name: Location:	Smiddyseat , Turriff, Aberdeenshire	A14NW (NE)	390	6	373346 849337
	Source: Reference:	British Geological Survey, National Geoscience Information Service				
	Type:	Opencast				
	Operator:	Unknown Operator				
	Operator Location: Periodic Type:	Unknown Operator Devonian				
	Geology:	Gardenstown Conglomerate Formation				
	Positional Accuracy:	Located by supplier to within 10m				
	BGS Recorded Mine	eral Sites				
29	Site Name:	Haughs Turriff Aberdeenshire	A17SE	454	6	372518
	Source:	British Geological Survey, National Geoscience Information Service	(1444)			049400
	Reference: Type:	135666 Opencast				
	Status:	Ceased Turriff District Committee				
	Operator Location:	Turriff District Committee, Road Surveyor, Minty Cottage, Turriff,				
	Periodic Type:	Neoproterozoic				
	Commodity:	Igneous and Metamorphic Rock				
	Positional Accuracy:	Located by supplier to within 10m				



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Recorded Mine	eral Sites				
30	Site Name: Location: Source: Reference: Type: Status: Operator: Operator: Operator Location: Periodic Type: Geology: Commodity: Positional Accuracy:	Turriff Brick & Tile Works , Turriff, Aberdeenshire British Geological Survey, National Geoscience Information Service 135663 Opencast Ceased Unknown Operator Unknown Operator Unknown Operator Quaternary Glaciofluvial Deposits Common Clay and Shale Located by supplier to within 10m	A18SE (NE)	503	6	373157 849629
	DOC Deserves al Mine					
31	Site Name: Location: Source: Reference: Type: Status: Operator: Operator: Operator Location: Periodic Type: Geology: Commodity: Positional Accuracy:	Bridgend Bridgend, Little Turriff, Turriff, Aberdeenshire British Geological Survey, National Geoscience Information Service 135841 Opencast Ceased Unknown Operator Unknown Operator Quaternary Till, Devensian Sand and Gravel Located by supplier to within 10m	A12SW (W)	580	6	372218 848975
	BGS Recorded Mine	eral Sites				
32	Site Name: Location: Source: Reference: Type: Status: Operator: Operator Location: Periodic Type: Geology: Commodity: Positional Accuracy:	Smiddyseat Sand Pit Lower Smiddyseat, Turriff, Aberdeenshire British Geological Survey, National Geoscience Information Service 135842 Opencast Ceased Unknown Operator Unknown Operator Unknown Operator Glaciofluvial Deposits Sand Located by supplier to within 10m	A14SE (E)	724	6	373725 848780
	BGS Measured Urba	an Soil Chemistry				
	No data available	in our onemistry				
	BGS Urban Soil Che No data available	emistry Averages				
	Coal Mining Affecte	d Areas				
	In an area that might	not be affected by coal mining				
	Non Coal Mining Are Risk: Source:	eas of Great Britain Rare British Geological Survey, National Geoscience Information Service	A13SW (W)	0	6	372919 849086
	Potential for Collaps Hazard Potential: Source:	sible Ground Stability Hazards No Hazard British Geological Survey, National Geoscience Information Service	A13NE (NE)	0	6	372944 849098
	Potential for Collaps Hazard Potential: Source:	sible Ground Stability Hazards Very Low British Geological Survey, National Geoscience Information Service	A13SW (W)	0	6	372919 849086
	Potential for Collaps	sible Ground Stability Hazards				
	Hazard Potential: Source:	Very Low British Geological Survey, National Geoscience Information Service	A13NE (E)	201	6	373238 849169
	Potential for Compr Hazard Potential: Source:	essible Ground Stability Hazards No Hazard British Geological Survey, National Geoscience Information Service	A13SW (W)	0	6	372919 849086
	Potential for Compr Hazard Potential: Source:	essible Ground Stability Hazards Moderate British Geological Survey, National Geoscience Information Service	A13NE (NE)	0	6	372944 849098
	Potential for Compr Hazard Potential: Source:	essible Ground Stability Hazards No Hazard British Geological Survey, National Geoscience Information Service	A13NE (E)	201	6	373238 849169
	Potential for Ground No Hazard	d Dissolution Stability Hazards				



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Lands	lide Ground Stability Hazards				
	Hazard Potential: Source:	Low British Geological Survey, National Geoscience Information Service	A13NE (NE)	0	6	372941 849139
	Potential for Lands	lide Ground Stability Hazards				
	Hazard Potential: Source:	Very Low British Geological Survey, National Geoscience Information Service	A13SW (W)	0	6	372919 849086
	Potential for Lands	lide Ground Stability Hazards				
	Hazard Potential: Source:	Low British Geological Survey, National Geoscience Information Service	A13NE (E)	13	6	373054 849111
	Potential for Lands	lide Ground Stability Hazards				
	Hazard Potential: Source:	Low British Geological Survey, National Geoscience Information Service	A13NW (N)	84	6	372900 849281
	Potential for Runni	ng Sand Ground Stability Hazards				
	Hazard Potential: Source:	Low British Geological Survey, National Geoscience Information Service	A13SW (W)	0	6	372919 849086
	Potential for Runni	ng Sand Ground Stability Hazards				
	Hazard Potential: Source:	Very Low British Geological Survey, National Geoscience Information Service	A13SW (SW)	13	6	372821 849023
	Potential for Runni	ng Sand Ground Stability Hazards				
	Hazard Potential: Source:	No Hazard British Geological Survey, National Geoscience Information Service	A13SW (W)	83	6	372725 849026
	Potential for Shrink	ing or Swelling Clay Ground Stability Hazards				
	Hazard Potential: Source:	No Hazard British Geological Survey, National Geoscience Information Service	A13SW (W)	0	6	372919 849086
	Potential for Shrink	ing or Swelling Clay Ground Stability Hazards				
	Hazard Potential: Source:	Very Low British Geological Survey, National Geoscience Information Service	A13NE (NE)	0	6	372944 849098
	Potential for Shrink	ing or Swelling Clay Ground Stability Hazards				
	Hazard Potential: Source:	Very Low British Geological Survey, National Geoscience Information Service	A13SW (SW)	13	6	372821 849023
	Potential for Shrink	ing or Swelling Clay Ground Stability Hazards				
	Hazard Potential: Source:	No Hazard British Geological Survey, National Geoscience Information Service	A13NE (E)	201	6	373238 849169
	Radon Potential - R	adon Protection Measures				
	Protection Measure:	No radon protective measures are necessary in the construction of new dwellings or extensions	A13SW (W)	0	6	372919 849086
	Source:	British Geological Survey, National Geoscience Information Service				
	Radon Potential - R	adon Protection Measures	A 1201A/	0	G	222022
	Source:	dwellings or extensions British Geological Survey, National Geoscience Information Service	(W)	0	0	849086
	Radon Potential - R	adon Affected Areas				
	Affected Area:	The property is in a lower probability radon area, as less than 1% of homes	A13SW	0	6	372919
	Source:	are above the action level British Geological Survey, National Geoscience Information Service	(W)			849086
	Radon Potential - R	adon Affected Areas				
	Affected Area:	The property is in a radon affected area, as between 3 and 5% of homes are above the action level British Geological Survey, National Geoscience Information Service	A13SW (W)	0	6	372877 849086
	Cource.					



Industrial Land Use

Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
33	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Town Tyres Station Rd, Turriff, Aberdeenshire, AB53 4ER Tyre Dealers Inactive Manually positioned to the road within the address or location	A13NW (NW)	147	-	372726 849238
33	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Ross Agri Services Station Works,Station Rd, Turriff, Aberdeenshire, AB53 4ER Agricultural Machinery - Sales & Service Active Manually positioned to the road within the address or location	A13NW (NW)	154	-	372717 849240
34	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	le Directory Entries Turriff Coachworks Station Road, Turriff, Aberdeenshire, AB53 4ER Car Body Repairs Active Automatically positioned to the address	A13NW (NW)	293	-	372616 849337
34	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	le Directory Entries Turriff Fuels Station Road, Turriff, Aberdeenshire, AB53 4ER Oil Fuel Distributors Active Automatically positioned to the address	A13NW (NW)	293	-	372616 849337
35	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Cameron Motors Station Rd, Turriff, Aberdeenshire, AB53 4ER Garage Services Inactive Manually positioned to the road within the address or location	A12NE (NW)	315	-	372544 849300
35	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Turriff Service Station Station Road, Turriff, Aberdeenshire, AB53 4ER Petrol Filling Stations Active Automatically positioned to the address	A12NE (NW)	342	-	372500 849287
35	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	le Directory Entries R C D Car Smart Ltd Station Road, Turriff, Aberdeenshire, AB53 4ER Garage Services Inactive Automatically positioned to the address	A12NE (NW)	342	-	372500 849287
36	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	le Directory Entries Dyce & District Tv Services 13, Maybank Court, Balmellie Street, Turriff, Aberdeenshire, AB53 4DE Electrical Goods Sales, Manufacturers & Wholesalers Active Automatically positioned to the address	A18SW (N)	586	-	372752 849765
37	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	le Directory Entries Turriff Tyres Ltd 1-5, Schoolhill, Turriff, Aberdeenshire, AB53 4DX Tyre Dealers Inactive Automatically positioned to the address	A17SE (NW)	639	-	372566 849743
37	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries National Tyres And Autocare 1-5, Schoolhill, Turriff, Aberdeenshire, AB53 4DX Tyre Dealers Inactive Automatically positioned to the address	A17SE (NW)	639	-	372566 849743
38	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Central Engineers Crown Street, Turriff, Aberdeenshire, AB53 4DN Garage Services Active Automatically positioned to the address	A18NW (N)	675	-	372842 849870
39	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Davidsons Garage 44, Balmellie Street, Turriff, Aberdeenshire, AB53 4DU Mot Testing Centres Active Automatically positioned to the address	A18NW (N)	686	-	372766 849871



Industrial Land Use

Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Contemporary Trad	e Directory Entries				
40	Name: Location: Classification: Status: Positional Accuracy:	W Peters & Son Ltd 16, High Street, Turriff, Aberdeenshire, AB53 4DT Printers Active Automatically positioned to the address	A17SE (NW)	698	-	372479 849755
40	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Turriff Advertiser 16, High Street, Turriff, Aberdeenshire, AB53 4DT Printers Inactive Automatically positioned to the address	A17NE (NW)	708	-	372480 849769
40	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Inverurie Advertiser 16, High Street, Turriff, Aberdeenshire, AB53 4DT Printers Inactive Automatically positioned to the address	A17NE (NW)	708	-	372480 849769
40	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Ellon Advertiser 16, High Street, Turriff, Aberdeenshire, AB53 4DT Printers Inactive Automatically positioned to the address	A17NE (NW)	708	-	372480 849769
41	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Lawrence Milne Shops Ltd 4, Main Street, Turriff, Aberdeenshire, AB53 4AD Painting & Decorating Supplies Active Automatically positioned to the address	A17NE (NW)	706	-	372531 849801
42	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Nickel & Dime Ltd 16-18, Main Street, Turriff, Aberdeenshire, AB53 4AD Hardware Active Automatically positioned to the address	A17NE (NW)	782	-	372510 849876
42	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Partridges 31, Main Street, Turriff, Aberdeenshire, AB53 4AB Gunsmiths Inactive Manually positioned to the address or location	A17NE (NW)	790	-	372544 849904
43	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Turiff Wash 28, Highfield Walk, Turriff, Aberdeenshire, AB53 4DF Ironing & Home Laundry Services Inactive Automatically positioned to the address	A18NE (N)	826	-	373148 849986
44	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Central Filling Station Fife Street, Turriff, Aberdeenshire, AB53 4BN Petrol Filling Stations Active Automatically positioned to the address	A18NW (N)	865	-	372589 850005
45	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Aberdeen Centre 22-26, Duff Street, Turriff, Aberdeenshire, AB53 4AX Cleaning Materials & Equipment Active Automatically positioned to the address	A17NE (NW)	896	-	372396 849939
45	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Turriff Agri-Parts Ltd 22-26, Duff Street, Turriff, Aberdeenshire, AB53 4AX Agricultural Machinery - Sales & Service Active Automatically positioned to the address	A17NE (NW)	896	-	372396 849939
46	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Transpan (Scotland) Ltd Cornfield Rd, Turriff, Aberdeenshire, AB53 4BP Road Haulage Services Inactive Manually positioned to the road within the address or location	A18NW (N)	905	-	372672 850074



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Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Contemporary Trad	e Directory Entries				
46	Name: Location: Classification: Status: Positional Accuracy:	Commercial Garage Commercial Garage, Cornfield Road, Turriff, Aberdeenshire, AB53 4BP Garage Services Inactive Automatically positioned to the address	A18NW (N)	927	-	372661 850094
	Contemporary Trad	e Directory Entries				
46	Name: Location: Classification: Status: Positional Accuracy:	Frontier Agriculture Ltd Cornfield Road, Turriff, Aberdeenshire, AB53 4BP Agricultural Merchants Active Automatically positioned to the address	A23SW (N)	946	-	372671 850116
	Fuel Station Entries					
47	Name: Location: Brand: Premises Type: Status: Positional Accuracy:	Turriff Service Station Station Road, Turriff, Aberdeenshire, AB53 4ER Gleaner Petrol Station Open Automatically positioned to the address	A12NE (NW)	342	-	372500 849287
	Fuel Station Entries					
48	Name: Location: Brand: Premises Type: Status: Positional Accuracy:	Central Engineers Service Station Crown Street, Turriff, Aberdeenshire, AB53 4DN Unbranded Petrol Station Open Manually positioned to the address or location	A18NW (N)	618	-	372812 849809
	Fuel Station Entries					
49	Name: Location: Brand: Premises Type: Status: Positional Accuracy:	Central Filling Station Fife Street, Turriff, Aberdeenshire, AB53 4BN ESSO Petrol Station Open Automatically positioned to the address	A18NW (N)	865	-	372589 850005



Sensitive Land Use

Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Nitrate Vulnerable	Zones				
50	Name: Description: Source:	Moray / Aberdeenshire / Banff / Buchan Groundwater Scottish Executive, Geographic Information Service	A13SW (W)	0	8	372919 849086

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices		
Aberdeenshire Council	April 2012	Annual Rolling Update
Discharge Consents		
Scottish Environment Protection Agency - North Region	February 1998	Variable
Enforcement and Prohibition Notices		
Scottish Environment Protection Agency - North Region	January 2012	Not Applicable
Integrated Pollution Controls		
Scottish Environment Protection Agency - Head Office	February 1998	Variable
Scottish Environment Protection Agency - North Region	March 2002	Variable
Local Authority Pollution Prevention and Controls		
Scottish Environment Protection Agency - North Region	March 2002	Variable
Nearest Surface Water Feature		
Ordnance Survey	December 2011	Quarterly
Prosecutions Relating to Authorised Processes		
Scottish Environment Protection Agency - North Region	March 2007	Not Applicable
Prosecutions Relating to Controlled Waters		
Scottish Environment Protection Agency - North Region	March 2007	Not Applicable
Registered Radioactive Substances		
Scottish Environment Protection Agency - North Region	February 1998	Variable
Scottish Environment Protection Agency - Head Office	January 1998	Variable
River Quality		
Scottish Environment Protection Agency - Head Office	December 1990	Not Applicable
Water Abstractions		
Scottish Executive - Agriculture, Environment and Fisheries Department	December 1997	Not Applicable
Water Industry Act Referrals		
Scottish Environment Protection Agency - North Region	April 1996	Variable
Groundwater Vulnerability		
Scottish Environment Protection Agency - Head Office	December 1995	Not Applicable
Drift Deposits		
Scottish Environment Protection Agency - Head Office	December 1995	Not Applicable
River Flood Data (Scotland)		
Centre for Ecology and Hydrology	September 1999	Not Applicable

Waste	Version	Update Cycle
BGS Recorded Landfill Sites		
British Geological Survey - National Geoscience Information Service	June 1996	Not Applicable
Integrated Pollution Control Registered Waste Sites		
Scottish Environment Protection Agency - North Region	February 1998	Variable
Scottish Environment Protection Agency - Head Office	January 1998	Variable
Local Authority Landfill Coverage		
Aberdeenshire Council	May 2000	Not Applicable
Local Authority Recorded Landfill Sites		
Aberdeenshire Council	May 2000	Not Applicable
Registered Landfill Sites		
Scottish Environment Protection Agency - North Region	December 2005	Not Applicable
Scottish Environment Protection Agency - North Region - Aberdeen Office	December 2005	Not Applicable
Registered Waste Transfer Sites		
Scottish Environment Protection Agency - North Region	December 2005	Not Applicable
Scottish Environment Protection Agency - North Region - Aberdeen Office	December 2005	Not Applicable
Registered Waste Treatment or Disposal Sites		
Scottish Environment Protection Agency - North Region	December 2005	Not Applicable
Scottish Environment Protection Agency - North Region - Aberdeen Office	December 2005	Not Applicable
Hazardous Substances	Version	Update Cycle
Control of Major Accident Hazards Sites (COMAH)		
Health and Safety Executive	May 2012	Bi-Annually
Explosive Sites		
Health and Safety Executive	June 2012	Bi-Annually
Notification of Installations Handling Hazardous Substances (NIHHS)		
Health and Safety Executive	November 2000	Not Applicable
Planning Hazardous Substance Enforcements		
Aberdeenshire Council - Aberdeenshire Council - Banff Area	September 2011	Annual Rolling Update
Planning Hazardous Substance Consents		
Aberdeenshire Council - Aberdeenshire Council - Banff Area	September 2011	Annual Rolling Update

Geological	Version	Update Cycle
BGS 1:625,000 Solid Geology		
British Geological Survey - National Geoscience Information Service	August 1996	Not Applicable
BGS Estimated Soil Chemistry		
British Geological Survey - National Geoscience Information Service	January 2010	Variable
BGS Recorded Mineral Sites		
British Geological Survey - National Geoscience Information Service	April 2012	Bi-Annually
Coal Mining Affected Areas		
The Coal Authority - Mining Report Service	January 2012	As notified
Mining Instability		
Ove Arup & Partners	October 2000	Not Applicable
Non Coal Mining Areas of Great Britain		
British Geological Survey - National Geoscience Information Service	February 2011	Not Applicable
Potential for Collapsible Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	February 2011	Annually
Potential for Compressible Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	February 2011	Annually
Potential for Ground Dissolution Stability Hazards		
British Geological Survey - National Geoscience Information Service	February 2011	Annually
Potential for Landslide Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	February 2011	Annually
Potential for Running Sand Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	February 2011	Annually
Potential for Shrinking or Swelling Clay Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	February 2011	Annually
Radon Potential - Radon Affected Areas		
British Geological Survey - National Geoscience Information Service	July 2011	As notified
Radon Potential - Radon Protection Measures		
British Geological Survey - National Geoscience Information Service	July 2011	As notified
Industrial Land Use	Version	Update Cycle
Contemporary Trade Directory Entries		
Thomson Directories	May 2012	Quarterly
Fuel Station Entries		
Catalist Ltd - Experian	May 2012	Quarterly

Sensitive Land Use	Version	Update Cycle
Areas of Adopted Green Belt		
Aberdeenshire Council	August 2012	As notified
Areas of Unadopted Green Belt		
Aberdeenshire Council	August 2012	As notified
Environmentally Sensitive Areas		
Scottish Executive - Geographic Information Service	April 2012	Annually
Forest Parks		
Forestry Commission	April 1997	Not Applicable
Local Nature Reserves		
Aberdeenshire Council	May 2012	Bi-Annually
Marine Nature Reserves		
Scottish Natural Heritage	February 2012	Bi-Annually
National Nature Reserves		
Scottish Natural Heritage	May 2012	Bi-Annually
Nitrate Vulnerable Zones		
Scottish Executive - Geographic Information Service	April 2011	Annually
Ramsar Sites		
Scottish Natural Heritage	May 2012	Bi-Annually
Sites of Special Scientific Interest		
Scottish Natural Heritage	May 2012	Bi-Annually
Special Areas of Conservation		
Scottish Natural Heritage	May 2012	Bi-Annually
Special Protection Areas		
Scottish Natural Heritage	May 2012	Bi-Annually



A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	Licensed Partner
Environment Agency	Environment Agency
Scottish Environment Protection Agency	SEPÃO Scottish Environment Protection Agency
The Coal Authority	THE COAL AUTHORITY
British Geological Survey	British Geological Survey
Centre for Ecology and Hydrology	Centre for Ecology & Hydrology NATURAL ENVIRONMENT RESEARCH COUNCIL
Countryside Council for Wales	CYNGOR CEFN GWLAD CYMRU COUNTRYSIDE COUNCIL FOR WALES
Scottish Natural Heritage	SCOTTISH NATURAL HERITAGE
Natural England	NATURAL ENGLAND
Health Protection Agency	Health Protection Agency
Ove Arup	ARUP
Peter Brett Associates	peterbrett

Useful Contacts

Contact	Name and Address	Contact Details
1	Scottish Environment Protection Agency - North Region	Telephone: 01349 862021 Fax: 01349 863987
	Graesser House, Fodderty Way, Dingwall Business Park, Dingwall, Highland, IV15 9XB	
2	Scottish Environment Protection Agency - Head Office	Telephone: 01786 457700
	Erskine Court, The Castle Business Park, Stirling, Stirlingshire, FK9 4TR	Fax. 01700 440000
3	Centre for Ecology and Hydrology	Telephone: 01491 838800 Fax: 01491 692424
	Maclean Building, Crowmarsh Gifford, WALLINGFORD, Oxfordshire, OX10 8BB	T ax. 01401 002424
4	Scottish Environment Protection Agency - North Region - Aberdeen Office	Telephone: 01224 248338 Fax: 01224 248591
	Greyhope House, Greyhope Road, Torry, Aberdeen, Aberdeenshire, AB1 3RD	
5	Health and Safety Executive	Telephone: 0151 951 3092
	Explosives Inspectorate, 1.2 Redgrave Court, Merton Road, Bootle, L20 7HS	Email: victoria.holloway@hse.gsi.go.uk Website: www.hse.gov.uk
6	British Geological Survey - Enquiry Service	Telephone: 0115 936 3143 Fax: 0115 936 3276
	British Geological Survey, Kingsley Dunham Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
7	Landmark Information Group Limited	Telephone: 01392 441761 Fax: 01392 441709
	5 - 7 Abbey Court, Eagle Way, Sowton, Exeter, Devon, EX2 7HY	Email: cssupport@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk
8	Scottish Executive - Geographic Information Service	Telephone: 0131 5568400 Fax: 0131 2448240
	Area 1J88, Victoria Quay, Edinburgh, EH6 6QQ	Email: ceu@scotland.gov.uk Website: www.scotland.gov.uk
9	Aberdeenshire Council	Telephone: 01467 620981
	Woodhill House, Westburn Road, Aberdeen, Aberdeenshire, AB16 5GB	Website. www.aberdeenshire.gov.uk
-	Health Protection Agency - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@bpa.org.uk
	Chilton, Didcot, Oxfordshire, OX11 0RQ	Website: www.hpa.org.uk
-	Landmark Information Group Limited	Telephone: 0844 844 9952
	The Smith Centre, Henley On Thames, Oxfordshire, RG9 6AB	Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk

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












APPENDIX C



Panel 1: <u>Site 1</u> View looking east showing the slope down to the main site entrance and the southern site boundary with the agricultural machinery depot.



Panel 2: <u>Site 1</u> View looking north-east showing the northern site boundary and the area former railway line and railsidings leading onto site.



Panel 3: <u>Site 1</u> View looking south showing the site interceptor.



Panel 4: <u>Site 1</u> View looking south showing the former road loading gantry and the former site office. Also showing the access road around the site.



Panel 5: Site 1 View looking north-west showing part of the former road loading gantry and two above ground storage tanks within a brick bund. Also shown is an above ground filter.



Panel 6: Site 1 View looking north showing an additional above ground storage tank and the lube oil pump house.



Panel 7: Site 1 View from the eastern corner looking south showing the spirit hose exchange pit and looking up to Site 2 and the aboveground storage tanks.



Panel 8: Site 1 View looking north-west from the eastern corner showing the area of the former rail sidings and gantry along the northern site boundary.



Panel 9: <u>Off-site 1</u>: View looking north-east showing the two off-site reservoirs between the site and the Burn of Turriff also shown.



Panel 10: <u>Off-site 1</u>: View of the agricultural machinery depot to the south of site 1 showing a number of drums stored on the granular base material.



Panel 11: Site 2: View looking south taken from Station road showing the site entrance, tanks T01 & T02 and the storage shed and emergency water supply tank.



Panel 12: Site 2: View looking south-east showing tanks T02 & T03 and the earth bund running along the northern boundary with Station road.



Panel 13: <u>Site 2:</u> View from the southern corner of the site showing all four of the above ground storage tanks and the slope of the site to the north-east.



Panel 14: Site 2: View from the top of tank T04 showing the pipe outlet from site 1. Also shown is the agricultural mechinary depot and Site 1 across Station Road.

APPENDIX D

Classification of Consequences and Probability

	Classification of Consequences	Classification of Probability				
Classification	Definition	Classification	Definition			
Severe	Acute risk to human health. Short-term risk of pollution of controlled waters or significant impact on controlled waters, for example, large scale pollution of very high levels of contamination equivalent to EA Category 1 pollution incident including persistent and/or extensive effects on water quality, for example, leading to closure of a major abstraction point, major impact on operational effectiveness and/or amenity value or major damage to agriculture or commerce. Catastrophic damage to buildings or property, for example, explosion causing building collapse. Ecological system effects- immediate risk of major damage which is likely to result in: irreversible substantial adverse change in the functioning of the ecosystem or harm to a species of special interest that endangers the long-term maintenance of the population.	High Likelihood	There is a contaminant linkage and an event is High Likelihood to occur in the short term and is almost inevitable over the long term OR there is evidence at the receptor of harm or pollution. >95% Likelihood of Consequence occurring.			
Medium	Chronic risk to human health. Pollution of sensitive water resources, for example, leaching of contaminants into controlled water that is equivalent to an EA category 2 pollution incident including significant effect on water quality, notification required to abstractors, reduction in amenity value or significant damage to site operations, agriculture or commerce. Ecological system effects – immediate risk of significant damage which may result in substantial, adverse changes to the ecosystem's functioning or harm to a species of special interest that may endanger the long-term maintenance of the population. Significant damage to buildings, structures and services, for example, damage rendering a building unsafe to occupy, such as foundation damage.	Likely	There is a contaminant linkage and it is probable that the event will occur. It is not inevitable, but possible in the short term and likely over the long term. 50-95% likelihood of consequence occurring.			
Mild	 Non-permanent health effects to humans (exposure unlikely to lead to 'significant' harm). Pollution of controlled waters or non-sensitive water resources, for example, pollution of non-classified groundwater that is equivalent to an EA Category 3 pollution incident or short lived effect on water quality, marginal effect on operational capability, amenity value, agriculture or commerce. Minor damage to buildings, structures and services, for example, damage rendering a building unsafe to occupy, such as foundation damage. Ecological system effects – minor or short term damage which is unlikely to result in substantial adverse changes to the ecosystem's functioning or harm to a species of special interest that may endanger the long-term maintenance of the population. Substantial damage to non-sensitive environments, such as unprotected ecosystems, for example, crops. 	Low Likelihood	There is a contaminant linkage and circumstances are possible under which an event could occur. It is by no means certain that even over a longer period such an event would take place and less likely in the short term. 5-49% likelihood of consequence occurring.			
Minor/Negligible	No measurable effects on human health including non-permanent health effects to humans that is easily preventable by appropriate use of personnel protective equipment. Minor pollution of controlled waters including non-sensitive water resource with no discernible effect on water quality or ecosystems. Minor damage to non-sensitive environments, such as unprotected ecosystems, for example, crops. Easily repairable effects of damage to buildings/structures/services/environment, for example, discolouration of concrete, loss of plants in a landscaping scheme.	Unlikely	There is a contaminant linkage and it is improbable that an event would occur even in the very long term. <5% likelihood of consequence occurring.			

Definitions of Classified Risks/Risk Terms

Classification	Definition
Very High Risk	Severe harm to a receptor may already be occurring OR there is a high likelihood that severe harm will arise to a receptor unless immediate remediation works/mitigation measures are undertaken. Realisation of that risk is likely to present a substantial liability to the MoD.
High Risk	Harm is likely to arise to a receptor and it is likely to be severe unless appropriate remediation works/mitigation measures are undertaken. Remediation works may be required in the short term and are likely to be required in the long term. Realisation of that risk is likely to present a substantial liability to the MoD
Moderate Risk	It is possible that harm could arise to a receptor, but there is low likelihood that such harm would be severe. Harm is likely to be mild. Some remediation works may be required in the long term. Realisation of that risk is unlikely to present a substantial liability to the MoD but further work may be required to determine whether this is the case.
Moderate/Low Risk	It is possible that harm could arise to a receptor, but where a combination of likelihood and consequence results in a risk that is above low, but is not of sufficient concern to be classed as mild. It can be driven by cases where there is an acute risk which carries severe consequences, but where the exposure is unlikely. Such harm would at worse normally be mild. Unlikely to present a substantial liability to the MoD. Limited further investigation may be required to clarify the risk and liability. If necessary remediation works are likely to be limited in extent.
Low Risk	It is possible that harm could arise to a receptor. Such harm would at worst, normally be mild.
Negligible Risk	There is low likelihood that harm could arise to receptor. Such harm is unlikely to be any worse than mild. No liability.
No Potential risk	There is no potential risk where no contaminant linkage has been established. No liability.

Classification of Risk

			Cons	equence	
		Severe	Medium	Mild	Minor
	High Likelihood	Very High Risk	High Risk	Moderate Risk	Moderate/Low Risk
ability	Likely	High Risk	Moderate Risk	Moderate/Low Risk	Low Risk
Proba	Low Likelihood	Moderate Risk	Moderate/Low Risk	Low Risk	Negligible Risk
	Unlikely	Moderate/Low Risk	Low Risk	Negligible Risk	Negligible Risk

APPENDIX E



GPSS Turriff Former PSD

FACTUAL REPORT ON GROUND INVESTIGATION

Prepared for ATKINS

Report Ref: 27475

Geotechnical Engineering Ltd Centurion House, Olympus Park Quedgeley, Gloucester. GL2 4NF

01452 527743 www.geoeng.co.uk





GPSS Turriff Former PSD

FACTUAL REPORT ON GROUND INVESTIGATION

Prepared for ATKINS

Report Ref: 27475

PROJECT: GPSS Turriff Former PSD

CONSULTANT:

VOLUME - VERSION	STATUS	ORIGINATOR	CHECKER	APPROVED	DATE		
1 of 1 – A	DRAFT	GEL2	GEL12	-	26/02/13		
1 of 1 – A	FINAL	GEL2	GEL12	-	04/03/13		
ORIGINATOR			APPROVER				
GEL2			GEL12				
Engineering Geologist			Geotechnical Co	nsultant			

The report is not to be used for contractual or engineering purposes unless this sheet is signed and the report designated "Final".

The report has been prepared for the sole use and reliance by Atkins. GEL accepts no liability as a result of the use or reliance of this report by any other parties.













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APPENDIX B	MONITORING DATA
APPENDIX C	METHOD STATEMENT



1. INTRODUCTION

Geotechnical Engineering Limited (GEL) was instructed by Atkins, acting on behalf of Defence Infrastructure Organisation (DIO), to carry out an investigation to determine the ground conditions, to check for contamination and install wells for water and gas monitoring at GPSS Turriff Former PSD.

The scope of works and terms and conditions of appointment were specified by the Client and GEL correspondence reference T15092. The investigation was carried out under direction and supervision of the Client.

This report describes the investigation and presents the findings.

2. SITE LOCATION AND GEOLOGY

The site is situated at Turriff Former PSD, Station Road, Turriff, Aberdeenshire and may be located by its Grid Reference NJ728491 as shown in Figure 1.

BGS online geology (1:50,000) indicate the site is underlain by glaciofluvial deposits - gravel, sand and silt; alluvium - clay, silt, sand and gravel; and possibly till, underlain by Gardenstown Conglomerate Formation.



