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20th December 2022

FAO: Frank Everett

Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU

Waste Classification Report

Please find attached the results of laboratory testing carried out on four samples of soil recovered from Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU (the site) by a geo-environmental engineer from Terragen Environmental Consultants Limited (TGEN) on 30/11/2022. The samples represent made ground and natural ground (soil and stones) being generated from enabling works excavations and will be excess to requirements and need to be removed from site.

1.0 WASTE CLASSIFICATION

One of the relevant objectives of the Revised Waste Framework (WFD) Directive (2018/851/EC) is to ensure that waste is recovered or disposed without endangering human health and without using processes or methods which could harm the environment, and without:

- Risk to water, air, soil, plants, or animals.
- Causing nuisance through noise or odours.
- Adversely affecting the countryside or places of special interest.

It also provides the general framework of waste management requirements and sets the basic EU waste management definitions. The List of Waste (LoW) Amendment Decision (2014/955/EU) establishes the classification system, including the distinction between hazardous and non-hazardous wastes. It is closely linked to the main characteristics that render waste hazardous as contained in Annex III of the WFD. The amendments came into force to align waste classification with relevant sections of and approaches used in EU chemicals regulations, such as REACH (1907/2006/EC) and the CLP (1272/2008/EC), which in turn adapt for the EU the UN globally harmonised system for chemicals classification. In 2020 and 2021, GB and the UK introduced its own set of waste classification regulations, such as the CLP, REACH and the mandatory classification and labelling list, which retain, mirror and/or replace relevant EU regulations.

Waste is not considered to be a substance, a mixture or an article. Consequently, obligations under the REACH and the CLP regulations do not apply for producers or holders of waste. Nevertheless, information generated in the frameworks of REACH and the CLP that set criteria for substances to be classified as hazardous are related to some of the hazardous properties applicable to the classification of waste. Annex VI of the CLP contains official harmonised classifications of substances, which must be used where the classification of waste depends on the presence of hazardous substances. The classification of substances is periodically updated by the European Chemicals Agency in the form of a new EU regulation, which automatically amends the CLP.

The Landfill Directive (1999/31/EC) defines the categories of waste applicable to landfill sites as hazardous, non-hazardous, municipal and inert. A landfill is defined as a waste disposal site for the deposit of waste onto or into land. Landfills are divided into three classes:

- Landfills for hazardous waste.
- Landfills for non-hazardous waste.
- Landfills for inert waste.

The three main categories of waste and the options for landfilling are as follows:

- Hazardous with or without additional treatment prior to landfill or stable non-reactive hazardous waste (SNRHW) suitable for placement in a dedicated cell in a suitably permitted non-hazardous landfill site.
- Non-hazardous.
- Inert and suitable for disposal to an appropriately permitted landfill site.

To determine the presence and significance of hazards associated with any construction, demolition and earthworks (CD&E) arisings and therefore the resultant options for management of the materials, and where necessary the appropriate class of facility the waste can be taken to, it is therefore necessary to:

- Determine the presence of hazardous properties within the materials.
- Determine the category of the waste.
- Determine if the waste meets the requirements for reuse onsite, recovery or recycling on or offsite, or disposal offsite as waste.

The main statutory guidance document used to properly classify waste as either hazardous or non-hazardous in the UK is Guidance on the Classification and Assessment of Waste (WM3). The stepped methodology for classifying a waste and assessing any hazardous properties is as follows:

- Check if the waste needs to be classified.
- Identify the code that may apply to the waste.
- Identify the assessment required to select the correct code.
- Determine the chemical composition of the waste.
- Determine if the substances in the waste are hazardous substances or persistent organic pollutants.
- Assess the hazardous properties of the waste.
- Assign and describe the classification code.

The waste types disposed to a landfill site permitted to accept inert waste or recovered at a site permitted or exempted in accordance with UK regulations and statutory guidance should be classified as inert. No hazardous or contaminated wastes, as defined in the Waste Acceptance Criteria (WAC) and Procedures Directive (2003/33/EC), should be accepted at such sites. The source and origin of the waste along with a description (e.g. physical form, consistency, composition, colour, odour and likely behaviour etc.) should be determined for all material accepted at such inert waste facilities. The materials should be stable, non-reactive and with a sufficient bearing capacity for the end use.

In accordance with the Landfill Directive and UK statutory guidance, the only materials allowed for disposal or recovery at such inert waste facilities without more detailed information (e.g. chemical analyses, site investigation data etc.) should be restricted to single source material from a known site and a reliable producer. The material from the site or source should not be contaminated and should not contain significant quantities of deleterious materials such as wood, plastic etc. Materials potentially suitable for recovery at such inert waste facilities without laboratory analysis should be restricted to the following:

LoW Code	Description	Restrictions
170101	Concrete	Selected CD&E waste only
170102	Bricks	Selected CD&E waste only
170103	Tiles & Ceramics	Selected CD&E waste only
170107	Mixture of Concrete, Bricks, Tiles & Ceramics	Selected CD&E waste only
170504	Soil & Stones (e.g. natural clay & sand etc.)	Selected CD&E waste not from contaminated sites*
200202	Soil & Stones (e.g. natural clay & sand etc.)	Selected garden & park waste only*

- *Excluding topsoil or peat when used as subsoil or fill.
- Selected CD&E or garden & park waste with low (non-significant) contents of other types of materials (i.e. metals, plastics, organics, wood, rubber etc.). The origin of the waste must be known and relevant information regarding the waste must have been assessed.
- No CD&E waste from buildings or land contaminated with dangerous substances (e.g. 170106 & 170503).
- No CD&E waste from buildings treated or painted with dangerous substances in significant amounts.
- These materials should only be accepted if they arise from a single identified source.
- Mixtures of different types of these wastes from the same single source are acceptable without testing.
- Mixtures of these wastes from different sources are not acceptable unless pre-testing is carried out.

If the waste materials were determined as hazardous or potentially inert and required disposal to landfill, then a further stage of assessment would be required to determine if the waste meets the requirements for disposal at a particular category of landfill facility. This is done in the form of WAC testing. It should be noted that the associated regulations and statutory guidance do not apply to the use of suitable uncontaminated waste for redevelopment, restoration and filling in work or for construction purposes, or for recovery activities.

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2.0 SITE DESCRIPTION

The Tottenham Hale Centre (THC) development consists of five different sites: Welbourne, North Island, Ferry Island, Ashley Road East and Ashley Road West. Prior to 1864, Ferry Island (Plot B) was predominantly residential with a pumping station occupying the E boundary. By 1936, the residential properties in the SW had been developed into a single building and the pumping station was no longer present. During the 1970s and 80s the site was cleared and a new road junction constructed in the SE corner of the site. More recently and prior to the current development Ferry Island has been occupied by three commercial units including KFC, Pizza Hut and Maplin, with associated car parking.

The proposed THC development essentially comprises the demolition of the existing structures and the construction of residential-led development with retail/business uses alongside; servicing, highways improvements and public amenity space including soft and hard landscaped areas creating an improved public realm.

We understand that as part of the development there will be a shallow reduced level excavation followed by placement of a pile mat, piling, pile cap excavations and a deep basement excavation, which will generate in total circa 26790m^3 of material for disposal from site as waste. It is likely that circa 7170m^3 (27%) of the arisings will be made ground of which circa 2870m^3 will be pile mat and hardstanding, and circa 19620m^3 (73%) will be uncontaminated and inert natural soil and pile arisings.

The anticipated geology at the Ferry Island site comprises made ground overlying superficial deposits of Enfield Silt and River Terrace Deposits. The London Clay is at depth and in the order of 15m thick, underlain by the Lambeth Group, Thanet Sand and White Chalk.

Two site investigation reports have been prepared by Langan International (ref. 841011101 dated 26/07/2018 and 04/11/2021) on behalf of Whitby Wood, which comprised the progression of thirteen exploratory holes. The strata encountered confirmed the anticipated geology and comprised made ground, on average circa 1.7m thick, typically containing only a small quantity of deleterious materials, such as fragments of clinker and tarmac, with no visual or olfactory evidence of significant contamination. Asbestos containing material was not visible during the previous site investigation but it was detected at low concentrations in three samples of made ground tested. The made ground overlies natural and uncontaminated (inert) Enfield Silt, Kempton Park Gravel and London Clay.

During the previous investigations thirty-five samples were taken from the thirteen exploratory hole locations to depths of up to 6.2mbgl representing circa 26790m^3 of enabling works excavations at the site.

3.0 SITE SAMPLING

A geo-environmental engineer from TGEN visited the site on 30/11/2022 to assess the nature of the strata encountered. This included:

- A physical description of the arisings in accordance with relevant AGS and BSI standards.
- An assessment of visual and olfactory evidence of contamination.
- The recovery of representative samples.
- The submission of samples to a UKAS/MCERTS accredited laboratory for analysis.

During the visit, routine reassurance samples of materials were recovered and included the following:

- Three samples of made ground from arisings from the excavation for water attenuation tanks (MG).
- One sample of natural ground from a stockpile of piling arisings (NAT).

4.0 MATERIALS ASSESSMENT

In accordance with the LoW (as amended), the CD&E arisings encountered during this sampling exercise are mirror entries with a mirror hazardous (MH) entry and a mirror non-hazardous (MN) entry as follows:

- Soil and stones containing dangerous substances (LoW Code 170503*) – MH.
- Soil and stones not containing dangerous substances (LoW Code 170504) - MN.

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4.1 Physical Appearance of the Waste

Made Ground Arisings (MG)

Sampling Date	Reference	Physical Description	Photograph
30/11/2022	MG/3011/01 MG/3011/02 MG/3011/03	Grey/ brown, slightly sandy, silty, clay with gravel and occasional fragments of brick and concrete, and rare fragments of wood and metal. There was no significant odour and the PID reading was <1ppm. No asbestos was seen during the sampling and there was no visual or olfactory evidence of contamination. Based on the physical description, the made ground arisings could be described as: Soil and stones not containing dangerous substances (LoW Code 170504) - MN.	

Natural Ground Arisings (NAT)

Sampling Date	Reference	Physical Description	Photograph
30/11/2022	NAT/3011/01	Grey/brown, silty, clay with rare gravel. There was no significant odour and the PID reading was <1ppm. No asbestos was seen during the sampling and there was no visual or olfactory evidence of contamination. Based on the physical description, the natural ground arisings could be described as: Soil and stones not containing dangerous substances (LoW Code 170504) - MN.	

4.2 Chemical Nature of the Waste

The samples were subjected to a programme of laboratory testing, which included an asbestos screen and a suite of potential contaminants associated with a wide range of potential activities to confirm the preliminary waste classification based on the physical description of the material sampled. The laboratory test reports are presented in Appendix A, which can be summarised as follows.

Made Ground Arisings (GA)

Ref	Chemical Summary		Waste Classification
	Asbestos	Solid	LoW Code
MG/3011/01	NAD	No significant contamination	170504
MG/3011/02	NAD	No significant contamination	170504
MG/3011/03	NAD	Elevated pH, but considered to be due to the presence of alkaline construction materials (e.g. concrete) in the sample that are crushed during sample preparation. Otherwise, no significant contamination	170504

NAD No asbestos observed during sample preparation or detected in the sample.

Natural Ground Arisings (NAT)

Ref	Chemical Summary		Waste Classification
	Asbestos	Solid	LoW Code
NAT/3011/01	NAD	No significant contamination	170504

NAD No asbestos observed during sample preparation or detected in the sample.

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5.0 SUMMARY

No asbestos was observed during the sampling and none was detected in the samples, which all returned low concentrations of potential contaminants. One sample (MG/3011/03) did return an elevated pH, but this is considered to be due to the presence of alkaline construction materials (e.g. concrete) in the sample that are crushed during sample preparation rather than the presence of other corrosive materials. As such, the material represented by the samples (made ground and natural) would be classified as

- **Soil and stones not containing hazardous substances (LoW Code 170504).**

In addition, material represented by the samples can be described for waste disposal purposes as follows:

- *MG/3011/01* *No significant contamination (Uncontaminated waste).*
- *MG/3011/02* *No significant contamination (Uncontaminated waste).*
- *MG/3011/03* *No significant contamination (Uncontaminated waste).*

- *NAT/3011/01* *No significant contamination (Uncontaminated and inert waste).*

We would recommend that during any excavation associated with future phases of the development, should materials previously unidentified during the various investigations be encountered (e.g. an unusual appearance and/or odour etc.), works are halted in that area and the advice of a geo-environmental specialist be sought to determine an appropriate course of action. We would also advise you to employ routine waste practices when managing the disposal of the waste material (i.e. visual and olfactory inspections of all loads leaving the site) to ensure that the material remains consistent and suitable for recovery or disposal at your chosen facility in accordance with level 1, level 2 and level 3 waste acceptance procedures. Please be aware that your duty of care paperwork now needs to include the following:

- The relevant UK SIC Code.
- A declaration that you have fulfilled your duty to apply the waste hierarchy.
- The relevant LoW Code.

*****

We trust that this report meets your requirements, but please contact us should you require clarification on any of the matters raised. Thank you for your custom and we hope that we can be of further assistance to you in the future.

Paul Brewer
BSc (Hons), MSc, MI Soil Sci
Senior Environmental Consultant

Dr. Barry Powell
BSc (Hons), PhD, MCIWM
Principal Consultant

(for and on behalf of Terragen Environmental Consultants Limited)

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6.0 LIMITATIONS AND USE OF THE REPORT

IMPORTANT: This section should be read before reliance is placed on any of the opinions, advice, recommendations or conclusions set out in this report.

a) This report has been prepared for the purpose of providing interpretation on analytical results supplied by the Client pursuant to its appointment of Terragen Environmental Consultants Limited to act as a Consultant.

b) These comments are given in good faith on the basis of the results provided. Terragen Environmental Consultants Limited can bear no responsibility for any inaccuracies that may arise from the laboratory testing.

c) This report does not constitute a qualitative risk assessment of the site or the soils and is not based upon a conceptual site model as we have been provided with insufficient information to establish the existence of potential sources of contamination, plausible pathways, or sensitive receptors and therefore assumes that they exist.

d) The report is unable to comment on the potential risks to controlled waters (groundwater or surface water), although where contaminant concentrations are below relevant threshold criteria in most circumstances it may be considered that the risk is low.

e) We have assumed that the results are representative of the area sampled. This does not imply that they may be considered representative of the site itself. Terragen Environmental Consultants Limited can accept no responsibility for the integrity of the sampling regime.

f) Save for the Client no duty is undertaken or warranty or representation made to any party in respect of the opinions, advice, recommendations or conclusions herein set out.

g) All work carried out in preparing this report has used, and is based upon, our professional knowledge and understanding of the current relevant English and European Community standards, approved codes of practice, technology and legislation.
Changes in the above may cause the opinion, advice, recommendations or conclusions set out in this report to become inappropriate or incorrect. However, in giving its opinions, advice, recommendations and conclusions, Terragen Environmental Consultants Limited has considered pending changes to environmental legislation and regulations of which it is currently aware. Following delivery of this report, we will have no obligation to advise the Client of any such changes, or of their repercussions.

h) Terragen Environmental Consultants Limited acknowledges that it is being retained, in part, because of its knowledge and experience with respect to environmental matters. Terragen Environmental Consultants Limited will consider and analyse all information provided to it in the context of our knowledge and experience and all other relevant information known to us. To the extent that the information provided to us is not inconsistent or incompatible therewith, Terragen Environmental Consultants Limited shall be entitled to rely upon and assume, without independent verification, the accuracy and completeness of such information.

i) The content of this report represents the professional opinion of experienced environmental consultants. Terragen Environmental Consultants Limited does not provide specialist legal advice and the advice of lawyers may be required.

j) In the Summary and Recommendations sections of this report, Terragen Environmental Consultants Limited has set out our key findings and provided a summary and overview of our advice, opinions and recommendations. However, other parts of this report will often indicate the limitations of the information obtained by Terragen Environmental Consultants Limited and therefore any advice, opinions or recommendations set out in the Executive Summary, Summary and Recommendations sections ought not to be relied upon unless they are considered in the context of the whole report.

k) The lack of evidence of the presence of hazardous or harmful materials at the subject property does not guarantee the absence of such materials; rather it indicates only that none were found as a result of the services provided. The services described in this report were performed in accordance with the general practices and procedures accepted in the consulting field.

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Appendix A Laboratory Test Reports.

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WD18 8YS

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e: reception@i2analytical.com

Analytical Report Number : 22-10866

Project / Site name:	Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE	**Samples received on:**	01/12/2022
Your job number:	TJ3885C03	**Samples instructed on/ Analysis started on:**	01/12/2022
Your order number:	TJ3885C03	**Analysis completed by:**	16/12/2022
Report Issue Number:	1	**Report issued on:**	16/12/2022
Samples Analysed:	3 soil samples		

Signed:

Adam Fenwick
Technical Reviewer
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

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
asbestos - 6 months from reporting

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

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 22-10866
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE
Your Order No: TJ3885C03

Lab Sample Number				2518903	2518904	2518905
Sample Reference				MG 3011 01	MG 3011 02	MG 3011 03
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				30/11/2022	30/11/2022	30/11/2022
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	%	0.01	NONE	11	17	11
Total mass of sample received	kg	0.001	NONE	1.7	1.7	1.7
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	KSZ	KSZ	KSZ
General Inorganics						
pH - Automated	pH Units	N/A	MCERTS	11.1	8.8	11.7
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	7500	1200	6400
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	1300	1100	490
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.67	0.56	0.24
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	672	555	244
Sulphide	mg/kg	1	MCERTS	220	17	150
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.6	0.2	0.4
Total Phenols						
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Speciated PAHs						
Naphthalene	mg/kg	0.05	MCERTS	0.1*	< 0.05*	< 0.05*
Acenaphthylene	mg/kg	0.05	MCERTS	0.08*	< 0.05*	0.06*
Acenaphthene	mg/kg	0.05	MCERTS	0.1*	< 0.05	*
Fluorene	mg/kg	0.05	MCERTS	0.08*	< 0.05	0.05*
Phenanthrene	mg/kg	0.05	MCERTS	0.76*	0.09*	0.33*
Anthracene	mg/kg	0.05	MCERTS	0.18*	< 0.05	0.09*
Fluoranthene	mg/kg	0.05	MCERTS	1.2*	0.18*	0.62*
Pyrene	mg/kg	0.05	MCERTS	1.2*	0.19*	0.55*
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.57	0.1	0.3
Chrysene	mg/kg	0.05	MCERTS	0.59*	0.1*	0.3*
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.82*	0.17*	0.41*
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.19*	0.07*	0.15*
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.58	0.11	0.28
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.3	< 0.05	0.17
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.33*	0.08*	0.19*
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Total PAH						
Total WAC-17 PAHs	mg/kg	0.85	NONE	7.07*	1.09*	3.56*

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Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE
Your Order No: TJ3885C03

Lab Sample Number				2518903	2518904	2518905
Sample Reference				MG 3011 01	MG 3011 02	MG 3011 03
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				30/11/2022	30/11/2022	30/11/2022
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Heavy Metals / Metalloids						
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	3.1	2.3	2.7
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11	14	12
Barium (aqua regia extractable)	mg/kg	1	MCERTS	120	82	98
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.75	1	0.73
Boron (water soluble)	mg/kg	0.2	MCERTS	1.2	1.6	1.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	20	31	20
Copper (aqua regia extractable)	mg/kg	1	MCERTS	32	23	25
Lead (aqua regia extractable)	mg/kg	1	MCERTS	100	25	68
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.6	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.89	0.66	1.1
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	15	48	13
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	33	51	29
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	86	66	73
Petroleum Hydrocarbons						
TPH C10 - C40 EH_CU_1D_TOTAL	mg/kg	10	MCERTS	110	< 10	44

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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* 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 loam (MCERTS) 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 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2518903	MG 3011 01	None Supplied	None Supplied	Brown loam and clay with rubble and brick.
2518904	MG 3011 02	None Supplied	None Supplied	Brown clay and loam with gravel.
2518905	MG 3011 03	None Supplied	None Supplied	Brown clay and loam with gravel and brick.

Analytical Report Number : 22-10866
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated WAC-17 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
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE

Analytical Report Number : 22-10866
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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Analytical Report Number : 22-10889

Project / Site name:	Ferry Island, Tottenham Hale (Plot B), High Cross Load, London N17 9NU	**Samples received on:**	01/12/2022
Your job number:	TJ3885C04	**Samples instructed on/ Analysis started on:**	01/12/2022
Your order number:	TJ3885C04	**Analysis completed by:**	15/12/2022
Report Issue Number:	1	**Report issued on:**	16/12/2022
Samples Analysed:	1 soil sample		

Signed:

Joanna Wawrzeczko
Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

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
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 22-10889
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Load, London N17 9NU
Your Order No: TJ3885C04

Lab Sample Number				2519003
Sample Reference				NAT/3011/01
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				30/11/2022
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Stone Content	%	0.1	NONE	9.7
Moisture Content	%	0.01	NONE	20
Total mass of sample received	kg	0.001	NONE	1.2

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	EC

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	9.1
Total Cyanide	mg/kg	1	MCERTS	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	650
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	750
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.38
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	377
Sulphide	mg/kg	1	MCERTS	930
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.9

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	< 0.85

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 22-10889
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Load, London N17 9NU
Your Order No: TJ3885C04

Lab Sample Number				2519003
Sample Reference				NAT/3011/01
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				30/11/2022
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Heavy Metals / Metalloids				
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	< 1.0
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8
Barium (aqua regia extractable)	mg/kg	1	MCERTS	130
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.2
Boron (water soluble)	mg/kg	0.2	MCERTS	2.1
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.4
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	36
Copper (aqua regia extractable)	mg/kg	1	MCERTS	26
Lead (aqua regia extractable)	mg/kg	1	MCERTS	14
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.53
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	32
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	49
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	72
Petroleum Hydrocarbons				
TPH C10 - C40 EH_CU_1D_TOTAL	mg/kg	10	MCERTS	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 22-10889
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Load, London N17 9NU

* 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 loam (MCERTS) 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 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2519003	NAT/3011/01	None Supplied	None Supplied	Brown clay with gravel.

Analytical Report Number : 22-10889
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Load, London N17 9NU

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated WAC-17 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
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE

Analytical Report Number : 22-10889
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Load, London N17 9NU

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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9th January 2023

FAO: Frank Everett

Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU

Waste Classification Report

Please find attached the results of laboratory testing carried out on three samples of soil and one sample of imported aggregate recovered from Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU (the site) by a geo-environmental engineer from Terragen Environmental Consultants Limited (TGEN) on 09/12/2022. The samples represent soil and stones being generated from enabling works excavations and piling and will be excess to requirements and need to be removed from site and aggregate being imported to site for placement as part of a pile mat.

1.0 WASTE CLASSIFICATION

One of the relevant objectives of the Revised Waste Framework (WFD) Directive (2018/851/EC) is to ensure that waste is recovered or disposed without endangering human health and without using processes or methods which could harm the environment, and without:

- Risk to water, air, soil, plants, or animals.
- Causing nuisance through noise or odours.
- Adversely affecting the countryside or places of special interest.

It also provides the general framework of waste management requirements and sets the basic EU waste management definitions. The List of Waste (LoW) Amendment Decision (2014/955/EU) establishes the classification system, including the distinction between hazardous and non-hazardous wastes. It is closely linked to the main characteristics that render waste hazardous as contained in Annex III of the WFD. The amendments came into force to align waste classification with relevant sections of and approaches used in EU chemicals regulations, such as REACH (1907/2006/EC) and the CLP (1272/2008/EC), which in turn adapt for the EU the UN globally harmonised system for chemicals classification. In 2020 and 2021, GB and the UK introduced its own set of waste classification regulations, such as the CLP, REACH and the mandatory classification and labelling list, which retain, mirror and/or replace relevant EU regulations.

Waste is not considered to be a substance, a mixture or an article. Consequently, obligations under the REACH and the CLP regulations do not apply for producers or holders of waste. Nevertheless, information generated in the frameworks of REACH and the CLP that set criteria for substances to be classified as hazardous are related to some of the hazardous properties applicable to the classification of waste. Annex VI of the CLP contains official harmonised classifications of substances, which must be used where the classification of waste depends on the presence of hazardous substances. The classification of substances is periodically updated by the European Chemicals Agency in the form of a new EU regulation, which automatically amends the CLP.

The Landfill Directive (1999/31/EC) defines the categories of waste applicable to landfill sites as hazardous, non-hazardous, municipal and inert. A landfill is defined as a waste disposal site for the deposit of waste onto or into land. Landfills are divided into three classes:

- Landfills for hazardous waste.
- Landfills for non-hazardous waste.
- Landfills for inert waste.

The three main categories of waste and the options for landfilling are as follows:

- Hazardous with or without additional treatment prior to landfill or stable non-reactive hazardous waste (SNRHW) suitable for placement in a dedicated cell in a suitably permitted non-hazardous landfill site.
- Non-hazardous.
- Inert and suitable for disposal to an appropriately permitted landfill site.

To determine the presence and significance of hazards associated with any construction, demolition and earthworks (CD&E) arisings and therefore the resultant options for management of the materials, and where necessary the appropriate class of facility the waste can be taken to, it is therefore necessary to:

- Determine the presence of hazardous properties within the materials.
- Determine the category of the waste.
- Determine if the waste meets the requirements for reuse onsite, recovery or recycling on or offsite, or disposal offsite as waste.

The main statutory guidance document used to properly classify waste as either hazardous or non-hazardous in the UK is Guidance on the Classification and Assessment of Waste (WM3). The stepped methodology for classifying a waste and assessing any hazardous properties is as follows:

- Check if the waste needs to be classified.
- Identify the code that may apply to the waste.
- Identify the assessment required to select the correct code.
- Determine the chemical composition of the waste.
- Determine if the substances in the waste are hazardous substances or persistent organic pollutants.
- Assess the hazardous properties of the waste.
- Assign and describe the classification code.

The waste types disposed to a landfill site permitted to accept inert waste or recovered at a site permitted or exempted in accordance with UK regulations and statutory guidance should be classified as inert. No hazardous or contaminated wastes, as defined in the Waste Acceptance Criteria (WAC) and Procedures Directive (2003/33/EC), should be accepted at such sites. The source and origin of the waste along with a description (e.g. physical form, consistency, composition, colour, odour and likely behaviour etc.) should be determined for all material accepted at such inert waste facilities. The materials should be stable, non-reactive and with a sufficient bearing capacity for the end use.

In accordance with the Landfill Directive and UK statutory guidance, the only materials allowed for disposal or recovery at such inert waste facilities without more detailed information (e.g. chemical analyses, site investigation data etc.) should be restricted to single source material from a known site and a reliable producer. The material from the site or source should not be contaminated and should not contain significant quantities of deleterious materials such as wood, plastic etc. Materials potentially suitable for recovery at such inert waste facilities without laboratory analysis should be restricted to the following:

LoW Code	Description	Restrictions
170101	Concrete	Selected CD&E waste only
170102	Bricks	Selected CD&E waste only
170103	Tiles & Ceramics	Selected CD&E waste only
170107	Mixture of Concrete, Bricks, Tiles & Ceramics	Selected CD&E waste only
170504	Soil & Stones (e.g. natural clay & sand etc.)	Selected CD&E waste not from contaminated sites*
200202	Soil & Stones (e.g. natural clay & sand etc.)	Selected garden & park waste only*

- *Excluding topsoil or peat when used as subsoil or fill.
- Selected CD&E or garden & park waste with low (non-significant) contents of other types of materials (i.e. metals, plastics, organics, wood, rubber etc.). The origin of the waste must be known and relevant information regarding the waste must have been assessed.
- No CD&E waste from buildings or land contaminated with dangerous substances (e.g. 170106 & 170503).
- No CD&E waste from buildings treated or painted with dangerous substances in significant amounts.
- These materials should only be accepted if they arise from a single identified source.
- Mixtures of different types of these wastes from the same single source are acceptable without testing.
- Mixtures of these wastes from different sources are not acceptable unless pre-testing is carried out.

If the waste materials were determined as hazardous or potentially inert and required disposal to landfill, then a further stage of assessment would be required to determine if the waste meets the requirements for disposal at a particular category of landfill facility. This is done in the form of WAC testing. It should be noted that the associated regulations and statutory guidance do not apply to the use of suitable uncontaminated waste for redevelopment, restoration and filling in work or for construction purposes, or for recovery activities.

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2.0 SITE DESCRIPTION

The Tottenham Hale Centre (THC) development consists of five different sites: Welbourne, North Island, Ferry Island, Ashley Road East and Ashley Road West. Prior to 1864, Ferry Island (Plot B) was predominantly residential with a pumping station occupying the E boundary. By 1936, the residential properties in the SW had been developed into a single building and the pumping station was no longer present. During the 1970s and 80s the site was cleared and a new road junction constructed in the SE corner of the site. More recently and prior to the current development Ferry Island has been occupied by three commercial units including KFC, Pizza Hut and Maplin, with associated car parking.

The proposed THC development essentially comprises the demolition of the existing structures and the construction of residential-led development with retail/business uses alongside; servicing, highways improvements and public amenity space including soft and hard landscaped areas creating an improved public realm.

We understand that as part of the development there will be a shallow reduced level excavation followed by placement of a pile mat, piling, pile cap excavations and a deep basement excavation, which will generate in total circa 26790m^3 of material for disposal from site as waste. It is likely that circa 7170m^3 (27%) of the arisings will be made ground of which circa 2870m^3 will be pile mat and hardstanding, and circa 19620m^3 (73%) will be uncontaminated and inert natural soil and pile arisings.