3. GROUND INVESTIGATION

3.1 Fieldwork

The fieldwork was carried out in general accordance with BS5930:1999+A2:2010 during the period 8th January to 10th January 2013 and comprised three boreholes and thirteen window samples.

The exploratory hole locations were selected by the Client and set out by the Client and GEL. The ground level and co-ordinates at each exploratory hole were established by GEL using GPS techniques on the 5th of February, 2013.

The boreholes, referenced ABH001 – ABH003 (Appendix A), were formed using a trackmounted Geotechnical Pioneer Rig. Initially, an inspection pit was hand excavated at each borehole location to a maximum depth of 1.50m to check for buried services. Disturbed samples were taken and retained in glass jars. Heavy duty dynamic sampling techniques were then employed to produce a continuous disturbed sample of 112mm nominal diameter reducing to 97mm as the borehole was advanced. The samples were recovered in semi-rigid plastic liner.

On refusal of dynamic sampling the boreholes were continued by rotary core drilling techniques utilising a water flush. A double-tube swivel core barrel with a semi-rigid plastic liner was utilised to recover continuous cores of 90mm diameter. Where appropriate, dynamic sampling techniques were carried out to recover dropped core or where rotary core drilling was not suitable.

The dynamic samples and rotary cores were extracted horizontally from the sampler and core barrel respectively, the semi-rigid liner was cut to length, placed in sequence in

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labelled, wooden coreboxes and logged on site. The core samples were not retained following logging. Environmental samples were retained by the Client.

Boreholes were monitored for groundwater ingress as dynamic sampling proceeded. Water levels were also recorded at the start and finish of each day's work and on completion of the borehole and are presented on the relevant log.

On completion gas/water monitoring standpipes were installed in ABH001 - ABH003. Each installation consisted of a 50mm ID HDPE slotted tube set in a filter response zone of non-calcareous pea gravel. The installation was sealed above and below with a bentonite plug and accessed via a valve assembly. The installations were protected at the surface by a lockable stopcock cover set in concrete, as appropriate to their position. Installation details are given on the relevant borehole log.

The window samples, referenced AWS001 to AWS013 (Appendix A), were formed using a Terrier 2000 rig. Initially, an inspection pit was hand excavated at each borehole location to a maximum depth of 1.20m to check for buried services. Disturbed samples were taken and retained in glass jars. Dynamic sampling techniques were then employed to produce a continuous disturbed sample of 97mm diameter reducing to 50mm as the borehole was advanced. The samples were recovered in semi-rigid plastic liner.

The samples were extracted horizontally from the sampler, labelled and logged on site. The dynamic samples were not retained after logging. Environmental samples were retained by the Client.

Window samples were monitored for groundwater ingress as dynamic sampling proceeded. Upon encountering water, sampling was temporarily stopped to allow the level to stabilise. Water levels were also recorded at the start and finish of each day's work and on completion of the borehole and are presented on the relevant log.

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AWS001 to AWS013 were backfilled with arisings and the surface reinstated.

The arisings and samples from the borehole and the window sample inspection pits and holes were monitored for Volatile Organic Compounds (VOC's) by the Client's engineer. Using a MiniRAE 2000 portable Photo-Ionisation Detector (PID) with a 10.6eV gas discharge lamp, headspace tests were carried out on all environmental samples that were collected. The detector uses an ultra violet light source to break down the chemicals into positive and negative ions (ionisation). The detector measures the charge of the ionised gas and converts the signal into current. The current is then amplified and displayed as "ppm"; after measurement the ions reform the original gas or vapour allowing it to be sampled. The readings are presented in Appendix A.

3.2 Logging

The logging of soils and rocks was carried out by a GEL Engineering Geologist in general accordance with BS5930:1999+A2:2010. A key to the exploratory hole logs is presented in Appendix A.

Detailed descriptions of the core and samples are given in the borehole logs, Appendix A, along with details of sampling, in situ testing, groundwater ingress and relevant comments on drilling techniques.

No visual contamination was noted in any of the samples.

Strong hydrocarbon odour was noted in AWS003, AWS005, and AWS008. Faint hydrocarbon odour was noted in AWS004, AWS006, and AWS008.



3.3 Monitoring

The installations were subsequently tested for carbon dioxide, methane, oxygen, hydrogen sulphide and carbon monoxide using a Gas Analyser GA2000 on the 5th of February, 2013. Installations were monitored for gas flow using a flow pod attached to the instrument and reported as gas flow in litres/hour. Barametric pressure was also recorded.

The installations were also monitored for Volatile Organic Compounds (VOC's) using a MiniRAE 2000 Portable Photo-Ionisation Detector (PID) with a 10.6eV gas discharge lamp.

Gorundwater samples were collected and monitoring of water using a Multi-parameter meter was carried out on the 5th of February. The Multi-parameter meter recorded groundwater temperature, pH, dissolved oxygen content, conductivity and oxygen reduction potential (redox). A method statement is presented in Appendix C.

No free product was detected in any of the boreholes.

Readings are presented in Appendix B.

GEOTECHNICAL ENGINEERING LIMITED



4. **REFERENCES**

British Standards Institution (1999): Code of practice for site investigations. BS 5930 incorporating Amendments No. 1 & 2. Amendment 1 removes text superseded by BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004 and BS EN ISO 14689-1:2003, and makes reference to the relevant standard for each affected sub clause. Amendment 2 removes text superseded by BS EN 22475-1:2006 and makes reference to the relevant standard for each affected sub clause.





APPENDIX A FIELDWORK DATA



• • •						_
Sample type D Small disturbed X Dynamic	D* Contaminatic C Core	n B Bulk disturbed U Undisturbed	LB Large bulk disturbed UT Undisturbed thin wall	W Water P Piston	Cs Core subsample (prepared)	
Test type						
S SPT - Split spoon C SPT - Solid cone (*250 - Where full te	n sampler followed followed by uncorr est drive not comple	by uncorrected SPT 'N' v ected SPT 'N' Value eted, lineraly extrapolate	Value d 'N' value reported, ** - Der	otes no effective p	penetration)	
 H Hand vane - dire M Mackintosh prol PP Pocket penetro Vo Headspace vap 	ect reading in kPa be - number of blov meter - direct read bour reading, uncor	- not corrected for BS13 ws to achieve 100mm pe ing in kg/sq.cm rected peak values in pp	77 (1990). Re* denotes refus enetration om, using a PID (calibrated v	al vith Isobutylene, us	sing a 10.6eV bulb)	
Sample/core range/	I _f					
I Dynamic samp	ble					
Undisturbed sa	ample - open drive	including thin wall. Sym	bol length reflects recovery			
x x = Total Core	e Recovery (TCR)	as percentage of core ru	n			
y y = Solid Core	e Recovery (SCR)	as percentage of core ru	n. Assessment of core is ba	sed on full diamete	er.	
z z = Rock Qua	ality Designation (R	QD). The amount of soli	d core greater than 100mm	expressed as perce	entage of core run.	
Where SPT has bee	en carried out at be	ginning of core run, dist	urbed section of core exclude	ed from SCR and F	RQD assessment.	
I _f - fracture spacing - average and maxim	 the average fracture um values are give 	ure spacing (mm) over th n. NI = non-intact core	ne indicated length of core. V NA = not applicable	Vhere spacing vari	es signficantly, the minimum,	
Instrumentation						
Porous tip	Perforated standpipe	Granular response zone	Bentonite C seal	Cement/ pentonite prout	Soil Concrete	
Stratum boundaries	5					
	Estim	ated boundary		Gra	ading boundary	
Logging						
The logging of soils Amendment 1 remore reference to the relevance reference to the relevance	s and rocks has be oves text superced evant standard for evant standard for e	een carried out in gene led by BS ENO ISO 14 each affected sub clause each affected sub clause	ral accordance with BS 593 4688-1:2002, BS EN ISO 1- se. Amendmet 2 removes t e.	30:1999 incorporat 4688-2:2004 and ext superceded by	ting Amendments 1 (2006) & 2 (2010). BS EN ISO 14689-1:2003, and makes / BS EN ISO 22475-1:2006 and makes	
Chalk is logged in g with Ciria C574; des	eneral accordance criptions and gradi	with Lord et al (2002) C ngs should be treated w	iria C574. Where possible, c ith caution given the potentia	lynamic samples ir al for sample distur	n chalk have been logged in accordance bance.	

For rocks the term fracture has been used to identify a mechanical break within the core. Where possible incipient and drilling induced fractures have been excluded from the assessment of fracture state. Where doubt exists, a note has been made in the descriptions. All fractures are considered to be continuous unless otherwise reported.

Made Ground is readily identifiable when, within the material make up, man made constituents are evident. Where Made Ground appears to be reworked natural material the differentiation between in situ natural deposits and Made Ground is much more difficult to ascertain. The interpretation of Made Ground within the logs should therefore be treated with caution.

General Comments

The process of drilling and sampling will inevitably lead to disturbance, mixing or loss of material in some soil and rocks.

Indicated water levels are those recorded during the process of drilling or excavating exploratory holes and may not represent standing water levels.

Legends are drawn in accordance with BS 5930:1999 incorporating Amendment 2.

All depths are measured along the axis of the borehole and are related to ground level at the point of entry.

BOREHOLE LOG

ATKINS

CLIENT



METHOD: Hand dug inspection pit 0.00-1.50m. Dynamic sampled (128mm) 1.50-3.00m, (113mm) 3.00-6.00m. Waterflush rotary core drilled (116mm) 6.00-8.50m.

CASING: 140mm diam to 6.00m.

BACKFILL: On completion, a slotted standpipe (50mm) was installed to 2.80m, granular response zone 2.80-1.80m, bentonite seal 8.50-2.80m and 1.80-0.30m, concrete and stopcock cover 0.30-0.00m.

REMARKS: Samples taken and retained by the Client.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m) casing (m) rose to (m) time to rise (min) remarks

Groundwater not encountered prior to use of water flush.



. 11/GEL GEL 2 GEL 05/03/2013 15:46:55 GEOTECH.GLB TURRIFF 28.1.13.GPJ TRIALJH.GPJ 27475 01452 527743 Tel. Ltd, Engineering Geotechnical

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AGS



BOREHOLE LOG

ATKINS

CLIENT

SITE	GP	SS TU	IRRIF	FF FOI	RMER	PSD)							Sheet		2 of 2
Start Date	e 8 J	anuary	/ 201	3		East	ing	37	3021.2					Scale		1 : 50
End Date	8 J	anuary	/ 201	3		Nort	hing	84	9104.8	Ground	level	37.08m	OD	Depth	8	3.50 m
progress date/time water depth	sample no & type	depth from	(m) to	casing depth (m)	test type & value	samp. /core range		instru -ment			description			depth (m)	reduced level (m)	legend
progress date/time water depth 08/01/13 1500hrs 1.37m	sample no & type	depth from	(m) to	casing depth (m)	test type & value	samp. /core range		instru -ment	Borehole	completed at i	description 8.50m.			depth (m)	reduced level (m) 28.58	legend
water strike	(m) cae	ing (m)	rose t) 0 (m) #	ime to ris	(m)	rem	arks					CONTE	{18.00}	CHE	
							e (m) remarks Groundwater not encountered prior to use of water							75	CT	

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ABH001

BOREHOLE LOG



Groundwater not encountered prior to use of water flush.



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2



BOREHOLE LOG

ATKINS

CLIENT

SITE	GP	'SS TU	IRRIF	FF FOF	RMER	PSD				Sheet		1 of 1
Start Date	e 10	Januai	ry 20	13		Easting	37	2897.7		Scale		1 : 50
End Date	10	Januai	ry 20	13		Northing	84	9036.5 Ground level	44.86mOD	Depth	-	7.20 m
progress date/time water depth	sample no & type	depth from	(m) to	casing depth (m)	test type & value	samp. /core range	instru -ment	descripti	on	depth (m)	reduced level (m)	legend
10/01/13 0830hrs	1D* 2D* 3D* X 4D* 5D* X 6D* C	from 0.30 0.50 1.00 1.20 - 2 2.00 2.50 2.70 - 4 3.00 4.20 - 5 5.70 - 7	to 2.70 1.20 5.70	- Nil	Vo 0.2 Vo 0.3 Vo 0.2 Vo 0.3 Vo 0.2 Vo 0.3	100 0 100 0		Grass over brown gravelly silty fi Gravel is subangular and subrou to coarse quartz and metamorph quartz cobbles. Firm brown slightly gravelly sand subangular and subrounded, rare quartz and metamorphic. 1.80 - 2.10m: Band of light brown Firm light reddish brown slightly s Gravel is subangular and subrou to coarse metamorphic and rare Light brown sandy rarely gravelly subangular to rounded fine to co crystalline. Rare cobble sized po medium sand. Stiff friable dark greyish brown gi angular and subangular fine to co lithorelicts. Extremely weak dark grey SAND metamorphic). Fractures are exti smooth, rarely rough, subvertical stained orangish brown and redo	ne and medium SAND. nded, rarely angular, fine ic. Rare subrounded y CLAY. Gravel is ely angular, fine to coarse n very sandy clay. sandy gravelly CLAY. nded, rarely angular, fine quartz. y SILT. Gravel is arse quartz and ckets of orangish brown ravelly CLAY. Gravel is barse metamorphic STONE (probably remely close, planar, and subhorizontal, lish brown.	1.00	(m) 43.86 42.56 42.16 40.86 40.66	
								Borehole completed at 7.20m.				
EQUIPMEN	IT: Geote	echnical F	Pionee	r ria.						{8.00}	1	
METHOD: I 4.20-7.20m	Hand dug	g inspecti	on pit ().00-1.20	m. Dyna	mic sampled	l (128m	m) 1.20-2.70m, (113mm) 2.70-4.20	0m. Waterflush rotary core	drilled (11	6mm)	

CASING: 140mm diam to 4.20m.

BACKFILL: On completion, a slotted standpipe (50mm) was installed to 2.30m, granular response zone 2.30-1.00m, bentonite seal 7.20-2.30m and 1.00-0.30m, concrete and stopcock cover 0.30-0.00m.

REMARKS: Samples taken and retained by the Client.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m) casing (m) rose to (m) time to rise (min) remarks

Groundwater not encountered prior to use of water flush.

AGS

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GEL 11/GEL 12 27475 TURRIFF 28.1.13.GPJ TRIALJH.GPJ GEOTECH.GLB 05/03/2013 15:46:58 GEL 2 01452 527743 Geotechnical Engineering Ltd, Tel.

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DUK			UG											inn	
CLIENT	AT	KINS											A	WS	001
SITE	GP	SS TURRI	IFF FO	RMER	PSD								Sheet		1 of 1
Start Date	e 8 J	anuary 20 ²	13		Eastii	ng	37	2999.2					Scale		1 : 50
End Date	8 J	anuary 201	13		North	ing	84	9087.0	Ground le	evel	38.09m0	DC	Depth		4.50 m
progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	iı -	nstru ment		c	descriptio	n		depth (m)	reduced level (m)	legend
08/01/12 08/01/12 1130hrs 1.72m EQUIPMEN METHOD: H CASING: 12 BACKFILL: REMARKS:	1D* 2D* 3D* X 4D* X 5D* X 6D* X	0.30 0.50 1.00 1.20 - 2.00 2.00 2.00 - 3.00 3.00 3.00 - 4.00 4.00 4.00 - 4.50 4.00 - 4.50 echnical Terrier g inspection pit am to 2.00m. pletion, hole bas s taken and ref	r 2000 rig. ackfilled w tained by	Vo 0.4 Vo 0.2 Vo 0.3 Vo 0.4 Vo 0.4 Vo 0.2 Vo 0.2	amic sam gs. tt.	npled (*	113m	Grass ov subangul crystalline Soft light Gravel is and cryst Dark grey fine to co Locally sa Soft brow Gravel is crystalline 3.80 - 4.0 Borehole	er brown gravell ar to rounded fir e. (POSSIBLE N brown locally m subangular to m alline. • and brown clay arse crystalline in slightly gravel ine to coarse sa ed crystalline co n locally greyist subangular and e and quartz. 0m: Locally ten completed at 4.	ly sandy S ne to coar MADE GR iottled gre ounded fir yey subar and rare : Ily CLAY. andstone obbles. In brown si d subround ding to cla .50m.	SILT. Gravel is se sandstone (OUND) ey slightly grav ne to coarse s ngular and sub sandstone GF Gravel is sub and crystalline lightly gravelly ded fine and n ayey gravel.	elly CLAY. and prounded AVEL. angular to e, rare r CLAY. nedium	0.70 1.40 2.30 4.50 (64mm) 4	37.39 36.69 35.79 34.99 33.59	
water strike 2.91 2.91	(m) casi	ing (m) rose 2.00 1. 2.00 1.	to (m) tir .72 .72	me to ris 5 20	e (min)	remar 1.48m	ks n After	r pulling ca	sing.		AGS	CONTE 274	RACT 75	CHE C	CKED

BOREHOLE LOG



2 GEL 05/03/2013 15:47:00 TURRIFF 28.1.13.GPJ TRIALJH.GPJ GEOTECH.GLB 27475 527743 01452 5 Tel. Engineering Ltd, Geotechnical

BOREHOLE LOG





BOREHOLE LOG





BOREHOLE LOG

CLIENT	ATI	KINS											A	WS	005
SITE	GP	'SS TU	IRRIF	F FOF	RMER	PSD							Sheet		1 of 1
Start Date	9 J	anuary	/ 201	3		Eastir	ng	37	2987.2				Scale		1 : 50
End Date	9 J	anuary	/ 201	3		North	ing	84	9116.5	Ground level	36.41m	OD	Depth		3.92 m
progress date/time water depth	sample no & type	depth from	(m) to	casing depth (m)	test type & value	samp. /core range		instru -ment		descri	iption		depth (m)	reduced level (m)	legend
09/01/13 0800hrs				-					Grass ove GRAVEL.	r black angular to su (MADE GROUND)	ubrounded fine to	coarse ash	0.30	36.11	
	1D*	0.50			Vo 0.3				Grey local Gravel is s rare ash. (ly brown gravelly me subangular fine to co MADE GROUND)	edium and coarse barse quartz, crys	SAND. talline and	0.70	35.71	
	X 2D*	1.20 - 2 1 20	2.00	– – – Nil	Vo 1.8				Firm brow is subangu rounded c	n and grey slightly g ular fine to coarse qu obbles of crystalline	ravelly sandy CLA uartz and crystallin . Faint hydrocarbo	AY. Gravel ne. Rare on odour.			
	20	1.20							1.30 - 1.50	official dark growich brown			1.70	34.71	
	3D* X	1.80 2.00 - 3	3.00	2.00	Vo 198				Gravel is s	subangular fine to co	parse quartz and c	crystalline.	2.10	34.31	× ×
									Greyish bi crystalline cobbles of	own locally clayey s and rare quartz GR quartz and crystalli	ubangular fine to AVEL. Rare subro ne.	coarse ounded	2.50	33.91	× × ×
	х	3.00 - 3	3.90	2.00					Stiff friable Gravel is s Strong hyd	e greyish brown sligh subangular fine to co drocarbon odour.	ntly gravelly sandy parse quartz and o	SILT.	3.00	33.41	.X .X X .X X .X 0 0 0 X 0 0
09/01/13 1000hrs									Dark grey and quartz	slightly silty subang GRAVEL. Faint hyd	ular fine to coarse drocarbon odour.	e crystalline			x0 0 0 x0 0 0 x0 0 0
1.81m	x	3 90 - 3	3 92	200					3.00 - 3.92	2m: Limited recovery	/.		3.92	32.49	, ox o
													{8.00}		
EQUIPMEN METHOD: H CASING: 12 BACKFILL: REMARKS:	T: Geote land dug 28mm dia On comp Sample:	echnical 1 j inspecti am to 2.0 pletion, h s taken a .0GS SHOI	Ferrier : on pit (0m. ole bac Ind reta	2000 rig.).00-1.20 :kfilled wi lined by t	m. Dyna th arisin he Clien	imic sam gs. it. Strong	ıpled () hydri	(113mi rocarbo	m) 1.20-2.0 on odour not S	0m, (84mm) 2.00-3.0 ed 1.70-2.10m.	00m, (74mm) 3.00	0-3.90m and	(64mm) 3	}.90-3.92	2m.
water strike (2.65	(m) casi 2	ing (m) 2.00	rose to	o (m) tin 92	ne to rise 5	e (min)	rema	ırks			AGS	CONT	RACT	CHE	CKED
2.65	2	2.00	1.9)1	20		1.62r	m After	r pulling cas	ing.		274	75	C	T



BOREHOLE LOG

CLIENT	AT	KINS											A	w5	006
SITE	GP	'SS TL	JRRIF	F FOI	RMEF	≀ PSD							Sheet		1 of 1
Start Date	39J	anuar	y 201	3		Easting	37	'2993.6					Scale		1 : 50
End Date	9 J	anuar	y 201	3		Northing	J 84	9121.1	Ground	level	36.39m	DC	Depth	;	3.30 m
progress date/time water depth	sample no & type	depth from	ו (m) to	casing depth (m)	test type & value	samp. /core range	instru -ment			descriptior	1		depth (m)	reduced level (m)	legend
09/01/13 1000hrs				-				Grass ov GRAVEL	er black angul (MADE GRC	lar to subrou DUND)	unded fine to	coarse ash	0.20	36.19	
	1D*	0.50			Vo 0.6			Dark grey Gravel is rare ash. GROUNI	y locally silty g subangular fir Rare subangi D)	jravelly med ne to coarse ular cobbles	ium and coar a quartz, crys of crystalline	se SAND. Italline and Italline (MADE	' - - - - - - - -	25.00	
	X 2D*	1.20 - 2 1.50	2.00	- Nil	Vo 2.0			Brown sa fine and r odour.	andy slightly gr medium crysta	ravelly SILT. alline and qu	. Gravel is sul Jartz. Faint hy	bangular /drocarbon	_ 1.30	35.09	× · · × · · × · · × · · × · · × · · × · · × · · × · · × · · × · · × · · × · · × · · × · · × · · · × · · · × · · · × · · · × · · · × · · · × · · · × · · · × · · · × · · · × · · · · × · · · × · · · × · · · · × · · · · × · · · · × · · · · × ·
	x	2.00 - 3	3.00	2.00											
09/01/13								Grevish I	prown mottled	brown sand	ty locally clay	ev	2.80	33.59	× × ×
1040hrs 0.50m	X 3D*	3.00 - 3 3.30	3.30	2.00	Vo 6.1			subangul Rare sub odour. 3.00 - 3.0	ar fine to coar rounded cobb 30m: Locally te	rse crystallin bles of crysta ending to sti	and quartz alline. Faint hy	GRAVEL. ydrocarbon	3.30	33.09	, 0.0. ,0.0. ,0.0.
								3.10 - 3.3 fine and	30m: Rare cob medium sand.	ble sized po	ockets of orar	igish brown			
EQUIPMEN METHOD: 1	IT: Geote Hand dug	echnical g inspect	Terrier tion pit (2000 rig.)m. Dyna	amic sample	d (113m	Borehole	completed at	3.30m. 2.00-3.00m	and (74mm)	3.00-3.30m.			
CASING: 1: BACKFILL: REMARKS	28mm dia On com Sample	am to 2.0 pletion, h is taken a	DOM, DOM, DOM, DOM, DOM, DOM, DOM, DOM,	skfilled wi ained by f	ith arisin the Clier	igs. nt.	EY SHEET	rs	John, (6441101) .	2.00-3.0011		3.00-3.3011.			
water strike	(m) cas	ing (m)	rose te	o (m) tir	ne to ris	e (min) rem	narks				AGS	CONTF	RACT	CHE	CKED
0.50	2	2.00	0.4	12	20	0.6	0m Afte	r pulling ca	sing.			274	75	C	;T

GEL 11/GEL 12 Geotechnical Engineering Ltd, Tel. 01452 527743 27475 TURRIFF 28.1.13.CPJ TRIALJH.GPJ GEOTECH.GLB 05/03/2013 15:47:04 GEL 2
BODEHOI E I OG



DUKE	IUL	с L	UG							inn	
CLIENT	ATKIN	S							Α	WS	007
SITE	GPSS	TURRI	FF FOI	RMER	PSD)			Sheet		1 of 1
Start Date	9 Janu	ary 201	3		East	ing	37	2972.5	Scale		1 : 50
End Date	9 Janu	ary 201	3		Nort	hing	84	9127.2 Ground level 36.22mOD	Depth	().65 m
progress sa date/time r water depth	ample de no & type fror	epth (m) n to	casing depth (m)	test type & value	samp. /core range		instru -ment	description	depth (m)	reduced level (m)	legend
09/01/13 1040hrs 09/01/13 1100hrs 0.30m	1D* 0.30)	- - - -	Vo 0.7				Grass over dark grey sandy subangular fine to coarse crystalline, quartz and rare ash GRAVEL. (MADE GROUND)	0.65	35.57	

EQUIPMENT: Hand digging tools.

METHOD: Hand dug inspection pit 0.00-0.65m.

BACKFILL: On completion, hole backfilled with arisings.

REMARKS: Water in pit, sides collapsing in. Pit moved to AWS007A. Samples taken and retained by the Client.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

{8.00}

GEL 11/GEL 12



CLIENT	ATKINS					AWS	007A					
SITE	GPSS TURRIFF FORMER	PSS TURRIFF FORMER PSD										
Start Date	9 January 2013	Easting	372972.9			Scale	1 : 50					
End Date	9 January 2013	Northing	849132.2	Ground level	36.19mOD	Depth	0.60 m					
progress s	ample depth (m) casing test	samn	nstru			depth red	uced legend					

progress sample depth (m) casing test samp. instru date/time no & depth type & /core -ment water depth type from to (m) value range	description (m)	reduced level (m)	legend
09/01/13 1100hrs Grass over dark grey sa crystalline, quartz and ra GROUND)	andy subangular fine to coarse rare ash GRAVEL. (MADE	35 59	
09/01/13 Borehole completed at 0	0.60m.	55.55	××××
0.20m	-		
	-		
	-		
	{8.00}		
EQUIPMENT: Hand digging tools.	1 (0.00)		
METHOD: Hand dug inspection pit 0.00-0.60m.			
REMARKS: Water in pit, sides collapsing in. Hole abandoned. Samples taken and retained by the	Client.		
EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS			
			I
water strike (m) casing (m) rose to (m) time to rise (min) remarks		CHEC	KED

CLIENT	AT	KINS										A	VV 3	008
SITE	GP	SS TU	JRRIF	F FOF	RMER	PSD						Sheet		1 of 1
Start Date	e 9J	anuary	/ 201	3		Easting	3	73049.7				Scale		1 : 50
End Date	9 J	anuary	/ 201	3		Northin	g 8	49078.5	Ground leve	l 37.96m	OD	Depth		3.00 m
progress date/time water depth	sample no & type	depth from	to	casing depth (m)	test type & value	samp. /core range	instr -mer	u nt	desc	ription		depth (m)	reduced level (m)	legend
09/01/13 1115hrs 09/01/13 1300hrs Dry EQUIPMEN	1D* X 2D* X 3D*	0.40 1.20 - 2 1.50 2.00 - 3 3.00	2.00 3.00	2.00 2.00	Vo 0.4 Vo 2.8			Grass ove is subang and quart 0.60 - 1.2 quartz. Brown gra Gravel is and crysta Brown loo Rare suba crystalline Grey loca and subro gravel. Fa Borehole	er dark brown slight ular and subrounde z. Possible made gr 0m: Rare subround avelly locally silty me subangular and sub alline. ally orangish brown angular and subrour gravel. Ily clayey fine to coa bunded fine and mea int hydrocarbon odd completed at 3.00m	ty gravelly sandy S d fine to coarse cr round. (MADE GR ed cobbles of crys edium and coarse prounded fine to coarse arse SAND. Rare s dium quartz and cr our.	ILT. Gravel ystalline OUND?) talline and SAND. arse quartz se SAND. e quartz and subangular ystalline	2.20	37.16 35.76 34.96	
METHOD: 1 CASING: 1 BACKFILL: REMARKS	Hand dug 28mm di On com : Borehol	g inspecti am to 2.0 pletion, h le refused	ion pit ()0m. iole bac d at 3.0).00-1.20 kfilled wi 0m on ha	m. Dyna th arisin ard strata	amic sample gs. a. Samples	ed (113r taken a	mm) 1.20-2.0	0m and (84mm) 2.0	00-3.00m. carbon odour note	d 2.90-3.00m			
EXPLORATOR	RY HOLE L	OGS SHO	ULD BE	READ IN C	ONJUNC	TION WITH K	EY SHEE	ETS						
water strike	(m) cas	ing (m)	rose to	o (m) tin	ne to rise	e (min) re Gr	marks oundwa	ater not enco	untered.	AGS	CONTR 2747	аст 75	CHE C	CKED ;T







BOREHOLE LOG



GEL 11/GEL 27475 TURRIFF 28.1.13.GPJ TRIALJH.GPJ GEOTECH.GLB 05/03/2013 15:47:08 GEL 2 01452 527743 Tel. Engineering Ltd, Geotechnical





BOREHOLE LOG

	CLIENT	AT	KINS											A	VV 3	UIZ
	SITE	GP	SS T	URRII	FF FOI	RMER	R PSD							Sheet		1 of 1
	Start Date	e 10	Janua	ary 20	13		Eastin	g	37	2876.9				Scale		1 : 50
	End Date	10	Janua	ary 20	13		Northi	ng	84	9021.1	Ground level	47.09m	OD	Depth	;	3.89 m
	progress date/time water depth	sample no & type	dept from	th (m) to	casing depth (m)	test type & value	samp. /core range		instru -ment		descrip	otion		depth (m)	reduced level (m)	legend
13.GPJ TRIALJH.GPJ GEOTECH.GLB 05/03/201315:47:10 GEL 2 GEL 11/GEL 12	date/time water depth 10/01/13 1100hrs 10/01/13 1220hrs Dry	no & type	from 0.50 1.00 1.20 - 2.40 3.00 - 3.60 3.85 -	to 2.00 3.00 3.85 3.89	depth (m) 2.00 2.00	type & value Vo 0.3 Vo 0.3 Vo 0.4 Vo 0.5			-ment	Grass ove Gravel is a to coarse quartz cot Stiff brown subround subangula quartz and subrounde Stiff friable angular to quartz. 3.40 - 3.70 very rare to Borehole of	descrip er brown gravelly silty subangular and subro quartz and metamorp obles. In gravelly CLAY. Grav- ed, rarely angular, fin hic. e slightly gravelly san ar and subrounded, ra d metamorphic. Rare ed quartz cobbles. e light greyish brown subrounded metamor 0m: Band of firm to si metasediment gravel. completed at 3.89m.	fine and medium punded, rarely ar phic. Rare subrou- vel is subangular ne to coarse quar dy CLAY. Grave arely angular, fin subangular and gravelly CLAY. Corphic lithorelicts	a SAND. gular, fine inded and tz and lis e to coarse Gravel is and rare ble clay with	(m)	level (m) 45.99 45.79 44.59 43.20	
Engineering Ltd, Tel. 01452 527743 27475 TURRIFF 28.1.1	EQUIPMEN METHOD: H CASING: 12 BACKFILL: REMARKS:	IT: Geote Hand dug 28mm dia On com Sample Sample	echnical g inspec am to 2 pletion, s taken	I Terrier ction pit (.00m. hole bac and reta	2000 rig. D.00-1.20 ckfilled w ained by f	Om. Dyna ith arisin the Clier	amic samp ngs. ht.	Died	(113mi	m) 1.20-2.0 S	0m, (98mm) 2.00-3.0	00m, (84mm) 3.00	0-3.85m and	(64mm) \$	3.85-3.89)m.
Geotechnical u	water strike	(m) casi	ing (m)	rose to	o (m) tir	ne to ris	e (min) r (rema Grou	arks Indwate	er not enco	untered.	AGS	CONTF 274	аст 75	CHEC C	CKED



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BOREHOLE LOG



GEL 11/GEL 27475 TURRIFF 28.1.13.GPJ TRIALJH.GPJ GEOTECH.GLB 05/03/2013 15:47:10 GEL 2 01452 527743 Tel. Engineering Ltd, Geotechnical