The anticipated geology at the Ferry Island site comprises made ground overlying superficial deposits of Enfield Silt and River Terrace Deposits. The London Clay is at depth and in the order of 15m thick, underlain by the Lambeth Group, Thanet Sand and White Chalk.

Two site investigation reports have been prepared by Langan International (ref. 841011101 dated 26/07/2018 and 04/11/2021) on behalf of Whitby Wood, which comprised the progression of thirteen exploratory holes. The strata encountered confirmed the anticipated geology and comprised made ground, on average circa 1.7m thick, typically containing only a small quantity of deleterious materials, such as fragments of clinker and tarmac, with no visual or olfactory evidence of significant contamination. Asbestos containing material was not visible during the previous site investigation but it was detected at low concentrations in three samples of made ground tested. The made ground overlies natural and uncontaminated (inert) Enfield Silt, Kempton Park Gravel and London Clay.

During the previous investigations thirty-five samples were taken from the thirteen exploratory hole locations to depths of up to 6.2mbgl representing circa 26790m^3 of enabling works excavations at the site.

3.0 SITE SAMPLING

A geo-environmental engineer from TGEN visited the site on 09/12/2022 to assess the nature of the strata encountered. This included:

- A physical description of the arisings in accordance with relevant AGS and BSI standards.
- An assessment of visual and olfactory evidence of contamination.
- The recovery of representative samples.
- The submission of samples to a UKAS/MCERTS accredited laboratory for analysis.

During the visit, routine reassurance samples of materials were recovered and included the following:

- Three samples of soil and stones from a stockpile of piling arisings (MG).
- One sample of imported aggregate (6F5).

4.0 MATERIALS ASSESSMENT

In accordance with the LoW (as amended), the CD&E arisings encountered during this sampling exercise are mirror entries with a mirror hazardous (MH) entry and a mirror non-hazardous (MN) entry as follows:

- Soil and stones containing dangerous substances (LoW Code 170503*) – MH.
- Soil and stones not containing dangerous substances (LoW Code 170504) - MN.

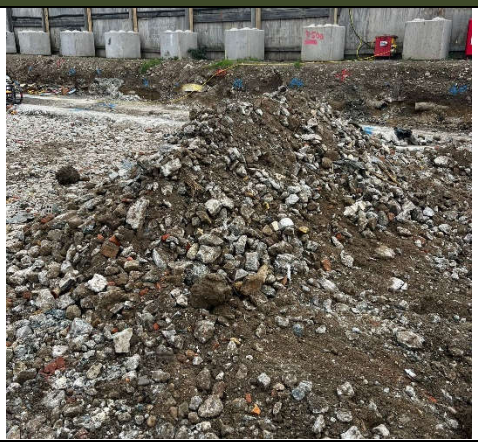
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4.1 Physical Appearance of the Waste

Piling Arisings (MG)

Sampling Date	Reference	Physical Description	Photograph
09/12/2022	MG/0912/01 MG/0912/02 MG/0912/03	Grey/ brown, slightly sandy, silty, clay with rare/incidental fragments of brick and concrete. There was no significant odour and the PID reading was <1ppm. No asbestos was seen during the sampling and there was no visual or olfactory evidence of contamination. Based on the physical description, the made ground arisings could be described as: Soil and stones not containing dangerous substances (LoW Code 170504) - MN.	

Imported Aggregate (6F5)

Sampling Date	Reference	Physical Description	Photograph
09/12/2022	6F5/0912/01	Grey/brown, sandy gravel of concrete and brick. There was no significant odour and the PID reading was <1ppm. No asbestos was seen during the sampling and there was no visual or olfactory evidence of contamination.	

4.2 Chemical Nature of the Waste

The samples were subjected to a programme of laboratory testing, which included an asbestos screen and a suite of potential contaminants associated with a wide range of potential activities to confirm the preliminary waste classification based on the physical description of the material sampled. The laboratory test reports are presented in Appendix A, which can be summarised as follows.

Made Ground Arisings (MG)

Ref	Chemical Summary		Waste Classification
	Asbestos	Solid	LoW Code
MG/0912/01	NAD	No significant contamination	170504
MG/0912/02	NAD	No significant contamination	170504
MG/0912/03	NAD	No significant contamination	170504

NAD No asbestos observed during sample preparation or detected in the sample.

Imported Aggregate (6F5)

Ref	Chemical Summary		Waste Classification
	Asbestos	Solid	LoW Code
6F5/0912/01	NAD	No significant contamination	n/a

NAD No asbestos observed during sample preparation or detected in the sample.

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5.0 SUMMARY

No asbestos was observed during the sampling and none was detected in the samples, which all returned low concentrations of potential contaminants.

The sample of imported aggregate did return an elevated pH, but this is considered to be due to the presence of alkaline construction materials (e.g., concrete) in the sample that are crushed during sample preparation rather than the presence of other corrosive materials.

The material represented by the samples (piling arisings) would be classified as:

- **Soil and stones not containing hazardous substances (LoW Code 170504).**

In addition, material represented by the samples can be described for waste disposal purposes as follows:

- *MG/0912/01* *No significant contamination (Uncontaminated waste).*
- *MG/0912/02* *No significant contamination (Uncontaminated waste).*
- *MG/0912/03* *No significant contamination (Uncontaminated waste).*

Furthermore, the predominantly natural ground with only incidental inclusions of brick and concrete may also be considered suitable for reuse on a development site in line with a materials management plan in accordance with the CL:AIRE Definition of Waste: Development Industry Code of Practice (DoWCoP).

The imported aggregate was free from significant contamination.

We would recommend that during any excavation associated with future phases of the development, should materials previously unidentified during the various investigations be encountered (e.g. an unusual appearance and/or odour etc.), works are halted in that area and the advice of a geo-environmental specialist be sought to determine an appropriate course of action. We would also advise you to employ routine waste practices when managing the disposal of the waste material (i.e. visual and olfactory inspections of all loads leaving the site) to ensure that the material remains consistent and suitable for recovery or disposal at your chosen facility in accordance with level 1, level 2 and level 3 waste acceptance procedures. Please be aware that your duty of care paperwork now needs to include the following:

- The relevant UK SIC Code.
- A declaration that you have fulfilled your duty to apply the waste hierarchy.
- The relevant LoW Code.

*****

We trust that this report meets your requirements, but please contact us should you require clarification on any of the matters raised. Thank you for your custom and we hope that we can be of further assistance to you in the future.

Paul Brewer
BSc (Hons), MSc, MI Soil Sci
Senior Environmental Consultant

Dr. Barry Powell
BSc (Hons), PhD, MCIWM
Principal Consultant

(for and on behalf of Terragen Environmental Consultants Limited)

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6.0 LIMITATIONS AND USE OF THE REPORT

IMPORTANT: This section should be read before reliance is placed on any of the opinions, advice, recommendations or conclusions set out in this report.

a) This report has been prepared for the purpose of providing interpretation on analytical results supplied by the Client pursuant to its appointment of Terragen Environmental Consultants Limited to act as a Consultant.

b) These comments are given in good faith on the basis of the results provided. Terragen Environmental Consultants Limited can bear no responsibility for any inaccuracies that may arise from the laboratory testing.

c) This report does not constitute a qualitative risk assessment of the site or the soils and is not based upon a conceptual site model as we have been provided with insufficient information to establish the existence of potential sources of contamination, plausible pathways, or sensitive receptors and therefore assumes that they exist.

d) The report is unable to comment on the potential risks to controlled waters (groundwater or surface water), although where contaminant concentrations are below relevant threshold criteria in most circumstances it may be considered that the risk is low.

e) We have assumed that the results are representative of the area sampled. This does not imply that they may be considered representative of the site itself. Terragen Environmental Consultants Limited can accept no responsibility for the integrity of the sampling regime.

f) Save for the Client no duty is undertaken or warranty or representation made to any party in respect of the opinions, advice, recommendations or conclusions herein set out.

g) All work carried out in preparing this report has used, and is based upon, our professional knowledge and understanding of the current relevant English and European Community standards, approved codes of practice, technology and legislation.
Changes in the above may cause the opinion, advice, recommendations or conclusions set out in this report to become inappropriate or incorrect. However, in giving its opinions, advice, recommendations and conclusions, Terragen Environmental Consultants Limited has considered pending changes to environmental legislation and regulations of which it is currently aware. Following delivery of this report, we will have no obligation to advise the Client of any such changes, or of their repercussions.

h) Terragen Environmental Consultants Limited acknowledges that it is being retained, in part, because of its knowledge and experience with respect to environmental matters. Terragen Environmental Consultants Limited will consider and analyse all information provided to it in the context of our knowledge and experience and all other relevant information known to us. To the extent that the information provided to us is not inconsistent or incompatible therewith, Terragen Environmental Consultants Limited shall be entitled to rely upon and assume, without independent verification, the accuracy and completeness of such information.

i) The content of this report represents the professional opinion of experienced environmental consultants. Terragen Environmental Consultants Limited does not provide specialist legal advice and the advice of lawyers may be required.

j) In the Summary and Recommendations sections of this report, Terragen Environmental Consultants Limited has set out our key findings and provided a summary and overview of our advice, opinions and recommendations. However, other parts of this report will often indicate the limitations of the information obtained by Terragen Environmental Consultants Limited and therefore any advice, opinions or recommendations set out in the Executive Summary, Summary and Recommendations sections ought not to be relied upon unless they are considered in the context of the whole report.

k) The lack of evidence of the presence of hazardous or harmful materials at the subject property does not guarantee the absence of such materials; rather it indicates only that none were found as a result of the services provided. The services described in this report were performed in accordance with the general practices and procedures accepted in the consulting field.

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Appendix A Laboratory Test Reports.

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Analytical Report Number : 22-12326

Project / Site name:	Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU	**Samples received on:**	09/12/2022
Your job number:	TJ3885D02	**Samples instructed on/ Analysis started on:**	09/12/2022
Your order number:	TJ3885D02	**Analysis completed by:**	09/01/2023
Report Issue Number:	1	**Report issued on:**	09/01/2023
Samples Analysed:	1 soil sample		

Signed:

Elżbieta Suchy
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

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
asbestos	- 6 months from reporting

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

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 22-12326
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU
Your Order No: TJ3885D02

Lab Sample Number				2527459
Sample Reference				6F5-0912-01
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				09/12/2022
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	8.5
Total mass of sample received	kg	0.001	NONE	1.5

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	SZS

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	11.8
Total Cyanide	mg/kg	1	MCERTS	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	4300
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	98
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.049
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	49.2
Sulphide	mg/kg	1	MCERTS	130
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.4

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0

Speciated PAHs*

Naphthalene	mg/kg	0.05	NONE	0.14
Acenaphthylene	mg/kg	0.05	NONE	< 0.05
Acenaphthene	mg/kg	0.05	NONE	0.06
Fluorene	mg/kg	0.05	NONE	0.08
Phenanthrene	mg/kg	0.05	NONE	0.59
Anthracene	mg/kg	0.05	NONE	0.16
Fluoranthene	mg/kg	0.05	NONE	0.98
Pyrene	mg/kg	0.05	NONE	0.82
Benzo(a)anthracene	mg/kg	0.05	NONE	0.41
Chrysene	mg/kg	0.05	NONE	0.4
Benzo(b)fluoranthene	mg/kg	0.05	NONE	0.38
Benzo(k)fluoranthene	mg/kg	0.05	NONE	0.3
Benzo(a)pyrene	mg/kg	0.05	NONE	0.35
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	0.22
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	0.07
Benzo(ghi)perylene	mg/kg	0.05	NONE	0.27
Coronene	mg/kg	0.05	NONE	< 0.05

Total PAH*

Total WAC-17 PAHs	mg/kg	0.85	NONE	5.23

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 22-12326
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU
Your Order No: TJ3885D02

Lab Sample Number				2527459
Sample Reference				6F5-0912-01
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				09/12/2022
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Heavy Metals / Metalloids				
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	2.7
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11
Barium (aqua regia extractable)	mg/kg	1	MCERTS	110
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.72
Boron (water soluble)	mg/kg	0.2	MCERTS	0.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	20
Copper (aqua regia extractable)	mg/kg	1	MCERTS	33
Lead (aqua regia extractable)	mg/kg	1	MCERTS	56
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	1.1
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	14
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	32
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	84
Petroleum Hydrocarbons				
TPH C10 - C40 $_{EH\_CU\_1D\_TOTAL}$	mg/kg	10	MCERTS	16

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

*Data reported unaccredited due to quality control parameter failure associated with this result; other checks applied prior to reporting the data have been accepted and the failure justified as having no significant impact on sample data reported.

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 22-12326
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU

* 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 loam (MCERTS) 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 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2527459	6F5-0912-01	None Supplied	None Supplied	Brown sandy loam with concrete.

Analytical Report Number : 22-12326
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated WAC-17 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	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE

Analytical Report Number : 22-12326
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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Analytical Report Number : 22-12330

Project / Site name:	Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE	**Samples received on:**	09/12/2022
Your job number:	TJ3885D01	**Samples instructed on/ Analysis started on:**	09/12/2022
Your order number:	TJ3885D01	**Analysis completed by:**	02/01/2023
Report Issue Number:	1	**Report issued on:**	03/01/2023
Samples Analysed:	3 soil samples		

Signed:

Elżbieta Suchy
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

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
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 22-12330
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE
Your Order No: TJ3885D01

Lab Sample Number				2527474	2527475	2527476
Sample Reference				MG/0912/01	MG/0912/02	MG/0912/03
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				09/12/2022	09/12/2022	09/12/2022
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	31
Moisture Content	%	0.01	NONE	13	12	16
Total mass of sample received	kg	0.001	NONE	1.6	1.6	1.6
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	SCA	SCA	SCA
General Inorganics						
pH - Automated	pH Units	N/A	MCERTS	11.1	11.2	11.2
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	3000	3400	3100
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	610	740	590
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.3	0.37	0.3
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	303	369	295
Sulphide	mg/kg	1	MCERTS	190	140	220
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.5	0.6	0.7
Total Phenols						
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Speciated PAHs						
Naphthalene	mg/kg	0.05	MCERTS	0.08	0.12	0.08
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	0.09	0.14	0.08
Phenanthrene	mg/kg	0.05	MCERTS	0.72	1.1	0.51
Anthracene	mg/kg	0.05	MCERTS	0.14	0.23	0.13
Fluoranthene	mg/kg	0.05	MCERTS	0.94	1.4	0.82
Pyrene	mg/kg	0.05	MCERTS	0.84	1.3	0.74
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.42	0.76	0.38
Chrysene	mg/kg	0.05	MCERTS	0.48	0.67	0.34
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.49	0.72	0.4
Benzo(k)fluoranthene*	mg/kg	0.05	NONE	0.26	0.42	0.22
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.43	0.65	0.36
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.23	0.37	0.26
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.06	0.09	0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.31	0.43	0.28
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Total PAH						
Total WAC-17 PAHs	mg/kg	0.85	NONE	5.49	8.4	4.65

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 22-12330
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE
Your Order No: TJ3885D01

Lab Sample Number				2527474	2527475	2527476
Sample Reference				MG/0912/01	MG/0912/02	MG/0912/03
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				09/12/2022	09/12/2022	09/12/2022
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Heavy Metals / Metalloids						
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	< 1.0	2.5	2.9
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	10	10	9.2
Barium (aqua regia extractable)	mg/kg	1	MCERTS	130	130	130
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.79	0.7	0.77
Boron (water soluble)	mg/kg	0.2	MCERTS	0.6	0.6	0.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	22	19	17
Copper (aqua regia extractable)	mg/kg	1	MCERTS	29	30	28
Lead (aqua regia extractable)	mg/kg	1	MCERTS	61	62	79
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	1.1	0.96	0.84
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	17	16	13
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	35	32	29
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	73	96	68
Petroleum Hydrocarbons*						
TPH C10 - C40 EH_CU_1D_TOTAL	mg/kg	10	NONE	38	40	41

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

*Data reported unaccredited due to quality control parameter failure associated with this result; other checks applied prior to reporting the data have been accepted and the failure justified as having no significant impact on sample data reported.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 22-12330
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE

* 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 loam (MCERTS) 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 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2527474	MG/0912/01	None Supplied	None Supplied	Brown clay and sand with gravel and vegetation.
2527475	MG/0912/02	None Supplied	None Supplied	Brown clay and sand with gravel and vegetation.
2527476	MG/0912/03	None Supplied	None Supplied	Brown clay and sand with gravel and stones.