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APPENDIX B MONITORING DATA



CLIENT: ATKINS

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H ₂ O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remark	S
ABH001	05/02/13 10:31:00	972	0.0								0.0				
ABH001	05/02/13 10:32:00										0.0				
ABH001	05/02/13 10:33:00										0.0				
ABH001	05/02/13 10:34:00										0.0				
ABH001	05/02/13 10:35:00										0.0				
ABH001	05/02/13 10:36:00										0.0				
ABH001	05/02/13 10:37:00										0.0				
ABH001	05/02/13 10:38:00										0.0				
ABH001	05/02/13 10:39:00										0.0				
ABH001	05/02/13 10:40:00			0.0	0.0	20.5	0.0	0	0						
ABH001	05/02/13 10:41:00			0.0	0.0	20.5	0.0	0	0						
ABH001	05/02/13 10:42:00			0.0	0.0	20.5	0.0	0	0						
ABH001	05/02/13 10:43:00			0.0	0.0	20.5	0.0	0	0						
ABH001	05/02/13 10:44:00			0.0	0.0	20.5	0.0	0	0						
ABH001	05/02/13 10:45:00			0.0	0.0	20.5	0.0	0	0						
ABH001	05/02/13 10:46:00			0.0	0.0	20.5	0.0	0	0						
ABH001	05/02/13 10:47:00			0.0	0.0	20.5	0.0	0	0						
ABH001	05/02/13 10:48:00			0.0	0.0	20.5	0.0	0	0						
romorko															
# denotes r	esult exceeding capacity c	of gas monitori	ng equipment	maxima with 40	(a)/ lama!!!		ia a budu da na -							CONTRACT	
VUC - Phot	Diomisation Detector Mini I	KAE 2000 mea	asures voc va	pours with 10.	oev lamp call	brated against	isobutyiene.							2/4/3	

and the second

CLIENT: ATKINS

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H ₂ O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (Itr/hr)	temperature (°C)	water level (m - bgl)	remarks	5
ABH001	05/02/13 10:49:00			0.0	0.0	20.5	0.0	0	0						
ABH001	05/02/13 10:50:00									0.0					
ABH001	05/02/13 10:51:00									0.0					
ABH001	05/02/13 10:52:00									0.0					
ABH001	05/02/13 10:53:00									0.0					
ABH001	05/02/13 10:54:00									0.0					
ABH001	05/02/13 10:55:00												1.80	No Product Detected	t
ABH001	05/02/13 10:56:00														
remarks # denotes re VOC - Phot	esult exceeding capacity o oionisation Detector Mini F	l f gas monitori RAE 2000 mea	I ng equipment asures VOC va	pours with 10.	l 6eV lamp calil	l brated against	isobutylene.	1	1	1	1	1		CONTRACT 27475	CHECKED CT



CLIENT: ATKINS

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H ₂ O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remark	S
ABH002	05/02/13 11:31:00	971	0.0								0.0				
ABH002	05/02/13 11:32:00										0.0				
ABH002	05/02/13 11:33:00										0.0				
ABH002	05/02/13 11:34:00										0.0				
ABH002	05/02/13 11:35:00										0.0				
ABH002	05/02/13 11:36:00										0.0				
ABH002	05/02/13 11:37:00										0.0				
ABH002	05/02/13 11:38:00										0.0				
ABH002	05/02/13 11:39:00										0.0				
ABH002	05/02/13 11:40:00			0.2	0.0	20.4	0.0	0	0						
ABH002	05/02/13 11:41:00			0.2	0.0	20.4	0.0	0	0						
ABH002	05/02/13 11:42:00			0.2	0.0	20.4	0.0	0	0						
ABH002	05/02/13 11:43:00			0.2	0.0	20.4	0.0	0	0						
ABH002	05/02/13 11:44:00			0.2	0.0	20.4	0.0	0	0						
ABH002	05/02/13 11:45:00			0.2	0.0	20.4	0.0	0	0						
ABH002	05/02/13 11:46:00			0.2	0.0	20.4	0.0	0	0						
ABH002	05/02/13 11:47:00			0.2	0.0	20.4	0.0	0	0						
ABH002	05/02/13 11:48:00			0.2	0.0	20.4	0.0	0	0						
													I		
# denotes r	esult exceeding capacity o	of gas monitori	ng equipment	nours with 10	6eV lamp calil	brated against	isobutylene							CONTRACT	
100-1100						oraceu agambi	isobutyiene.							2/4/J	

and the second

CLIENT: ATKINS

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H ₂ O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remark	S
ABH002	05/02/13 11:49:00			0.2	0.0	20.4	0.0	0	0						
ABH002	05/02/13 11:50:00									0.0					
ABH002	05/02/13 11:51:00									0.0					
ABH002	05/02/13 11:52:00									0.0					
ABH002	05/02/13 11:53:00									0.0					
ABH002	05/02/13 11:54:00									0.0					
ABH002	05/02/13 11:55:00												2.10	No product detected	I.
ABH002	05/02/13 11:56:00														
remarks # denotes re VOC - Phote	esult exceeding capacity o oionisation Detector Mini F	f gas monitorir RAE 2000 mea	ng equipment asures VOC va	pours with 10	.6eV lamp calil	orated against	isobutylene.							CONTRACT 27475	CHECKED CT



CLIENT: ATKINS

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H ₂ O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remark	S
ABH003	05/02/13 08:31:00	972	0.0								0.0				
ABH003	05/02/13 08:31:00										0.0				
ABH003	05/02/13 08:32:00										0.0				
ABH003	05/02/13 08:33:00										0.0				
ABH003	05/02/13 08:34:00										0.0				
ABH003	05/02/13 08:35:00										0.0				
ABH003	05/02/13 08:36:00										0.0				
ABH003	05/02/13 08:37:00										0.0				
ABH003	05/02/13 08:38:00										0.0				
ABH003	05/02/13 08:39:00										0.0				
ABH003	05/02/13 08:40:00			1.3	0.0	16.6	0.0	0	0						
ABH003	05/02/13 08:41:00			1.3	0.0	16.7	0.0	0	0						
ABH003	05/02/13 08:42:00			1.2	0.0	17.0	0.0	0	0						
ABH003	05/02/13 08:43:00			1.2	0.0	17.2	0.0	0	0						
ABH003	05/02/13 08:44:00			1.2	0.0	17.6	0.0	0	0						
ABH003	05/02/13 08:45:00			1.1	0.0	17.8	0.0	0	0						
ABH003	05/02/13 08:46:00			1.1	0.0	17.9	0.0	0	0						
ABH003	05/02/13 08:47:00			1.0	0.0	18.0	0.0	0	0						
													I		
remarks # denotes re	esult exceeding capacity c	of gas monitori	ng equipment											CONTRACT	CHECKED
VOC - Phot	oionisation Detector Mini I	RAE 2000 mea	asures VOC va	pours with 10.	6eV lamp cali	brated against	isobutylene.							27475	СТ

and the second

CLIENT: ATKINS

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H ₂ O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remark	S
ABH003	05/02/13 08:48:00			0.9	0.0	18.3	0.0	0	0						
ABH003	05/02/13 08:49:00			0.8	0.0	18.4	0.0	0	0						
ABH003	05/02/13 08:50:00									0.0					
ABH003	05/02/13 08:51:00									0.0					
ABH003	05/02/13 08:52:00									0.0					
ABH003	05/02/13 08:53:00									0.0					
ABH003	05/02/13 08:54:00									0.0					
ABH003	05/02/13 08:55:00												Dry	No Product Detected	d
remarks # denotes r VOC - Phot	esult exceeding capacity c coionisation Detector Mini I	f gas monitorii RAE 2000 mea	ng equipment asures VOC va	pours with 10	.6eV lamp calil	prated against	isobutylene.	1	1	1	1	1		CONTRACT 27475	CHECKED

Geotechnical Engineering Limited GROUNDWATER TESTING DATA

CLIENT: ATKINS

borehole /trial pit no.	date and time	sample depth (m)	water temperature (°C)	dissolved oxygen concentration (mg/l)	рН	resistivity (ohmcm)	conductivity (uS/cm)	total dissolved solids (ppm)	salinity (PSU)	redox (mV)	remarks	
ABH001	05/02/13 10:56:00	1.80	4.61	3.30	7.83		366	184		-101.7		
ABH002	05/02/13 11:56:00	2.10	5.55	3.84	7.05		246	125		-81.1		
remarks		f tooting or vis	mont								CONTRACT	CHECKED
Hanna Instr	ruments HI 9828 Multipara	meter Portable	e Meter								27475	СТ





APPENDIX C METHOD STATEMENT



General

This Method Statement details the procedure to be followed for sampling of groundwater and surface water.

The purpose of taking surface water/groundwater/leachate samples is generally to provide data on water quality from in-situ field and/or laboratory testing. The field and laboratory results may form part of a geotechnical or geoenvironmental report. Samples are taken using various containers, bailers etc. The materials for the sampler and containers will generally depend on the conditions encountered and the particular analysis to be undertaken.

Water samples are generally taken from:

- Standing water bodies ponds, lagoons, streams, rivers, canals & lakes,
- Manholes, drains, culverts, wells and other man-made catchments,
- Trial pits,
- Boreholes, probeholes etc. during drilling,
- Installed standpipes or piezometers.

Confined spaces should not be entered and personnel must not sample from areas where there is a danger of slipping/falling (e.g. river banks, deep wells) unless the appropriate risk assessments and mitigation measures have been undertaken.

This Method Statement should be read in conjunction with the relevant Risk Assessments.

Personnel

Personnel typically comprise an Engineering Geologist and/or Geoenvironmental Engineer. All work will be carried out by competent personnel who hold a current and valid CSCS card and have received training in line with the Company Training Policy. Plant operators (if applicable) will be appropriately qualified and hold valid CPCS cards. In-situ field testing kits will only be used and interpreted by qualified personnel.

Standard Equipment and Materials

- Sampling containers, bailers etc.
- Dipmeter/Tape measure
- Cool boxes for samples

Personal Protective Equipment

- Hard Hat (mandatory as per Category A of the Costain PPE Standard for GPSS)
- Safety Boots (mandatory as per Category A of the Costain PPE Standard for GPSS y)
- Anti static, flame retardant, high visibility overalls (mandatory as per Category A of the Costain PPE Standard for GPSS)
- Gloves (mandatory)
- Ear Defenders (to be worn in accordance with noise assessments)
- Safety Glasses / Goggles (mandatory as per Category A of the Costain PPE Standard for GPSS)
 - Tyvex overalls



COSHH

• Usually dependent on chemical properties of waters to be sampled.

General Instructions

All steps detailed in this Method Statement are to be completed sequentially, unless otherwise instructed by GEL Contract Manager or Supervising Engineer.

System of Work

- 1. A visual inspection of the proposed sampling locations must be undertaken to identify potential hazards. For example, locations should be relocated if they are in areas where there is a danger of slipping/falling.
- 2. If any excavation is required the procedures detailed in MS01 (The avoidance of Underground Services) must be adhered to.
- 3. If any development or purging of sample locations is required the supervising Engineer should ensure that adequate precautions are taken to avoid the spread of contamination and the protection of operatives. Collection and disposal of purged water should be as detailed below.
- 4. The supervising Engineering Geologist/Geoenvironmental Engineer will take the samples and carry out any in-situ testing. No man entry into unstable excavations or down unstable banks is permitted and no entry into excavations deeper than 1.20m is allowed unless adequate shoring equipment has been safely installed.
- 5. The area around the sampling location will be kept clear of any trip hazards. Where required, suitable fencing will be employed to isolate the sampling area. No open pit or manhole will be left unattended.
- 6. On completion of sampling, the area will be made safe by replacing any covers etc.

Additional Information

APPENDIX F



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Environmental Science

i2 Analytical Ltd. Building 19, BRE, Garston, Watford, WD25 9XX

t: 01923 67 00 20 f: 01923 67 00 30 e: reception@i2analytical.com

Analytical Report Number : 13-38762

Project / Site name:	Turriff	Samples received on:	10/01/2013
Your job number:	5106238	Samples instructed on:	10/01/2013
Your order number:		Analysis completed by:	16/01/2013
Report Issue Number:	1	Report issued on:	16/01/2013
Samples Analysed:	13 soil samples		

QA1 Signed:

QA2 Signed:

For & on behalf of i2 Analytical Ltd.

For & on behalf of i2 Analytical Ltd.

Other office located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.





Lab Sample Number	I ab Sample Number						241849	241850
Sample Reference				AWS002	AWS002	AWS003	AWS003	AW/\$001
Sample Number				None Supplied				
Depth (m)				0.50	3.00	0.50	1.00	0.50
Date Sampled		08/01/2013	08/01/2013	08/01/2013	08/01/2013	08/01/2013		
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	66	< 0.1
Moisture Content	%	N/A	NONE	6.2	13	20	13	24
Total mass of sample received	kg	0.001	NONE	0.51	0.52	0.58	0.65	0.48
Asbestos in Soil Screen	P/A	N/A	ISO 17025	Absent	-	Absent	-	Absent
General Inorganics								
рН	pH Units	N/A	MCERTS	6.0	6.1	5.8	5.9	6.0
Fraction Organic Carbon (FOC)	N/A	0.00001	NONE	0.0013	0.0005	0.0011	0.0025	0.012
Speciated PAHs	-							
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Phenanthrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Pyrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(a)anthracene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Dibenz(a,h)anthracene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6





Lab Sample Number				241846	241847	241848	241849	241850
Sample Reference				AW/\$002	AWS002	AWS003	AWS003	AWS001
Sample Number				None Supplied				
Depth (m)				0.50	3.00	0.50	1.00	0.50
Date Sampled	08/01/2013	08/01/2013	08/01/2013	08/01/2013	08/01/2013			
Time Taken				None Supplied				
			Ac					
Analytical Parameter	c	det Lin	ste					
(Soil Analysis)	nit	ecti	atit					
		g f	ation					
Monoaromatics					I			
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons	-							
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	130	35	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	190	9.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	530	34	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	12	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	870	/8	< 10
TPH-CWG - Aromatic >EC5 - EC7	ma/ka	0.1	MCEDITS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Alomatic > EC7 EC9	mg/kg	0.1	MCEDITC	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic > EC9 = EC10	mg/kg	0.1	MCEDITC	< 0.1	< 0.1	15	7.7	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCEDTC	< 1.0	< 1.0	36	7.7	< 1.0
TPH-CWG - Aromatic >EC10 - EC12 TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCEDTC	< 2.0	< 2.0	120	0.2	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	2.2 < 10	< 10
TPH-CWG - Aromatic >EC21 - EC25	ma/ka	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (FC5 - FC35)	mg/kg	10	MCERTS	< 10	< 10	170	19	< 10
	119/19	10	HOLKIJ	. 10	. 10	1/0	1.7	10
Tetraethyl Lead	mg/ka	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tetramethyl Lead	mg/kg	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01





Lab Sample Number		241851	241852	241853	241854	241855		
Sample Reference				AWS001	AWS004	AWS004	ABH001	ABH001
Sample Number				None Supplied				
Depth (m)				3.00	0.30	1.00	3.50	2.80
Date Sampled	08/01/2013	08/01/2013	08/01/2013	08/01/2013	08/01/2013			
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	12	11	11	10	9.3
Total mass of sample received	kg	0.001	NONE	0.56	0.55	0.58	0.57	0.59
Asbestos in Soil Screen	P/A	N/A	ISO 17025	-	Absent	-	-	-
General Inorganics								
pН	pH Units	N/A	MCERTS	6.6	6.3	6.3	6.1	6.3
Fraction Organic Carbon (FOC)	N/A	0.00001	NONE	0.0004	0.0032	0.0017	0.0006	0.0006
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Phenanthrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Pyrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(a)anthracene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Dibenz(a,h)anthracene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6





Project / Site name: Turriff

Tetraethyl Lead Tetramethyl Lead

Lab Sample Number				241851	241852	241853	241854	241855
Sample Reference				AWS001	AWS004	AWS004	ABH001	ABH001
Sample Number				None Supplied				
Depth (m)				3.00	0.30	1.00	3.50	2.80
Date Sampled				08/01/2013	08/01/2013	08/01/2013	08/01/2013	08/01/2013
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Monoaromatics								
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10

< 0.01

< 0.01

< 0.01

< 0.01

mg/kg

mg/kg

0.01

0.01

NONE

NONE

< 0.01

< 0.01

< 0.01

< 0.01

< 0.01

< 0.01





Lab Sample Number		241856	241857	241858			
Sample Reference				ABH001	ABH002	ABH002	
Sample Number				None Supplied	None Supplied	None Supplied	
Depth (m)				0.30	0.30	2.00	
Date Sampled				08/01/2013	09/01/2013	09/01/2013	
Time Taken				None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	17	12	4.9	
Total mass of sample received	kg	0.001	NONE	0.59	0.53	0.53	
Asbestos in Soil Screen	P/A	N/A	ISO 17025	Absent	Absent	-	
General Inorganics							
pH	pH Units	N/A	MCERTS	4.2	5.1	5.6	
Fraction Organic Carbon (FOC)	N/A	0.00001	NONE	0.017	0.014	0.0004	
Speciated PAHs							
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	
Acenaphthylene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	
Fluorene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	
Phenanthrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	
Fluoranthene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	
Pyrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	
Benzo(a)anthracene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	
Benzo(k)fluoranthene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	
Indeno(1,2,3-cd)pyrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	
Dibenz(a,h)anthracene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	
Total PAH							
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.6	< 1.6	< 1.6	





Lab Sample Number	241856	241857	241858				
Sample Reference				ABH001	ABH002	ABH002	
Sample Number	None Supplied	None Supplied	None Supplied				
Depth (m)				0.30	0.30	2.00	
Date Sampled				08/01/2013	09/01/2013	09/01/2013	
Time Taken				None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Monoaromatics							
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	
Petroleum Hydrocarbons							

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	
Tetraethyl Lead	mg/kg	0.01	NONE	< 0.01	< 0.01	< 0.01	
Tetramethyl Lead	ma/ka	0.01	NONE	< 0.01	< 0.01	< 0.01	





Project / Site name: Turriff

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and topsoil/loam soil types. Data for unaccredited types of solid should be interpreted with care. Stone content of

a sample is calculated as the % weight of the stones not passing a 2 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
241846	AWS002	None Supplied	0.50	Light brown sand with vegetation.
241847	AWS002	None Supplied	3.00	Light brown sand with gravel.
241848	AWS003	None Supplied	0.50	Light brown gravelly sand.
241849	AWS003	None Supplied	1.00	Light brown gravelly sand with stones.
241850	AWS001	None Supplied	0.50	Light brown topsoil and clay with vegetation.
241851	AWS001	None Supplied	3.00	Light brown clay and sand.
241852	AWS004	None Supplied	0.30	Brown topsoil and clay with gravel.
241853	AWS004	None Supplied	1.00	Light brown clay.
241854	ABH001	None Supplied	3.50	Light brown clay and sand with gravel.
241855	ABH001	None Supplied	2.80	Brown clay and sand with gravel and brick.
241856	ABH001	None Supplied	0.30	Brown topsoil and clay with vegetation.
241857	ABH002	None Supplied	0.30	Brown topsoil and sand with vegetation.
241858	ABH002	None Supplied	2.00	Light brown sand.





Project / Site name: Turriff

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos Screening in Soil	Screening of samples for Asbestos in Soil. Standard practice is to screen a representative 100 g of the sample provided for the presence/absence of asbestos and identification.	In-house method based on HSG 248. All samples are screened by optical microscopy and identification is carried out using dispersion staining and polarised light microscopy. This method is applicable to bulks, fibres, and soils containing bulk material and loose fibres.	A001-UK	W	ISO 17025
BTEX and MTBE in soil	Determination of BTEX in soil by headspace GC- MS.	In-house method based on USEPA8260	L073S-PL	W	MCERTS
Fraction of Organic Carbon in soil	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L023-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Organolead (Speciated)	Determination of organo lead compounds in soil by GC-MS	In-house method based on USEPA 8270	L064-PL	D	NONE
pH in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L005-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Stones not passing through a 10 mm sieve is determined gravimetrically and reported as a percentage of the dry weight. Sample results are not corrected for the stone content of the sample.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPHCWG (Soil)	Determination of pentane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L076-PL	W	MCERTS

For method numbers ending in 'PL' analysis have been carried out in our laboratory in the United Kingdom. For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland. Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.



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i2 Analytical Ltd. Building 19, BRE, Garston, Watford, WD25 9XX

t: 01923 67 00 20 **f:** 01923 67 00 30 e: reception@i2analytical.com

Analytical Report Number : 13-38847

Project / Site name:	Turriff 5106238 D10GPSS	Samples received on:	14/01/2013
Your job number:		Samples instructed on:	14/01/2013
Your order number:		Analysis completed by:	18/01/2013
Report Issue Number:	1	Report issued on:	18/01/2013
Samples Analysed:	21 soil samples		

QA1 Signed:

For & on behalf of i2 Analytical Ltd.

Other office located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting

For & on behalf of i2 Analytical Ltd.

QA4

Signed:

Excel copies of reports are only valid when accompanied by this PDF certificate.





I ab Sample Number				242391	242392	242393	242394	242395
Sample Reference				AWS005	AWS005	AWS006	AWS006	AWS007
Sample Number				None Supplied				
Depth (m)				0.50	1.80	0.50	3.50	0.30
Date Sampled				09/01/2013	09/01/2013	09/01/2013	09/01/2013	09/01/2013
Time Taken				None Supplied				
	1							
Analytical Parameter	c	det Lin	St					
(Soil Analysis)	nits	<u>₿</u> .≓	dita					
(S ₹	s					
Stone Content	0/-	0.1	NONE	< 0.1	70	38	< 0.1	55
Moisture Content	9/6	N/A	NONE	10	70	17	8.0	10
Total mass of sample received		0.001	NONE	0.56	0.53	0.48	0.5	0.50
Ashestos in Soil Screen	P/A	N/A	ISO 17025	Absent	-	Absent	-	Absent
	ΠA	14/1	150 17025	Absent		Absent		Absent
General Inorganics								
рН	pH Units	N/A	MCERTS	6.5	6.7	6.3	6.4	6.1
Fraction Organic Carbon (FOC)	N/A	0.00001	NONE	0.0025	0.0029	0.011	0.0026	0.0019
Speciated DAHe								
Nanhthalene	ma/ka	0.05	MCEDTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenandthylene	mg/kg	0.05	MCEDTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	ma/ka	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.10
Fluorene	ma/ka	0.1	MCEPTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Anthracene	mg/kg	0.2	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	ma/ka	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Pyrene	ma/ka	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(a)anthracene	ma/ka	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Chrysene	ma/ka	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	ma/ka	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	ma/ka	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Dibenz(a,h)anthracene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH		1.0	MOEDTO	.10	.16	.16	.16	.1.0
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6
Monoaromatics								
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0





Project / Site name: Turriff 5106238 D10GPSS

Lab Sample Number				242391	242392	242393	242394	242395
Sample Reference			AWS005	AWS005	AWS006	AWS006	AWS007	
Sample Number			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.50	1.80	0.50	3.50	0.30
Date Sampled				09/01/2013	09/01/2013	09/01/2013	09/01/2013	09/01/2013
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	5.2	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	22	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	27	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	2.1	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	9.8	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	12	< 10	< 10	< 10
Tetraethyl Lead	mg/kg	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tetramethyl Lead	mg/kg	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01





Lab Sample Number				242396	242397	242398	242399	242400
Sample Reference				AWS008	ABH002	AWS008	AWS009	AWS009
Sample Number				None Supplied				
Depth (m)				0.40	3.50	3.00	0.50	1.80
Date Sampled				09/01/2013	09/01/2013	09/01/2013	09/01/2013	09/01/2013
Time Taken				None Supplied				
			2	FF			FF	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	occreditation Status					
Stone Content	%	0.1	NONE	< 0.1	45	63	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	11	7.0	11	6.2	8.8
Total mass of sample received	kg	0.001	NONE	0.52	0.52	0.49	0.54	0.48
Asbestos in Soil Screen	P/A	N/A	ISO 17025	Absent	-	-	Absent	-
General Inorganics								
pH	pH Units	N/A	MCERTS	5.3	5.7	5.8	6.0	5.9
Fraction Organic Carbon (FOC)	N/A	0.00001	NONE	0.023	0.0012	0.0032	0.012	0.0014
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	ma/ka	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Phenanthrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Pyrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(a)anthracene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Dibenz(a,h)anthracene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6
Monoaromatics								
Benzene	µg/ka	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kq	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/ka	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kq	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	• • • • •					-	-	





Lab Sample Number				242396	242397	242398	242399	242400
Sample Reference				AWS008	ABH002	AWS008	AWS009	AWS009
Sample Number				None Supplied				
Depth (m)	0.40	3.50	3.00	0.50	1.80			
Date Sampled				09/01/2013	09/01/2013	09/01/2013	09/01/2013	09/01/2013
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	2.2	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	17	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	17	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
Tetraethyl Lead	mg/kg	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tetramethyl Lead	mg/kg	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01





I ab Sample Number				242401	242402	242403	242404	242405
Sample Reference				AWS010	AWS010	AW/S011	AWS011	AWS012
Sample Number				None Supplied				
Depth (m)				0.50	1.60	0.50	2.70	0.50
Date Sampled				10/01/2013	10/01/2013	10/01/2013	10/01/2013	10/01/2013
Time Taken				None Supplied				
		I	<u> </u>					
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	15	23	15	4.9	20
Total mass of sample received	kg	0.001	NONE	0.51	0.51	0.50	0.49	0.48
Asbestos in Soil Screen	P/A	N/A	ISO 17025	Absent	-	Absent	-	Absent
General Inorganics								
pН	pH Units	N/A	MCERTS	5.8	6.1	5.6	5.7	5.6
Fraction Organic Carbon (FOC)	N/A	0.00001	NONE	0.0096	0.0010	0.019	0.0021	0.019
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Phenanthrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Pyrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(a)anthracene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Dibenz(a,h)anthracene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6
Monoaromatics								
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0





Lab Sample Number				242401	242402	242403	242404	242405
Sample Reference				AWS010	AWS010	AWS011	AWS011	AWS012
Sample Number				None Supplied				
Depth (m)	0.50	1.60	0.50	2.70	0.50			
Date Sampled	10/01/2013	10/01/2013	10/01/2013	10/01/2013	10/01/2013			
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TDH CMC Aliphotic > ECE EC6	ma/ka	0.1	MCEDTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCEDTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC9 - EC9	mg/kg	0.1	MCEDIC	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCEDTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCEDTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCEDTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	ma/ka	10	MCERTS	< 10	< 10	< 10	< 10	< 10
		10	HOLINO	. 10	. 10	. 10	. 10	. 10
TPH-CWG - Aromatic >EC5 - EC7	ma/ka	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
Tetraethyl Lead	mg/kg	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tetramethyl Lead	mg/kg	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01




Lab Sample Number				242406	242407	242408	242409	242410
Sample Reference				ABH003	ABH003	ABH003	AWS012	AWS013
Sample Number				None Supplied				
Depth (m)				0.50	2.00	2.50	2.40	0.50
Date Sampled				10/01/2013	10/01/2013	10/01/2013	10/01/2013	10/01/2013
Time Taken				None Supplied				
			ъ	FF				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	occreditation Status					
Stone Content	%	0.1	NONE	18	< 0.1	< 0.1	24	< 0.1
Moisture Content	%	N/A	NONE	16	16	9.0	7.9	17
Total mass of sample received	kg	0.001	NONE	0.43	0.47	0.43	0.56	0.50
Asbestos in Soil Screen	P/A	N/A	ISO 17025	Absent	-	-	-	Absent
General Inorganics								
рН	pH Units	N/A	MCERTS	5.7	5.2	5.5	5.4	6.2
Fraction Organic Carbon (FOC)	N/A	0.00001	NONE	0.016	0.015	0.0020	0.0019	0.0070
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	ma/ka	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Acenaphthene	ma/ka	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Phenanthrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Pyrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(a)anthracene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Dibenz(a,h)anthracene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6
Monoaromatics								
Benzene	µg/kq	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kq	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kq	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kq	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
					-	-	-	





Lab Sample Number				242406	242407	242408	242409	242410
Sample Reference				ABH003	ABH003	ABH003	AWS012	AWS013
Sample Number				None Supplied				
Depth (m)				0.50	2.00	2.50	2.40	0.50
Date Sampled				10/01/2013	10/01/2013	10/01/2013	10/01/2013	10/01/2013
Time Taken		None Supplied	None Supplied	None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons							-	
TRU CALC Aliphotics ECE ECC		0.1	MCEDIC	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic > EC6 = EC9	mg/kg	0.1	MCEDIC	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic > EC9 - EC0	mg/kg	0.1	MCEDIC	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic > EC10 - EC12	mg/kg	0.1	MCEDIC	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic > EC10 - EC12	mg/kg	2	MCEDIC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic > EC16 - EC21	mg/kg	2	MCEDIC	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic > EC21 = EC21	mg/kg	0	MCEDIC	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	0	MCEDTS	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0
TPT-CWG - Aliphatic (EC3 - EC33)	iiig/kg	10	PICENTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
	-							
Tetraethyl Lead	mg/kg	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tetramethyl Lead	mg/kg	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01





Lab Carrie Namba				242414		1	1	
Lab Sample Number				242411				
				AWS013				
				None Supplied				
				1.80				
Date Sampled				10/01/2013				
	1		None Supplied					
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	48				
Moisture Content	%	N/A	NONE	2.9				
Total mass of sample received	kg	0.001	NONE	0.55				
Asbestos in Soil Screen	P/A	N/A	ISO 17025	-				
General Inorganics								
pH	pH Units	N/A	MCERTS	6.4				
Fraction Organic Carbon (FOC)	N/A	0.00001	NONE	0.0027				
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05				
Acenaphthylene	mg/kg	0.2	MCERTS	< 0.20				
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10				
Fluorene	mg/kg	0.2	MCERTS	< 0.20				
Phenanthrene	mg/kg	0.2	MCERTS	< 0.20				
Anthracene	mg/kg	0.1	MCERTS	< 0.10				
Fluoranthene	mg/kg	0.2	MCERTS	< 0.20				
Pyrene	mg/kg	0.2	MCERTS	< 0.20				
Benzo(a)anthracene	mg/kg	0.2	MCERTS	< 0.20				
Chrysene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10				
Benzo(k)fluoranthene	mg/kg	0.2	MCERTS	< 0.20				
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10				
Indeno(1,2,3-cd)pyrene	mg/kg	0.2	MCERTS	< 0.20				
Dibenz(a,h)anthracene	mg/kg	0.2	MCERTS	< 0.20				
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05				
Total PAH					•		n	
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.6				
Monoaromatics								
Benzene	µg/kg	1	MCERTS	< 1.0				
Toluene	µg/kg	1	MCERTS	< 1.0				
Ethylbenzene	µg/kg	1	MCERTS	< 1.0				
p & m-xylene	µg/kg	1	MCERTS	< 1.0				
o-xylene	µg/kg	1	MCERTS	< 1.0				
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0				





Lab Sample Number				242411				
Sample Reference				AWS013				
Sample Number				None Supplied				
Depth (m)				1.80				
Date Sampled				10/01/2013				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons					-	-	-	
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1				
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1				
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1				
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0				
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0				
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0				
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0				
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10				
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1				
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1				
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1				
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0				
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0				
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10				
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	ļ	ļ		
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10				
Tetraethyl Lead	ma/ka	0.01	NONE	< 0.01	1	1	1	
Totramothyl Load	mg/kg	0.01	NONE	< 0.01				
	тід/кд	0.01	NUNE	< 0.01	1	I	1	





Stone content

Analytical Report Number : 13-38847 Project / Site name: Turriff 5106238 D10GPSS

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and topsoil/loam soil types. Data for unaccredited types of solid should be interpreted with care.

of a sample is calculated as the % weight of the stones not passing a 2 mm sieve. Results are not corrected for stone content.