Analytical Report Number : 22-12330
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated WAC-17 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
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 22-12330
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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5th January 2023

FAO: Frank Everett

Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU

Waste Classification Report

Please find attached the results of laboratory testing carried out on three samples of soil recovered from Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU (the site) by a geo-environmental engineer from Terragen Environmental Consultants Limited (TGEN) on 14/12/2022. The samples represent soil and stones being generated from enabling works excavations and piling and will be excess to requirements and need to be removed from site.

1.0 WASTE CLASSIFICATION

One of the relevant objectives of the Revised Waste Framework (WFD) Directive (2018/851/EC) is to ensure that waste is recovered or disposed without endangering human health and without using processes or methods which could harm the environment, and without:

- Risk to water, air, soil, plants, or animals.
- Causing nuisance through noise or odours.
- Adversely affecting the countryside or places of special interest.

It also provides the general framework of waste management requirements and sets the basic EU waste management definitions. The List of Waste (LoW) Amendment Decision (2014/955/EU) establishes the classification system, including the distinction between hazardous and non-hazardous wastes. It is closely linked to the main characteristics that render waste hazardous as contained in Annex III of the WFD. The amendments came into force to align waste classification with relevant sections of and approaches used in EU chemicals regulations, such as REACH (1907/2006/EC) and the CLP (1272/2008/EC), which in turn adapt for the EU the UN globally harmonised system for chemicals classification. In 2020 and 2021, GB and the UK introduced its own set of waste classification regulations, such as the CLP, REACH and the mandatory classification and labelling list, which retain, mirror and/or replace relevant EU regulations.

Waste is not considered to be a substance, a mixture or an article. Consequently, obligations under the REACH and the CLP regulations do not apply for producers or holders of waste. Nevertheless, information generated in the frameworks of REACH and the CLP that set criteria for substances to be classified as hazardous are related to some of the hazardous properties applicable to the classification of waste. Annex VI of the CLP contains official harmonised classifications of substances, which must be used where the classification of waste depends on the presence of hazardous substances. The classification of substances is periodically updated by the European Chemicals Agency in the form of a new EU regulation, which automatically amends the CLP.

The Landfill Directive (1999/31/EC) defines the categories of waste applicable to landfill sites as hazardous, non-hazardous, municipal and inert. A landfill is defined as a waste disposal site for the deposit of waste onto or into land. Landfills are divided into three classes:

- Landfills for hazardous waste.
- Landfills for non-hazardous waste.
- Landfills for inert waste.

The three main categories of waste and the options for landfilling are as follows:

- Hazardous with or without additional treatment prior to landfill or stable non-reactive hazardous waste (SNRHW) suitable for placement in a dedicated cell in a suitably permitted non-hazardous landfill site.
- Non-hazardous.
- Inert and suitable for disposal to an appropriately permitted landfill site.

To determine the presence and significance of hazards associated with any construction, demolition and earthworks (CD&E) arisings and therefore the resultant options for management of the materials, and where necessary the appropriate class of facility the waste can be taken to, it is therefore necessary to:

- Determine the presence of hazardous properties within the materials.
- Determine the category of the waste.
- Determine if the waste meets the requirements for reuse onsite, recovery or recycling on or offsite, or disposal offsite as waste.

The main statutory guidance document used to properly classify waste as either hazardous or non-hazardous in the UK is Guidance on the Classification and Assessment of Waste (WM3). The stepped methodology for classifying a waste and assessing any hazardous properties is as follows:

- Check if the waste needs to be classified.
- Identify the code that may apply to the waste.
- Identify the assessment required to select the correct code.
- Determine the chemical composition of the waste.
- Determine if the substances in the waste are hazardous substances or persistent organic pollutants.
- Assess the hazardous properties of the waste.
- Assign and describe the classification code.

The waste types disposed to a landfill site permitted to accept inert waste or recovered at a site permitted or exempted in accordance with UK regulations and statutory guidance should be classified as inert. No hazardous or contaminated wastes, as defined in the Waste Acceptance Criteria (WAC) and Procedures Directive (2003/33/EC), should be accepted at such sites. The source and origin of the waste along with a description (e.g. physical form, consistency, composition, colour, odour and likely behaviour etc.) should be determined for all material accepted at such inert waste facilities. The materials should be stable, non-reactive and with a sufficient bearing capacity for the end use.

In accordance with the Landfill Directive and UK statutory guidance, the only materials allowed for disposal or recovery at such inert waste facilities without more detailed information (e.g. chemical analyses, site investigation data etc.) should be restricted to single source material from a known site and a reliable producer. The material from the site or source should not be contaminated and should not contain significant quantities of deleterious materials such as wood, plastic etc. Materials potentially suitable for recovery at such inert waste facilities without laboratory analysis should be restricted to the following:

LoW Code	Description	Restrictions
170101	Concrete	Selected CD&E waste only
170102	Bricks	Selected CD&E waste only
170103	Tiles & Ceramics	Selected CD&E waste only
170107	Mixture of Concrete, Bricks, Tiles & Ceramics	Selected CD&E waste only
170504	Soil & Stones (e.g. natural clay & sand etc.)	Selected CD&E waste not from contaminated sites*
200202	Soil & Stones (e.g. natural clay & sand etc.)	Selected garden & park waste only*

- *Excluding topsoil or peat when used as subsoil or fill.
- Selected CD&E or garden & park waste with low (non-significant) contents of other types of materials (i.e. metals, plastics, organics, wood, rubber etc.). The origin of the waste must be known and relevant information regarding the waste must have been assessed.
- No CD&E waste from buildings or land contaminated with dangerous substances (e.g. 170106 & 170503).
- No CD&E waste from buildings treated or painted with dangerous substances in significant amounts.
- These materials should only be accepted if they arise from a single identified source.
- Mixtures of different types of these wastes from the same single source are acceptable without testing.
- Mixtures of these wastes from different sources are not acceptable unless pre-testing is carried out.

If the waste materials were determined as hazardous or potentially inert and required disposal to landfill, then a further stage of assessment would be required to determine if the waste meets the requirements for disposal at a particular category of landfill facility. This is done in the form of WAC testing. It should be noted that the associated regulations and statutory guidance do not apply to the use of suitable uncontaminated waste for redevelopment, restoration and filling in work or for construction purposes, or for recovery activities.

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2.0 SITE DESCRIPTION

The Tottenham Hale Centre (THC) development consists of five different sites: Welbourne, North Island, Ferry Island, Ashley Road East and Ashley Road West. Prior to 1864, Ferry Island (Plot B) was predominantly residential with a pumping station occupying the E boundary. By 1936, the residential properties in the SW had been developed into a single building and the pumping station was no longer present. During the 1970s and 80s the site was cleared and a new road junction constructed in the SE corner of the site. More recently and prior to the current development Ferry Island has been occupied by three commercial units including KFC, Pizza Hut and Maplin, with associated car parking.

The proposed THC development essentially comprises the demolition of the existing structures and the construction of residential-led development with retail/business uses alongside; servicing, highways improvements and public amenity space including soft and hard landscaped areas creating an improved public realm.

We understand that as part of the development there will be a shallow reduced level excavation followed by placement of a pile mat, piling, pile cap excavations and a deep basement excavation, which will generate in total circa 26790m^3 of material for disposal from site as waste. It is likely that circa 7170m^3 (27%) of the arisings will be made ground of which circa 2870m^3 will be pile mat and hardstanding, and circa 19620m^3 (73%) will be uncontaminated and inert natural soil and pile arisings.

The anticipated geology at the Ferry Island site comprises made ground overlying superficial deposits of Enfield Silt and River Terrace Deposits. The London Clay is at depth and in the order of 15m thick, underlain by the Lambeth Group, Thanet Sand and White Chalk.

Two site investigation reports have been prepared by Langan International (ref. 841011101 dated 26/07/2018 and 04/11/2021) on behalf of Whitby Wood, which comprised the progression of thirteen exploratory holes. The strata encountered confirmed the anticipated geology and comprised made ground, on average circa 1.7m thick, typically containing only a small quantity of deleterious materials, such as fragments of clinker and tarmac, with no visual or olfactory evidence of significant contamination. Asbestos containing material was not visible during the previous site investigation but it was detected at low concentrations in three samples of made ground tested. The made ground overlies natural and uncontaminated (inert) Enfield Silt, Kempton Park Gravel and London Clay.

During the previous investigations thirty-five samples were taken from the thirteen exploratory hole locations to depths of up to 6.2mbgl representing circa 26790m^3 of enabling works excavations at the site.

3.0 SITE SAMPLING

A geo-environmental engineer from TGEN visited the site on 14/12/2022 to assess the nature of the strata encountered. This included:

- A physical description of the arisings in accordance with relevant AGS and BSI standards.
- An assessment of visual and olfactory evidence of contamination.
- The recovery of representative samples.
- The submission of samples to a UKAS/MCERTS accredited laboratory for analysis.

During the visit, routine reassurance samples of materials were recovered and included the following:

- Three samples of soil and stones from a stockpile of piling arisings (MG).

4.0 MATERIALS ASSESSMENT

In accordance with the LoW (as amended), the CD&E arisings encountered during this sampling exercise are mirror entries with a mirror hazardous (MH) entry and a mirror non-hazardous (MN) entry as follows:

- Soil and stones containing dangerous substances (LoW Code 170503*) – MH.
- Soil and stones not containing dangerous substances (LoW Code 170504) - MN.

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4.1 Physical Appearance of the Waste

Piling Arisings (MG)

Sampling Date	Reference	Physical Description	Photograph
14/12/2022	MG/1412/01 MG/1412/02 MG/1412/03	Brown, slightly sandy, silty, clay with rare/incidental fragments of brick and concrete. There was no significant odour and the PID reading was <1ppm. No asbestos was seen during the sampling and there was no visual or olfactory evidence of contamination. Based on the physical description, the made ground arisings could be described as: Soil and stones not containing dangerous substances (LoW Code 170504) - MN.	

4.2 Chemical Nature of the Waste

The samples were subjected to a programme of laboratory testing, which included an asbestos screen and a suite of potential contaminants associated with a wide range of potential activities to confirm the preliminary waste classification based on the physical description of the material sampled. The laboratory test reports are presented in Appendix A, which can be summarised as follows.

Made Ground Arisings (MG)

Ref	Chemical Summary		Waste Classification
	Asbestos	Solid	LoW Code
MG/1412/01	NAD	No significant contamination	170504
MG/1412/02	NAD	No significant contamination	170504
MG/1412/03	NAD	No significant contamination	170504

NAD No asbestos observed during sample preparation or detected in the sample.

5.0 SUMMARY

No asbestos was observed during the sampling and none was detected in the samples, which all returned low concentrations of potential contaminants. As such, the material represented by the samples (piling arisings) would be classified as:

- **Soil and stones not containing hazardous substances (LoW Code 170504).**

In addition, material represented by the samples can be described for waste disposal purposes as follows:

- *MG/1412/01* *No significant contamination (Uncontaminated waste).*
- *MG/1412/02* *No significant contamination (Uncontaminated waste).*
- *MG/1412/03* *No significant contamination (Uncontaminated waste).*

Furthermore, the predominantly natural ground with only incidental inclusions of brick and concrete may also be considered suitable for reuse on a development site in line with a materials management plan in accordance with the CL:AIRE Definition of Waste: Development Industry Code of Practice (DoWCoP).

We would recommend that during any excavation associated with future phases of the development, should materials previously unidentified during the various investigations be encountered (e.g. an unusual appearance and/or odour etc.), works are halted in that area and the advice of a geo-environmental specialist be sought to determine an appropriate course of action. We would also advise you to employ routine waste practices when managing the disposal of the waste material (i.e. visual and olfactory inspections of all loads leaving the site) to ensure that the material remains consistent and suitable for recovery or disposal at your chosen facility in accordance with level 1, level 2 and level 3 waste acceptance procedures.

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Please be aware that your duty of care paperwork now needs to include the following:

- The relevant UK SIC Code.
- A declaration that you have fulfilled your duty to apply the waste hierarchy.
- The relevant LoW Code.

We trust that this report meets your requirements, but please contact us should you require clarification on any of the matters raised. Thank you for your custom and we hope that we can be of further assistance to you in the future.