Lab Sample Sample Sample Depth (m) Sample Description * Reference Number Number 242391 AWS005 None Supplied 0.50 Grey gravelly sand. 242392 AWS005 None Supplied 1.80 Grey gravelly sand with stones. 242393 AWS006 0.50 Brown sandy clay with gravel and stones. None Supplied 242394 AWS006 3.50 Light brown sandy clay with gravel. None Supplied 242395 AWS007 None Supplied 0.30 Brown gravelly sand with stones. 242396 AWS008 0.40 Brown topsoil and gravel with vegetation. None Supplied 242397 ABH002 Light brown sandy clay with gravel and stones None Supplied 3.50 AWS008 3.00 Light brown sandy clay with gravel and stones. 242398 None Supplied 242399 AWS009 None Supplied 0.50 Light brown sand with gravel and vegetation. 242400 AWS009 1.80 Light brown clay and gravel. None Supplied 242401 AWS010 0.50 Brown sandy topsoil with gravel and vegetation. None Supplied 242402 AWS010 1.60 Light brown sand. None Supplied 242403 AWS011 Brown sandy topsoil with gravel. 0.50 None Supplied 242404 AWS011 2.70 Light brown clay with gravel. None Supplied 242405 AWS012 None Supplied 0.50 Light brown sandy topsoil with gravel and vegetation. 242406 ABH003 None Supplied 0.50 Brown clay and sand with stones 242407 ABH003 None Supplied 2.00 Brown sandy clay. 242408 ABH003 None Supplied 2.50 Brown clay with gravel. 242409 AWS012 None Supplied 2.40 Light brown gravelly sand with stones. 242410 AWS013 None Supplied 0.50 Light brown sand with gravel. Light brown sand with gravel and stones 242411 AWS013 None Supplied 1.80





Project / Site name: Turriff 5106238 D10GPSS

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos Screening in Soil	Screening of samples for Asbestos in Soil. Standard practice is to screen a representative 100 g of the sample provided for the presence/absence of asbestos and identification.	In-house method based on HSG 248. All samples are screened by optical microscopy and identification is carried out using dispersion staining and polarised light	A001-UK	W	ISO 17025
BTEX and MTBE in soil	Determination of BTEX in soil by headspace GC- MS.	In-house method based on USEPA8260	L073S-PL	W	MCERTS
Fraction of Organic Carbon in soil	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L023-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Organolead (Speciated)	Determination of organo lead compounds in soil by GC-MS	In-house method based on USEPA 8270	L064-PL	D	NONE
pH in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L005-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Stones not passing through a 10 mm sieve is determined gravimetrically and reported as a percentage of the dry weight. Sample results are not corrected for the stone content of the sample.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPHCWG (Soil)	Determination of pentane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L076-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.



Atkins Ltd

The Axis 6th Floor West

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10 Holliday Street Birmingham B1 1TF



i2 Analytical Ltd. Building 19, BRE, Garston, Watford, WD25 9XX

t: 01923 67 00 20 f: 01923 67 00 30 e: reception@i2analytical.com

Analytical Report Number : 13-39580

Project / Site name:	5106238	Samples received on:	11/02/2013
Your job number:	5106238	Samples instructed on:	11/02/2013
Your order number:		Analysis completed by:	14/02/2013
Report Issue Number:	1	Report issued on:	14/02/2013
Samples Analysed:	2 water samples		
QA1 Signed:	-	QA2 Signed:	_
For & on behalf of i2 Analy	rtical Ltd.	For & on behalf of i2 Analyt	ical Ltd.
Other office located at: ul. Pionieró	w 39, 41 -711 Ruda Śląska, Poland		
Standard sample disposal times,	unless otherwise agreed with the laboratory, are :	soils- 4 weeks from reportileachates- 2 weeks from reportiwaters- 2 weeks from reporti	ng ng ng
Excel copies of reports are only	valid when accompanied by this PDF certificate.		
Sampling date indicates that recom	mended time for holding samples prior to analysis for pH & vo	latiles has been exceeded. The results	for such

parameters may be invalid and should be interpreted with care.





Project / Site name: 5106238

Lab Sample Number		246466	246467				
Sample Reference				ABH001	ABH002		
Sample Number				None Supplied	None Supplied		
Depth (m)				1.90	2.30		
Date Sampled				05/02/2013	05/02/2013		
Time Taken				None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status				

pH	pH Units	N/A	ISO 17025	7.9	8.1		
Speciated PAHs							
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01		
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01		
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01		
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01		
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01		
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01		
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01		
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01		
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01		
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01		
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01		
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01		
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01		
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01		
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01		
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01		
Total PAH							
Total EPA-16 PAHs	µg/l	0.2	ISO 17025	< 0.20	< 0.20		

Monoaromatics

General Inorganics

Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0		
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0		
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0		
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0		
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0		
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0		





Project / Site name: 5106238

Lab Sample Number		246466	246467				
Sample Reference				ABH001	ABH002		
Sample Number				None Supplied	None Supplied		
Depth (m)				1.90	2.30		
Date Sampled				05/02/2013	05/02/2013		
Time Taken				None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status				

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >C5 - C6	µg/l	10	NONE	< 10	< 10		
TPH-CWG - Aliphatic >C6 - C8	µg/l	10	NONE	< 10	< 10		
TPH-CWG - Aliphatic >C8 - C10	µg/l	10	NONE	< 10	< 10		
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10		
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10		
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10		
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10		
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10		
TPH-CWG - Aromatic >C5 - C7	µg/l	10	NONE	< 10	< 10		
TPH-CWG - Aromatic >C7 - C8	µg/l	10	NONE	< 10	< 10		
TPH-CWG - Aromatic >C8 - C10	µg/l	10	NONE	< 10	< 10		
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10		
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10		
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10		
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10		
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10		

Miscellaneous Organics Tetraethyl Lead ug/l 0.01 NONE < 0.01</td> < 0.01</td> Image: Constraint of the second second

U/S = Unsuitable Sample I/S = Insufficient Sample





Project / Site name: 5106238

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
BTEX and MTBE in water	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW	In-house method based on USEPA8260	L036-UK	W	ISO 17025
Organolead (Speciated)	Determination of organo lead compounds in water by GC-MS	In-house method based on USEPA 8270	L070-UK	W	NONE
pH in water	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L005-PL	W	ISO 17025
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in hexane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L070-UK	W	ISO 17025
TPH7 (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-UK	W	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland. Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Checked

Centre M

Centre M

Authorised for issue

Date

07/13

15/03/13

Date

D-ORD CHECK

PLOT DATE 08.07.2013

REV

N/A

DATE



APPENDICES



Historical Mapping Legends

Ordnance Survey County Series 1:10,560 Other Gravel Pit Sand Pit Pits Crchard Quarry Shingle Marsh Reeds Osiers ter ter ter set Mixed Wood Deciduous Brushwood Fir Furze Rough Pasture Trigonometrical Arrow denotes ۵ flow of water Station + Site of Antiquities Bench Mark T Pump, Guide Post, Well, Spring, . Signal Post Boundary Post .285 Surface Level Sketched Instrumental ----Contour Contour Fenced Fenced Main Roads Minor Roads Un-Fenced Un-Fenced Raised Road Sunken Road Road over Railway over Railway River Railway over Level Crossing Road Road over Road over **River or Canal** Stream Road over = Stream County Boundary (Geographical) County & Civil Parish Boundary Administrative County & Civil Parish Boundary County Borough Boundary (England) Co. Boro. Bdy. County Burgh Boundary (Scotland) Co. Burgh Bdy.

Rural District Boundary

----- Civil Parish Boundary

RD. Bdy.

Ordnance Survey Plan 1:10,000				
Euro	 Chalk Pit, Clay Pit or Quarry 	0000000	Gravel Pit	
	Sand Pit	$\langle \rangle$	Disused Pit or Quarry	
	Refuse or Slag Heap		Lake, Loch or Pond	
	Dunes		Boulders	
↑ ↑ ↑	Coniferous Trees	$\phi_{\phi\phi}$	Non-Coniferous Trees	
ቀ ቀ	Orchard Ոი_	Scrub	۱۲ _м Coppice	
ਜ ਜ ਜ	Bracken MUIII.	Heath ''	, , , Rough Grassland	
<u> </u>	Marsh WV//	Reeds -	Saltings	
	Direc Building	tion of Flow of Wa	ater	
2000 E	Sloping Masonry	Pylon 	Electricity Transmission Line	
Cutting	Cutting Embankment Standard Gauge Multiple Track			
Road ''' Under	∏''' Road // Lev. Over Cross	el Foot sing Bridge	Single Track Siding, Tramway	
			Narrow Gauge	
Geographical County				
Administrative County, County Borough or County of City				
Municipal Borough, Urban or Rural District, Burgh or District Council				
Borough, Burgh or County Constituency Shown only when not coincident with other boundaries				
Civil Parish Shown alternately when coincidence of boundaries occurs				
BP,B\$ Ch CH FESta FB Fn	Boundary Post or Stone Church Club House Fire Engine Station Foot Bridge Fountain	Pol Sta Po PO Po PC Pu PH Pu SB Sit Spr Sp	olice Station st Office iblic Convenience iblic House gnal Box rring	
GP	Guide Post	TCB Te	lephone Call Box	
MP MS	Mile Post Mile Stone	W W	lepnone Call Post ell	

	Gravel Pit		Refuse tip or slag heap
	Rock	1	Rock (scattered)
	Boulders	· · ·	Boulders (scattered)
2522	Shingle	Mud	Mud
Sand	Sand		Sand Pit
inimi,	Slopes	differen Lilling	Top of cliff
	General detail		Underground detail
	- Overhead detail	-++++++++++++++++++++++++++++++++++++++	Narrow gauge railway
	Multi-track railway		Single track railway
••	County boundary (England only)		Civil, parish or community boundary
	District, Unitary, Metropolitan, London Borough boundary		Constituency boundary
^{مم} **	Area of wooded vegetation	°° °°	Non-coniferous trees
۵ ۵	Non-coniferous trees (scattered)	** **	Coniferous trees
* *	Coniferous trees (scattered)	<u>₽</u>	Positioned tree
	Orchard	g g	Coppice or Osiers
.au., .au.	Rough Grassland	aMite aMite	Heath
0n	Scrub	a <u>M</u> e a <u>M</u> e	Marsh, Salt Marsh or Reeds
S	Water feature	44	Flow arrows
MHW(S)	Mean high water (springs)	MLW(S)	Mean low water (springs)
-••-	Telephone line (where shown)	+-	Electricity transmission line (with poles)
€- BM 123.45 m	Bench mark (where shown)	Δ	Triangulation station
•	Point feature (e.g. Guide Post or Mile Stone)		Pylon, flare stack or lighting tower
÷	Site of (antiquity)		Glasshouse
	General Building		Important Building

1:10,000 Raster Mapping



Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Banffshire	1:10,560	1871	2
Aberdeenshire	1:10,560	1873 - 1874	3
Aberdeenshire	1:10,560	1902 - 1903	4
Aberdeenshire	1:10,560	1928	5
Aberdeenshire	1:10,560	1938	6
Ordnance Survey Plan	1:10,000	1959	7
Ordnance Survey Plan	1:10,000	1970	8
Ordnance Survey Plan	1:10,000	1987	9
Ordnance Survey Plan	1:10,000	1989	10
Ordnance Survey Plan	1:10,000	1995	11
10K Raster Mapping	1:10,000	2006	12
10K Raster Mapping	1:10,000	2012	13

Historical Map - Slice A



Order Details

Order Number: Customer Ref: National Grid Reference: Slice: Site Area (Ha): Search Buffer (m):	41002256 5106238 372920, 84 A 2.9 1000	_1_1 19090	
Site Details Turriff, AB53 8BJ			
Landma	rk	Tel: Fax: Web:	0844 844 9952 0844 844 9951 www.envirocheck.co.uk
A Landmark Information Group	Service v47.0	24-Aug-2	2012 Page 1 of 13









Aberdeenshire Published 1902 - 1903 Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 12,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:0,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.







Aberdeenshire Published 1928 Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840°s. In 1854 the 1:2,50° scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940°s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:0,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.



















1	Historical Mapping Legends	5	Envire check
Ordnance Survey County Series and Ordnance Survey Plan 1:2,500	Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250	Large-Scale National Grid Data 1:2,500 and 1:1,250	Historical Mapping & Photography included:
Quarry Gravel Pit Sand Pit Clay Pit Shingle Refuse Heap Sloping Masonry Flat Rock Marsh Reeds Osiers Marsh Fuze Wood	Inactive Quarry, Chalk Pit or Clay Pit Rock Slopes Cliff Cliff Clay Clay Clay Clay Pit Clay Clay Clay Pit Clay Clay Clay Clay Clay Clay Clay Clay	Cliff Top Top Cliff Top Image: Source of the	Mapping Type Scale Date Pg Aberdeenshire 1:2,500 1870 - 1871 2 Aberdeenshire 1:2,500 1901 3 Aberdeenshire 1:2,500 1901 3 Aberdeenshire 1:2,500 1901 3 Aberdeenshire 1:2,500 1901 3 Aberdeenshire 1:2,500 1926 4 Ordnance Survey Plan 1:2,500 1964 - 1966 5 Ordnance Survey Plan 1:2,500 1975 - 6 6 Additional SIMs 1:2,500 1979 - 1984 7 Additional SIMs 1:2,500 1979 - 1984 7 Additional SIMs 1:2,500 1985 - 1990 8 Large-Scale National Grid Data 1:2,500 1995 - 9 10
Mixed Wood Brushwood Orchard	Top Sloping Archway 分型 Non-Coniferous Tree (surveyed) 余量 Coniferous Tree (surveyed) 公平 Non-Coniferous Trees (not surveyed) 未載 Coniferous Trees (not surveyed)	(not surveyed) Crohard Tree Coppice, Serub Coppice, Coppice, Cosier Cosier Cosier Cosier Colvert Colvert	
△ Trig. Station 507 △ Altitude at Trig. Station B.M. 325.9 ↑ Bench Mark 342 + Surface Level ← Arrow denotes flow of water ↓ Antiquities (site of) Cutting ↓ Embankment Failway crossing Road Level Crossing Level Crossing Road crossing Railway Failway crossing ↓ ↓ Failway crossing ↓ ↓ Failway crossing Bad over Bad over		Image: Direction of water flow	Historical Map - Segment A13
River or Canal single stream River or Canal River or Canal single stream River or Canal County Boundary (Geographical) County & Civil Parish Boundary +-+++ Administrative County & Civil Parish Boundary Co. Boro. Bdy. County Borough Boundary (England) Co. Burgh Bdy. County Burgh Boundary (Scotland) BP BS Boundary Postor Stone P.C.B P.B. Bridle Road P Pump E.P Electricity Pylon S.P. Signal Post F.P. Foot Bridge SL G.P. Guide Post or Board Tr.C.B M.P. M.R. Mooring Postor Ring W M.P. M.R. Mooring Postor Ring W	Symbol marking point where boundary mereing changes BH Beer House P Pillar, Pole or Post BP, BS Boundary Post or Stone PO Post Office Cn, C Capstan, Crane PC Public Convenience Chy Chimney PH Public House D Fn Drinking Fountain Pp Pump EIP Electricity Pillar or Post SB, S Br Signal Post or Bridge FAP Fire Alarm Pillar SP, SL Signal Post or Light FB Foot Bridge Spr Spring GP Guide Post Tk Tank or Track H Hydrant or Hydraulic TCB Telephone Call Box LC Level Crossing TC Telephone Call Post MP Mile Post or Mooring Post WPt, WrT. Water Point, Water Tap MS Mile Stone W W NTL Normal Tidal Limit Wd Pp Wind Pump	Bks Barracks P Pillar, Pole or Post Bty Battery PO Post Office Cemy Cemetery PC Public Convenience Chy Chimmey Pp Pump Cis Clstern Ppg Sta Pumping Station Dismtd Rly Dismantled Railway PW Place of Worship El Gen Sta Electricity Generating Sewage Ppg Sta Sewage pumping Station El P Electricity Fole, Pillar SB, S Br Signal Boxor Bridge El Sub Sta Electricity Sub Station SP, SL Signal Postor Light FB Filter Bed Spr Spring Fn J D Fn Fountain / Drinking Ftn. Tk Tank or Track Gas Gov Gas Vee Compound Tr Trough GVC Gas Governer Wd Pp Wind Pump GP Guide Post WrPt WrT Water Point, Water Tap MH Manhole Wks Works (building or area)	Order Details Order Number: 41002256_1_1 Customer Ref: 5106238 National Grid Reference: 372920, 849090 Slice: A Site Area (Ha): 2.9 Search Buffer (m): 100 Site Details Turriff, AB53 8BJ Turriff, AB53 8BJ Tel: 0844 844 9952 Fax: 0844 844 9951 Web: Web: www.envirocheck.co.uk A Landmark Information Group Service v47.0 24-Aug-2012 Page 1 of 10

Т










Ordnance Survey Plan Published 1975

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





Historical Map - Segment A13



Order Details 41002256_1_1 5106238 National Grid Reference: 372920, 849090 А Site Area (Ha): Search Buffer (m): 2.9 100 Site Details Turriff, AB53 8BJ **Landmark** 0844 844 9952 Tel: Fax: 0844 844 9951 Web: www.envirocheck.co.uk





Additional SIMs Published 1979 - 1984

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









41002256_1_1 5106238 National Grid Reference: 372920, 849090 А 2.9 100 **Landmark*** 0844 844 9952 Tel: Fax: 0844 844 9951 Web: www.envirocheck.co.uk

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Large-Scale National Grid Data Published 1995

Source map scale - 1:2,500

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



Tel: Fax:

Web:

0844 844 9952

0844 844 9951

www.envirocheck.co.uk

A Landmark Information Group Service v47.0 24-Aug-2012 Page 9 of 10



Large-Scale National Grid Data Published 1996

Source map scale - 1:2,500

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





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APPENDIX B



Envirocheck® Report:

Datasheet

Order Details:

Order Number: 41002256_1_1

Customer Reference: 5106238

National Grid Reference: 372920, 849090

Slice:

Site Area (Ha): 2.9 Search Buffer (m): 1000

Site Details:

Turriff AB53 8BJ

Client Details:

Mr I McBurnie Atkins Ltd The Axis 10 Holliday Street Birminghan B1 1TF

Prepared For:

Defence Infrastructure Organisation Kingston Road Sutton Coldfield West Midlands B75 7RL



Report Section	Page Number
Summary	-
Agency & Hydrological	1
Waste	10
Hazardous Substances	12
Geological	13
Industrial Land Use	25
Sensitive Land Use	28
Data Currency	29
Data Suppliers	33
Useful Contacts	34

Introduction

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

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

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Report Version v47.0

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Agency & Hydrological					
Contaminated Land Register Entries and Notices					
Discharge Consents	pg 1		2	6	20
Enforcement and Prohibition Notices					
Integrated Pollution Controls					
Integrated Pollution Prevention And Control					
Local Authority Integrated Pollution Prevention And Control					
Local Authority Pollution Prevention and Controls					
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature	pg 7	Yes			
Pollution Incidents to Controlled Waters					
Prosecutions Relating to Authorised Processes					
Prosecutions Relating to Controlled Waters					
Registered Radioactive Substances					
River Quality	pg 8		1		
Substantiated Pollution Incident Register					
Water Abstractions					
Water Industry Act Referrals					
Groundwater Vulnerability	pg 8	Yes	n/a	n/a	n/a
Source Protection Zones					
River Flood Data (Scotland)	pg 8		Yes	n/a	n/a
Waste					
BGS Recorded Landfill Sites					
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)					
Local Authority Recorded Landfill Sites					
Registered Landfill Sites	pg 10		2		
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Registered Waste Treatment or Disposal Sites	pg 11				1
Hazardous Substances					
Control of Major Accident Hazards Sites (COMAH)	pg 12	1			
Explosive Sites					
Notification of Installations Handling Hazardous Substances (NIHHS)					
Planning Hazardous Substance Consents					
Planning Hazardous Substance Enforcements					

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Geological					
BGS 1:625,000 Solid Geology	pg 13	Yes	n/a	n/a	n/a
BGS Estimated Soil Chemistry	pg 13	Yes	Yes	Yes	Yes
BGS Recorded Mineral Sites	pg 22			3	3
BGS Urban Soil Chemistry					
BGS Urban Soil Chemistry Averages					
Brine Compensation Area			n/a	n/a	n/a
Coal Mining Affected Areas			n/a	n/a	n/a
Mining Instability			n/a	n/a	n/a
Man-Made Mining Cavities					
Natural Cavities					
Non Coal Mining Areas of Great Britain	pg 23	Yes		n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 23	Yes	Yes	n/a	n/a
Potential for Compressible Ground Stability Hazards	pg 23	Yes		n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 24	Yes	Yes	n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 24	Yes	Yes	n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 24	Yes	Yes	n/a	n/a
Radon Potential - Radon Affected Areas	pg 24	Yes	n/a	n/a	n/a
Radon Potential - Radon Protection Measures	pg 24	Yes	n/a	n/a	n/a
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Contemporary Trade Directory Entries	pg 25		2	5	19
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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Sensitive Land Use					
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Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves					
Marine Nature Reserves					
National Nature Reserves					
National Parks					
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Sites of Special Scientific Interest					
Special Areas of Conservation					
Special Protection Areas					



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	S Mill Of Turriff Ltd Not Given Oatmeal Mill And Cottage, Mill Of Turriff, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/73/92 Not Supplied 26th October 1973 Not Supplied Septic tank Freshwater Stream/River Idoch Water Not Supplied Located by supplier to within 100m	A13NW (N)	3	1	372900 849200
2	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	Grampian Regional Council Not Given Grain Mill Housing, Station Road, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/95/47/S Not Supplied Not Supplied 12th July 1995 Not Supplied Discharge Of Other Matter-Surface Water Freshwater Stream/River Burn Of Turriff Not Supplied Located by supplier to within 100m	A13NW (NW)	193	1	372780 849350
3	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	Grampian Regional Council Not Given Storm Tank At Brodies Den, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/78/3 Not Supplied Not Supplied 2nd June 1978 Not Supplied Storm Sewage Freshwater Stream/River Gasey Burn Not Supplied Located by supplier to within 100m	A18SW (N)	292	1	372900 849490
4	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	Turriff Town Council Not Given Lower Haughs Storm Overflow, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/74/6 Not Supplied Not Supplied 6th January 1975 Not Supplied Storm Sewage Freshwater Stream/River Gassie Burn Not Supplied Located by supplier to within 100m	A18SW (N)	336	1	372850 849530



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
5	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	Grampian Regional Council Not Given Housing Development, Victoria Terrace, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/95/4/S/R Not Supplied Not Supplied 18th May 1995 Not Supplied Discharge Of Other Matter-Surface Water Freshwater Stream/River Gasey Burn Not Supplied Located by supplier to within 100m	A18SW (NW)	392	1	372700 849535
5	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Environment: Receiving Water: Status: Positional Accuracy:	Grampian Regional Council Not Given Sheltered Housing Development, Victoria Terrace, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/88/7* Not Supplied Not Supplied 14th March 1988 Not Supplied Discharge Of Other Matter-Surface Water Freshwater Stream/River Brodies Burn Not Supplied Located by supplier to within 100m	A18SW (NW)	396	1	372700 849540
6	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	Turriff Town Council Not Given Turriff Sewage Treatment Works, The Den Overflow Scottish Environment Protection Agency, North Region Deveron D/70/58 Not Supplied Not Supplied 30th July 1970 Not Supplied Storm Sewage Freshwater Stream/River Idoch Water Not Supplied Located by supplier to within 100m	A18SE (N)	415	1	373000 849600
7	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	Mr & Mrs J Angus Not Given New House, Bridgend, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/89/15 Not Supplied Not Supplied 10th May 1989 Not Supplied Septic tank Onto Land Not Supplied Not Supplied Located by supplier to within 100m	A12NE (W)	496	1	372300 849200



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Discharge Consents					
8	Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	W G Hutcheon Not Given Boggieshalloch, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/72/164 Not Supplied Not Supplied 10th July 1972 Not Supplied Agricultural effluents Freshwater Stream/River Tributary Of Idoch Water Not Supplied Located by supplier to within 100m	A9NW (SE)	520	1	373300 848600
8	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	S W G Hutcheon Not Given Boggieshalloch, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/72/163 Not Supplied Not Supplied 10th July 1972 Not Supplied Septic tank Freshwater Stream/River Tributary Of Idoch Water Not Supplied Located by supplier to within 100m	A9NW (SE)	524	1	373300 848595
9	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Environment: Receiving Water: Status: Positional Accuracy:	S North Of Scotland Water Authority Not Given Turriff Sewerage System, Haughs To Putachie, Manhole I , TURRIFF Scottish Environment Protection Agency, North Region Deveron D/97/17/S(E) Not Supplied 30th October 1997 Not Supplied Storm /emergency overflow Freshwater Stream/River Gasey Burn Not Supplied Located by supplier to within 100m	A17SE (NW)	536	1	372410 849480
10	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	J Macbain & Sons Not Given Lower Smiddyseat, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/73/43 Not Supplied 26th March 1973 Not Supplied Septic tank Freshwater Stream/River Idoch Water Not Supplied Located by supplier to within 100m	A14NE (E)	539	1	373600 849100



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Discharge Consents	5				
10	Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	J Macbain & Sons Not Given Lower Smiddyseat, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/73/44 Not Supplied Not Supplied 26th March 1973 Not Supplied Agricultural effluents Freshwater Stream/River Tributary Of Idoch Water Not Supplied Located by supplier to within 100m	A14NE (E)	539	1	373600 849095
11	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	Grampian Regional Council Not Given Housing Development, Balmellie Road, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/95/2/S/R Not Supplied Not Supplied 18th May 1995 Not Supplied Discharge Of Other Matter-Surface Water Freshwater Stream/River Colly Stripe Not Supplied Located by supplier to within 100m	A19SW (NE)	610	1	373500 849495
11	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	Grampian Regional Council Not Given Housing Development At, Balmellie Road, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/86/35/A* Not Supplied Not Supplied 3rd February 1987 Not Supplied Discharge Of Other Matter-Surface Water Freshwater Stream/River Colly Stripe Not Supplied Located by supplier to within 100m	A19SW (NE)	614	1	373500 849500
12	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	S Banff & Buchan Dist Council Not Given Sports Centre, Playing Fields, Queens Road, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/93/31/S Not Supplied Not Supplied 13th May 1993 Not Supplied Discharge Of Other Matter-Surface Water Freshwater Stream/River Burn Of Turriff Not Supplied Located by supplier to within 100m	A12NW (W)	627	1	372220 849370



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
13	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Environment: Receiving Water: Status: Positional Accuracy:	s Mr & Mrs J Hutcheon Not Given New House, Lower Smiddyseat, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/94/21/U Not Supplied Not Supplied 26th April 1994 Not Supplied Septic tank Groundwater Not Supplied Not Supplied Located by supplier to within 100m	A14NE (E)	683	1	373730 849210
14	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	s R F Maxwell Not Given Upperton Of Gask, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/73/69 Not Supplied Not Supplied 26th March 1973 Not Supplied Agricultural effluents Freshwater Stream/River Tributary Of Idoch Water Not Supplied Located by supplier to within 100m	A7SE (SW)	695	1	372500 848400
14	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	R F Maxwell Not Given Upperton Of Gask, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/73/68 Not Supplied Not Supplied 26th March 1973 Not Supplied Septic tank Freshwater Stream/River Tributary Of Idoch Water Not Supplied Located by supplier to within 100m	A7SE (SW)	699	1	372500 848395
15	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	s Mr Alistair Garnett Not Given New Dwellinghouse, Balquholly, AUCHTERLESS Scottish Environment Protection Agency, North Region Ythan Y/91/71/U Not Supplied Not Supplied 22nd August 1991 Not Supplied Septic tank Groundwater Not Supplied Not Supplied Not Supplied Located by supplied to within 100m	A17SW (NW)	715	1	372240 849560



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
16	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	Mr A Davidson Not Given New House, Smiddyseat, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/96/18/U Not Supplied Not Supplied 28th March 1996 Not Supplied Septic tank Groundwater Not Supplied Not Supplied Act Supplied Not Supplied Located by supplier to within 100m	A14NE (E)	733	1	373770 849260
17	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Environment: Receiving Water: Status: Positional Accuracy:	S Turriff Town Council Not Given Turriff Sewage Treatment Works, Gas Works Overflow Scottish Environment Protection Agency, North Region Deveron D/70/59 Not Supplied Not Supplied 30th July 1970 Not Supplied Storm Sewage Freshwater Stream/River Idoch Water Not Supplied Located by supplier to within 100m	A17SE (NW)	773	1	372300 849700
18	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	A Singer Not Given Findon Croft, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/81/45 Not Supplied Not Supplied 9th October 1981 Not Supplied Septic tank Freshwater Stream/River Colley Strype Not Supplied Located by supplier to within 100m	A19SE (NE)	909	1	373800 849600
19	Discharge Consents Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	David A Meldrum Not Given New House, Middletack, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/91/17/U Not Supplied Not Supplied 14th February 1991 Not Supplied Septic tank Groundwater Not Supplied Not Supplied Located by supplier to within 100m	A11SE (W)	958	1	371840 848940



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Discharge Consent					
20	Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type:	Harbro Farm Sales Ltd Not Given Lower Smiddyseat, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/79/7 Not Supplied Not Supplied 31st July 1979 Not Supplied Septic tank	A15NW (E)	966	1	374000 849300
	Environment: Receiving Water: Status: Positional Accuracy:	Tributary Of Colly Stripe Not Supplied Located by supplier to within 100m				
	Discharge Consent					
20	Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	P W Kenyon Not Given Lower Smiddyseat, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/88/1/A Not Supplied Not Supplied 21st March 1988 Not Supplied Trade Effluent Ditch A Ditch Tributary Of The Colp Burn Not Supplied Located by supplier to within 100m	A15NW (E)	989	1	374030 849270
	Discharge Consent					
21	Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	Turriff Town Council Not Given Turriff Sewage Treatment Works, Putachie Overflow Scottish Environment Protection Agency, North Region Deveron D/70/60 Not Supplied Not Supplied 30th July 1970 Not Supplied Storm Sewage Freshwater Stream/River Idoch Water Not Supplied Located by supplier to within 100m	A17NW (NW)	981	1	372100 849800
22	Operator: Property Type: Location: Authority: Catchment Area: Reference: Permit Version: Effective Date: Issued Date: Revocation Date: Discharge Type: Discharge Environment: Receiving Water: Status: Positional Accuracy:	Mr J Ironside Not Given New House, Eastside, Kinnermit, TURRIFF Scottish Environment Protection Agency, North Region Deveron D/89/20 Not Supplied Not Supplied 12th June 1889 Not Supplied Septic tank Onto Land Not Supplied Not Supplied Not Supplied Located by supplier to within 100m	A11SE (W)	987	1	371800 849030
	Nearest Surface Wa	ter Feature				
	Nearest Jurrate Wa		A13SW (SW)	0	-	372894 849067