Paul Brewer
BSc (Hons), MSc, MI Soil Sci
Senior Environmental Consultant

Dr. Barry Powell
BSc (Hons), PhD, MCIWM
Principal Consultant

(for and on behalf of Terragen Environmental Consultants Limited)

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6.0 LIMITATIONS AND USE OF THE REPORT

IMPORTANT: This section should be read before reliance is placed on any of the opinions, advice, recommendations or conclusions set out in this report.

a) This report has been prepared for the purpose of providing interpretation on analytical results supplied by the Client pursuant to its appointment of Terragen Environmental Consultants Limited to act as a Consultant.

b) These comments are given in good faith on the basis of the results provided. Terragen Environmental Consultants Limited can bear no responsibility for any inaccuracies that may arise from the laboratory testing.

c) This report does not constitute a qualitative risk assessment of the site or the soils and is not based upon a conceptual site model as we have been provided with insufficient information to establish the existence of potential sources of contamination, plausible pathways, or sensitive receptors and therefore assumes that they exist.

d) The report is unable to comment on the potential risks to controlled waters (groundwater or surface water), although where contaminant concentrations are below relevant threshold criteria in most circumstances it may be considered that the risk is low.

e) We have assumed that the results are representative of the area sampled. This does not imply that they may be considered representative of the site itself. Terragen Environmental Consultants Limited can accept no responsibility for the integrity of the sampling regime.

f) Save for the Client no duty is undertaken or warranty or representation made to any party in respect of the opinions, advice, recommendations or conclusions herein set out.

g) All work carried out in preparing this report has used, and is based upon, our professional knowledge and understanding of the current relevant English and European Community standards, approved codes of practice, technology and legislation.
Changes in the above may cause the opinion, advice, recommendations or conclusions set out in this report to become inappropriate or incorrect. However, in giving its opinions, advice, recommendations and conclusions, Terragen Environmental Consultants Limited has considered pending changes to environmental legislation and regulations of which it is currently aware. Following delivery of this report, we will have no obligation to advise the Client of any such changes, or of their repercussions.

h) Terragen Environmental Consultants Limited acknowledges that it is being retained, in part, because of its knowledge and experience with respect to environmental matters. Terragen Environmental Consultants Limited will consider and analyse all information provided to it in the context of our knowledge and experience and all other relevant information known to us. To the extent that the information provided to us is not inconsistent or incompatible therewith, Terragen Environmental Consultants Limited shall be entitled to rely upon and assume, without independent verification, the accuracy and completeness of such information.

i) The content of this report represents the professional opinion of experienced environmental consultants. Terragen Environmental Consultants Limited does not provide specialist legal advice and the advice of lawyers may be required.

j) In the Summary and Recommendations sections of this report, Terragen Environmental Consultants Limited has set out our key findings and provided a summary and overview of our advice, opinions and recommendations. However, other parts of this report will often indicate the limitations of the information obtained by Terragen Environmental Consultants Limited and therefore any advice, opinions or recommendations set out in the Executive Summary, Summary and Recommendations sections ought not to be relied upon unless they are considered in the context of the whole report.

k) The lack of evidence of the presence of hazardous or harmful materials at the subject property does not guarantee the absence of such materials; rather it indicates only that none were found as a result of the services provided. The services described in this report were performed in accordance with the general practices and procedures accepted in the consulting field.

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Appendix A Laboratory Test Reports.

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Analytical Report Number : 22-13103

Project / Site name:	Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU	**Samples received on:**	14/12/2022
Your job number:	TJ3885D03	**Samples instructed on/ Analysis started on:**	14/12/2022
Your order number:	TJ3885D03	**Analysis completed by:**	29/12/2022
Report Issue Number:	1	**Report issued on:**	29/12/2022
Samples Analysed:	3 soil samples		

Signed:

Elżbieta Suchy
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

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
asbestos	- 6 months from reporting

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

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 22-13103
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU
Your Order No: TJ3885D03

Lab Sample Number				2532332	2532333	2532334
Sample Reference				MG/1412/01	MG/1412/02	MG/1412/03
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				14/12/2022	14/12/2022	14/12/2022
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	80
Moisture Content	%	0.01	NONE	9.9	12	6.2
Total mass of sample received	kg	0.001	NONE	1.6	1.6	1.6
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	ASE	ASE	ASE
General Inorganics						
pH - Automated	pH Units	N/A	MCERTS	10.5	10.8	11.3
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	1100	880	1800
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	520	310	280
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.26	0.15	0.14
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	260	154	141
Sulphide	mg/kg	1	MCERTS	260	230	170
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.2	0.4	0.2
Total Phenols						
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Speciated PAHs						
Naphthalene	mg/kg	0.05	MCERTS	0.41	0.35	0.29
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.12	0.17	0.19
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.15	0.32	0.17
Pyrene	mg/kg	0.05	MCERTS	0.13	0.26	0.15
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.07	0.18	0.08
Chrysene	mg/kg	0.05	MCERTS	0.06	0.15	0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.08	0.14	0.07
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.09	0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.1	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.07	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.09	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Total PAH						
Total WAC-17 PAHs	mg/kg	0.85	NONE	1.02	1.92	1.05

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 22-13103
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU
Your Order No: TJ3885D03

Lab Sample Number				2532332	2532333	2532334
Sample Reference				MG/1412/01	MG/1412/02	MG/1412/03
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				14/12/2022	14/12/2022	14/12/2022
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Heavy Metals / Metalloids						
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11	11	6.9
Barium (aqua regia extractable)	mg/kg	1	MCERTS	85	86	47
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.72	0.72	0.48
Boron (water soluble)	mg/kg	0.2	MCERTS	0.9	0.8	1.1
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	17	16	11
Copper (aqua regia extractable)	mg/kg	1	MCERTS	11	11	6.9
Lead (aqua regia extractable)	mg/kg	1	MCERTS	14	16	10
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.37	0.46	0.36
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	14	16	10
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	29	31	20
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	31	33	21
Petroleum Hydrocarbons						
TPH C10 - C40 $_{EH\_CU\_1D\_TOTAL}$	mg/kg	10	MCERTS	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 22-13103
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU

* 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 loam (MCERTS) 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 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2532332	MG/1412/01	None Supplied	None Supplied	Light brown clay and sand with gravel.
2532333	MG/1412/02	None Supplied	None Supplied	Brown clay and sand with gravel.
2532334	MG/1412/03	None Supplied	None Supplied	Brown clay with gravel and stones.

Analytical Report Number : 22-13103
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated WAC-17 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
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE

Analytical Report Number : 22-13103
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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10th January 2023

FAO: Frank Everett

Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU

Waste Classification Report

Please find attached the results of laboratory testing carried out on three samples of soil and one sample of imported aggregate recovered from Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU (the site) by a geo-environmental engineer from Terragen Environmental Consultants Limited (TGEN) on 21/12/2022. The samples represent soil and stones being generated from enabling works excavations and piling and will be excess to requirements and need to be removed from site and aggregate being imported to site for placement as part of a pile mat.

1.0 WASTE CLASSIFICATION

One of the relevant objectives of the Revised Waste Framework (WFD) Directive (2018/851/EC) is to ensure that waste is recovered or disposed without endangering human health and without using processes or methods which could harm the environment, and without:

- Risk to water, air, soil, plants, or animals.
- Causing nuisance through noise or odours.
- Adversely affecting the countryside or places of special interest.

It also provides the general framework of waste management requirements and sets the basic EU waste management definitions. The List of Waste (LoW) Amendment Decision (2014/955/EU) establishes the classification system, including the distinction between hazardous and non-hazardous wastes. It is closely linked to the main characteristics that render waste hazardous as contained in Annex III of the WFD. The amendments came into force to align waste classification with relevant sections of and approaches used in EU chemicals regulations, such as REACH (1907/2006/EC) and the CLP (1272/2008/EC), which in turn adapt for the EU the UN globally harmonised system for chemicals classification. In 2020 and 2021, GB and the UK introduced its own set of waste classification regulations, such as the CLP, REACH and the mandatory classification and labelling list, which retain, mirror and/or replace relevant EU regulations.

Waste is not considered to be a substance, a mixture or an article. Consequently, obligations under the REACH and the CLP regulations do not apply for producers or holders of waste. Nevertheless, information generated in the frameworks of REACH and the CLP that set criteria for substances to be classified as hazardous are related to some of the hazardous properties applicable to the classification of waste. Annex VI of the CLP contains official harmonised classifications of substances, which must be used where the classification of waste depends on the presence of hazardous substances. The classification of substances is periodically updated by the European Chemicals Agency in the form of a new EU regulation, which automatically amends the CLP.

The Landfill Directive (1999/31/EC) defines the categories of waste applicable to landfill sites as hazardous, non-hazardous, municipal and inert. A landfill is defined as a waste disposal site for the deposit of waste onto or into land. Landfills are divided into three classes:

- Landfills for hazardous waste.
- Landfills for non-hazardous waste.
- Landfills for inert waste.

The three main categories of waste and the options for landfilling are as follows:

- Hazardous with or without additional treatment prior to landfill or stable non-reactive hazardous waste (SNRHW) suitable for placement in a dedicated cell in a suitably permitted non-hazardous landfill site.
- Non-hazardous.
- Inert and suitable for disposal to an appropriately permitted landfill site.

To determine the presence and significance of hazards associated with any construction, demolition and earthworks (CD&E) arisings and therefore the resultant options for management of the materials, and where necessary the appropriate class of facility the waste can be taken to, it is therefore necessary to:

- Determine the presence of hazardous properties within the materials.
- Determine the category of the waste.
- Determine if the waste meets the requirements for reuse onsite, recovery or recycling on or offsite, or disposal offsite as waste.

The main statutory guidance document used to properly classify waste as either hazardous or non-hazardous in the UK is Guidance on the Classification and Assessment of Waste (WM3). The stepped methodology for classifying a waste and assessing any hazardous properties is as follows:

- Check if the waste needs to be classified.
- Identify the code that may apply to the waste.
- Identify the assessment required to select the correct code.
- Determine the chemical composition of the waste.
- Determine if the substances in the waste are hazardous substances or persistent organic pollutants.
- Assess the hazardous properties of the waste.
- Assign and describe the classification code.

The waste types disposed to a landfill site permitted to accept inert waste or recovered at a site permitted or exempted in accordance with UK regulations and statutory guidance should be classified as inert. No hazardous or contaminated wastes, as defined in the Waste Acceptance Criteria (WAC) and Procedures Directive (2003/33/EC), should be accepted at such sites. The source and origin of the waste along with a description (e.g. physical form, consistency, composition, colour, odour and likely behaviour etc.) should be determined for all material accepted at such inert waste facilities. The materials should be stable, non-reactive and with a sufficient bearing capacity for the end use.

In accordance with the Landfill Directive and UK statutory guidance, the only materials allowed for disposal or recovery at such inert waste facilities without more detailed information (e.g. chemical analyses, site investigation data etc.) should be restricted to single source material from a known site and a reliable producer. The material from the site or source should not be contaminated and should not contain significant quantities of deleterious materials such as wood, plastic etc. Materials potentially suitable for recovery at such inert waste facilities without laboratory analysis should be restricted to the following:

LoW Code	Description	Restrictions
170101	Concrete	Selected CD&E waste only
170102	Bricks	Selected CD&E waste only
170103	Tiles & Ceramics	Selected CD&E waste only
170107	Mixture of Concrete, Bricks, Tiles & Ceramics	Selected CD&E waste only
170504	Soil & Stones (e.g. natural clay & sand etc.)	Selected CD&E waste not from contaminated sites*
200202	Soil & Stones (e.g. natural clay & sand etc.)	Selected garden & park waste only*

- *Excluding topsoil or peat when used as subsoil or fill.
- Selected CD&E or garden & park waste with low (non-significant) contents of other types of materials (i.e. metals, plastics, organics, wood, rubber etc.). The origin of the waste must be known and relevant information regarding the waste must have been assessed.
- No CD&E waste from buildings or land contaminated with dangerous substances (e.g. 170106 & 170503).
- No CD&E waste from buildings treated or painted with dangerous substances in significant amounts.
- These materials should only be accepted if they arise from a single identified source.
- Mixtures of different types of these wastes from the same single source are acceptable without testing.
- Mixtures of these wastes from different sources are not acceptable unless pre-testing is carried out.

If the waste materials were determined as hazardous or potentially inert and required disposal to landfill, then a further stage of assessment would be required to determine if the waste meets the requirements for disposal at a particular category of landfill facility. This is done in the form of WAC testing. It should be noted that the associated regulations and statutory guidance do not apply to the use of suitable uncontaminated waste for redevelopment, restoration and filling in work or for construction purposes, or for recovery activities.

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2.0 SITE DESCRIPTION

The Tottenham Hale Centre (THC) development consists of five different sites: Welbourne, North Island, Ferry Island, Ashley Road East and Ashley Road West. Prior to 1864, Ferry Island (Plot B) was predominantly residential with a pumping station occupying the E boundary. By 1936, the residential properties in the SW had been developed into a single building and the pumping station was no longer present. During the 1970s and 80s the site was cleared and a new road junction constructed in the SE corner of the site. More recently and prior to the current development Ferry Island has been occupied by three commercial units including KFC, Pizza Hut and Maplin, with associated car parking.

The proposed THC development essentially comprises the demolition of the existing structures and the construction of residential-led development with retail/business uses alongside; servicing, highways improvements and public amenity space including soft and hard landscaped areas creating an improved public realm.

We understand that as part of the development there will be a shallow reduced level excavation followed by placement of a pile mat, piling, pile cap excavations and a deep basement excavation, which will generate in total circa 26790m^3 of material for disposal from site as waste. It is likely that circa 7170m^3 (27%) of the arisings will be made ground of which circa 2870m^3 will be pile mat and hardstanding, and circa 19620m^3 (73%) will be uncontaminated and inert natural soil and pile arisings.

The anticipated geology at the Ferry Island site comprises made ground overlying superficial deposits of Enfield Silt and River Terrace Deposits. The London Clay is at depth and in the order of 15m thick, underlain by the Lambeth Group, Thanet Sand and White Chalk.

Two site investigation reports have been prepared by Langan International (ref. 841011101 dated 26/07/2018 and 04/11/2021) on behalf of Whitby Wood, which comprised the progression of thirteen exploratory holes. The strata encountered confirmed the anticipated geology and comprised made ground, on average circa 1.7m thick, typically containing only a small quantity of deleterious materials, such as fragments of clinker and tarmac, with no visual or olfactory evidence of significant contamination. Asbestos containing material was not visible during the previous site investigation but it was detected at low concentrations in three samples of made ground tested. The made ground overlies natural and uncontaminated (inert) Enfield Silt, Kempton Park Gravel and London Clay.

During the previous investigations thirty-five samples were taken from the thirteen exploratory hole locations to depths of up to 6.2mbgl representing circa 26790m^3 of enabling works excavations at the site.

3.0 SITE SAMPLING

A geo-environmental engineer from TGEN visited the site on 21/12/2022 to assess the nature of the strata encountered. This included:

- A physical description of the arisings in accordance with relevant AGS and BSI standards.
- An assessment of visual and olfactory evidence of contamination.
- The recovery of representative samples.
- The submission of samples to a UKAS/MCERTS accredited laboratory for analysis.

During the visit, routine reassurance samples of materials were recovered and included the following:

- Three samples of soil and stones from a stockpile of piling arisings (NAT).
- One sample of imported aggregate (6F5).

4.0 MATERIALS ASSESSMENT

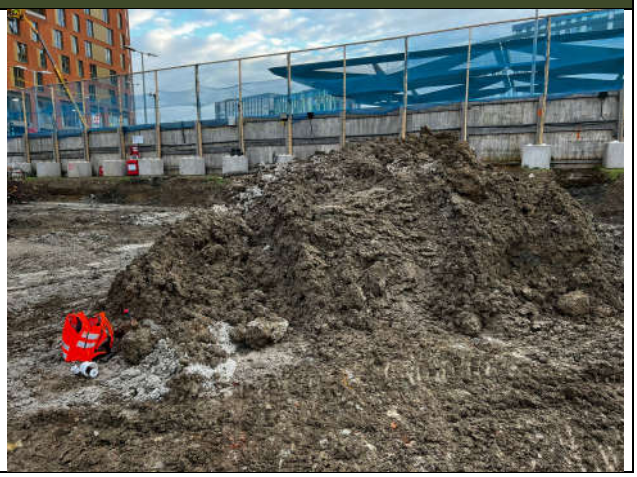
In accordance with the LoW (as amended), the CD&E arisings encountered during this sampling exercise are mirror entries with a mirror hazardous (MH) entry and a mirror non-hazardous (MN) entry as follows:

- Soil and stones containing dangerous substances (LoW Code 170503*) – MH.
- Soil and stones not containing dangerous substances (LoW Code 170504) - MN.

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4.1 Physical Appearance of the Waste

Piling Arisings (NAT)

Sampling Date	Reference	Physical Description	Photograph
21/12/2022	NAT/2112/01 NAT/2112/02 NAT/2112/03	Grey/ brown, slightly sandy, silty, clay with rare/incidental fragments of brick and concrete. There was no significant odour and the PID reading was <1ppm. No asbestos was seen during the sampling and there was no visual or olfactory evidence of contamination. Based on the physical description, the made ground arisings could be described as: Soil and stones not containing dangerous substances (LoW Code 170504) - MN.	

Imported Aggregate (6F5)

Sampling Date	Reference	Physical Description	Photograph
21/12/2022	6F5/2112/01	Grey/brown, sandy gravel of concrete and brick. There was no significant odour and the PID reading was <1ppm. No asbestos was seen during the sampling and there was no visual or olfactory evidence of contamination.	

4.2 Chemical Nature of the Waste

The samples were subjected to a programme of laboratory testing, which included an asbestos screen and a suite of potential contaminants associated with a wide range of potential activities to confirm the preliminary waste classification based on the physical description of the material sampled. The laboratory test reports are presented in Appendix A, which can be summarised as follows.

Piling Arisings (NAT)

Ref	Chemical Summary		Waste Classification
	Asbestos	Solid	LoW Code
NAT/2112/01	NAD	No significant contamination	170504
NAT/2112/02	NAD	No significant contamination	170504
NAT/2112/03	NAD	No significant contamination	170504

NAD No asbestos observed during sample preparation or detected in the sample.

Imported Aggregate (6F5)

Ref	Chemical Summary		Waste Classification
	Asbestos	Solid	LoW Code
6F5/2112/01	NAD	No significant contamination	n/a

NAD No asbestos observed during sample preparation or detected in the sample.

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5.0 SUMMARY

No asbestos was observed during the sampling and none was detected in the samples, which all returned low concentrations of potential contaminants.

The sample of imported aggregate did return an elevated pH, but this is considered to be due to the presence of alkaline construction materials (e.g., concrete) in the sample that are crushed during sample preparation rather than the presence of other corrosive materials.

The material represented by the samples (piling arisings) would be classified as:

- **Soil and stones not containing hazardous substances (LoW Code 170504).**

In addition, material represented by the samples can be described for waste disposal purposes as follows:

- *NAT/2112/01* *No significant contamination (Uncontaminated waste).*
- *NAT/2112/02* *No significant contamination (Uncontaminated waste).*
- *NAT/2112/03* *No significant contamination (Uncontaminated waste).*

Furthermore, the predominantly natural ground with only incidental inclusions of brick and concrete may also be considered suitable for reuse on a development site in line with a materials management plan in accordance with the CL:AIRE Definition of Waste: Development Industry Code of Practice (DoWCoP).

The imported aggregate was free from significant contamination.

We would recommend that during any excavation associated with future phases of the development, should materials previously unidentified during the various investigations be encountered (e.g. an unusual appearance and/or odour etc.), works are halted in that area and the advice of a geo-environmental specialist be sought to determine an appropriate course of action. We would also advise you to employ routine waste practices when managing the disposal of the waste material (i.e. visual and olfactory inspections of all loads leaving the site) to ensure that the material remains consistent and suitable for recovery or disposal at your chosen facility in accordance with level 1, level 2 and level 3 waste acceptance procedures. Please be aware that your duty of care paperwork now needs to include the following:

- The relevant UK SIC Code.
- A declaration that you have fulfilled your duty to apply the waste hierarchy.
- The relevant LoW Code.

*****

We trust that this report meets your requirements, but please contact us should you require clarification on any of the matters raised. Thank you for your custom and we hope that we can be of further assistance to you in the future.

Paul Brewer
BSc (Hons), MSc, MI Soil Sci
Senior Environmental Consultant

Dr. Barry Powell
BSc (Hons), PhD, MCIWM
Principal Consultant

(for and on behalf of Terragen Environmental Consultants Limited)

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6.0 LIMITATIONS AND USE OF THE REPORT

IMPORTANT: This section should be read before reliance is placed on any of the opinions, advice, recommendations or conclusions set out in this report.

a) This report has been prepared for the purpose of providing interpretation on analytical results supplied by the Client pursuant to its appointment of Terragen Environmental Consultants Limited to act as a Consultant.

b) These comments are given in good faith on the basis of the results provided. Terragen Environmental Consultants Limited can bear no responsibility for any inaccuracies that may arise from the laboratory testing.

c) This report does not constitute a qualitative risk assessment of the site or the soils and is not based upon a conceptual site model as we have been provided with insufficient information to establish the existence of potential sources of contamination, plausible pathways, or sensitive receptors and therefore assumes that they exist.

d) The report is unable to comment on the potential risks to controlled waters (groundwater or surface water), although where contaminant concentrations are below relevant threshold criteria in most circumstances it may be considered that the risk is low.

e) We have assumed that the results are representative of the area sampled. This does not imply that they may be considered representative of the site itself. Terragen Environmental Consultants Limited can accept no responsibility for the integrity of the sampling regime.

f) Save for the Client no duty is undertaken or warranty or representation made to any party in respect of the opinions, advice, recommendations or conclusions herein set out.

g) All work carried out in preparing this report has used, and is based upon, our professional knowledge and understanding of the current relevant English and European Community standards, approved codes of practice, technology and legislation.
Changes in the above may cause the opinion, advice, recommendations or conclusions set out in this report to become inappropriate or incorrect. However, in giving its opinions, advice, recommendations and conclusions, Terragen Environmental Consultants Limited has considered pending changes to environmental legislation and regulations of which it is currently aware. Following delivery of this report, we will have no obligation to advise the Client of any such changes, or of their repercussions.

h) Terragen Environmental Consultants Limited acknowledges that it is being retained, in part, because of its knowledge and experience with respect to environmental matters. Terragen Environmental Consultants Limited will consider and analyse all information provided to it in the context of our knowledge and experience and all other relevant information known to us. To the extent that the information provided to us is not inconsistent or incompatible therewith, Terragen Environmental Consultants Limited shall be entitled to rely upon and assume, without independent verification, the accuracy and completeness of such information.

i) The content of this report represents the professional opinion of experienced environmental consultants. Terragen Environmental Consultants Limited does not provide specialist legal advice and the advice of lawyers may be required.

j) In the Summary and Recommendations sections of this report, Terragen Environmental Consultants Limited has set out our key findings and provided a summary and overview of our advice, opinions and recommendations. However, other parts of this report will often indicate the limitations of the information obtained by Terragen Environmental Consultants Limited and therefore any advice, opinions or recommendations set out in the Executive Summary, Summary and Recommendations sections ought not to be relied upon unless they are considered in the context of the whole report.

k) The lack of evidence of the presence of hazardous or harmful materials at the subject property does not guarantee the absence of such materials; rather it indicates only that none were found as a result of the services provided. The services described in this report were performed in accordance with the general practices and procedures accepted in the consulting field.

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Appendix A Laboratory Test Reports.

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Analytical Report Number : 22-14411

Project / Site name:	Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE	**Samples received on:**	21/12/2022
Your job number:	TJ3885D05	**Samples instructed on/ Analysis started on:**	21/12/2022
Your order number:	TJ3885D05	**Analysis completed by:**	09/01/2023
Report Issue Number:	1	**Report issued on:**	09/01/2023
Samples Analysed:	3 soil samples		

Izabela Wójcik

Signed:

Izabela Wójcik
Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

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
asbestos - 6 months from reporting

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

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 22-14411
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE
Your Order No: TJ3885D05

Lab Sample Number				2540838	2540839	2540840
Sample Reference				NAT/2112/01	NAT/2112/02	NAT/2112/03
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				21/12/2022	21/12/2022	21/12/2022
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	%	0.01	NONE	13	15	14
Total mass of sample received	kg	0.001	NONE	1.2	1.2	1.2

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	KSZ	KSZ	KSZ

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	11.2	10.6	10.6
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	3500	3500	3600
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	780	1100	1100
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.39	0.55	0.56
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	391	555	557
Sulphide	mg/kg	1	MCERTS	280	230	400
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.4	0.3	0.4

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0

Speciated PAHs*

Naphthalene	mg/kg	0.05	NONE	0.65	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	NONE	0.26	< 0.05	0.09
Fluorene	mg/kg	0.05	NONE	0.25	0.06	0.08
Phenanthrene	mg/kg	0.05	NONE	1.5	0.41	0.56
Anthracene	mg/kg	0.05	NONE	0.41	0.09	0.16
Fluoranthene	mg/kg	0.05	NONE	1.6	0.63	0.85
Pyrene	mg/kg	0.05	NONE	1.6	0.6	0.79
Benzo(a)anthracene	mg/kg	0.05	NONE	0.73	0.27	0.35
Chrysene	mg/kg	0.05	NONE	0.53	0.22	0.27
Benzo(b)fluoranthene	mg/kg	0.05	NONE	0.71	0.25	0.36
Benzo(k)fluoranthene	mg/kg	0.05	NONE	0.2	0.16	0.15
Benzo(a)pyrene	mg/kg	0.05	NONE	0.5	0.19	0.25
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	0.23	0.15	0.17
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	NONE	0.27	0.16	0.16
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05

Total PAH*

Total WAC-17 PAHs	mg/kg	0.85	NONE	9.36	3.19	4.24

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Analytical Report Number: 22-14411
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE
Your Order No: TJ3885D05

Lab Sample Number				2540838	2540839	2540840
Sample Reference				NAT/2112/01	NAT/2112/02	NAT/2112/03
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				21/12/2022	21/12/2022	21/12/2022
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Heavy Metals / Metalloids						
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.7	7.7	7.6
Barium (aqua regia extractable)	mg/kg	1	MCERTS	120	160	120
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.77	0.81	0.83
Boron (water soluble)	mg/kg	0.2	MCERTS	2.3	2.7	1.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	18	17	16
Copper (aqua regia extractable)	mg/kg	1	MCERTS	17	19	19
Lead (aqua regia extractable)	mg/kg	1	MCERTS	33	32	30
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.69	0.67	0.67
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	12	12	12
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	31	32	29
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	55	50	49
Petroleum Hydrocarbons						
TPH C10 - C40 EH_CU_1D_TOTAL	mg/kg	10	MCERTS	26	23	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

*Data reported unaccredited due to quality control parameter failure associated with this result; other checks applied prior to reporting the data have been accepted and the failure justified as having no significant impact on sample data reported.

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 22-14411

Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE

* 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 loam (MCERTS) 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 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2540838	NAT/2112/01	None Supplied	None Supplied	Brown clay and sand with gravel.
2540839	NAT/2112/02	None Supplied	None Supplied	Brown clay and sand with gravel.
2540840	NAT/2112/03	None Supplied	None Supplied	Brown clay and sand with gravel.

Analytical Report Number : 22-14411
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated WAC-17 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	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 22-14411
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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Analytical Report Number : 22-14416

Project / Site name:	Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU	**Samples received on:**	21/12/2022
Your job number:	TJ3885D06	**Samples instructed on/ Analysis started on:**	21/12/2022
Your order number:	TJ3885D06	**Analysis completed by:**	09/01/2023
Report Issue Number:	1	**Report issued on:**	09/01/2023
Samples Analysed:	1 soil sample		

Signed:

Anna Goc
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

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
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 22-14416
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU
Your Order No: TJ3885D06

Lab Sample Number				2540848
Sample Reference				6F5/2112/01
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				21/12/2022
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Stone Content	%	0.1	NONE	44
Moisture Content	%	0.01	NONE	9
Total mass of sample received	kg	0.001	NONE	1.2

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	DSA

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	11.9
Total Cyanide	mg/kg	1	MCERTS	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	5500
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	130
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.066
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	66.2
Sulphide	mg/kg	1	MCERTS	230
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.4

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0

Speciated PAHs*

Naphthalene	mg/kg	0.05	NONE	< 0.05
Acenaphthylene	mg/kg	0.05	NONE	0.07
Acenaphthene	mg/kg	0.05	NONE	0.1
Fluorene	mg/kg	0.05	NONE	0.14
Phenanthrene	mg/kg	0.05	NONE	0.93
Anthracene	mg/kg	0.05	NONE	0.2
Fluoranthene	mg/kg	0.05	NONE	1.4
Pyrene	mg/kg	0.05	NONE	1.2
Benzo(a)anthracene	mg/kg	0.05	NONE	0.61
Chrysene	mg/kg	0.05	NONE	0.48
Benzo(b)fluoranthene	mg/kg	0.05	NONE	0.57
Benzo(k)fluoranthene	mg/kg	0.05	NONE	0.4
Benzo(a)pyrene	mg/kg	0.05	NONE	0.51
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	0.31
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	NONE	0.28
Coronene	mg/kg	0.05	NONE	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	7.26

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Analytical Report Number: 22-14416
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU
Your Order No: TJ3885D06

Lab Sample Number				2540848
Sample Reference				6F5/2112/01
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				21/12/2022
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Heavy Metals / Metalloids				
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	< 1.0
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	10
Barium (aqua regia extractable)	mg/kg	1	MCERTS	100
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.71
Boron (water soluble)	mg/kg	0.2	MCERTS	1.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	15
Copper (aqua regia extractable)	mg/kg	1	MCERTS	19
Lead (aqua regia extractable)	mg/kg	1	MCERTS	44
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.73
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	9.5
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	24
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	56
Petroleum Hydrocarbons				
TPH C10 - C40 EH_CU_1D_TOTAL	mg/kg	10	MCERTS	45

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

*Data reported unaccredited due to quality control parameter failure associated with this result; other checks applied prior to reporting the data have been accepted and the failure justified as having no significant impact on sample data reported.

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Analytical Report Number : 22-14416

Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU

* 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 loam (MCERTS) 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 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2540848	6F5/2112/01	None Supplied	None Supplied	Brown clay and sand with gravel and stones.