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	River Quality Name: GQA Grade: Reach: Estimated Distance	Not Supplied River Quality A Not Supplied Not Supplied	A13SW (S)	78	2	372875 848905
	Flow Rate: Flow Type: Year:	Not Supplied Not Supplied 1990				
	Groundwater Vulne	erability				
	Geological Classification: Soil Classification: Map Sheet:	Minor or Moderately Permeable Aquifer - Fractured or potentially fractured rocks which do not have a high primary permeability or other formations of variable permeability Not classified Map of Scotland	A13SW (W)	0	2	372919 849086
	Drift Deposits	1:625,000				
	River Flood Data (S	(actiond)				
	Type: Flood Plain Type: Source:	Flood Plain Depth 0 -1 Metres 0-1m estimated 100yr flood depth Centre for Ecology and Hydrology	A13NE (N)	72	3	372950 849250
	River Flood Data (S	cotland)				
	Type: Flood Plain Type: Source:	Flood Plain Depth 0 -1 Metres 0-1m estimated 100yr flood depth Centre for Ecology and Hydrology	A13NE (NE)	91	3	373050 849200
	River Flood Data (S	cotland)				
	Type: Flood Plain Type: Source:	Flood Plain Depth 1 - 2 Metres 1-2m estimated 100yr flood depth Centre for Ecology and Hydrology	A13NE (E)	93	3	373150 849100
	River Flood Data (S	cotland)				
	Type: Flood Plain Type: Source:	Flood Plain Depth Greater than 2 Metres over 2m estimated 100yr flood depth Centre for Ecology and Hydrology	A13NE (NE)	101	3	373000 849250
	River Flood Data (S	cotland)				
	Type: Flood Plain Type: Source:	Flood Plain Depth Greater than 2 Metres over 2m estimated 100yr flood depth Centre for Ecology and Hydrology	A13NW (N)	102	3	372919 849300
	River Flood Data (S	cotland)				
	Type: Flood Plain Type: Source:	Flood Plain Depth Greater than 2 Metres over 2m estimated 100yr flood depth Centre for Ecology and Hydrology	A13NE (NE)	122	3	373100 849200
	River Flood Data (S	cotland)				
	Type: Flood Plain Type: Source:	Flood Plain Depth 1 - 2 Metres 1-2m estimated 100yr flood depth Centre for Ecology and Hydrology	A13SE (E)	138	3	373200 849086
	River Flood Data (S	cotland)				
	Type: Flood Plain Type: Source:	Flood Plain Depth 0 -1 Metres 0-1m estimated 100yr flood depth Centre for Ecology and Hydrology	A13NE (NE)	141	3	373100 849250
	River Flood Data (S	cotland)				
	Type: Flood Plain Type: Source:	Flood Plain Depth 1 - 2 Metres 1-2m estimated 100yr flood depth Centre for Ecology and Hydrology	A13NE (N)	142	3	373000 849300
	River Flood Data (S	cotland)				
	Type: Flood Plain Type: Source:	Flood Plain Depth 1 - 2 Metres 1-2m estimated 100yr flood depth Centre for Ecology and Hydrology	A13NW (N)	152	3	372919 849350
	River Flood Data (S	cotland)				
	Type: Flood Plain Type: Source:	Flood Plain Depth Greater than 2 Metres over 2m estimated 100yr flood depth Centre for Ecology and Hydrology	A13NW (N)	160	3	372850 849350
	River Flood Data (S	cotland)				
	Type: Flood Plain Type: Source:	Flood Plain Depth 0 -1 Metres 0-1m estimated 100yr flood depth Centre for Ecology and Hydrology	A13NE (NE)	171	3	373050 849300



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	River Flood Data (Scotland)					
	Type: Flood Plain Type: Source:	Flood Plain Depth 1 - 2 Metres 1-2m estimated 100yr flood depth Centre for Ecology and Hydrology	A13SE (E)	189	3	373250 849050
	River Flood Data (River Flood Data (Scotland)				
	Type: Flood Plain Type: Source:	Flood Plain Depth 0 -1 Metres 0-1m estimated 100yr flood depth Centre for Ecology and Hydrology	A14SW (E)	249	3	373300 849000



Waste

Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Local Authority Lan	dfill Coverage				
	Name:	Aberdeenshire Council - Has no landfill data to supply		0	9	372919 849086
	Registered Landfill	Sites				
23	Licence Holder: Licence Reference: Site Location: Licence Easting: Licence Northing: Operator Location: Authority: Site Category: Max Input Rate: Waste Source Restrictions: Status: Dated: Preceded By Licence: Superseded By Licence: Positional Accuracy: Boundary Accuracy: Authorised Waste	Aberdeenshire Council WML/N/20036/97 Millmoss Inert Landfill, Little Turriff, Turriff, Aberdeenshire Not Supplied Woodhill House, Westburn Road, Aberdeen, Aberdeenshire, Ab16 5gb Scottish Environment Protection Agency - North Region, Aberdeen Office Landfill Small (Equal to or greater than 10,000 and less than 25,000 tonnes per year) No known restriction on source of waste Site dormant 31st October 1997 WMR/16 Not Given Positioned by the supplier Moderate Inactive Waste Consisting Of Max.Waste Permitted By Licence Uncontam. Brick/Stone/Concrete Rubble Uncontam. Brick/Stone/Concrete Rubble Liquid Wastes Spec.Waste (Epa'90:S62/1996 Regs)	A13NE (NE)	11	4	372976 849159
	Pagistared Landfill	Sites				
24	Licence Holder: Licence Reference: Site Location: Licence Easting: Licence Easting: Licence Northing: Operator Location: Authority: Site Category: Max Input Rate: Waste Source Restrictions: Status: Dated: Preceded By Licence: Superseded By Licence: Positional Accuracy: Boundary Accuracy: Authorised Waste Prohibited Waste	Banff & Buchan D.C. WMR/16 Adj. Caravan Site, Little Turriff, Turriff, Aberdeenshire 373000 849200 The Town House, Low Street, Banff, Aberdeenshire, Ab4 1ay Scottish Environment Protection Agency - North Region, Aberdeen Office Landfill - with civic amenity Small (Equal to or greater than 10,000 and less than 25,000 tonnes per year) Some restriction on source of waste Record supersededSuperseded Not Supplied Not Given WML/N/20036/97 Manually positioned to the address or location Not Applicable Builders Rubble Other Inert Material Hazardous Wastes Industrial Wastes	A13NE (NE)	60	4	373000 849200



Waste

Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
Reg	gistered Waste Tr	reatment or Disposal Sites				
25 Lice Site Ope Autt Site Max Was Res Lice Date Prec Sup Lice Posi Bou Autt	ence Holder: ence Reference: e Location: werator Location: thority: e Category: tx Input Rate: aste Source strictions: ence Status: ted: eence Status: ted: perseded By ence: sitional Accuracy: undary Quality: thorised Waste	J Low WML/27 Priory Stores, Southend, Muiresk, Turriff, Aberdeenshire As Site Address Scottish Environment Protection Agency - North Region, Aberdeen Office Scrapyard Very Small (Less than 10,000 tonnes per year) No known restriction on source of waste Operational as far as is knownOperational 28th July 1994 Not Given Not Given Manually positioned to the road within the address or location Not Supplied General Ferrous Metal Scrap General Non-Ferrous Metal Scrap Lead/Acid Batteries Max.Waste Permitted By Licence Scrap Motor Vehicles Commercial Waste Household Waste Industrial Wastes Special Wastes (As In S17 1980) N.O.S Waste N.O.S.	A7NW (SW)	955	4	372040 848500



Hazardous Substances

Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Control of Major Ac	cident Hazards Sites (COMAH)				
26	Name: Location: Reference: Type: Status: Positional Accuracy:	Oil And Pipelines Agency Turiff, Millmoss, Turiff, Aberdeenshire, AB53 Not Supplied Lower Tier Active Manually positioned within the geographical locality	A13NW (W)	0	5	372876 849093



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid	d Geology				
	Description:	Middle Old Red Sandstone	A13SW (W)	0	6	372919 849086
	BGS Estimated Soil Source: Soil Sample Type: Arsenic	Chemistry British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A13SW (S)	0	7	372919 849000
	Concentration: Cadmium Concentration: Chromium Concentration: Lead Concentration:	no data 60 - 90 mg/kg <150 mg/kg				
	Concentration:	15 - Su Ingikg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A13SW (W)	0	7	372919 849086
	Cadmium Concentration:	no data				
	Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A13SE (E)	0	7	373000 849086
	Concentration: Cadmium	no data				
	Concentration: Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A13NE (NE)	0	7	372944 849098
	Concentration: Cadmium	no data				
	Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A13NW (W)	0	7	372838 849108
	Concentration: Cadmium Concentration:	no data				
	Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel	<150 mg/kg 15 - 30 mg/kg				
		Chamister				
	Source:	British Geological Survey, National Geoscience Information Service	A13SW	12	7	372816
	Soil Sample Type: Arsenic Concentration	Sed <15 mg/kg	(SW)			849033
	Cadmium Concentration:	no data				
	Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg				



	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR		
BGS Estimated Soil Chemistry							
Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A13SW (SW)	16	7	372820 849026		
Cadmium Concentration:	no data						
Concentration:	<150 mg/kg						
Nickel Concentration:	15 - 30 mg/kg						
BGS Estimated Soil	Chemistry						
Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A13SW (SW)	22	7	372835 849000		
Cadmium Concentration:	no data						
Chromium Concentration:	60 - 90 mg/kg						
Nickel Concentration:	< 150 mg/kg 15 - 30 mg/kg						
BGS Estimated Soil	Chemistry						
Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A13NW (NW)	29	7	372864 849203		
Arsenic Concentration:	<15 mg/kg						
Concentration: Chromium	60 - 90 ma/ka						
Concentration: Lead Concentration:	<150 mg/kg						
Nickel Concentration:	15 - 30 mg/kg						
BGS Estimated Soil	Chemistry						
Source: Soil Sample Type: Arsenic	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A13SW (SW)	45	7	372806 849000		
Concentration: Cadmium	no data						
Concentration: Chromium	60 - 90 mg/kg						
Lead Concentration: Nickel	<150 mg/kg 15 - 30 mg/kg						
Concentration:							
BGS Estimated Soil	Chemistry						
Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A13SE (SE)	51	7	373000 849000		
Arsenic Concentration:	<15 mg/kg						
Cadmium Concentration:	no data						
Concentration:	50 - 90 mg/kg						
Nickel Concentration:	15 - 30 mg/kg						
BGS Estimated Soil	Chemistry						
Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A13SE (SE)	56	7	372995 849000		
Arsenic Concentration:	<15 mg/kg	(32)			0.0000		
Cadmium Concentration:	no data						
Chromium Concentration:	60 - 90 mg/kg						
Nickel Concentration:	< 150 mg/kg 15 - 30 mg/kg						
	BGS Estimated Soil Source: Soil Sample Type: Arsenic Concentration: Cadmium Concentration: Chromium Concentration: Lead Concentration: Nickel Concentration: Concentration: Concentration: Concentration: Cadmium Concentration: Cadmium Concentration: Cadmium Concentration: Lead Concentration: Nickel Concentration: Cadmium Concentration: Cadmium Concentration: Cadmium Concentration: Cadmium Concentration: Nickel Concentration: Cadmium Concentration: Cadmium Concentration: Lead Concentration: Nickel Concentration: Cadmium Concentration: Lead Concentrat	Details British Geological Survey, National Geoscience Information Service Sold Sample Type: Sed Arsenic Arsenic 515 mg/kg Concentration: 614 a Concentration: 60 - 90 mg/kg Concentration: 510 mg/kg Concentration: 510 mg/kg Concentration: 510 mg/kg Concentration: 510 mg/kg Concentration: British Geological Survey, National Geoscience Information Service Same: British Geological Survey, National Geoscience Information Service Same: British Geological Survey, National Geoscience Information Service Same: British Geological Survey, National Geoscience Information Service Concentration: 60 - 90 mg/kg Concentration: 510 mg/kg Concentration: 510 mg/kg Concentration: 50 mg/kg Concentration: 60 - 90 mg/kg Concentration: 60 - 90 mg/kg Concentration: 61 mg/kg Concentration: 61 mg/kg Concentration: 61 mg/kg Concentration: 61 mg/kg	Details References Direction) BGS Estimated Soil Chemistry Art3SW Soil Sample Type: Sed Assenic Art3SW (SW) Concentration: Concent	Details Peteranoc (Compass) Direction Estimated Distance (SW) EGS Estimated Soil Chemistry Gamma modula Concentration: Ead Concentration: Ead Eadmised Soil Chemistry Source: Ead Eadmised Soil Chemistry Ead Ead Eadmised Soil Chemistry Ead Eadmised Soil Chemistry Eadmised Eadmised Soil Chemistry Ead Eadmised Soil Chemistr	Details Reference Estimated prom Site Contact 605 Estimated Soli Chemistry Bittin Coclogical Survey, National Geoscience Information Service Soli Sample Type, Sod Arsenic Concentration: A135W (SW) 16 7 60 Settimated Soli Chemistry no data A135W (SW) 22 7 Concentration: 0 - 80 mg/kg A135W (SW) 22 7 Source: British Coclogical Survey, National Geoscience Information Service Sol Sample Type, Concentration: A135W (SW) 22 7 Source: British Coclogical Survey, National Geoscience Information Service Concentration: A138W (SW) 22 7 Source: British Coclogical Survey, National Geoscience Information Service Concentration: A138W (SW) 23 7 Source: British Coclogical Survey, National Geoscience Information Service Concentration: A138W (SW) 23 7 Source: British Coclogical Survey, National Geoscience Information Service Concentration: A138W (SW) 45 7 Source: British Coclogical Survey, National Geoscience Information Service Concentration: A138W (SW) 45 7 Source: Source: <t< td=""></t<>		



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR		
	BGS Estimated Soil Chemistry							
	Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A13SE (SE)	61	7	373000 848995		
	Cadmium Concentration:	no data						
	Chromium Concentration:	60 - 90 mg/kg						
	Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg						
	BGS Estimated Soil	Chemistry						
	Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A13SW (W)	83	7	372725 849026		
	Cadmium Concentration:	no data						
	Concentration:	60 - 90 mg/kg						
	Nickel Concentration:	15 - 30 mg/kg						
	BGS Estimated Soil	Chemistry						
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service	A13SW (SW)	102	7	372733 849000		
	Arsenic Concentration:	<15 mg/kg						
	Concentration:	60 - 90 mg/kg						
	Concentration: Lead Concentration:	<150 ma/ka						
	Nickel Concentration:	15 - 30 mg/kg						
	BGS Estimated Soil	Chemistry						
	Source: Soil Sample Type: Arsenic	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A13NE (E)	201	7	373236 849173		
	Concentration: Cadmium	no data						
	Concentration: Chromium	60 - 90 mg/kg						
	Lead Concentration:	<150 mg/kg						
	Concentration:	15 - 50 liig/kg						
	BGS Estimated Soil	Chemistry						
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A18SE (N)	251	7	373000 849429		
	Arsenic Concentration:	<15 mg/kg						
	Cadmium Concentration:	no data						
	Concentration:							
	Nickel Concentration:	15 - 30 mg/kg						
	BGS Estimated Soil	Chemistry						
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A18SW (N)	259	7	372915 849456		
	Arsenic Concentration:	<15 mg/kg				010100		
	Cadmium Concentration:	no data						
	Chromium Concentration:	60 - 90 mg/kg						
	Lead Concentration: Nickel	<150 mg/kg 15 - 30 mg/kg						
			1					



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR		
	BGS Estimated Soil Chemistry							
	Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A8NE (S)	281	7	373000 848725		
	Cadmium Concentration: Chromium	no data 60 - 90 mg/kg						
	Concentration: Lead Concentration:	<150 mg/kg						
	Nickel Concentration:	15 - 30 mg/kg						
	BGS Estimated Soil	Chemistry						
	Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A12SE (W)	362	7	372436 849000		
	Cadmium Concentration:	no data						
	Chromium Concentration:	60 - 90 mg/kg						
	Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg						
	BGS Estimated Soil	Chemistry						
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A14SW (E)	374	7	373408 848928		
	Arsenic Concentration:	<15 mg/kg						
	Concentration: Chromium	60 - 90 ma/ka						
	Concentration: Lead Concentration:	<150 mg/kg						
	Nickel Concentration:	15 - 30 mg/kg						
	BGS Estimated Soil	Chemistry						
	Source: Soil Sample Type: Arsenic	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A14SW (E)	377	7	373432 849000		
	Concentration: Cadmium	no data						
	Chromium Concentration:	60 - 90 mg/kg						
	Lead Concentration: Nickel	<150 mg/kg 15 - 30 mg/kg						
	Concentration:							
	BGS Estimated Soil	Chemistry						
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A14SW (E)	378	7	373433 849000		
	Arsenic Concentration:	<15 mg/kg						
	Concentration: Chromium	60 - 90 mg/kg						
	Concentration: Lead Concentration:	<150 mg/kg						
	Nickel Concentration:	15 - 30 mg/kg						
	BGS Estimated Soil	Chemistry						
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A12SE (W)	402	7	372396 849000		
	Arsenic Concentration:	<15 mg/kg						
	Cadmium Concentration:	no data						
	Concentration:	<150 ma/ka						
	Nickel Concentration:	15 - 30 mg/kg						



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR		
	BGS Estimated Soil Chemistry							
	Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A14NW (E)	404	7	373464 849114		
	Cadmium Concentration:	no data						
	Chromium Concentration:	60 - 90 mg/kg						
	Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg						
	BGS Estimated Soil	Chemistry						
	Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A14SW (E)	415	7	373470 849000		
	Cadmium Concentration:	no data						
	Chromium Concentration:	60 - 90 mg/kg						
	Nickel Concentration:	15 - 30 mg/kg						
	BGS Estimated Soil	Chemistry						
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A14SW (E)	430	7	373474 848948		
	Arsenic Concentration:	<15 mg/kg						
	Concentration:	60 - 90 mg/kg						
	Concentration: Lead Concentration:	<150 ma/ka						
	Nickel Concentration:	15 - 30 mg/kg						
	BGS Estimated Soil	Chemistry						
	Source: Soil Sample Type: Arsenic	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A14SW (SE)	490	7	373485 848825		
	Concentration: Cadmium	no data						
	Concentration: Chromium	60 - 90 mg/kg						
	Lead Concentration:	<150 mg/kg 15 - 30 mg/kg						
	Concentration:							
	BGS Estimated Soil	Chemistry						
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A8SE (S)	597	7	373032 848404		
	Concentration:	< 15 mg/kg						
	Concentration: Chromium	60 - 90 ma/kg						
	Concentration: Lead Concentration: Nickel	<150 mg/kg 15 - 30 mg/kg						
	Concentration:							
	BGS Estimated Soil	Chemistry			_			
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A8SE (S)	601	7	373000 848393		
	Arsenic Concentration: Cadmium	s to trig/kg						
	Concentration: Chromium	60 - 90 ma/kg						
	Concentration: Lead Concentration:	<150 mg/kg						
	Nickel Concentration:	15 - 30 mg/kg						



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A18SE (NE)	630	7	373211 849745
	Cadmium Concentration:	no data				
	Concentration:	50 - 50 mg/kg				
	Nickel Concentration:	15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A18NW (N)	636	7	372921 849833
	Cadmium Concentration:	no data				
	Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A18NW (N)	636	7	372922 849833
	Arsenic Concentration:	<15 mg/kg				
	Cadmium Concentration:					
	Concentration:	60 - 90 mg/kg				
	Nickel Concentration:	15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A12SW (W)	671	7	372160 848855
	Cadmium Concentration:	no data				
	Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel	<150 mg/kg 15 - 30 mg/kg				
	Concentration:					
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A19SW (NE)	713	7	373479 849654
	Arsenic Concentration:	<15 mg/kg				
	Cadmium Concentration:	no data				
	Concentration:	60 - 90 mg/kg				
	Nickel Concentration:	15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A9NW (SE)	756	7	373456 848420
	Arsenic Concentration:	<15 mg/kg				
	Cadmium Concentration:					
	Concentration:					
	Nickel Concentration:	15 - 30 mg/kg				



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR		
	BGS Estimated Soil Chemistry							
	Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A12SW (W)	785	7	372000 849086		
	Cadmium Concentration:	no data						
	Chromium Concentration:	60 - 90 mg/kg						
	Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg						
	BGS Estimated Soil	Chemistry						
	Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A12SW (W)	791	7	372000 849000		
	Cadmium Concentration:	no data						
	Chromium Concentration:	60 - 90 mg/kg						
	Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg						
	BGS Estimated Soil	Chemistry						
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A12NW (W)	795	7	372000 849221		
	Arsenic Concentration:	<15 mg/kg						
	Concentration:							
	Concentration:	stor - so mg/kg						
	Nickel Concentration:	15 - 30 mg/kg						
	BGS Estimated Soil	Chemistry						
	Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A18NW (N)	802	7	372900 850000		
	Cadmium Concentration:	no data						
	Chromium Concentration:	60 - 90 mg/kg						
	Lead Concentration: Nickel	<150 mg/kg 15 - 30 mg/kg						
	Concentration:							
	BGS Estimated Soil	Chemistry						
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A18NW (N)	802	7	372919 850000		
	Arsenic Concentration:	<15 mg/kg						
	Cadmium Concentration:	no data						
	Chromium Concentration:	60 - 90 mg/kg						
	Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg						
	BGS Estimated Soil	Chemistry						
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A18NE (N)	809	7	373000 850000		
	Arsenic Concentration:	<15 mg/kg						
	Cadmium Concentration:	10 data						
	Concentration:	<150 ma/ka						
	Nickel Concentration:	15 - 30 mg/kg						



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR		
	BGS Estimated Soil Chemistry							
	Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A18NE (N)	820	7	373067 850000		
	Cadmium Concentration: Chromium	no data 60 - 90 mg/kg						
	Concentration: Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg						
	BGS Estimated Soil	Chemistry						
	Source: Soil Sample Type: Arsenic Concentration: Cadmium	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg no data	A18NE (N)	820	7	373109 849991		
	Concentration: Chromium Concentration:	60 - 90 mg/kg						
	Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg						
	BGS Estimated Soil	Chemistry						
	Source: Soil Sample Type: Arsenic	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A18NE (N)	848	7	373174 850000		
	Concentration: Cadmium Concentration:	no data						
	Chromium Concentration:	60 - 90 mg/kg						
	Nickel Concentration:	15 - 30 mg/kg						
	BGS Estimated Soil	Chemistry						
	Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A19NW (N)	852	7	373270 849964		
	Cadmium Concentration: Chromium	no data 60 - 90 mg/kg						
	Concentration: Lead Concentration:	<150 mg/kg						
	Nickel Concentration:	15 - 30 mg/kg						
	BGS Estimated Soil	Chemistry						
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A18NE (N)	862	7	373000 850053		
	Arsenic Concentration: Cadmium	<15 mg/kg						
	Concentration: Chromium Concentration:	60 - 90 mg/kg						
	Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg						
	BGS Estimated Soil	Chemistry						
	Source: Soil Sample Type: Arsenic	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A9SW (SE)	866	7	373448 848286		
	Concentration: Cadmium Concentration:	no data						
	Chromium Concentration:	60 - 90 mg/kg						
	Nickel Concentration:	< 150 mg/kg 15 - 30 mg/kg						



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A9NE (SE)	866	7	373807 848629
	Concentration: Chromium	60 - 90 mg/kg				
	Concentration: Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg				
	BGS Estimated Soil	Chomistry				
	Source: Soil Sample Type: Arsenic Concentration: Cadmium	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg no data	A17SW (NW)	913	7	372000 849563
	Concentration: Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A15SW (E)	938	7	374000 849086
	Concentration: Cadmium Concentration:	no data				
	Chromium Concentration:	60 - 90 mg/kg <150 mg/kg				
	Nickel Concentration:	15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic Concentration:	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A15SW (E)	941	7	374000 849000
	Cadmium Concentration:	no data				
	Concentration: Lead Concentration:	<150 mg/kg				
	Nickel Concentration:	15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A19NW (NE)	944	7	373397 850000
	Concentration: Cadmium	no data				
	Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A3NW (S)	985	7	372919 848000
	Concentration: Cadmium Concentration	no data				
	Chromium Concentration:	60 - 90 mg/kg				
	Nickel Concentration:	15 - 30 mg/kg				



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type: Arsenic	British Geological Survey, National Geoscience Information Service Sed <15 mg/kg	A3NW (S)	987	7	372832 848000
	Concentration: Cadmium	no data				
	Concentration: Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel	<150 mg/kg 15 - 30 mg/kg				
	Concentration.					
	BGS Estimated Soil	Chemistry				
	Source: Soil Sample Type:	British Geological Survey, National Geoscience Information Service Sed	A19NW (NE)	988	7	373476 850000
	Concentration:	< to migikg				
	Concentration: Chromium	60 - 90 ma/ka				
	Concentration: Lead Concentration:	<150 mg/kg				
	Nickel Concentration:	15 - 30 mg/kg				
	BGS Estimated Soil	Chemistry				
	Source:	British Geological Survey, National Geoscience Information Service	A3NE	991	7	373000
	Soil Sample Type: Arsenic	Sed <15 mg/kg	(S)			848000
	Concentration: Cadmium	no data				
	Chromium Concentration:	60 - 90 mg/kg				
	Lead Concentration: Nickel Concentration:	<150 mg/kg 15 - 30 mg/kg				
	BGS Recorded Mine	eral Sites				
27	Site Name:	Brodie'S Den Gravel Pit	A18SE	374	6	373085
	Location:	, Turriff, Aberdeenshire	(N)			849522
	Source: Reference:	135664				
	Type:	Opencast				
	Status: Operator	Ceased Unknown Operator				
	Operator Location:	Unknown Operator				
	Periodic Type:	Quaternary Clasiofluvial Dancaita				
	Commodity:	Sand and Gravel				
	Positional Accuracy:	Located by supplier to within 10m				
	BGS Recorded Mine	eral Sites				
28	Site Name:	Smiddyseat	A14NW	390	6	373346
	Source:	British Geological Survey, National Geoscience Information Service	(NE)			049337
	Reference:	135665 Openedet				
	Status:	Ceased				
	Operator:	Unknown Operator				
	Operator Location: Periodic Type:	Unknown Operator Devonian				
	Geology:	Gardenstown Conglomerate Formation				
	Commodity: Positional Accuracy:	Sandstone Located by supplier to within 10m				
	BGS Recorded Mineral Sites					
29	Site Name:	Haughs	A17SE	454	6	372518
	Location:	, Turriff, Aberdeenshire	(NW)			849465
	Reference:	aniush Geological Survey, Inational Geoscience Information Service				
	Type:	Opencast				
	otatus: Operator:	Ceased Turriff District Committee				
	Operator Location:	Turriff District Committee, Road Surveyor, Minty Cottage, Turriff, Aberdeenshire				
	Periodic Type:	Neoproterozoic				
	Geology: Commodity	Macoutt Formation				
	Positional Accuracy:	Located by supplier to within 10m				



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Recorded Mine	eral Sites				
30	Site Name: Location: Source: Reference: Type: Status: Operator: Operator Location: Periodic Type: Geology: Commodity: Positional Accuracy:	Turriff Brick & Tile Works , Turriff, Aberdeenshire British Geological Survey, National Geoscience Information Service 135663 Opencast Ceased Unknown Operator Unknown Operator Unknown Operator Quaternary Glaciofluvial Deposits Common Clay and Shale Located by supplier to within 10m	A18SE (NE)	503	6	373157 849629
	DOC Deserved ad Minu					
31	BCS Recorded Mine Site Name: Location: Source: Reference: Type: Status: Operator: Operator: Operator Location: Periodic Type: Geology: Commodity: Positional Accuracy:	Bridgend Bridgend, Little Turriff, Turriff, Aberdeenshire British Geological Survey, National Geoscience Information Service 135841 Opencast Ceased Unknown Operator Unknown Operator Quaternary Till, Devensian Sand and Gravel Located by supplier to within 10m	A12SW (W)	580	6	372218 848975
	BGS Recorded Mine	eral Sites				
32	Site Name: Location: Source: Reference: Type: Status: Operator: Operator Location: Periodic Type: Geology: Commodity: Positional Accuracy:	Smiddyseat Sand Pit Lower Smiddyseat, Turriff, Aberdeenshire British Geological Survey, National Geoscience Information Service 135842 Opencast Ceased Unknown Operator Unknown Operator Unknown Operator Quaternary Glaciofluvial Deposits Sand Located by supplier to within 10m	A14SE (E)	724	6	373725 848780
	BGS Measured Urba	an Soil Chemistry				
	No data available					
	BGS Urban Soil Chemistry Averages No data available					
	Coal Mining Affecte	d Areas				
	In an area that might	not be affected by coal mining				
	Non Coal Mining Ar Risk: Source:	eas of Great Britain Rare British Geological Survey, National Geoscience Information Service	A13SW (W)	0	6	372919 849086
	Potential for Collaps Hazard Potential: Source:	sible Ground Stability Hazards No Hazard British Geological Survey, National Geoscience Information Service	A13NE (NE)	0	6	372944 849098
	Potential for Collaps Hazard Potential: Source:	sible Ground Stability Hazards Very Low British Geological Survey, National Geoscience Information Service	A13SW (W)	0	6	372919 849086
	Potential for Collaps	sible Ground Stability Hazards				
	Hazard Potential: Source:	Very Low British Geological Survey, National Geoscience Information Service	A13NE (E)	201	6	373238 849169
	Potential for Compr Hazard Potential: Source:	essible Ground Stability Hazards No Hazard British Geological Survey, National Geoscience Information Service	A13SW (W)	0	6	372919 849086
	Potential for Compr Hazard Potential: Source:	essible Ground Stability Hazards Moderate British Geological Survey, National Geoscience Information Service	A13NE (NE)	0	6	372944 849098
	Potential for Compr Hazard Potential: Source:	essible Ground Stability Hazards No Hazard British Geological Survey, National Geoscience Information Service	A13NE (E)	201	6	373238 849169
	Potential for Ground No Hazard	d Dissolution Stability Hazards				



Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Lands	lide Ground Stability Hazards				
	Hazard Potential: Source:	Low British Geological Survey, National Geoscience Information Service	A13NE (NE)	0	6	372941 849139
	Potential for Lands	lide Ground Stability Hazards				
	Hazard Potential: Source:	Very Low British Geological Survey, National Geoscience Information Service	A13SW (W)	0	6	372919 849086
	Potential for Lands	lide Ground Stability Hazards				
	Hazard Potential: Source:	Low British Geological Survey, National Geoscience Information Service	A13NE (E)	13	6	373054 849111
	Potential for Lands	lide Ground Stability Hazards				
	Hazard Potential: Source:	Low British Geological Survey, National Geoscience Information Service	A13NW (N)	84	6	372900 849281
	Potential for Runni	ng Sand Ground Stability Hazards				
	Hazard Potential: Source:	Low British Geological Survey, National Geoscience Information Service	A13SW (W)	0	6	372919 849086
	Potential for Runni	ng Sand Ground Stability Hazards				
	Hazard Potential: Source:	Very Low British Geological Survey, National Geoscience Information Service	A13SW (SW)	13	6	372821 849023
	Potential for Runni	ng Sand Ground Stability Hazards				
	Hazard Potential: Source:	No Hazard British Geological Survey, National Geoscience Information Service	A13SW (W)	83	6	372725 849026
	Potential for Shrink	ing or Swelling Clay Ground Stability Hazards				
	Hazard Potential: Source:	No Hazard British Geological Survey, National Geoscience Information Service	A13SW (W)	0	6	372919 849086
	Potential for Shrink	ing or Swelling Clay Ground Stability Hazards				
	Hazard Potential: Source:	Very Low British Geological Survey, National Geoscience Information Service	A13NE (NE)	0	6	372944 849098
	Potential for Shrink	ing or Swelling Clay Ground Stability Hazards				
	Hazard Potential: Source:	Very Low British Geological Survey, National Geoscience Information Service	A13SW (SW)	13	6	372821 849023
	Potential for Shrink	ing or Swelling Clay Ground Stability Hazards				
	Hazard Potential: Source:	No Hazard British Geological Survey, National Geoscience Information Service	A13NE (E)	201	6	373238 849169
	Radon Potential - R	adon Protection Measures				
	Protection Measure:	No radon protective measures are necessary in the construction of new dwellings or extensions	A13SW (W)	0	6	372919 849086
	Source:	British Geological Survey, National Geoscience Information Service				
	Radon Potential - R	adon Protection Measures	A 1201A/	0	G	22022
	Source:	dwellings or extensions British Geological Survey, National Geoscience Information Service	(W)	0	0	849086
	Radon Potential - R	adon Affected Areas				
	Affected Area:	The property is in a lower probability radon area, as less than 1% of homes	A13SW	0	6	372919
	Source:	are above the action level British Geological Survey, National Geoscience Information Service	(W)			849086
	Radon Potential - R	adon Affected Areas				
	Affected Area:	The property is in a radon affected area, as between 3 and 5% of homes are above the action level British Geological Survey, National Geoscience Information Service	A13SW (W)	0	6	372877 849086
	Cource.					