Analytical Report Number : 22-14416
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated WAC-17 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	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 22-14416
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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25th January 2023

FAO: Frank Everett

Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU

Waste Classification Report

Please find attached the results of laboratory testing carried out on two samples of soil recovered from Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU (the site) by a geo-environmental engineer from Terragen Environmental Consultants Limited (TGEN) on 04/01/2023. The samples represent soil and stones being generated from enabling works excavations and piling and will be excess to requirements and need to be removed from site.

1.0 WASTE CLASSIFICATION

One of the relevant objectives of the Revised Waste Framework (WFD) Directive (2018/851/EC) is to ensure that waste is recovered or disposed without endangering human health and without using processes or methods which could harm the environment, and without:

- Risk to water, air, soil, plants, or animals.
- Causing nuisance through noise or odours.
- Adversely affecting the countryside or places of special interest.

It also provides the general framework of waste management requirements and sets the basic EU waste management definitions. The List of Waste (LoW) Amendment Decision (2014/955/EU) establishes the classification system, including the distinction between hazardous and non-hazardous wastes. It is closely linked to the main characteristics that render waste hazardous as contained in Annex III of the WFD. The amendments came into force to align waste classification with relevant sections of and approaches used in EU chemicals regulations, such as REACH (1907/2006/EC) and the CLP (1272/2008/EC), which in turn adapt for the EU the UN globally harmonised system for chemicals classification. In 2020 and 2021, GB and the UK introduced its own set of waste classification regulations, such as the CLP, REACH and the mandatory classification and labelling list, which retain, mirror and/or replace relevant EU regulations.

Waste is not considered to be a substance, a mixture or an article. Consequently, obligations under the REACH and the CLP regulations do not apply for producers or holders of waste. Nevertheless, information generated in the frameworks of REACH and the CLP that set criteria for substances to be classified as hazardous are related to some of the hazardous properties applicable to the classification of waste. Annex VI of the CLP contains official harmonised classifications of substances, which must be used where the classification of waste depends on the presence of hazardous substances. The classification of substances is periodically updated by the European Chemicals Agency in the form of a new EU regulation, which automatically amends the CLP.

The Landfill Directive (1999/31/EC) defines the categories of waste applicable to landfill sites as hazardous, non-hazardous, municipal and inert. A landfill is defined as a waste disposal site for the deposit of waste onto or into land. Landfills are divided into three classes:

- Landfills for hazardous waste.
- Landfills for non-hazardous waste.
- Landfills for inert waste.

The three main categories of waste and the options for landfilling are as follows:

- Hazardous with or without additional treatment prior to landfill or stable non-reactive hazardous waste (SNRHW) suitable for placement in a dedicated cell in a suitably permitted non-hazardous landfill site.
- Non-hazardous.
- Inert and suitable for disposal to an appropriately permitted landfill site.

To determine the presence and significance of hazards associated with any construction, demolition and earthworks (CD&E) arisings and therefore the resultant options for management of the materials, and where necessary the appropriate class of facility the waste can be taken to, it is therefore necessary to:

- Determine the presence of hazardous properties within the materials.
- Determine the category of the waste.
- Determine if the waste meets the requirements for reuse onsite, recovery or recycling on or offsite, or disposal offsite as waste.

The main statutory guidance document used to properly classify waste as either hazardous or non-hazardous in the UK is Guidance on the Classification and Assessment of Waste (WM3). The stepped methodology for classifying a waste and assessing any hazardous properties is as follows:

- Check if the waste needs to be classified.
- Identify the code that may apply to the waste.
- Identify the assessment required to select the correct code.
- Determine the chemical composition of the waste.
- Determine if the substances in the waste are hazardous substances or persistent organic pollutants.
- Assess the hazardous properties of the waste.
- Assign and describe the classification code.

The waste types disposed to a landfill site permitted to accept inert waste or recovered at a site permitted or exempted in accordance with UK regulations and statutory guidance should be classified as inert. No hazardous or contaminated wastes, as defined in the Waste Acceptance Criteria (WAC) and Procedures Directive (2003/33/EC), should be accepted at such sites. The source and origin of the waste along with a description (e.g. physical form, consistency, composition, colour, odour and likely behaviour etc.) should be determined for all material accepted at such inert waste facilities. The materials should be stable, non-reactive and with a sufficient bearing capacity for the end use.

In accordance with the Landfill Directive and UK statutory guidance, the only materials allowed for disposal or recovery at such inert waste facilities without more detailed information (e.g. chemical analyses, site investigation data etc.) should be restricted to single source material from a known site and a reliable producer. The material from the site or source should not be contaminated and should not contain significant quantities of deleterious materials such as wood, plastic etc. Materials potentially suitable for recovery at such inert waste facilities without laboratory analysis should be restricted to the following:

LoW Code	Description	Restrictions
170101	Concrete	Selected CD&E waste only
170102	Bricks	Selected CD&E waste only
170103	Tiles & Ceramics	Selected CD&E waste only
170107	Mixture of Concrete, Bricks, Tiles & Ceramics	Selected CD&E waste only
170504	Soil & Stones (e.g. natural clay & sand etc.)	Selected CD&E waste not from contaminated sites*
200202	Soil & Stones (e.g. natural clay & sand etc.)	Selected garden & park waste only*

- *Excluding topsoil or peat when used as subsoil or fill.
- Selected CD&E or garden & park waste with low (non-significant) contents of other types of materials (i.e. metals, plastics, organics, wood, rubber etc.). The origin of the waste must be known and relevant information regarding the waste must have been assessed.
- No CD&E waste from buildings or land contaminated with dangerous substances (e.g. 170106 & 170503).
- No CD&E waste from buildings treated or painted with dangerous substances in significant amounts.
- These materials should only be accepted if they arise from a single identified source.
- Mixtures of different types of these wastes from the same single source are acceptable without testing.
- Mixtures of these wastes from different sources are not acceptable unless pre-testing is carried out.

If the waste materials were determined as hazardous or potentially inert and required disposal to landfill, then a further stage of assessment would be required to determine if the waste meets the requirements for disposal at a particular category of landfill facility. This is done in the form of WAC testing. It should be noted that the associated regulations and statutory guidance do not apply to the use of suitable uncontaminated waste for redevelopment, restoration and filling in work or for construction purposes, or for recovery activities.

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2.0 SITE DESCRIPTION

The Tottenham Hale Centre (THC) development consists of five different sites: Welbourne, North Island, Ferry Island, Ashley Road East and Ashley Road West. Prior to 1864, Ferry Island (Plot B) was predominantly residential with a pumping station occupying the E boundary. By 1936, the residential properties in the SW had been developed into a single building and the pumping station was no longer present. During the 1970s and 80s the site was cleared and a new road junction constructed in the SE corner of the site. More recently and prior to the current development Ferry Island has been occupied by three commercial units including KFC, Pizza Hut and Maplin, with associated car parking.

The proposed THC development essentially comprises the demolition of the existing structures and the construction of residential-led development with retail/business uses alongside; servicing, highways improvements and public amenity space including soft and hard landscaped areas creating an improved public realm.

We understand that as part of the development there will be a shallow reduced level excavation followed by placement of a pile mat, piling, pile cap excavations and a deep basement excavation, which will generate in total circa 26790m^3 of material for disposal from site as waste. It is likely that circa 7170m^3 (27%) of the arisings will be made ground of which circa 2870m^3 will be pile mat and hardstanding, and circa 19620m^3 (73%) will be uncontaminated and inert natural soil and pile arisings.

The anticipated geology at the Ferry Island site comprises made ground overlying superficial deposits of Enfield Silt and River Terrace Deposits. The London Clay is at depth and in the order of 15m thick, underlain by the Lambeth Group, Thanet Sand and White Chalk.

Two site investigation reports have been prepared by Langan International (ref. 841011101 dated 26/07/2018 and 04/11/2021) on behalf of Whitby Wood, which comprised the progression of thirteen exploratory holes. The strata encountered confirmed the anticipated geology and comprised made ground, on average circa 1.7m thick, typically containing only a small quantity of deleterious materials, such as fragments of clinker and tarmac, with no visual or olfactory evidence of significant contamination. Asbestos containing material was not visible during the previous site investigation but it was detected at low concentrations in three samples of made ground tested. The made ground overlies natural and uncontaminated (inert) Enfield Silt, Kempton Park Gravel and London Clay.

During the previous investigations thirty-five samples were taken from the thirteen exploratory hole locations to depths of up to 6.2mbgl representing circa 26790m^3 of enabling works excavations at the site.

3.0 SITE SAMPLING

A geo-environmental engineer from TGEN visited the site on 04/01/2023 to assess the nature of the strata encountered. This included:

- A physical description of the arisings in accordance with relevant AGS and BSI standards.
- An assessment of visual and olfactory evidence of contamination.
- The recovery of representative samples.
- The submission of samples to a UKAS/MCERTS accredited laboratory for analysis.

During the visit, routine reassurance samples of materials were recovered and included the following:

- Two samples of soil and stones from a stockpile of piling arisings (NAT).

4.0 MATERIALS ASSESSMENT

In accordance with the LoW (as amended), the CD&E arisings encountered during this sampling exercise are mirror entries with a mirror hazardous (MH) entry and a mirror non-hazardous (MN) entry as follows:

- Soil and stones containing dangerous substances (LoW Code 170503*) – MH.
- Soil and stones not containing dangerous substances (LoW Code 170504) - MN.

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4.1 Physical Appearance of the Waste

Piling Arisings (NAT)

Sampling Date	Reference	Physical Description	Photograph
04/01/2023	NAT/0401/01 NAT/0401/02	Grey/ brown, slightly sandy, silty, clay with rare/incidental fragments of brick and concrete. There was no significant odour and the PID reading was <1ppm. No asbestos was seen during the sampling and there was no visual or olfactory evidence of contamination. Based on the physical description, the made ground arisings could be described as: Soil and stones not containing dangerous substances (LoW Code 170504) - MN.	

4.2 Chemical Nature of the Waste

The samples were subjected to a programme of laboratory testing, which included an asbestos screen and a suite of potential contaminants associated with a wide range of potential activities to confirm the preliminary waste classification based on the physical description of the material sampled. The laboratory test reports are presented in Appendix A, which can be summarised as follows.

Piling Arisings (NAT)

Ref	Chemical Summary		Waste Classification
	Asbestos	Solid	LoW Code
NAT/0401/01	NAD	No significant contamination	170504
NAT/0401/02	NAD	No significant contamination	170504

NAD No asbestos observed during sample preparation or detected in the sample.

5.0 SUMMARY

No asbestos was observed during the sampling and none was detected in the samples, which all returned low concentrations of potential contaminants. The material represented by the samples (piling arisings) would be classified as:

- **Soil and stones not containing hazardous substances (LoW Code 170504).**

In addition, material represented by the samples can be described for waste disposal purposes as follows:

- *NAT/2112/01* *No significant contamination (Uncontaminated waste).*
- *NAT/2112/02* *No significant contamination (Uncontaminated waste).*

Furthermore, the predominantly natural ground with only incidental inclusions of brick and concrete may also be considered suitable for reuse on a development site in line with a materials management plan in accordance with the CL:AIRE Definition of Waste: Development Industry Code of Practice (DoWCoP).

We would recommend that during any excavation associated with future phases of the development, should materials previously unidentified during the various investigations be encountered (e.g. an unusual appearance and/or odour etc.), works are halted in that area and the advice of a geo-environmental specialist be sought to determine an appropriate course of action. We would also advise you to employ routine waste practices when managing the disposal of the waste material (i.e. visual and olfactory inspections of all loads leaving the site) to ensure that the material remains consistent and suitable for recovery or disposal at your chosen facility in accordance with level 1, level 2 and level 3 waste acceptance procedures. Please be aware that your duty of care paperwork now needs to include the following:

- The relevant UK SIC Code.
- A declaration that you have fulfilled your duty to apply the waste hierarchy.
- The relevant LoW Code.

We trust that this report meets your requirements, but please contact us should you require clarification on

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any of the matters raised. Thank you for your custom and we hope that we can be of further assistance to you in the future.

Paul Brewer
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Dr. Barry Powell
BSc (Hons), PhD, MCIWM
Principal Consultant

(for and on behalf of Terragen Environmental Consultants Limited)

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6.0 LIMITATIONS AND USE OF THE REPORT

IMPORTANT: This section should be read before reliance is placed on any of the opinions, advice, recommendations or conclusions set out in this report.

a) This report has been prepared for the purpose of providing interpretation on analytical results supplied by the Client pursuant to its appointment of Terragen Environmental Consultants Limited to act as a Consultant.

b) These comments are given in good faith on the basis of the results provided. Terragen Environmental Consultants Limited can bear no responsibility for any inaccuracies that may arise from the laboratory testing.

c) This report does not constitute a qualitative risk assessment of the site or the soils and is not based upon a conceptual site model as we have been provided with insufficient information to establish the existence of potential sources of contamination, plausible pathways, or sensitive receptors and therefore assumes that they exist.

d) The report is unable to comment on the potential risks to controlled waters (groundwater or surface water), although where contaminant concentrations are below relevant threshold criteria in most circumstances it may be considered that the risk is low.

e) We have assumed that the results are representative of the area sampled. This does not imply that they may be considered representative of the site itself. Terragen Environmental Consultants Limited can accept no responsibility for the integrity of the sampling regime.

f) Save for the Client no duty is undertaken or warranty or representation made to any party in respect of the opinions, advice, recommendations or conclusions herein set out.

g) All work carried out in preparing this report has used, and is based upon, our professional knowledge and understanding of the current relevant English and European Community standards, approved codes of practice, technology and legislation.
Changes in the above may cause the opinion, advice, recommendations or conclusions set out in this report to become inappropriate or incorrect. However, in giving its opinions, advice, recommendations and conclusions, Terragen Environmental Consultants Limited has considered pending changes to environmental legislation and regulations of which it is currently aware. Following delivery of this report, we will have no obligation to advise the Client of any such changes, or of their repercussions.

h) Terragen Environmental Consultants Limited acknowledges that it is being retained, in part, because of its knowledge and experience with respect to environmental matters. Terragen Environmental Consultants Limited will consider and analyse all information provided to it in the context of our knowledge and experience and all other relevant information known to us. To the extent that the information provided to us is not inconsistent or incompatible therewith, Terragen Environmental Consultants Limited shall be entitled to rely upon and assume, without independent verification, the accuracy and completeness of such information.

i) The content of this report represents the professional opinion of experienced environmental consultants. Terragen Environmental Consultants Limited does not provide specialist legal advice and the advice of lawyers may be required.

j) In the Summary and Recommendations sections of this report, Terragen Environmental Consultants Limited has set out our key findings and provided a summary and overview of our advice, opinions and recommendations. However, other parts of this report will often indicate the limitations of the information obtained by Terragen Environmental Consultants Limited and therefore any advice, opinions or recommendations set out in the Executive Summary, Summary and Recommendations sections ought not to be relied upon unless they are considered in the context of the whole report.

k) The lack of evidence of the presence of hazardous or harmful materials at the subject property does not guarantee the absence of such materials; rather it indicates only that none were found as a result of the services provided. The services described in this report were performed in accordance with the general practices and procedures accepted in the consulting field.