Industrial Land Use

Map ID		Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
33	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Town Tyres Station Rd, Turriff, Aberdeenshire, AB53 4ER Tyre Dealers Inactive Manually positioned to the road within the address or location	A13NW (NW)	147	-	372726 849238
33	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Ross Agri Services Station Works,Station Rd, Turriff, Aberdeenshire, AB53 4ER Agricultural Machinery - Sales & Service Active Manually positioned to the road within the address or location	A13NW (NW)	154	-	372717 849240
34	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	le Directory Entries Turriff Coachworks Station Road, Turriff, Aberdeenshire, AB53 4ER Car Body Repairs Active Automatically positioned to the address	A13NW (NW)	293	-	372616 849337
34	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	le Directory Entries Turriff Fuels Station Road, Turriff, Aberdeenshire, AB53 4ER Oil Fuel Distributors Active Automatically positioned to the address	A13NW (NW)	293	-	372616 849337
35	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Cameron Motors Station Rd, Turriff, Aberdeenshire, AB53 4ER Garage Services Inactive Manually positioned to the road within the address or location	A12NE (NW)	315	-	372544 849300
35	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Turriff Service Station Station Road, Turriff, Aberdeenshire, AB53 4ER Petrol Filling Stations Active Automatically positioned to the address	A12NE (NW)	342	-	372500 849287
35	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries R C D Car Smart Ltd Station Road, Turriff, Aberdeenshire, AB53 4ER Garage Services Inactive Automatically positioned to the address	A12NE (NW)	342	-	372500 849287
36	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Dyce & District Tv Services 13, Maybank Court, Balmellie Street, Turriff, Aberdeenshire, AB53 4DE Electrical Goods Sales, Manufacturers & Wholesalers Active Automatically positioned to the address	A18SW (N)	586	-	372752 849765
37	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Turriff Tyres Ltd 1-5, Schoolhill, Turriff, Aberdeenshire, AB53 4DX Tyre Dealers Inactive Automatically positioned to the address	A17SE (NW)	639	-	372566 849743
37	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries National Tyres And Autocare 1-5, Schoolhill, Turriff, Aberdeenshire, AB53 4DX Tyre Dealers Inactive Automatically positioned to the address	A17SE (NW)	639	-	372566 849743
38	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Central Engineers Crown Street, Turriff, Aberdeenshire, AB53 4DN Garage Services Active Automatically positioned to the address	A18NW (N)	675	-	372842 849870
39	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Davidsons Garage 44, Balmellie Street, Turriff, Aberdeenshire, AB53 4DU Mot Testing Centres Active Automatically positioned to the address	A18NW (N)	686	-	372766 849871


Industrial Land Use

Map ID	Details			Estimated Distance From Site	Contact	NGR
	Contemporary Trad	e Directory Entries				
40	Name: Location: Classification: Status: Positional Accuracy:	W Peters & Son Ltd 16, High Street, Turriff, Aberdeenshire, AB53 4DT Printers Active Automatically positioned to the address	A17SE (NW)	698	-	372479 849755
40	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Turriff Advertiser 16, High Street, Turriff, Aberdeenshire, AB53 4DT Printers Inactive Automatically positioned to the address	A17NE (NW)	708	-	372480 849769
40	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Inverurie Advertiser 16, High Street, Turriff, Aberdeenshire, AB53 4DT Printers Inactive Automatically positioned to the address	A17NE (NW)	708	-	372480 849769
40	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Ellon Advertiser 16, High Street, Turriff, Aberdeenshire, AB53 4DT Printers Inactive Automatically positioned to the address	A17NE (NW)	708	-	372480 849769
41	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Lawrence Milne Shops Ltd 4, Main Street, Turriff, Aberdeenshire, AB53 4AD Painting & Decorating Supplies Active Automatically positioned to the address	A17NE (NW)	706	-	372531 849801
42	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Nickel & Dime Ltd 16-18, Main Street, Turriff, Aberdeenshire, AB53 4AD Hardware Active Automatically positioned to the address	A17NE (NW)	782	-	372510 849876
42	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Partridges 31, Main Street, Turriff, Aberdeenshire, AB53 4AB Gunsmiths Inactive Manually positioned to the address or location	A17NE (NW)	790	-	372544 849904
43	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Turiff Wash 28, Highfield Walk, Turriff, Aberdeenshire, AB53 4DF Ironing & Home Laundry Services Inactive Automatically positioned to the address	A18NE (N)	826	-	373148 849986
44	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Central Filling Station Fife Street, Turriff, Aberdeenshire, AB53 4BN Petrol Filling Stations Active Automatically positioned to the address	A18NW (N)	865	-	372589 850005
45	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Aberdeen Centre 22-26, Duff Street, Turriff, Aberdeenshire, AB53 4AX Cleaning Materials & Equipment Active Automatically positioned to the address	A17NE (NW)	896	-	372396 849939
45	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Turriff Agri-Parts Ltd 22-26, Duff Street, Turriff, Aberdeenshire, AB53 4AX Agricultural Machinery - Sales & Service Active Automatically positioned to the address	A17NE (NW)	896	-	372396 849939
46	Contemporary Trad Name: Location: Classification: Status: Positional Accuracy:	e Directory Entries Transpan (Scotland) Ltd Cornfield Rd, Turriff, Aberdeenshire, AB53 4BP Road Haulage Services Inactive Manually positioned to the road within the address or location	A18NW (N)	905	-	372672 850074



Industrial Land Use

Map ID	Details			Estimated Distance From Site	Contact	NGR
	Contemporary Trad	e Directory Entries				
46	Name: Location: Classification: Status: Positional Accuracy:	Commercial Garage Commercial Garage, Cornfield Road, Turriff, Aberdeenshire, AB53 4BP Garage Services Inactive Automatically positioned to the address	A18NW (N)	927	-	372661 850094
	Contemporary Trad	e Directory Entries				
46	Name: Location: Classification: Status: Positional Accuracy:	Frontier Agriculture Ltd Cornfield Road, Turriff, Aberdeenshire, AB53 4BP Agricultural Merchants Active Automatically positioned to the address	A23SW (N)	946	-	372671 850116
	Fuel Station Entries					
47	Name: Location: Brand: Premises Type: Status: Positional Accuracy:	Turriff Service Station Station Road, Turriff, Aberdeenshire, AB53 4ER Gleaner Petrol Station Open Automatically positioned to the address	A12NE (NW)	342	-	372500 849287
	Fuel Station Entries					
48	Name: Location: Brand: Premises Type: Status: Positional Accuracy:	Central Engineers Service Station Crown Street, Turriff, Aberdeenshire, AB53 4DN Unbranded Petrol Station Open Manually positioned to the address or location	A18NW (N)	618	-	372812 849809
	Fuel Station Entries					
49	Name: Location: Brand: Premises Type: Status: Positional Accuracy:	Central Filling Station Fife Street, Turriff, Aberdeenshire, AB53 4BN ESSO Petrol Station Open Automatically positioned to the address	A18NW (N)	865	-	372589 850005



Sensitive Land Use

Map ID	Details		Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Nitrate Vulnerable	Zones				
50	Name: Description: Source:	Moray / Aberdeenshire / Banff / Buchan Groundwater Scottish Executive, Geographic Information Service	A13SW (W)	0	8	372919 849086

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices		
Aberdeenshire Council	April 2012	Annual Rolling Update
Discharge Consents		
Scottish Environment Protection Agency - North Region	February 1998	Variable
Enforcement and Prohibition Notices		
Scottish Environment Protection Agency - North Region	January 2012	Not Applicable
Integrated Pollution Controls		
Scottish Environment Protection Agency - Head Office	February 1998	Variable
Scottish Environment Protection Agency - North Region	March 2002	Variable
Local Authority Pollution Prevention and Controls		
Scottish Environment Protection Agency - North Region	March 2002	Variable
Nearest Surface Water Feature		
Ordnance Survey	December 2011	Quarterly
Prosecutions Relating to Authorised Processes		
Scottish Environment Protection Agency - North Region	March 2007	Not Applicable
Prosecutions Relating to Controlled Waters		
Scottish Environment Protection Agency - North Region	March 2007	Not Applicable
Registered Radioactive Substances		
Scottish Environment Protection Agency - North Region	February 1998	Variable
Scottish Environment Protection Agency - Head Office	January 1998	Variable
River Quality		
Scottish Environment Protection Agency - Head Office	December 1990	Not Applicable
Water Abstractions		
Scottish Executive - Agriculture, Environment and Fisheries Department	December 1997	Not Applicable
Water Industry Act Referrals		
Scottish Environment Protection Agency - North Region	April 1996	Variable
Groundwater Vulnerability		
Scottish Environment Protection Agency - Head Office	December 1995	Not Applicable
Drift Deposits		
Scottish Environment Protection Agency - Head Office	December 1995	Not Applicable
River Flood Data (Scotland)		
Centre for Ecology and Hydrology	September 1999	Not Applicable

Waste	Version	Update Cycle
BGS Recorded Landfill Sites		
British Geological Survey - National Geoscience Information Service	June 1996	Not Applicable
Integrated Pollution Control Registered Waste Sites		
Scottish Environment Protection Agency - North Region	February 1998	Variable
Scottish Environment Protection Agency - Head Office	January 1998	Variable
Local Authority Landfill Coverage		
Aberdeenshire Council	May 2000	Not Applicable
Local Authority Recorded Landfill Sites		
Aberdeenshire Council	May 2000	Not Applicable
Registered Landfill Sites		
Scottish Environment Protection Agency - North Region	December 2005	Not Applicable
Scottish Environment Protection Agency - North Region - Aberdeen Office	December 2005	Not Applicable
Registered Waste Transfer Sites		
Scottish Environment Protection Agency - North Region	December 2005	Not Applicable
Scottish Environment Protection Agency - North Region - Aberdeen Office	December 2005	Not Applicable
Registered Waste Treatment or Disposal Sites		
Scottish Environment Protection Agency - North Region	December 2005	Not Applicable
Scottish Environment Protection Agency - North Region - Aberdeen Office	December 2005	Not Applicable
Hazardous Substances	Version	Update Cycle
Control of Major Accident Hazards Sites (COMAH)		
Health and Safety Executive	May 2012	Bi-Annually
Explosive Sites		
Health and Safety Executive	June 2012	Bi-Annually
Notification of Installations Handling Hazardous Substances (NIHHS)		
Health and Safety Executive	November 2000	Not Applicable
Planning Hazardous Substance Enforcements		
Aberdeenshire Council - Aberdeenshire Council - Banff Area	September 2011	Annual Rolling Update
Planning Hazardous Substance Consents		
Aberdeenshire Council - Aberdeenshire Council - Banff Area	September 2011	Annual Rolling Update

Geological	Version	Update Cycle
BGS 1:625,000 Solid Geology		
British Geological Survey - National Geoscience Information Service	August 1996	Not Applicable
BGS Estimated Soil Chemistry		
British Geological Survey - National Geoscience Information Service	January 2010	Variable
BGS Recorded Mineral Sites		
British Geological Survey - National Geoscience Information Service	April 2012	Bi-Annually
Coal Mining Affected Areas		
The Coal Authority - Mining Report Service	January 2012	As notified
Mining Instability		
Ove Arup & Partners	October 2000	Not Applicable
Non Coal Mining Areas of Great Britain		
British Geological Survey - National Geoscience Information Service	February 2011	Not Applicable
Potential for Collapsible Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	February 2011	Annually
Potential for Compressible Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	February 2011	Annually
Potential for Ground Dissolution Stability Hazards		
British Geological Survey - National Geoscience Information Service	February 2011	Annually
Potential for Landslide Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	February 2011	Annually
Potential for Running Sand Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	February 2011	Annually
Potential for Shrinking or Swelling Clay Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	February 2011	Annually
Radon Potential - Radon Affected Areas		
British Geological Survey - National Geoscience Information Service	July 2011	As notified
Radon Potential - Radon Protection Measures		
British Geological Survey - National Geoscience Information Service	July 2011	As notified
Industrial Land Use	Version	Update Cycle
Contemporary Trade Directory Entries		
Thomson Directories	May 2012	Quarterly
Fuel Station Entries		
Catalist Ltd - Experian	May 2012	Quarterly

Sensitive Land Use	Version	Update Cycle
Areas of Adopted Green Belt		
Aberdeenshire Council	August 2012	As notified
Areas of Unadopted Green Belt		
Aberdeenshire Council	August 2012	As notified
Environmentally Sensitive Areas		
Scottish Executive - Geographic Information Service	April 2012	Annually
Forest Parks		
Forestry Commission	April 1997	Not Applicable
Local Nature Reserves		
Aberdeenshire Council	May 2012	Bi-Annually
Marine Nature Reserves		
Scottish Natural Heritage	February 2012	Bi-Annually
National Nature Reserves		
Scottish Natural Heritage	May 2012	Bi-Annually
Nitrate Vulnerable Zones		
Scottish Executive - Geographic Information Service	April 2011	Annually
Ramsar Sites		
Scottish Natural Heritage	May 2012	Bi-Annually
Sites of Special Scientific Interest		
Scottish Natural Heritage	May 2012	Bi-Annually
Special Areas of Conservation		
Scottish Natural Heritage	May 2012	Bi-Annually
Special Protection Areas		
Scottish Natural Heritage	May 2012	Bi-Annually



A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	Licensed Partner
Environment Agency	Environment Agency
Scottish Environment Protection Agency	SEPÃO Scottish Environment Protection Agency
The Coal Authority	THE COAL AUTHORITY
British Geological Survey	British Geological Survey
Centre for Ecology and Hydrology	Centre for Ecology & Hydrology NATURAL ENVIRONMENT RESEARCH COUNCIL
Countryside Council for Wales	CYNGOR CEFN GWLAD CYMRU COUNTRYSIDE COUNCIL FOR WALES
Scottish Natural Heritage	SCOTTISH NATURAL HERITAGE
Natural England	NATURAL ENGLAND
Health Protection Agency	Health Protection Agency
Ove Arup	ARUP
Peter Brett Associates	peterbrett

Useful Contacts

Contact	Name and Address	Contact Details
1	Scottish Environment Protection Agency - North Region	Telephone: 01349 862021 Fax: 01349 863987
	Graesser House, Fodderty Way, Dingwall Business Park, Dingwall, Highland, IV15 9XB	
2	Scottish Environment Protection Agency - Head Office	Telephone: 01786 457700
	Erskine Court, The Castle Business Park, Stirling, Stirlingshire, FK9 4TR	T ax. 01700 440003
3	Centre for Ecology and Hydrology	Telephone: 01491 838800 Fax: 01491 692424
	Maclean Building, Crowmarsh Gifford, WALLINGFORD, Oxfordshire, OX10 8BB	
4	Scottish Environment Protection Agency - North Region - Aberdeen Office	Telephone: 01224 248338 Fax: 01224 248591
	Greyhope House, Greyhope Road, Torry, Aberdeen, Aberdeenshire, AB1 3RD	
5	Health and Safety Executive	Telephone: 0151 951 3092
	Explosives Inspectorate, 1.2 Redgrave Court, Merton Road, Bootle, L20 7HS	Email: victoria.holloway@hse.gsi.go.uk Website: www.hse.gov.uk
6	British Geological Survey - Enquiry Service	Telephone: 0115 936 3143 Fax: 0115 936 3276
	British Geological Survey, Kingsley Dunham Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
7	Landmark Information Group Limited	Telephone: 01392 441761 Fax: 01392 441709
	5 - 7 Abbey Court, Eagle Way, Sowton, Exeter, Devon, EX2 7HY	Email: cssupport@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk
8	Scottish Executive - Geographic Information Service	Telephone: 0131 5568400 Fax: 0131 2448240
	Area 1J88, Victoria Quay, Edinburgh, EH6 6QQ	Email: ceu@scotland.gov.uk Website: www.scotland.gov.uk
9	Aberdeenshire Council	Telephone: 01467 620981
	Woodhill House, Westburn Road, Aberdeen, Aberdeenshire, AB16 5GB	Website. www.aberdeenshire.gov.uk
-	Health Protection Agency - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@hpa.org.uk
	Chilton, Didcot, Oxfordshire, OX11 0RQ	Website: www.hpa.org.uk
-	Landmark Information Group Limited	Telephone: 0844 844 9952 Fax: 0844 844 9951
	The Smith Centre, Henley On Thames, Oxfordshire, RG9 6AB	Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk

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





























APPENDIX C



Panel 1: <u>Site 1</u> View looking east showing the slope down to the main site entrance and the southern site boundary with the agricultural machinery depot.



Panel 2: <u>Site 1</u> View looking north-east showing the northern site boundary and the area former railway line and railsidings leading onto site.



Panel 3: <u>Site 1</u> View looking south showing the site interceptor.



Panel 4: <u>Site 1</u> View looking south showing the former road loading gantry and the former site office. Also showing the access road around the site.



Panel 5: Site 1 View looking north-west showing part of the former road loading gantry and two above ground storage tanks within a brick bund. Also shown is an above ground filter.



Panel 6: Site 1 View looking north showing an additional above ground storage tank and the lube oil pump house.



Panel 7: Site 1 View from the eastern corner looking south showing the spirit hose exchange pit and looking up to Site 2 and the aboveground storage tanks.



Panel 8: Site 1 View looking north-west from the eastern corner showing the area of the former rail sidings and gantry along the northern site boundary.



Panel 9: <u>Off-site 1</u>: View looking north-east showing the two off-site reservoirs between the site and the Burn of Turriff also shown.



Panel 10: <u>Off-site 1</u>: View of the agricultural machinery depot to the south of site 1 showing a number of drums stored on the granular base material.



Panel 11: Site 2: View looking south taken from Station road showing the site entrance, tanks T01 & T02 and the storage shed and emergency water supply tank.



Panel 12: Site 2: View looking south-east showing tanks T02 & T03 and the earth bund running along the northern boundary with Station road.



Panel 13: <u>Site 2:</u> View from the southern corner of the site showing all four of the above ground storage tanks and the slope of the site to the north-east.



Panel 14: Site 2: View from the top of tank T04 showing the pipe outlet from site 1. Also shown is the agricultural mechinary depot and Site 1 across Station Road.

APPENDIX D

Classification of Consequences and Probability

Classification of Consequences			Classification of Probability		
Classification	Definition	Classification	Definition		
Severe	Acute risk to human health. Short-term risk of pollution of controlled waters or significant impact on controlled waters, for example, large scale pollution of very high levels of contamination equivalent to EA Category 1 pollution incident including persistent and/or extensive effects on water quality, for example, leading to closure of a major abstraction point, major impact on operational effectiveness and/or amenity value or major damage to agriculture or commerce. Catastrophic damage to buildings or property, for example, explosion causing building collapse. Ecological system effects- immediate risk of major damage which is likely to result in: irreversible substantial adverse change in the functioning of the ecosystem or harm to a species of special interest that endangers the long-term maintenance of the population.	High Likelihood	There is a contaminant linkage and an event is High Likelihood to occur in the short term and is almost inevitable over the long term OR there is evidence at the receptor of harm or pollution. >95% Likelihood of Consequence occurring.		
Medium	Chronic risk to human health. Pollution of sensitive water resources, for example, leaching of contaminants into controlled water that is equivalent to an EA category 2 pollution incident including significant effect on water quality, notification required to abstractors, reduction in amenity value or significant damage to site operations, agriculture or commerce. Ecological system effects – immediate risk of significant damage which may result in substantial, adverse changes to the ecosystem's functioning or harm to a species of special interest that may endanger the long-term maintenance of the population. Significant damage to buildings, structures and services, for example, damage rendering a building unsafe to occupy, such as foundation damage.	Likely	There is a contaminant linkage and it is probable that the event will occur. It is not inevitable, but possible in the short term and likely over the long term. 50-95% likelihood of consequence occurring.		
Mild	 Non-permanent health effects to humans (exposure unlikely to lead to 'significant' harm). Pollution of controlled waters or non-sensitive water resources, for example, pollution of non-classified groundwater that is equivalent to an EA Category 3 pollution incident or short lived effect on water quality, marginal effect on operational capability, amenity value, agriculture or commerce. Minor damage to buildings, structures and services, for example, damage rendering a building unsafe to occupy, such as foundation damage. Ecological system effects – minor or short term damage which is unlikely to result in substantial adverse changes to the ecosystem's functioning or harm to a species of special interest that may endanger the long-term maintenance of the population. Substantial damage to non-sensitive environments, such as unprotected ecosystems, for example, crops. 	Low Likelihood	There is a contaminant linkage and circumstances are possible under which an event could occur. It is by no means certain that even over a longer period such an event would take place and less likely in the short term. 5-49% likelihood of consequence occurring.		
Minor/Negligible	No measurable effects on human health including non-permanent health effects to humans that is easily preventable by appropriate use of personnel protective equipment. Minor pollution of controlled waters including non-sensitive water resource with no discernible effect on water quality or ecosystems. Minor damage to non-sensitive environments, such as unprotected ecosystems, for example, crops. Easily repairable effects of damage to buildings/structures/services/environment, for example, discolouration of concrete, loss of plants in a landscaping scheme.	Unlikely	There is a contaminant linkage and it is improbable that an event would occur even in the very long term. <5% likelihood of consequence occurring.		

Definitions of Classified Risks/Risk Terms

Classification	Definition
Very High Risk	Severe harm to a receptor may already be occurring OR there is a high likelihood that severe harm will arise to a receptor unless immediate remediation works/mitigation measures are undertaken. Realisation of that risk is likely to present a substantial liability to the MoD.
High Risk	Harm is likely to arise to a receptor and it is likely to be severe unless appropriate remediation works/mitigation measures are undertaken. Remediation works may be required in the short term and are likely to be required in the long term. Realisation of that risk is likely to present a substantial liability to the MoD
Moderate Risk	It is possible that harm could arise to a receptor, but there is low likelihood that such harm would be severe. Harm is likely to be mild. Some remediation works may be required in the long term. Realisation of that risk is unlikely to present a substantial liability to the MoD but further work may be required to determine whether this is the case.
Moderate/Low Risk	It is possible that harm could arise to a receptor, but where a combination of likelihood and consequence results in a risk that is above low, but is not of sufficient concern to be classed as mild. It can be driven by cases where there is an acute risk which carries severe consequences, but where the exposure is unlikely. Such harm would at worse normally be mild. Unlikely to present a substantial liability to the MoD. Limited further investigation may be required to clarify the risk and liability. If necessary remediation works are likely to be limited in extent.
Low Risk	It is possible that harm could arise to a receptor. Such harm would at worst, normally be mild.
Negligible Risk	There is low likelihood that harm could arise to receptor. Such harm is unlikely to be any worse than mild. No liability.
No Potential risk	There is no potential risk where no contaminant linkage has been established. No liability.

Classification of Risk

	Consequence				
		Severe	Medium	Mild	Minor
Probability	High Likelihood	Very High Risk	High Risk	Moderate Risk	Moderate/Low Risk
	Likely	High Risk	Moderate Risk	Moderate/Low Risk	Low Risk
	Low Likelihood	Moderate Risk	Moderate/Low Risk	Low Risk	Negligible Risk
	Unlikely	Moderate/Low Risk	Low Risk	Negligible Risk	Negligible Risk

APPENDIX E



GPSS Turriff Former PSD

FACTUAL REPORT ON GROUND INVESTIGATION

Prepared for ATKINS

Report Ref: 27475

Geotechnical Engineering Ltd Centurion House, Olympus Park Quedgeley, Gloucester. GL2 4NF

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GPSS Turriff Former PSD

FACTUAL REPORT ON GROUND INVESTIGATION

Prepared for ATKINS

Report Ref: 27475

PROJECT: GPSS Turriff Former PSD

CONSULTANT:

VOLUME - VERSION	STATUS	ORIGINATOR	CHECKER	APPROVED	DATE
1 of 1 – A	DRAFT	GEL2	GEL12	-	26/02/13
1 of 1 – A	FINAL	GEL2	GEL12	-	04/03/13
ORIGINATOR			APPROVER		
GEL2			GEL12		
Engineering Geologist			Geotechnical Consultant		

The report is not to be used for contractual or engineering purposes unless this sheet is signed and the report designated "Final".

The report has been prepared for the sole use and reliance by Atkins. GEL accepts no liability as a result of the use or reliance of this report by any other parties.













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APPENDIX B	MONITORING DATA
APPENDIX C	METHOD STATEMENT


1. INTRODUCTION

Geotechnical Engineering Limited (GEL) was instructed by Atkins, acting on behalf of Defence Infrastructure Organisation (DIO), to carry out an investigation to determine the ground conditions, to check for contamination and install wells for water and gas monitoring at GPSS Turriff Former PSD.

The scope of works and terms and conditions of appointment were specified by the Client and GEL correspondence reference T15092. The investigation was carried out under direction and supervision of the Client.

This report describes the investigation and presents the findings.

2. SITE LOCATION AND GEOLOGY

The site is situated at Turriff Former PSD, Station Road, Turriff, Aberdeenshire and may be located by its Grid Reference NJ728491 as shown in Figure 1.

BGS online geology (1:50,000) indicate the site is underlain by glaciofluvial deposits - gravel, sand and silt; alluvium - clay, silt, sand and gravel; and possibly till, underlain by Gardenstown Conglomerate Formation.



3. GROUND INVESTIGATION

3.1 Fieldwork

The fieldwork was carried out in general accordance with BS5930:1999+A2:2010 during the period 8th January to 10th January 2013 and comprised three boreholes and thirteen window samples.

The exploratory hole locations were selected by the Client and set out by the Client and GEL. The ground level and co-ordinates at each exploratory hole were established by GEL using GPS techniques on the 5th of February, 2013.

The boreholes, referenced ABH001 – ABH003 (Appendix A), were formed using a trackmounted Geotechnical Pioneer Rig. Initially, an inspection pit was hand excavated at each borehole location to a maximum depth of 1.50m to check for buried services. Disturbed samples were taken and retained in glass jars. Heavy duty dynamic sampling techniques were then employed to produce a continuous disturbed sample of 112mm nominal diameter reducing to 97mm as the borehole was advanced. The samples were recovered in semi-rigid plastic liner.

On refusal of dynamic sampling the boreholes were continued by rotary core drilling techniques utilising a water flush. A double-tube swivel core barrel with a semi-rigid plastic liner was utilised to recover continuous cores of 90mm diameter. Where appropriate, dynamic sampling techniques were carried out to recover dropped core or where rotary core drilling was not suitable.

The dynamic samples and rotary cores were extracted horizontally from the sampler and core barrel respectively, the semi-rigid liner was cut to length, placed in sequence in

RT01 v09 18/07/12 JH



labelled, wooden coreboxes and logged on site. The core samples were not retained following logging. Environmental samples were retained by the Client.

Boreholes were monitored for groundwater ingress as dynamic sampling proceeded. Water levels were also recorded at the start and finish of each day's work and on completion of the borehole and are presented on the relevant log.

On completion gas/water monitoring standpipes were installed in ABH001 - ABH003. Each installation consisted of a 50mm ID HDPE slotted tube set in a filter response zone of non-calcareous pea gravel. The installation was sealed above and below with a bentonite plug and accessed via a valve assembly. The installations were protected at the surface by a lockable stopcock cover set in concrete, as appropriate to their position. Installation details are given on the relevant borehole log.

The window samples, referenced AWS001 to AWS013 (Appendix A), were formed using a Terrier 2000 rig. Initially, an inspection pit was hand excavated at each borehole location to a maximum depth of 1.20m to check for buried services. Disturbed samples were taken and retained in glass jars. Dynamic sampling techniques were then employed to produce a continuous disturbed sample of 97mm diameter reducing to 50mm as the borehole was advanced. The samples were recovered in semi-rigid plastic liner.

The samples were extracted horizontally from the sampler, labelled and logged on site. The dynamic samples were not retained after logging. Environmental samples were retained by the Client.

Window samples were monitored for groundwater ingress as dynamic sampling proceeded. Upon encountering water, sampling was temporarily stopped to allow the level to stabilise. Water levels were also recorded at the start and finish of each day's work and on completion of the borehole and are presented on the relevant log.

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AWS001 to AWS013 were backfilled with arisings and the surface reinstated.

The arisings and samples from the borehole and the window sample inspection pits and holes were monitored for Volatile Organic Compounds (VOC's) by the Client's engineer. Using a MiniRAE 2000 portable Photo-Ionisation Detector (PID) with a 10.6eV gas discharge lamp, headspace tests were carried out on all environmental samples that were collected. The detector uses an ultra violet light source to break down the chemicals into positive and negative ions (ionisation). The detector measures the charge of the ionised gas and converts the signal into current. The current is then amplified and displayed as "ppm"; after measurement the ions reform the original gas or vapour allowing it to be sampled. The readings are presented in Appendix A.

3.2 Logging

The logging of soils and rocks was carried out by a GEL Engineering Geologist in general accordance with BS5930:1999+A2:2010. A key to the exploratory hole logs is presented in Appendix A.

Detailed descriptions of the core and samples are given in the borehole logs, Appendix A, along with details of sampling, in situ testing, groundwater ingress and relevant comments on drilling techniques.

No visual contamination was noted in any of the samples.

Strong hydrocarbon odour was noted in AWS003, AWS005, and AWS008. Faint hydrocarbon odour was noted in AWS004, AWS006, and AWS008.



3.3 Monitoring

The installations were subsequently tested for carbon dioxide, methane, oxygen, hydrogen sulphide and carbon monoxide using a Gas Analyser GA2000 on the 5th of February, 2013. Installations were monitored for gas flow using a flow pod attached to the instrument and reported as gas flow in litres/hour. Barametric pressure was also recorded.

The installations were also monitored for Volatile Organic Compounds (VOC's) using a MiniRAE 2000 Portable Photo-Ionisation Detector (PID) with a 10.6eV gas discharge lamp.

Gorundwater samples were collected and monitoring of water using a Multi-parameter meter was carried out on the 5th of February. The Multi-parameter meter recorded groundwater temperature, pH, dissolved oxygen content, conductivity and oxygen reduction potential (redox). A method statement is presented in Appendix C.

No free product was detected in any of the boreholes.

Readings are presented in Appendix B.

GEOTECHNICAL ENGINEERING LIMITED



4. **REFERENCES**

British Standards Institution (1999): Code of practice for site investigations. BS 5930 incorporating Amendments No. 1 & 2. Amendment 1 removes text superseded by BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004 and BS EN ISO 14689-1:2003, and makes reference to the relevant standard for each affected sub clause. Amendment 2 removes text superseded by BS EN 22475-1:2006 and makes reference to the relevant standard for each affected sub clause.





APPENDIX A FIELDWORK DATA



• • •						_
Sample type D Small disturbed X Dynamic	D* Contaminatic C Core	n B Bulk disturbed U Undisturbed	LB Large bulk disturbed UT Undisturbed thin wall	W Water P Piston	Cs Core subsample (prepared)	
Test type						
S SPT - Split spoon C SPT - Solid cone (*250 - Where full te	n sampler followed followed by uncorr est drive not comple	by uncorrected SPT 'N' v ected SPT 'N' Value eted, lineraly extrapolate	Value d 'N' value reported, ** - Der	otes no effective p	penetration)	
 H Hand vane - dire M Mackintosh prol PP Pocket penetro Vo Headspace vap 	ect reading in kPa be - number of blov meter - direct read bour reading, uncor	- not corrected for BS13 ws to achieve 100mm pe ing in kg/sq.cm rected peak values in pp	77 (1990). Re* denotes refus enetration om, using a PID (calibrated v	al vith Isobutylene, us	sing a 10.6eV bulb)	
Sample/core range/	I _f					
I Dynamic samp	ble					
Undisturbed sa	ample - open drive	including thin wall. Sym	bol length reflects recovery			
x x = Total Core	e Recovery (TCR)	as percentage of core ru	n			
y y = Solid Core	e Recovery (SCR)	as percentage of core ru	n. Assessment of core is ba	sed on full diamete	er.	
z z = Rock Qua	ality Designation (R	QD). The amount of soli	d core greater than 100mm	expressed as perce	entage of core run.	
Where SPT has bee	en carried out at be	ginning of core run, dist	urbed section of core exclude	ed from SCR and F	RQD assessment.	
I _f - fracture spacing - average and maxim	 the average fracture um values are give 	ure spacing (mm) over th n. NI = non-intact core	ne indicated length of core. V NA = not applicable	Vhere spacing vari	es signficantly, the minimum,	
Instrumentation						
Porous tip	Perforated standpipe	Granular response zone	Bentonite C seal	Cement/ pentonite prout	Soil Concrete	
Stratum boundaries	5					
	Estim	ated boundary		Gra	ading boundary	
Logging						
The logging of soils Amendment 1 remore reference to the relevance reference to the relevance	s and rocks has be oves text superced evant standard for evant standard for e	een carried out in gene led by BS ENO ISO 14 each affected sub clause each affected sub clause	ral accordance with BS 593 4688-1:2002, BS EN ISO 1- se. Amendmet 2 removes t e.	30:1999 incorporat 4688-2:2004 and ext superceded by	ting Amendments 1 (2006) & 2 (2010). BS EN ISO 14689-1:2003, and makes / BS EN ISO 22475-1:2006 and makes	
Chalk is logged in g with Ciria C574; des	eneral accordance criptions and gradi	with Lord et al (2002) C ngs should be treated w	iria C574. Where possible, c ith caution given the potentia	lynamic samples ir al for sample distur	n chalk have been logged in accordance bance.	

For rocks the term fracture has been used to identify a mechanical break within the core. Where possible incipient and drilling induced fractures have been excluded from the assessment of fracture state. Where doubt exists, a note has been made in the descriptions. All fractures are considered to be continuous unless otherwise reported.

Made Ground is readily identifiable when, within the material make up, man made constituents are evident. Where Made Ground appears to be reworked natural material the differentiation between in situ natural deposits and Made Ground is much more difficult to ascertain. The interpretation of Made Ground within the logs should therefore be treated with caution.

General Comments

The process of drilling and sampling will inevitably lead to disturbance, mixing or loss of material in some soil and rocks.

Indicated water levels are those recorded during the process of drilling or excavating exploratory holes and may not represent standing water levels.

Legends are drawn in accordance with BS 5930:1999 incorporating Amendment 2.

All depths are measured along the axis of the borehole and are related to ground level at the point of entry.

BOREHOLE LOG

ATKINS

CLIENT



METHOD: Hand dug inspection pit 0.00-1.50m. Dynamic sampled (128mm) 1.50-3.00m, (113mm) 3.00-6.00m. Waterflush rotary core drilled (116mm) 6.00-8.50m.

CASING: 140mm diam to 6.00m.

BACKFILL: On completion, a slotted standpipe (50mm) was installed to 2.80m, granular response zone 2.80-1.80m, bentonite seal 8.50-2.80m and 1.80-0.30m, concrete and stopcock cover 0.30-0.00m.

REMARKS: Samples taken and retained by the Client.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m) casing (m) rose to (m) time to rise (min) remarks

Groundwater not encountered prior to use of water flush.



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AGS



BOREHOLE LOG

ATKINS

CLIENT

SITE	GP	SS TU	IRRIF	FF FOI	RMER	PSD)							Sheet		2 of 2
Start Date	e 8 J	anuary	/ 201	3		East	ing	37	3021.2					Scale		1 : 50
End Date	8 J	anuary	/ 201	3		Nort	hing	84	9104.8	Ground	level	37.08m	OD	Depth	8	3.50 m
progress date/time water depth	sample no & type	depth from	(m) to	casing depth (m)	test type & value	samp. /core range		instru -ment			description			depth (m)	reduced level (m)	legend
progress date/time water depth 08/01/13 1500hrs 1.37m	sample no & type	depth from	(m) to	casing depth (m)	test type & value	samp. /core range		instru -ment	Borehole	completed at i	description 8.50m.			depth (m)	reduced level (m) 28.58	legend
water strike	(m) cae	ing (m)	rose t) 0 (m) #	ime to ris	(m)	rem	arks					CONTE	{18.00}	CHE	
	un cas	y (111)	1030 11	- (<i>m)</i> (Gro	undwat	er not encol	untered prior t	to use of wat	er AGS	274	75	C	T

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BOREHOLE LOG



Groundwater not encountered prior to use of water flush.



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BOREHOLE LOG

ATKINS

CLIENT

SITE	GP	'SS TU	IRRIF	FF FOF	RMER	PSD				Sheet		1 of 1
Start Date	e 10	Januai	ry 20	13		Easting	37	2897.7		Scale		1 : 50
End Date	10	Januai	ry 20	13		Northing	84	9036.5 Ground level	44.86mOD	Depth	-	7.20 m
progress date/time water depth	sample no & type	depth from	(m) to	casing depth (m)	test type & value	samp. /core range	instru -ment	descripti	on	depth (m)	reduced level (m)	legend
10/01/13 0830hrs	1D* 2D* 3D* X 4D* 5D* X 6D* C	from 0.30 0.50 1.00 1.20 - 2 2.00 2.50 2.70 - 4 3.00 4.20 - 5 5.70 - 7	to 2.70 1.20 5.70	- Nil	Vo 0.2 Vo 0.3 Vo 0.2 Vo 0.3 Vo 0.2 Vo 0.3	100 0 100 0		Grass over brown gravelly silty fi Gravel is subangular and subrou to coarse quartz and metamorph quartz cobbles. Firm brown slightly gravelly sand subangular and subrounded, rare quartz and metamorphic. 1.80 - 2.10m: Band of light brown Firm light reddish brown slightly s Gravel is subangular and subrou to coarse metamorphic and rare Light brown sandy rarely gravelly subangular to rounded fine to co crystalline. Rare cobble sized po medium sand. Stiff friable dark greyish brown gi angular and subangular fine to co lithorelicts. Extremely weak dark grey SAND metamorphic). Fractures are exti smooth, rarely rough, subvertical stained orangish brown and redo	ne and medium SAND. nded, rarely angular, fine ic. Rare subrounded y CLAY. Gravel is ely angular, fine to coarse n very sandy clay. sandy gravelly CLAY. nded, rarely angular, fine quartz. y SILT. Gravel is arse quartz and ckets of orangish brown ravelly CLAY. Gravel is barse metamorphic STONE (probably remely close, planar, and subhorizontal, lish brown.	1.00	(m) 43.86 42.56 42.16 40.86 40.66	
								Borehole completed at 7.20m.				
EQUIPMEN	IT: Geote	echnical F	Pionee	r ria.						{8.00}	1	
METHOD: I 4.20-7.20m	Hand dug	g inspecti	on pit ().00-1.20	m. Dyna	mic sampled	l (128m	m) 1.20-2.70m, (113mm) 2.70-4.20	0m. Waterflush rotary core	drilled (11	6mm)	

CASING: 140mm diam to 4.20m.

BACKFILL: On completion, a slotted standpipe (50mm) was installed to 2.30m, granular response zone 2.30-1.00m, bentonite seal 7.20-2.30m and 1.00-0.30m, concrete and stopcock cover 0.30-0.00m.

REMARKS: Samples taken and retained by the Client.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m) casing (m) rose to (m) time to rise (min) remarks

Groundwater not encountered prior to use of water flush.

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CLIENT	AT	KINS											A	WS	001
SITE	GP	SS TURRI	IFF FO	RMER	PSD								Sheet		1 of 1
Start Date	e 8 J	anuary 20 ²	13		Eastii	ng	37	2999.2					Scale		1 : 50
End Date	8 J	anuary 201	13		North	ing	84	9087.0	Ground le	evel	38.09m0	DC	Depth		4.50 m
progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	iı -	nstru ment		c	descriptio	n		depth (m)	reduced level (m)	legend
08/01/12 08/01/12 1130hrs 1.72m EQUIPMEN METHOD: H CASING: 12 BACKFILL: REMARKS:	1D* 2D* 3D* X 4D* X 5D* X 6D* X ftr: Geote Hand dug 28mm dia On com	0.30 0.50 1.00 1.20 - 2.00 2.00 2.00 - 3.00 3.00 3.00 - 4.00 4.00 4.00 - 4.50 4.00 - 4.50 echnical Terrier g inspection pit am to 2.00m. pletion, hole bas s taken and ref	r 2000 rig. ackfilled w tained by	Vo 0.4 Vo 0.2 Vo 0.3 Vo 0.4 Vo 0.4 Vo 0.2 Vo 0.2	amic sam gs. tt.	npled (*	113m	Grass ov subangul crystalline Soft light Gravel is and cryst Dark grey fine to co Locally sa Soft brow Gravel is crystalline 3.80 - 4.0 Borehole	er brown gravell ar to rounded fir e. (POSSIBLE N brown locally m subangular to m alline. • and brown clay arse crystalline in slightly gravel ine to coarse sa ed crystalline co n locally greyist subangular and e and quartz. 0m: Locally ten completed at 4.	ly sandy S ne to coar MADE GR iottled gre ounded fir yey subar and rare : lly CLAY. andstone obbles. n brown si d subround ding to cla .50m.	SILT. Gravel is se sandstone (OUND) ey slightly grav ne to coarse s ngular and sub sandstone GF Gravel is sub and crystalline lightly gravelly ded fine and n ayey gravel.	elly CLAY. and prounded AVEL. angular to e, rare r CLAY. nedium	0.70 1.40 2.30 4.50 (64mm) 4	37.39 36.69 35.79 34.99 33.59	
water strike 2.91 2.91	(m) casi	ing (m) rose 2.00 1. 2.00 1.	to (m) tir .72 .72	me to ris 5 20	e (min)	remar 1.48m	ks n After	r pulling ca	sing.		AGS	CONTE 274	RACT 75	CHE C	CKED

BOREHOLE LOG



2 GEL 05/03/2013 15:47:00 TURRIFF 28.1.13.GPJ TRIALJH.GPJ GEOTECH.GLB 27475 527743 01452 5 Tel. Engineering Ltd, Geotechnical









BOREHOLE LOG

CLIENT	ATI	KINS											A	WS	005
SITE	GP	'SS TU	IRRIF	F FOF	RMER	PSD							Sheet		1 of 1
Start Date	9 J	anuary	/ 201	3		Eastir	ng	37	2987.2				Scale		1 : 50
End Date	9 J	anuary	/ 201	3		North	ing	84	9116.5	Ground level	36.41m	OD	Depth		3.92 m
progress date/time water depth	sample no & type	depth from	(m) to	casing depth (m)	test type & value	samp. /core range		instru -ment		descri	iption		depth (m)	reduced level (m)	legend
09/01/13 0800hrs				-					Grass ove GRAVEL.	r black angular to su (MADE GROUND)	ubrounded fine to	coarse ash	0.30	36.11	
	1D*	0.50			Vo 0.3				Grey local Gravel is s rare ash. (ly brown gravelly me subangular fine to co MADE GROUND)	edium and coarse barse quartz, crys	SAND. talline and	0.70	35.71	
	X 2D*	1.20 - 2 1 20	2.00	– – – Nil	Vo 1.8				Firm brow is subangu rounded c	n and grey slightly g ular fine to coarse qu obbles of crystalline	ravelly sandy CLA uartz and crystallin . Faint hydrocarbo	AY. Gravel ne. Rare on odour.			
	20	1.20							1.30 - 1.50	official dark growich brown			1.70	34.71	
	3D* X	1.80 2.00 - 3	3.00	2.00	Vo 198				Gravel is s	subangular fine to co	barse quartz and c	crystalline.	2.10	34.31	× ×
									Greyish bi crystalline cobbles of	own locally clayey s and rare quartz GR quartz and crystalli	ubangular fine to AVEL. Rare subro ne.	coarse ounded	2.50	33.91	× × ×
	х	3.00 - 3	3.90	2.00					Stiff friable Gravel is s Strong hyd	e greyish brown sligh subangular fine to co drocarbon odour.	ntly gravelly sandy parse quartz and o	SILT. Crystalline.	3.00	33.41	.X .X X .X X .X 0 0 0 X 0 0
09/01/13 1000hrs									Dark grey and quartz	slightly silty subang GRAVEL. Faint hyd	ular fine to coarse drocarbon odour.	e crystalline			x0 0 0 x0 0 0 x0 0 0
1.81m	x	3 90 - 3	3 92	200					3.00 - 3.92	2m: Limited recovery	/.		3.92	32.49	, ox o
													{8.00}		
EQUIPMEN METHOD: H CASING: 12 BACKFILL: REMARKS:	T: Geote land dug 28mm dia On comp Sample:	echnical 1 j inspecti am to 2.0 pletion, h s taken a OGS SHOI	Ferrier : on pit (0m. ole bac Ind reta	2000 rig.).00-1.20 :kfilled wi lined by t	m. Dyna th arisin he Clien	imic sam gs. it. Strong	ıpled () hydri	(113mi rocarbo	m) 1.20-2.0 on odour not S	0m, (84mm) 2.00-3.0 ed 1.70-2.10m.	00m, (74mm) 3.00	0-3.90m and	(64mm) 3	}.90-3.92	2m.
water strike (2.65	(m) casi 2	ing (m) 2.00	rose to	o (m) tin 92	ne to rise 5	e (min)	rema	ırks			AGS	CONT	RACT	CHE	CKED
2.65	2	2.00	1.9)1	20		1.62r	m After	r pulling cas	ing.		274	75	C	T



BOREHOLE LOG

CLIENT	AT	KINS											A	w5	006
SITE	GP	'SS TL	JRRIF	F FOI	RMEF	≀ PSD							Sheet		1 of 1
Start Date	39J	anuar	y 201	3		Easting	37	'2993.6					Scale		1 : 50
End Date	9 J	anuar	y 201	3		Northing	J 84	9121.1	Ground	level	36.39m	DC	Depth	;	3.30 m
progress date/time water depth	sample no & type	depth from	ו (m) to	casing depth (m)	test type & value	samp. /core range	instru -ment			descriptior	1		depth (m)	reduced level (m)	legend
09/01/13 1000hrs				-				Grass ov GRAVEL	er black angul (MADE GRC	lar to subrou DUND)	unded fine to	coarse ash	0.20	36.19	
	1D*	0.50			Vo 0.6			Dark grey Gravel is rare ash. GROUNI	y locally silty g subangular fir Rare subangi D)	jravelly med ne to coarse ular cobbles	ium and coar a quartz, crys of crystalline	se SAND. Italline and Italline (MADE	' - - - - - - - -	25.00	
	X 2D*	1.20 - 2 1.50	2.00	- Nil	Vo 2.0			Brown sa fine and r odour.	andy slightly gr medium crysta	ravelly SILT. alline and qu	. Gravel is sul Jartz. Faint hy	bangular /drocarbon	_ 1.30	35.09	× · · × · · × · · × · · × · · × · · × · · × · · × · · × · · × · · × · · × · · × · · × · · × · · · × · · · × · · · × · · · × · · · × · · · × · · · × · · · × · · · × · · · × · · · · × · · · × · · · × · · · · × · · · · × · · · · × · · · · × ·
	x	2.00 - 3	3.00	2.00											
09/01/13								Grevish I	prown mottled	brown sand	ty locally clay	ev	2.80	33.59	× × ×
1040hrs 0.50m	X 3D*	3.00 - 3 3.30	3.30	2.00	Vo 6.1			subangul Rare sub odour. 3.00 - 3.0	ar fine to coar rounded cobb 30m: Locally te	rse crystallin bles of crysta ending to sti	and quartz alline. Faint hy	GRAVEL. ydrocarbon	3.30	33.09	, 0.0. ,0.0. ,0.0.
				-				3.10 - 3.3 fine and	30m: Rare cob medium sand.	ble sized po	ockets of orar	igish brown			
EQUIPMEN METHOD: 1	IT: Geote Hand dug	echnical	Terrier tion pit (2000 rig.)m. Dyna	amic sample	d (113m	Borehole	completed at	3.30m. 2.00-3.00m	and (74mm)	3.00-3.30m.			
CASING: 1: BACKFILL: REMARKS	28mm dia On com Sample	am to 2.0 pletion, h is taken a	DOM, DOM, DOM, DOM, DOM, DOM, DOM, DOM,	skfilled wi ained by f	ith arisin the Clier	igs. nt.	EY SHEET	rs	John, (6441101) .	2.00-3.0011		3.00-3.3011.			
water strike	(m) cas	ing (m)	rose te	o (m) tir	ne to ris	e (min) rem	narks				AGS	CONTF	RACT	CHE	CKED
0.50	2	2.00	0.4	12	20	0.6	0m Afte	r pulling ca	sing.			274	75	C	;T

GEL 11/GEL 12 Geotechnical Engineering Ltd, Tel. 01452 527743 27475 TURRIFF 28.1.13.CPJ TRIALJH.GPJ GEOTECH.GLB 05/03/2013 15:47:04 GEL 2

BODEHOI E I OG



DUKE	IUL	с L	UG							inn	
CLIENT	ATKIN	S							Α	WS	007
SITE	GPSS	TURRI	FF FOI	RMER	PSD)			Sheet		1 of 1
Start Date	9 Janu	ary 201	3		East	ing	37	2972.5	Scale		1 : 50
End Date	9 Janu	ary 201	3		Nort	hing	84	9127.2 Ground level 36.22mOD	Depth	().65 m
progress sa date/time r water depth	ample de no & type fror	epth (m) n to	casing depth (m)	test type & value	samp. /core range		instru -ment	description	depth (m)	reduced level (m)	legend
09/01/13 1040hrs 09/01/13 1100hrs 0.30m	1D* 0.30)	- - - -	Vo 0.7				Grass over dark grey sandy subangular fine to coarse crystalline, quartz and rare ash GRAVEL. (MADE GROUND)	0.65	35.57	

EQUIPMENT: Hand digging tools.

METHOD: Hand dug inspection pit 0.00-0.65m.

BACKFILL: On completion, hole backfilled with arisings.

REMARKS: Water in pit, sides collapsing in. Pit moved to AWS007A. Samples taken and retained by the Client.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

{8.00}

GEL 11/GEL 12



CLIENT	ATKINS					AWS	007A
SITE	GPSS TURRIFF FORMER	Sheet	1 of 1				
Start Date	9 January 2013	Easting	372972.9			Scale	1 : 50
End Date	9 January 2013	Northing	849132.2	Ground level	36.19mOD	Depth	0.60 m
progress s	ample depth (m) casing test	samn	nstru			depth red	uced legend

progress sample depth (m) casing test samp. instru date/time no & depth type & /core -ment water depth type from to (m) value range	description (m)	reduced level (m)	legend
09/01/13 1100hrs Grass over dark grey sa crystalline, quartz and ra GROUND)	andy subangular fine to coarse rare ash GRAVEL. (MADE	35 59	
09/01/13 Borehole completed at 0	0.60m.	55.55	××××
0.20m	-		
	-		
	{8.00}		
EQUIPMENT: Hand digging tools.	1 (0.00)		
METHOD: Hand dug inspection pit 0.00-0.60m.			
REMARKS: Water in pit, sides collapsing in. Hole abandoned. Samples taken and retained by the	Client.		
EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS			
			I
water strike (m) casing (m) rose to (m) time to rise (min) remarks		CHEC	KED

CLIENT	AT	KINS										A	VV 3	008
SITE	GP	SS TU	JRRIF	F FOF	RMER	PSD						Sheet		1 of 1
Start Date	e 9J	anuary	/ 201	3		Easting	3	73049.7				Scale		1 : 50
End Date	9 J	anuary	/ 201	3		Northin	g 8	49078.5	Ground leve	l 37.96m	OD	Depth		3.00 m
progress date/time water depth	sample no & type	depth from	to	casing depth (m)	test type & value	samp. /core range	instr -mer	u nt	desc	ription		depth (m)	reduced level (m)	legend
09/01/13 1115hrs 09/01/13 1300hrs Dry EQUIPMEN	1D* X 2D* X 3D*	0.40 1.20 - 2 1.50 2.00 - 3 3.00	2.00 3.00	2.00 2.00	Vo 0.4 Vo 2.8			Grass ove is subang and quart 0.60 - 1.2 quartz. Brown gra Gravel is and crysta Brown loo Rare suba crystalline Grey loca and subro gravel. Fa Borehole	er dark brown slight ular and subrounde z. Possible made gr 0m: Rare subround avelly locally silty me subangular and sub alline. ally orangish brown angular and subrour gravel. Ily clayey fine to coa bunded fine and mea int hydrocarbon odd completed at 3.00m	ty gravelly sandy S d fine to coarse cr round. (MADE GR ed cobbles of crys edium and coarse prounded fine to coarse arse SAND. Rare s dium quartz and cr our.	ILT. Gravel ystalline OUND?) talline and SAND. arse quartz se SAND. e quartz and subangular ystalline	2.20	37.16 35.76 34.96	
METHOD: 1 CASING: 1 BACKFILL: REMARKS	Hand dug 28mm di On com : Borehol	g inspecti am to 2.0 pletion, h le refused	ion pit ()0m. iole bac d at 3.0).00-1.20 :kfilled wi 0m on ha	m. Dyna th arisin ard strata	amic sample gs. a. Samples	ed (113r taken a	mm) 1.20-2.0	0m and (84mm) 2.0	00-3.00m. carbon odour note	d 2.90-3.00m			
EXPLORATOR	RY HOLE L	OGS SHO	ULD BE	READ IN C	ONJUNC	TION WITH K	EY SHEE	ETS						
water strike	(m) cas	ing (m)	rose to	o (m) tin	ne to rise	e (min) re Gr	marks oundwa	ater not enco	untered.	AGS	CONTR 2747	аст 75	CHE C	CKED ;T







BOREHOLE LOG



GEL 11/GEL 27475 TURRIFF 28.1.13.GPJ TRIALJH.GPJ GEOTECH.GLB 05/03/2013 15:47:08 GEL 2 01452 527743 Tel. Engineering Ltd, Geotechnical





BOREHOLE LOG

	CLIENT	AT	KINS											A	VV 3	UIZ
	SITE	GP	SS T	URRII	FF FOI	RMER	R PSD							Sheet		1 of 1
	Start Date	e 10	Janua	ary 20	13		Eastin	g	37	2876.9				Scale		1 : 50
	End Date	10	Janua	ary 20	13		Northi	ng	84	9021.1	Ground level	47.09m	OD	Depth	;	3.89 m
	progress date/time water depth	sample no & type	dept from	th (m) to	casing depth (m)	test type & value	samp. /core range		instru -ment		descrip	otion		depth (m)	reduced level (m)	legend
13.GPJ TRIALJH.GPJ GEOTECH.GLB 05/03/201315:47:10 GEL 2 GEL 11/GEL 12	date/time water depth 10/01/13 1100hrs 10/01/13 1220hrs Dry	no & type	from 0.50 1.00 1.20 - 2.40 3.00 - 3.60 3.85 -	to 2.00 3.00 3.85 3.89	depth (m) 2.00 2.00	type & value Vo 0.3 Vo 0.3 Vo 0.4 Vo 0.5			-ment	Grass ove Gravel is a to coarse quartz cot Stiff brown subround subangula quartz and subrounde Stiff friable angular to quartz. 3.40 - 3.70 very rare to Borehole of	descrip er brown gravelly silty subangular and subro quartz and metamorp obles. In gravelly CLAY. Grav- ed, rarely angular, fin hic. e slightly gravelly san ar and subrounded, ra d metamorphic. Rare ed quartz cobbles. e light greyish brown subrounded metamor 0m: Band of firm to si metasediment gravel. completed at 3.89m.	fine and medium punded, rarely ar phic. Rare subrou- vel is subangular ne to coarse quar dy CLAY. Grave arely angular, fin subangular and gravelly CLAY. Corphic lithorelicts	a SAND. gular, fine inded and tz and lis e to coarse Gravel is and rare ble clay with	(m)	level (m) 45.99 45.79 44.59 43.20	
Engineering Ltd, Tel. 01452 527743 27475 TURRIFF 28.1.1	EQUIPMEN METHOD: H CASING: 12 BACKFILL: REMARKS:	IT: Geote Hand dug 28mm dia On com Sample Sample	echnical g inspec am to 2 pletion, s taken	I Terrier ction pit (.00m. hole bac and reta	2000 rig. D.00-1.20 ckfilled w ained by f	Om. Dyna ith arisin the Clier	amic samp ngs. ht.	Died	(113mi	m) 1.20-2.0 S	0m, (98mm) 2.00-3.0	00m, (84mm) 3.00	0-3.85m and	(64mm) \$	3.85-3.89)m.
Geotechnical u	water strike	(m) casi	ing (m)	rose to	o (m) tir	ne to ris	e (min) r (rema Grou	arks Indwate	er not enco	untered.	AGS	CONTF 274	аст 75	CHEC C	CKED



A \ A / O O A O

BOREHOLE LOG



GEL 11/GEL 27475 TURRIFF 28.1.13.GPJ TRIALJH.GPJ GEOTECH.GLB 05/03/2013 15:47:10 GEL 2 01452 527743 Tel. Engineering Ltd, Geotechnical

4



APPENDIX B MONITORING DATA



CLIENT: ATKINS

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H ₂ O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remark	S
ABH001	05/02/13 10:31:00	972	0.0								0.0				
ABH001	05/02/13 10:32:00										0.0				
ABH001	05/02/13 10:33:00										0.0				
ABH001	05/02/13 10:34:00										0.0				
ABH001	05/02/13 10:35:00										0.0				
ABH001	05/02/13 10:36:00										0.0				
ABH001	05/02/13 10:37:00										0.0				
ABH001	05/02/13 10:38:00										0.0				
ABH001	05/02/13 10:39:00										0.0				
ABH001	05/02/13 10:40:00			0.0	0.0	20.5	0.0	0	0						
ABH001	05/02/13 10:41:00			0.0	0.0	20.5	0.0	0	0						
ABH001	05/02/13 10:42:00			0.0	0.0	20.5	0.0	0	0						
ABH001	05/02/13 10:43:00			0.0	0.0	20.5	0.0	0	0						
ABH001	05/02/13 10:44:00			0.0	0.0	20.5	0.0	0	0						
ABH001	05/02/13 10:45:00			0.0	0.0	20.5	0.0	0	0						
ABH001	05/02/13 10:46:00			0.0	0.0	20.5	0.0	0	0						
ABH001	05/02/13 10:47:00			0.0	0.0	20.5	0.0	0	0						
ABH001	05/02/13 10:48:00			0.0	0.0	20.5	0.0	0	0						
romorko															
# denotes r	esult exceeding capacity c	of gas monitori	ng equipment	maxima with 40	(a)/ lama!!!		ia a budu da na -							CONTRACT	
VUC - Phot	Diomisation Detector Mini I	KAE 2000 mea	asures voc va	pours with 10.	oev lamp call	brated against	isobutyiene.							2/4/3	

and the second

CLIENT: ATKINS

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H ₂ O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (Itr/hr)	temperature (°C)	water level (m - bgl)	remarks	5
ABH001	05/02/13 10:49:00			0.0	0.0	20.5	0.0	0	0						
ABH001	05/02/13 10:50:00									0.0					
ABH001	05/02/13 10:51:00									0.0					
ABH001	05/02/13 10:52:00									0.0					
ABH001	05/02/13 10:53:00									0.0					
ABH001	05/02/13 10:54:00									0.0					
ABH001	05/02/13 10:55:00												1.80	No Product Detected	t
ABH001	05/02/13 10:56:00														
remarks # denotes re VOC - Phot	remarks # denotes result exceeding capacity of gas monitoring equipment VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.													CONTRACT 27475	CHECKED CT



CLIENT: ATKINS

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H ₂ O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remark	S
ABH002	05/02/13 11:31:00	971	0.0								0.0				
ABH002	05/02/13 11:32:00										0.0				
ABH002	05/02/13 11:33:00										0.0				
ABH002	05/02/13 11:34:00										0.0				
ABH002	05/02/13 11:35:00										0.0				
ABH002	05/02/13 11:36:00										0.0				
ABH002	05/02/13 11:37:00										0.0				
ABH002	05/02/13 11:38:00										0.0				
ABH002	05/02/13 11:39:00										0.0				
ABH002	05/02/13 11:40:00			0.2	0.0	20.4	0.0	0	0						
ABH002	05/02/13 11:41:00			0.2	0.0	20.4	0.0	0	0						
ABH002	05/02/13 11:42:00			0.2	0.0	20.4	0.0	0	0						
ABH002	05/02/13 11:43:00			0.2	0.0	20.4	0.0	0	0						
ABH002	05/02/13 11:44:00			0.2	0.0	20.4	0.0	0	0						
ABH002	05/02/13 11:45:00			0.2	0.0	20.4	0.0	0	0						
ABH002	05/02/13 11:46:00			0.2	0.0	20.4	0.0	0	0						
ABH002	05/02/13 11:47:00			0.2	0.0	20.4	0.0	0	0						
ABH002	05/02/13 11:48:00			0.2	0.0	20.4	0.0	0	0						
													I		
# denotes r	esult exceeding capacity o	of gas monitori	ng equipment	nours with 10	6e\/ lamn calil	hrated against	isobutylene							CONTRACT 27475	
100-1100						oraceu agambi	isobutyiene.							2/4/J	

and the second

CLIENT: ATKINS

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H ₂ O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remark	S
ABH002	05/02/13 11:49:00			0.2	0.0	20.4	0.0	0	0						
ABH002	05/02/13 11:50:00									0.0					
ABH002	05/02/13 11:51:00									0.0					
ABH002	05/02/13 11:52:00									0.0					
ABH002	05/02/13 11:53:00									0.0					
ABH002	05/02/13 11:54:00									0.0					
ABH002	05/02/13 11:55:00												2.10	No product detected	L
ABH002	05/02/13 11:56:00														
/															
remarks # denotes result exceeding capacity of gas monitoring equipment													<u> </u>	CONTRACT	CHECKED
VOC - Phot	oionisation Detector Mini F	RAE 2000 mea	isures VOC va	pours with 10	.6eV lamp calil	orated against	isobutylene.							27475	СТ



CLIENT: ATKINS

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H ₂ O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remark	S
ABH003	05/02/13 08:31:00	972	0.0								0.0				
ABH003	05/02/13 08:31:00										0.0				
ABH003	05/02/13 08:32:00										0.0				
ABH003	05/02/13 08:33:00										0.0				
ABH003	05/02/13 08:34:00										0.0				
ABH003	05/02/13 08:35:00										0.0				
ABH003	05/02/13 08:36:00										0.0				
ABH003	05/02/13 08:37:00										0.0				
ABH003	05/02/13 08:38:00										0.0				
ABH003	05/02/13 08:39:00										0.0				
ABH003	05/02/13 08:40:00			1.3	0.0	16.6	0.0	0	0						
ABH003	05/02/13 08:41:00			1.3	0.0	16.7	0.0	0	0						
ABH003	05/02/13 08:42:00			1.2	0.0	17.0	0.0	0	0						
ABH003	05/02/13 08:43:00			1.2	0.0	17.2	0.0	0	0						
ABH003	05/02/13 08:44:00			1.2	0.0	17.6	0.0	0	0						
ABH003	05/02/13 08:45:00			1.1	0.0	17.8	0.0	0	0						
ABH003	05/02/13 08:46:00			1.1	0.0	17.9	0.0	0	0						
ABH003	05/02/13 08:47:00			1.0	0.0	18.0	0.0	0	0						
													I		
remarks # denotes r	esult exceeding capacity c	of gas monitori	ng equipment											CONTRACT	CHECKED
VOC - Phot	oionisation Detector Mini I	RAE 2000 mea	asures VOC va	pours with 10.	6eV lamp cali	brated against	isobutylene.							27475	СТ

and the second

CLIENT: ATKINS

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H ₂ O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remark	S
ABH003	05/02/13 08:48:00			0.9	0.0	18.3	0.0	0	0						
ABH003	05/02/13 08:49:00			0.8	0.0	18.4	0.0	0	0						
ABH003	05/02/13 08:50:00									0.0					
ABH003	05/02/13 08:51:00									0.0					
ABH003	05/02/13 08:52:00									0.0					
ABH003	05/02/13 08:53:00									0.0					
ABH003	05/02/13 08:54:00									0.0					
ABH003	05/02/13 08:55:00												Dry	No Product Detected	d
remarks		[ĺ	CONTRACT	CHECKED
# denotes re VOC - Phote	esuit exceeding capacity o oionisation Detector Mini F	t gas monitorii RAE 2000 mea	ng equipment asures VOC va	pours with 10.	6eV lamp calil	orated against	isobutylene.							27475	СТ

Geotechnical Engineering Limited GROUNDWATER TESTING DATA

CLIENT: ATKINS

borehole /trial pit no.	date and time	sample depth (m)	water temperature (°C)	dissolved oxygen concentration (mg/l)	рН	resistivity (ohmcm)	conductivity (uS/cm)	total dissolved solids (ppm)	salinity (PSU)	redox (mV)	remarks	
ABH001	05/02/13 10:56:00	1.80	4.61	3.30	7.83		366	184		-101.7		
ABH002	05/02/13 11:56:00	2.10	5.55	3.84	7.05		246	125		-81.1		
remarks # denotes r	esult exceeding capacity o	f testing equip	ment								CONTRACT	CHECKED
Hanna Instr	ruments HI 9828 Multipara	meter Portable	e Meter								27475	СТ





APPENDIX C METHOD STATEMENT


General

This Method Statement details the procedure to be followed for sampling of groundwater and surface water.

The purpose of taking surface water/groundwater/leachate samples is generally to provide data on water quality from in-situ field and/or laboratory testing. The field and laboratory results may form part of a geotechnical or geoenvironmental report. Samples are taken using various containers, bailers etc. The materials for the sampler and containers will generally depend on the conditions encountered and the particular analysis to be undertaken.

Water samples are generally taken from:

- Standing water bodies ponds, lagoons, streams, rivers, canals & lakes,
- Manholes, drains, culverts, wells and other man-made catchments,
- Trial pits,
- Boreholes, probeholes etc. during drilling,
- Installed standpipes or piezometers.

Confined spaces should not be entered and personnel must not sample from areas where there is a danger of slipping/falling (e.g. river banks, deep wells) unless the appropriate risk assessments and mitigation measures have been undertaken.

This Method Statement should be read in conjunction with the relevant Risk Assessments.

Personnel

Personnel typically comprise an Engineering Geologist and/or Geoenvironmental Engineer. All work will be carried out by competent personnel who hold a current and valid CSCS card and have received training in line with the Company Training Policy. Plant operators (if applicable) will be appropriately qualified and hold valid CPCS cards. In-situ field testing kits will only be used and interpreted by qualified personnel.

Standard Equipment and Materials

- Sampling containers, bailers etc.
- Dipmeter/Tape measure
- Cool boxes for samples

Personal Protective Equipment

- Hard Hat (mandatory as per Category A of the Costain PPE Standard for GPSS)
- Safety Boots (mandatory as per Category A of the Costain PPE Standard for GPSS y)
- Anti static, flame retardant, high visibility overalls (mandatory as per Category A of the Costain PPE Standard for GPSS)
- Gloves (mandatory)
- Ear Defenders (to be worn in accordance with noise assessments)
- Safety Glasses / Goggles (mandatory as per Category A of the Costain PPE Standard for GPSS)
 - Tyvex overalls



COSHH

• Usually dependent on chemical properties of waters to be sampled.

General Instructions

All steps detailed in this Method Statement are to be completed sequentially, unless otherwise instructed by GEL Contract Manager or Supervising Engineer.

System of Work

- 1. A visual inspection of the proposed sampling locations must be undertaken to identify potential hazards. For example, locations should be relocated if they are in areas where there is a danger of slipping/falling.
- 2. If any excavation is required the procedures detailed in MS01 (The avoidance of Underground Services) must be adhered to.
- 3. If any development or purging of sample locations is required the supervising Engineer should ensure that adequate precautions are taken to avoid the spread of contamination and the protection of operatives. Collection and disposal of purged water should be as detailed below.
- 4. The supervising Engineering Geologist/Geoenvironmental Engineer will take the samples and carry out any in-situ testing. No man entry into unstable excavations or down unstable banks is permitted and no entry into excavations deeper than 1.20m is allowed unless adequate shoring equipment has been safely installed.
- 5. The area around the sampling location will be kept clear of any trip hazards. Where required, suitable fencing will be employed to isolate the sampling area. No open pit or manhole will be left unattended.
- 6. On completion of sampling, the area will be made safe by replacing any covers etc.

Additional Information

APPENDIX F



Atkins Ltd 200 Broomielaw Glasgow G1 4RU

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Environmental Science

i2 Analytical Ltd. Building 19, BRE, Garston, Watford, WD25 9XX

t: 01923 67 00 20 f: 01923 67 00 30 e: reception@i2analytical.com

Analytical Report Number : 13-38762

Project / Site name:	Turriff	Samples received on:	10/01/2013
Your job number:	5106238	Samples instructed on:	10/01/2013
Your order number:		Analysis completed by:	16/01/2013
Report Issue Number:	1	Report issued on:	16/01/2013
Samples Analysed:	13 soil samples		

QA1 Signed:

QA2 Signed:

For & on behalf of i2 Analytical Ltd.

For & on behalf of i2 Analytical Ltd.

Other office located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.





Lab Sample Number	I ab Sample Number						241849	241850
Sample Reference				AWS002	AWS002	AWS003	AWS003	AW/\$001
Sample Number				None Supplied				
Depth (m)				0.50	3.00	0.50	1.00	0.50
Date Sampled		08/01/2013	08/01/2013	08/01/2013	08/01/2013	08/01/2013		
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	66	< 0.1
Moisture Content	%	N/A	NONE	6.2	13	20	13	24
Total mass of sample received	kg	0.001	NONE	0.51	0.52	0.58	0.65	0.48
Asbestos in Soil Screen	P/A	N/A	ISO 17025	Absent	-	Absent	-	Absent
General Inorganics								
рН	pH Units	N/A	MCERTS	6.0	6.1	5.8	5.9	6.0
Fraction Organic Carbon (FOC)	N/A	0.00001	NONE	0.0013	0.0005	0.0011	0.0025	0.012
Speciated PAHs	-							
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Phenanthrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Pyrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(a)anthracene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Dibenz(a,h)anthracene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6





Lab Sample Number				241846	241847	241848	241849	241850
Sample Reference				AW/S002	AWS002	AWS003	AWS003	AWS001
Sample Number				None Supplied				
Depth (m)				0.50	3.00	0.50	1.00	0.50
Date Sampled	08/01/2013	08/01/2013	08/01/2013	08/01/2013	08/01/2013			
Time Taken				None Supplied				
			Ac					
Analytical Parameter	c	det Lin	ste					
(Soil Analysis)	nit	ecti	atit					
		g f	ation					
Monoaromatics					I			
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons	-							
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	130	35	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	190	9.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	530	34	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	12	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	870	/8	< 10
TPH-CWG - Aromatic >EC5 - EC7	ma/ka	0.1	MCEDITS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Alomatic > EC7 EC9	mg/kg	0.1	MCEDITC	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic > EC9 = EC10	mg/kg	0.1	MCEDITC	< 0.1	< 0.1	15	7.7	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCEDTC	< 1.0	< 1.0	36	7.7	< 1.0
TPH-CWG - Aromatic >EC10 - EC12 TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCEDTC	< 2.0	< 2.0	120	0.2	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	2.2 < 10	< 10
TPH-CWG - Aromatic >EC21 - EC25	ma/ka	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (FC5 - FC35)	mg/kg	10	MCERTS	< 10	< 10	170	19	< 10
	119/19	10	HOLKIJ	. 10	. 10	1/0	19	10
Tetraethyl Lead	mg/ka	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tetramethyl Lead	mg/kg	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01





Lab Sample Number		241851	241852	241853	241854	241855		
Sample Reference				AWS001	AWS004	AWS004	ABH001	ABH001
Sample Number				None Supplied				
Depth (m)				3.00	0.30	1.00	3.50	2.80
Date Sampled	08/01/2013	08/01/2013	08/01/2013	08/01/2013	08/01/2013			
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	12	11	11	10	9.3
Total mass of sample received	kg	0.001	NONE	0.56	0.55	0.58	0.57	0.59
Asbestos in Soil Screen	P/A	N/A	ISO 17025	-	Absent	-	-	-
General Inorganics								
pН	pH Units	N/A	MCERTS	6.6	6.3	6.3	6.1	6.3
Fraction Organic Carbon (FOC)	N/A	0.00001	NONE	0.0004	0.0032	0.0017	0.0006	0.0006
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Phenanthrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Pyrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(a)anthracene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Dibenz(a,h)anthracene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6





Project / Site name: Turriff

Tetraethyl Lead Tetramethyl Lead

Lab Sample Number				241851	241852	241853	241854	241855
Sample Reference				AWS001	AWS004	AWS004	ABH001	ABH001
Sample Number				None Supplied				
Depth (m)				3.00	0.30	1.00	3.50	2.80
Date Sampled				08/01/2013	08/01/2013	08/01/2013	08/01/2013	08/01/2013
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Monoaromatics								
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10

< 0.01

< 0.01

< 0.01

< 0.01

mg/kg

mg/kg

0.01

0.01

NONE

NONE

< 0.01

< 0.01

< 0.01

< 0.01

< 0.01

< 0.01





Lab Sample Number		241856	241857	241858			
Sample Reference				ABH001	ABH002	ABH002	
Sample Number				None Supplied	None Supplied	None Supplied	
Depth (m)				0.30	0.30	2.00	
Date Sampled				08/01/2013	09/01/2013	09/01/2013	
Time Taken				None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	17	12	4.9	
Total mass of sample received	kg	0.001	NONE	0.59	0.53	0.53	
Asbestos in Soil Screen	P/A	N/A	ISO 17025	Absent	Absent	-	
General Inorganics							
pH	pH Units	N/A	MCERTS	4.2	5.1	5.6	
Fraction Organic Carbon (FOC)	N/A	0.00001	NONE	0.017	0.014	0.0004	
Speciated PAHs							
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	
Acenaphthylene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	
Fluorene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	
Phenanthrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	
Fluoranthene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	
Pyrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	
Benzo(a)anthracene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	
Benzo(k)fluoranthene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	
Indeno(1,2,3-cd)pyrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	
Dibenz(a,h)anthracene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	
Total PAH							
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.6	< 1.6	< 1.6	





Lab Sample Number	241856	241857	241858				
Sample Reference				ABH001	ABH002	ABH002	
Sample Number	None Supplied	None Supplied	None Supplied				
Depth (m)				0.30	0.30	2.00	
Date Sampled				08/01/2013	09/01/2013	09/01/2013	
Time Taken				None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Monoaromatics							
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	
Petroleum Hydrocarbons							

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	
Tetraethyl Lead	mg/kg	0.01	NONE	< 0.01	< 0.01	< 0.01	
Tetramethyl Lead	ma/ka	0.01	NONE	< 0.01	< 0.01	< 0.01	





Project / Site name: Turriff

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and topsoil/loam soil types. Data for unaccredited types of solid should be interpreted with care. Stone content of

a sample is calculated as the % weight of the stones not passing a 2 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
241846	AWS002	None Supplied	0.50	Light brown sand with vegetation.
241847	AWS002	None Supplied	3.00	Light brown sand with gravel.
241848	AWS003	None Supplied	0.50	Light brown gravelly sand.
241849	AWS003	None Supplied	1.00	Light brown gravelly sand with stones.
241850	AWS001	None Supplied	0.50	Light brown topsoil and clay with vegetation.
241851	AWS001	None Supplied	3.00	Light brown clay and sand.
241852	AWS004	None Supplied	0.30	Brown topsoil and clay with gravel.
241853	AWS004	None Supplied	1.00	Light brown clay.
241854	ABH001	None Supplied	3.50	Light brown clay and sand with gravel.
241855	ABH001	None Supplied	2.80	Brown clay and sand with gravel and brick.
241856	ABH001	None Supplied	0.30	Brown topsoil and clay with vegetation.
241857	ABH002	None Supplied	0.30	Brown topsoil and sand with vegetation.
241858	ABH002	None Supplied	2.00	Light brown sand.





Project / Site name: Turriff

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos Screening in Soil	Screening of samples for Asbestos in Soil. Standard practice is to screen a representative 100 g of the sample provided for the presence/absence of asbestos and identification.	In-house method based on HSG 248. All samples are screened by optical microscopy and identification is carried out using dispersion staining and polarised light microscopy. This method is applicable to bulks, fibres, and soils containing bulk material and loose fibres.	A001-UK	W	ISO 17025
BTEX and MTBE in soil	Determination of BTEX in soil by headspace GC- MS.	In-house method based on USEPA8260	L073S-PL	W	MCERTS
Fraction of Organic Carbon in soil	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L023-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Organolead (Speciated)	Determination of organo lead compounds in soil by GC-MS	In-house method based on USEPA 8270	L064-PL	D	NONE
pH in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L005-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Stones not passing through a 10 mm sieve is determined gravimetrically and reported as a percentage of the dry weight. Sample results are not corrected for the stone content of the sample.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPHCWG (Soil)	Determination of pentane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L076-PL	W	MCERTS

For method numbers ending in 'PL' analysis have been carried out in our laboratory in the United Kingdom. For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland. Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.



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i2 Analytical Ltd. Building 19, BRE, Garston, Watford, WD25 9XX

t: 01923 67 00 20 **f:** 01923 67 00 30 e: reception@i2analytical.com

Analytical Report Number : 13-38847

Project / Site name:	Turriff 5106238 D10GPSS	Samples received on:	14/01/2013
Your job number:		Samples instructed on:	14/01/2013
Your order number:		Analysis completed by:	18/01/2013
Report Issue Number:	1	Report issued on:	18/01/2013
Samples Analysed:	21 soil samples		

QA1 Signed:

For & on behalf of i2 Analytical Ltd.

Other office located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting

For & on behalf of i2 Analytical Ltd.

QA4

Signed:

Excel copies of reports are only valid when accompanied by this PDF certificate.





I ab Sample Number				242391	242392	242393	242394	242395
Sample Reference				AWS005	AWS005	AWS006	AWS006	AWS007
Sample Number				None Supplied				
Depth (m)				0.50	1.80	0.50	3.50	0.30
Date Sampled				09/01/2013	09/01/2013	09/01/2013	09/01/2013	09/01/2013
Time Taken				None Supplied				
		1						
Analytical Parameter	c	det Lin	St					
(Soil Analysis)	nits	ů it	atu					
(g q	s s					
Stone Contont	0/	0.1	NONE	< 0.1	70	20	< 0.1	FF
Moisture Content	70	0.1 N/A	NONE	10	70	17	< 0.1	10
Total mass of sample received	70 kg	0.001	NONE	0.56	7.0	0.49	0.9	19
	Ry D/A	0.001 N/Δ	ISO 17025	Δhsent		Δhcent		Δhsent
	1/4	N/A	150 17025	Absent		Absent		Absent
General Inorganics								
pН	pH Units	N/A	MCERTS	6.5	6.7	6.3	6.4	6.1
Fraction Organic Carbon (FOC)	N/A	0.00001	NONE	0.0025	0.0029	0.011	0.0026	0.0019
Construct PALL								
Speciated PAHS		0.05	MOEDTO	. 0.05	1 0 0F	- 0.05	+ 0.0F	10.05
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphulyielle	mg/kg	0.2	MCEDIC	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Eluoropo	mg/kg	0.1	MCEDITS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Departhrepe	mg/kg	0.2	MCEDTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Anthracene	mg/kg	0.2	MCEDTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Fluoranthene	mg/kg	0.1	MCEDTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(a)anthracene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	ma/ka	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.09	< 0.05
Benzo(k)fluoranthene	ma/ka	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(a)pyrene	ma/ka	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	ma/ka	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Dibenz(a,h)anthracene	ma/ka	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(ghi)pervlene	ma/ka	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6
Monoaromatics								
Benzene	µq/kq	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kq	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	_1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
		-				-	-	





Project / Site name: Turriff 5106238 D10GPSS

Lab Sample Number	242391	242392	242393	242394	242395			
Sample Reference			AWS005	AWS005	AWS006	AWS006	AWS007	
Sample Number				None Supplied				
Depth (m)	0.50	1.80	0.50	3.50	0.30			
Date Sampled				09/01/2013	09/01/2013	09/01/2013	09/01/2013	09/01/2013
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Petroleum Hydrocarbons

mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
mg/kg	1	MCERTS	< 1.0	5.2	< 1.0	< 1.0	< 1.0
mg/kg	2	MCERTS	< 2.0	22	< 2.0	< 2.0	< 2.0
mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
mg/kg	10	MCERTS	< 10	27	< 10	< 10	< 10
mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
mg/kg	1	MCERTS	< 1.0	2.1	< 1.0	< 1.0	< 1.0
mg/kg	2	MCERTS	< 2.0	9.8	< 2.0	< 2.0	< 2.0
mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
mg/kg	10	MCERTS	< 10	12	< 10	< 10	< 10
mg/kg	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
mg/kg	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	mg/kg mg/kg	mg/kg 0.1 mg/kg 0.1 mg/kg 0.1 mg/kg 0.1 mg/kg 1 mg/kg 1 mg/kg 1 mg/kg 8 mg/kg 10 mg/kg 0.1 mg/kg 0.1 mg/kg 0.1 mg/kg 0.1 mg/kg 0.1 mg/kg 10 mg/kg 10 mg/kg 10 mg/kg 10 mg/kg 0.1 mg/kg 0.0 mg/kg 0.01 mg/kg 0.01	mg/kg 0.1 MCERTS mg/kg 0.1 MCERTS mg/kg 0.1 MCERTS mg/kg 1 MCERTS mg/kg 2 MCERTS mg/kg 8 MCERTS mg/kg 10 MCERTS mg/kg 10 MCERTS mg/kg 0.1 MCERTS mg/kg 0.1 MCERTS mg/kg 0.1 MCERTS mg/kg 10 MCERTS mg/kg 10 MCERTS mg/kg 1 MCERTS mg/kg 1 MCERTS mg/kg 10 MCERTS mg/kg 0.01 MONE	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $





Lab Sample Number				242396	242397	242398	242399	242400
Sample Reference				AWS008	ABH002	AW/5008	AW/\$009	AWS009
Sample Number				None Supplied				
Depth (m)				0.40	3.50	3.00	0.50	1.80
Date Sampled				09/01/2013	09/01/2013	09/01/2013	09/01/2013	09/01/2013
Time Taken				None Supplied				
			7	FF	I F			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	occreditation Status					
Stone Content	%	0.1	NONE	< 0.1	45	63	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	11	7.0	11	6.2	8.8
Total mass of sample received	kg	0.001	NONE	0.52	0.52	0.49	0.54	0.48
Asbestos in Soil Screen	P/A	N/A	ISO 17025	Absent	-	-	Absent	-
General Inorganics								
pH	pH Units	N/A	MCERTS	5.3	5.7	5.8	6.0	5.9
Fraction Organic Carbon (FOC)	N/A	0.00001	NONE	0.023	0.0012	0.0032	0.012	0.0014
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	ma/ka	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Phenanthrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Pyrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(a)anthracene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Dibenz(a,h)anthracene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6
Monoaromatics								
Benzene	µg/ka	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kq	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/ka	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kq	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
					-	-	-	





Lab Sample Number				242396	242397	242398	242399	242400
Sample Reference				AWS008	ABH002	AWS008	AWS009	AWS009
Sample Number				None Supplied				
Depth (m)				0.40	3.50	3.00	0.50	1.80
Date Sampled				09/01/2013	09/01/2013	09/01/2013	09/01/2013	09/01/2013
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	2.2	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	17	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	17	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
Tetraethyl Lead	mg/kg	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tetramethyl Lead	mg/kg	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01





I ab Sample Number				242401	242402	242403	242404	242405
Sample Reference				AWS010	AWS010	AW/S011	AWS011	AWS012
Sample Number				None Supplied				
Depth (m)				0.50	1.60	0.50	2.70	0.50
Date Sampled				10/01/2013	10/01/2013	10/01/2013	10/01/2013	10/01/2013
Time Taken				None Supplied				
		1						
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	15	23	15	4.9	20
Total mass of sample received	kg	0.001	NONE	0.51	0.51	0.50	0.49	0.48
Asbestos in Soil Screen	P/A	N/A	ISO 17025	Absent	-	Absent	-	Absent
General Inorganics								
pН	pH Units	N/A	MCERTS	5.8	6.1	5.6	5.7	5.6
Fraction Organic Carbon (FOC)	N/A	0.00001	NONE	0.0096	0.0010	0.019	0.0021	0.019
Speciated PAHs								
Naphthalene	ma/ka	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenanhthylene	ma/ka	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Acenaphthene	ma/ka	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Eluorene	ma/ka	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Phenanthrene	ma/ka	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Anthracene	ma/ka	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	ma/ka	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Pyrene	ma/ka	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(a)anthracene	ma/ka	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Chrvsene	ma/ka	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	ma/ka	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	ma/ka	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(a)pyrene	ma/ka	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Dibenz(a,h)anthracene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6
Monoaromatics								
Benzene	µg/kq	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kq	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kq	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
		-				-	-	





Lab Sample Number				242401	242402	242403	242404	242405
Sample Reference				AWS010	AWS010	AWS011	AWS011	AWS012
Sample Number				None Supplied				
Depth (m)				0.50	1.60	0.50	2.70	0.50
Date Sampled				10/01/2013	10/01/2013	10/01/2013	10/01/2013	10/01/2013
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
TDH CMC Aliphotic > ECE EC6	ma/ka	0.1	MCEDITE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCEDTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC9 - EC9	mg/kg	0.1	MCEDIC	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCEDTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCEDTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCEDTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	ma/ka	10	MCERTS	< 10	< 10	< 10	< 10	< 10
		10	HOLINO	. 10	. 10	. 10	. 10	. 10
TPH-CWG - Aromatic >EC5 - EC7	ma/ka	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
Tetraethyl Lead	mg/kg	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tetramethyl Lead	mg/kg	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01





Lab Sample Number				242406	242407	242408	242409	242410
Sample Reference				ABH003	ABH003	ABH003	AWS012	AWS013
Sample Number				None Supplied				
Depth (m)				0.50	2.00	2.50	2.40	0.50
Date Sampled				10/01/2013	10/01/2013	10/01/2013	10/01/2013	10/01/2013
Time Taken				None Supplied				
			Þ	FF				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	occreditation Status					
Stone Content	%	0.1	NONE	18	< 0.1	< 0.1	24	< 0.1
Moisture Content	%	N/A	NONE	16	16	9.0	7.9	17
Total mass of sample received	kg	0.001	NONE	0.43	0.47	0.43	0.56	0.50
Asbestos in Soil Screen	P/A	N/A	ISO 17025	Absent	-	-	-	Absent
General Inorganics								
рН	pH Units	N/A	MCERTS	5.7	5.2	5.5	5.4	6.2
Fraction Organic Carbon (FOC)	N/A	0.00001	NONE	0.016	0.015	0.0020	0.0019	0.0070
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	ma/ka	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Acenaphthene	ma/ka	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Phenanthrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Pyrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(a)anthracene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Dibenz(a,h)anthracene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6
Monoaromatics								
Benzene	µg/kq	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kq	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kq	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kq	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
					-	-	-	





Lab Sample Number				242406	242407	242408	242409	242410
Sample Reference				ABH003	ABH003	ABH003	AWS012	AWS013
Sample Number				None Supplied				
Depth (m)				0.50	2.00	2.50	2.40	0.50
Date Sampled				10/01/2013	10/01/2013	10/01/2013	10/01/2013	10/01/2013
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons							-	
TRU CALC Aliphotics ECE ECC		0.1	MCEDIC	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic > EC6 = EC9	mg/kg	0.1	MCEDIC	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic > EC9 - EC0	mg/kg	0.1	MCEDIC	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic > EC10 - EC12	mg/kg	0.1	MCEDIC	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic > EC10 - EC12	mg/kg	2	MCEDIC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic > EC16 - EC21	mg/kg	2	MCEDIC	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic > EC21 = EC21	mg/kg	0	MCEDIC	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	0	MCEDTS	< 0.0	< 0.0	< 0.0	< 0.0	< 0.0
TPT-CWG - Aliphatic (EC3 - EC33)	iiig/kg	10	PICENTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
	-							
Tetraethyl Lead	mg/kg	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tetramethyl Lead	mg/kg	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01





Lab Carrie Namba				242414		1	1	
Lab Sample Number				242411				
				AWS013				
				None Supplied				
				1.80				
Date Sampled				10/01/2013				
		1		None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	48				
Moisture Content	%	N/A	NONE	2.9				
Total mass of sample received	kg	0.001	NONE	0.55				
Asbestos in Soil Screen	P/A	N/A	ISO 17025	-				
General Inorganics								
pH	pH Units	N/A	MCERTS	6.4				
Fraction Organic Carbon (FOC)	N/A	0.00001	NONE	0.0027				
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05				
Acenaphthylene	mg/kg	0.2	MCERTS	< 0.20				
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10				
Fluorene	mg/kg	0.2	MCERTS	< 0.20				
Phenanthrene	mg/kg	0.2	MCERTS	< 0.20				
Anthracene	mg/kg	0.1	MCERTS	< 0.10				
Fluoranthene	mg/kg	0.2	MCERTS	< 0.20				
Pyrene	mg/kg	0.2	MCERTS	< 0.20				
Benzo(a)anthracene	mg/kg	0.2	MCERTS	< 0.20				
Chrysene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10				
Benzo(k)fluoranthene	mg/kg	0.2	MCERTS	< 0.20				
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10				
Indeno(1,2,3-cd)pyrene	mg/kg	0.2	MCERTS	< 0.20				
Dibenz(a,h)anthracene	mg/kg	0.2	MCERTS	< 0.20				
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05				
Total PAH					•		n	
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.6				
Monoaromatics								
Benzene	µg/kg	1	MCERTS	< 1.0				
Toluene	µg/kg	1	MCERTS	< 1.0				
Ethylbenzene	µg/kg	1	MCERTS	< 1.0				
p & m-xylene	µg/kg	1	MCERTS	< 1.0				
o-xylene	µg/kg	1	MCERTS	< 1.0				
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0				





Lab Sample Number				242411				
Sample Reference				AWS013				
Sample Number				None Supplied				
Depth (m)				1.80				
Date Sampled				10/01/2013				
Time Taken		None Supplied						
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons					-	-	-	
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1				
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1				
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1				
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0				
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0				
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0				
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0				
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10				
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1				
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1				
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1				
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0				
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0				
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10				
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	ļ	ļ	ļ	
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10				
Tetraethyl Lead	ma/ka	0.01	NONE	< 0.01	1	1	1	
Totramothyl Load	mg/kg	0.01	NONE	< 0.01				
	тід/кд	0.01	NUNE	< 0.01	1	I	1	





Stone content

Analytical Report Number : 13-38847 Project / Site name: Turriff 5106238 D10GPSS

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and topsoil/loam soil types. Data for unaccredited types of solid should be interpreted with care.

of a sample is calculated as the % weight of the stones not passing a 2 mm sieve. Results are not corrected for stone content.

Lab Sample Sample Sample Depth (m) Sample Description * Reference Number Number 242391 AWS005 None Supplied 0.50 Grey gravelly sand. 242392 AWS005 None Supplied 1.80 Grey gravelly sand with stones. 242393 AWS006 0.50 Brown sandy clay with gravel and stones. None Supplied 242394 AWS006 3.50 Light brown sandy clay with gravel. None Supplied 242395 AWS007 None Supplied 0.30 Brown gravelly sand with stones. 242396 AWS008 0.40 Brown topsoil and gravel with vegetation. None Supplied 242397 ABH002 Light brown sandy clay with gravel and stones None Supplied 3.50 AWS008 3.00 Light brown sandy clay with gravel and stones. 242398 None Supplied 242399 AWS009 None Supplied 0.50 Light brown sand with gravel and vegetation. 242400 AWS009 1.80 Light brown clay and gravel. None Supplied 242401 AWS010 0.50 Brown sandy topsoil with gravel and vegetation. None Supplied 242402 AWS010 1.60 Light brown sand. None Supplied 242403 AWS011 Brown sandy topsoil with gravel. 0.50 None Supplied 242404 AWS011 2.70 Light brown clay with gravel. None Supplied 242405 AWS012 None Supplied 0.50 Light brown sandy topsoil with gravel and vegetation. 242406 ABH003 None Supplied 0.50 Brown clay and sand with stones 242407 ABH003 None Supplied 2.00 Brown sandy clay. 242408 ABH003 None Supplied 2.50 Brown clay with gravel. 242409 AWS012 None Supplied 2.40 Light brown gravelly sand with stones. 242410 AWS013 None Supplied 0.50 Light brown sand with gravel. Light brown sand with gravel and stones 242411 AWS013 None Supplied 1.80





Project / Site name: Turriff 5106238 D10GPSS

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos Screening in Soil	Screening of samples for Asbestos in Soil. Standard practice is to screen a representative 100 g of the sample provided for the presence/absence of asbestos and identification.	In-house method based on HSG 248. All samples are screened by optical microscopy and identification is carried out using dispersion staining and polarised light	A001-UK	W	ISO 17025
BTEX and MTBE in soil	Determination of BTEX in soil by headspace GC- MS.	In-house method based on USEPA8260	L073S-PL	W	MCERTS
Fraction of Organic Carbon in soil	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L023-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Organolead (Speciated)	Determination of organo lead compounds in soil by GC-MS	In-house method based on USEPA 8270	L064-PL	D	NONE
pH in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L005-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Stones not passing through a 10 mm sieve is determined gravimetrically and reported as a percentage of the dry weight. Sample results are not corrected for the stone content of the sample.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPHCWG (Soil)	Determination of pentane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L076-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.



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t: 01923 67 00 20 f: 01923 67 00 30 e: reception@i2analytical.com

Analytical Report Number : 13-39580

Project / Site name:	5106238	Samples received on:	11/02/2013						
Your job number:	5106238	Samples instructed on:	11/02/2013						
Your order number:		Analysis completed by:	14/02/2013						
Report Issue Number:	1	Report issued on:	14/02/2013						
Samples Analysed:	2 water samples								
QA1 Signed:	-	QA2 Signed:	_						
For & on behalf of i2 Analy	tical Ltd.	For & on behalf of i2 Analytical Ltd.							
Other office located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland									
Standard sample disposal times,	unless otherwise agreed with the laboratory, are :	soils- 4 weeks from reportingleachates- 2 weeks from reportingwaters- 2 weeks from reporting							
Excel copies of reports are only valid when accompanied by this PDF certificate.									
Sampling date indicates that recom	mended time for holding samples prior to analysis for pH & vo	atiles has been exceeded. The results t	for such						

Sampling date indicates that recommended time for holding samples prior to analysis for pH & volatiles has been exceeded. The results for such parameters may be invalid and should be interpreted with care.





Project / Site name: 5106238

Lab Sample Number		246466	246467				
Sample Reference	ABH001	ABH002					
Sample Number				None Supplied	None Supplied		
Depth (m)	1.90	2.30					
Date Sampled				05/02/2013	05/02/2013		
Time Taken				None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status				

pH	pH Units	N/A	ISO 17025	7.9	8.1				
Speciated PAHs									
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01				
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01				
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01				
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01				
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01				
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01				
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01				
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01				
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01				
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01				
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01				
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01				
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01				
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01				
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01				
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01				
Total PAH									
Total EPA-16 PAHs	µg/l	0.2	ISO 17025	< 0.20	< 0.20				

Monoaromatics

General Inorganics

Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0		
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0		
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0		
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0		
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0		
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0		





Project / Site name: 5106238

Lab Sample Number		246466	246467				
Sample Reference	ABH001	ABH002					
Sample Number	None Supplied	None Supplied					
Depth (m)	1.90	2.30					
Date Sampled				05/02/2013	05/02/2013		
Time Taken				None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status				

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >C5 - C6	µg/l	10	NONE	< 10	< 10		
TPH-CWG - Aliphatic >C6 - C8	µg/l	10	NONE	< 10	< 10		
TPH-CWG - Aliphatic >C8 - C10	µg/l	10	NONE	< 10	< 10		
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10		
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10		
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10		
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10		
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10		
TPH-CWG - Aromatic >C5 - C7	µg/l	10	NONE	< 10	< 10		
TPH-CWG - Aromatic >C7 - C8	µg/l	10	NONE	< 10	< 10		
TPH-CWG - Aromatic >C8 - C10	µg/l	10	NONE	< 10	< 10		
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10		
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10		
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10		
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10		
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10		

Miscellaneous Organics Tetraethyl Lead ug/l 0.01 NONE < 0.01</td> < 0.01</td> Image: Constraint of the second second

U/S = Unsuitable Sample I/S = Insufficient Sample





Project / Site name: 5106238

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
BTEX and MTBE in water	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW	In-house method based on USEPA8260	L036-UK	W	ISO 17025
Organolead (Speciated)	Determination of organo lead compounds in water by GC-MS	In-house method based on USEPA 8270	L070-UK	W	NONE
pH in water	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L005-PL	W	ISO 17025
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in hexane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L070-UK	W	ISO 17025
TPH7 (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-UK	W	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland. Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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