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Appendix A Laboratory Test Reports.

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Analytical Report Number : 23-10393

Project / Site name:	Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU	**Samples received on:**	05/01/2023
Your job number:	TJ3885E02	**Samples instructed on/ Analysis started on:**	05/01/2023
Your order number:	TJ3885E02	**Analysis completed by:**	12/01/2023
Report Issue Number:	1	**Report issued on:**	19/01/2023
Samples Analysed:	2 soil samples		

Signed:

Dominika Warjan
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

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
asbestos	- 6 months from reporting

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

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-10393
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU
Your Order No: TJ3885E02

Lab Sample Number				2546336	2546337
Sample Reference				NAT/0401/01	NAT/0401/02
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				04/01/2023	04/01/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	20	16
Total mass of sample received	kg	0.001	NONE	1.1	1.1

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	ASE	ASE

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	10.8	11
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	2800	2800
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	1600	1300
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.82	0.66
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	822	665
Sulphide	mg/kg	1	MCERTS	340	230
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.6	0.5

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.3	0.13
Anthracene	mg/kg	0.05	MCERTS	0.07	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.57	0.14
Pyrene	mg/kg	0.05	MCERTS	0.45	0.13
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.3	0.09
Chrysene	mg/kg	0.05	MCERTS	0.31	0.07
Benzo(b)fluoranthene	mg/kg	0.05	NONE	0.33*	0.07*
Benzo(k)fluoranthene	mg/kg	0.05	NONE	0.15*	< 0.05*
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.23	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.13	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.13	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	2.97	< 0.85

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-10393
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU
Your Order No: TJ3885E02

Lab Sample Number				2546336	2546337
Sample Reference				NAT/0401/01	NAT/0401/02
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				04/01/2023	04/01/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Heavy Metals / Metalloids					
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	2.2	1.5
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.6	6.6
Barium (aqua regia extractable)	mg/kg	1	MCERTS	99	93
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.93	0.8
Boron (water soluble)	mg/kg	0.2	MCERTS	1.1	2.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	22	19
Copper (aqua regia extractable)	mg/kg	1	MCERTS	38	34
Lead (aqua regia extractable)	mg/kg	1	MCERTS	17	16
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.49	0.49
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	21	15
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	37	30
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	100	60
Petroleum Hydrocarbons					
TPH C10 - C40 $_{EH\_CU\_1D\_TOTAL}$	mg/kg	10	MCERTS	14	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

*Data reported unaccredited due to quality control parameter failure associated with this result; other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and therefore may be unreliable.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 23-10393
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU

* 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 loam (MCERTS) 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 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2546336	NAT/0401/01	None Supplied	None Supplied	Brown clay and sand with gravel.
2546337	NAT/0401/02	None Supplied	None Supplied	Brown clay and sand with gravel.

Analytical Report Number : 23-10393
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated WAC-17 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	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE

Analytical Report Number : 23-10393
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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Our Ref. TJ3994AR1

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Borehamwood
WD6 1RN

24th October 2023

FAO: Lee Armstrong

Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU

Waste Classification Report

Please find attached the results of laboratory testing carried out on four samples of soil recovered from Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU (the site) by a geo-environmental engineer from Terragen Environmental Consultants Limited (TGEN) on 12/10/2023. The samples represent made ground and natural ground (soil and stones) being generated from enabling works excavations and will be excess to requirements and need to be removed from site.

2.0 SITE DESCRIPTION

The Tottenham Hale Centre (THC) development consists of five different sites: Welbourne, North Island, Ferry Island, Ashley Road East and Ashley Road West. Prior to 1864, Ferry Island (Plot B) was predominantly residential with a pumping station occupying the E boundary. By 1936, the residential properties in the SW had been developed into a single building and the pumping station was no longer present. During the 1970s and 80s the site was cleared and a new road junction constructed in the SE corner of the site. More recently and prior to the current development Ferry Island has been occupied by three commercial units including KFC, Pizza Hut and Maplin, with associated car parking.

The proposed THC development essentially comprises the demolition of the existing structures and the construction of residential-led development with retail/business uses alongside; servicing, highways improvements and public amenity space including soft and hard landscaped areas creating an improved public realm.

We understand that as part of the development there will be a shallow reduced level excavation followed by placement of a pile mat, piling, pile cap excavations and a deep basement excavation, which will generate in total circa 26790m^3 of material for disposal from site as waste. It is likely that circa 7170m^3 (27%) of the arisings will be made ground of which circa 2870m^3 will be pile mat and hardstanding, and circa 19620m^3 (73%) will be uncontaminated and inert natural soil and pile arisings.

The anticipated geology at the Ferry Island site comprises made ground overlying superficial deposits of Enfield Silt and River Terrace Deposits. The London Clay is at depth and in the order of 15m thick, underlain by the Lambeth Group, Thanet Sand and White Chalk.

Two site investigation reports have been prepared by Langan International (ref. 841011101 dated 26/07/2018 and 04/11/2021) on behalf of Whitby Wood, which comprised the progression of thirteen exploratory holes. The strata encountered confirmed the anticipated geology and comprised made ground, on average circa 1.7m thick, typically containing only a small quantity of deleterious materials, such as fragments of clinker and tarmac, with no visual or olfactory evidence of significant contamination. Asbestos containing material was not visible during the previous site investigations but it was detected at low concentrations in three samples of made ground tested. The made ground overlies natural and uncontaminated (inert) Enfield Silt, Kempton Park Gravel and London Clay.

During the previous investigations thirty-five samples were taken from the thirteen exploratory hole locations to depths of up to 6.2mbgl representing circa 26790m^3 of enabling works excavations at the site.

3.0 SITE SAMPLING

A geo-environmental engineer from TGEN visited the site on 12/10/2023 to assess the nature of the strata encountered. This included:

- A physical description of the arisings in accordance with relevant AGS and BSI standards.
- An assessment of visual and olfactory evidence of contamination.
- The recovery of representative samples.
- The submission of samples to a UKAS/MCERTS accredited laboratory for analysis.

During the visit, routine reassurance samples of materials were recovered and included the following:

- Three samples of made ground from arisings from the reduced level excavations (MG).
- One sample of natural ground from a stockpile of piling arisings (NAT).

4.0 MATERIALS ASSESSMENT

In accordance with the LoW (as amended), the CD&E arisings encountered during this sampling exercise are mirror entries with a mirror hazardous (MH) entry and a mirror non-hazardous (MN) entry as follows:

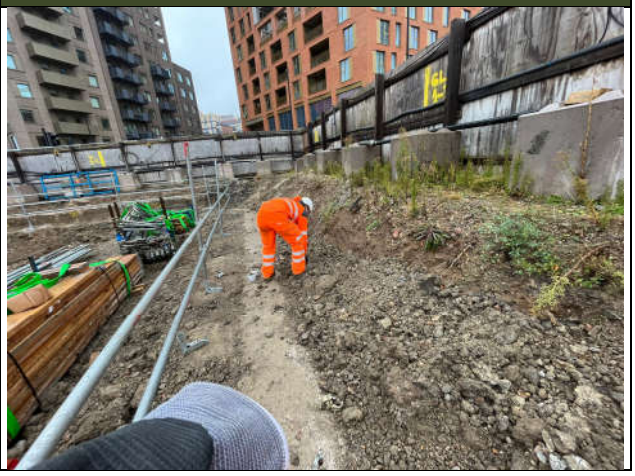
- Soil and stones containing dangerous substances (LoW Code 170503*) – MH.
- Soil and stones not containing dangerous substances (LoW Code 170504) - MN.

4.1 Physical Appearance of the Waste

Made Ground Arisings (MG)

Sampling Date	Reference	Physical Description	Photograph
12/10/2023	MG/1210/01 MG/1210/02 MG/1210/03	Grey/ brown, slightly sandy, silty, clay with gravel and occasional fragments of brick and concrete, and rare fragments of wood and metal. There was no significant odour and the PID reading was <1ppm. No asbestos was seen during the sampling and there was no visual or olfactory evidence of contamination. Based on the physical description, the made ground arisings could be described as: Soil and stones not containing dangerous substances (LoW Code 170504) - MN.	

Natural Ground Arisings (NAT)

Sampling Date	Reference	Physical Description	Photograph
12/10/2023	NAT/1210/01	Grey/brown, silty, clay with rare gravel. There was no significant odour and the PID reading was <1ppm. No asbestos was seen during the sampling and there was no visual or olfactory evidence of contamination. Based on the physical description, the natural ground arisings could be described as: Soil and stones not containing dangerous substances (LoW Code 170504) - MN.	

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4.2 Chemical Nature of the Waste

The samples were subjected to a programme of laboratory testing, which included an asbestos screen and a suite of potential contaminants associated with a wide range of potential activities to confirm the preliminary waste classification based on the physical description of the material sampled. The laboratory test reports are presented in Appendix A, which can be summarised as follows.

Made Ground Arisings (MG)

Ref	Chemical Summary		Waste Classification
	Asbestos	Solid	LoW Code
MG/1210/01	NAD	Elevated pH, but considered to be due to the presence of alkaline construction materials (e.g., concrete) in the sample that are crushed during sample preparation. Otherwise, no significant contamination.	170504
MG/1210/02	NAD		170504
MG/1210/03	NAD	No significant contamination	170504

NAD No asbestos observed during sample preparation or detected in the sample.

Natural Ground Arisings (NAT)

Ref	Chemical Summary		Waste Classification
	Asbestos	Solid	LoW Code
NAT/1210/01	NAD	No significant contamination	170504

NAD No asbestos observed during sample preparation or detected in the sample.

5.0 SUMMARY

No asbestos was observed during the sampling, and none was detected in the samples, which all returned low concentrations of potential contaminants. Two samples (MG/1210/01 and MG/1210/02) did return an elevated pH, but this is considered to be due to the presence of alkaline construction materials (e.g. concrete) in the sample that are crushed during sample preparation rather than the presence of other corrosive materials. As such, the material represented by the samples would be classified as:

- **Soil and stones not containing hazardous substances (LoW Code 170504).**

In addition, material represented by the samples can be described for waste disposal purposes as follows:

- *MG/1210/01 No significant contamination (Uncontaminated waste).*
- *MG/1210/02 No significant contamination (Uncontaminated waste).*
- *MG/1210/03 No significant contamination (Uncontaminated waste).*
- *NAT/1210/01 No significant contamination (Uncontaminated and inert waste).*

We would recommend that during any excavation associated with future phases of the development, should materials previously unidentified during the various investigations be encountered (e.g., an unusual appearance and/or odour etc.), works are halted in that area and the advice of a geo-environmental specialist be sought to determine an appropriate course of action. We would also advise you to employ routine waste practices when managing the disposal of the waste material (i.e. visual and olfactory inspections of all loads leaving the site) to ensure that the material remains consistent and suitable for recovery or disposal at your chosen facility in accordance with level 1, level 2 and level 3 waste acceptance procedures. Please be aware that your duty of care paperwork now needs to include the following:

- The relevant UK SIC Code.
- A declaration that you have fulfilled your duty to apply the waste hierarchy.
- The relevant LoW Code.

We trust that this report meets your requirements, but please contact us should you require clarification on any of the matters raised. Thank you for your custom and we hope that we can be of further assistance to you in the future.

Paul Brewer
BSc (Hons), MSc, MI Soil Sci
Senior Environmental Consultant

Dr. Barry Powell
BSc (Hons), PhD, MCIWM
Principal Consultant

(for and on behalf of Terragen Environmental Consultants Limited)

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WASTE CLASSIFICATION FRAMEWORK

One of the relevant objectives of the Revised Waste Framework (WFD) Directive (2018/851/EC) is to ensure that waste is recovered or disposed without endangering human health and without using processes or methods which could harm the environment, and without:

- Risk to water, air, soil, plants, or animals.
- Causing nuisance through noise or odours.
- Adversely affecting the countryside or places of special interest.

It also provides the general framework of waste management requirements and sets the basic EU waste management definitions. The List of Waste (LoW) Amendment Decision (2014/955/EU) establishes the classification system, including the distinction between hazardous and non-hazardous wastes. It is closely linked to the main characteristics that render waste hazardous as contained in Annex III of the WFD. The amendments came into force to align waste classification with relevant sections of and approaches used in EU chemicals regulations, such as REACH (1907/2006/EC) and the CLP (1272/2008/EC), which in turn adapt for the EU the UN globally harmonised system for chemicals classification. In 2020 and 2021, GB and the UK introduced its own set of waste classification regulations, such as the CLP, REACH and the mandatory classification and labelling list, which retain, mirror and/or replace relevant EU regulations.

Waste is not considered to be a substance, a mixture or an article. Consequently, obligations under the REACH and the CLP regulations do not apply for producers or holders of waste. Nevertheless, information generated in the frameworks of REACH and the CLP that set criteria for substances to be classified as hazardous are related to some of the hazardous properties applicable to the classification of waste. Annex VI of the CLP contains official harmonised classifications of substances, which must be used where the classification of waste depends on the presence of hazardous substances. The classification of substances is periodically updated by the European Chemicals Agency in the form of a new EU regulation, which automatically amends the CLP.

The Landfill Directive (1999/31/EC) defines the categories of waste applicable to landfill sites as hazardous, non-hazardous, municipal and inert. A landfill is defined as a waste disposal site for the deposit of waste onto or into land. Landfills are divided into three classes:

- Landfills for hazardous waste.
- Landfills for non-hazardous waste.
- Landfills for inert waste.

The three main categories of waste and the options for landfilling are as follows:

- Hazardous with or without additional treatment prior to landfill or stable non-reactive hazardous waste (SNRHW) suitable for placement in a dedicated cell in a suitably permitted non-hazardous landfill site.
- Non-hazardous.
- Inert and suitable for disposal to an appropriately permitted landfill site.

To determine the presence and significance of hazards associated with any construction, demolition and earthworks (CD&E) arisings and therefore the resultant options for management of the materials, and where necessary the appropriate class of facility the waste can be taken to, it is therefore necessary to:

- Determine the presence of hazardous properties within the materials.
- Determine the category of the waste.
- Determine if the waste meets the requirements for reuse onsite, recovery or recycling on or offsite, or disposal offsite as waste.

The main statutory guidance document used to properly classify waste as either hazardous or non-hazardous in the UK is Guidance on the Classification and Assessment of Waste (WM3). The stepped methodology for classifying a waste and assessing any hazardous properties is as follows:

- Check if the waste needs to be classified.
- Identify the code that may apply to the waste.
- Identify the assessment required to select the correct code.
- Determine the chemical composition of the waste.
- Determine if the substances in the waste are hazardous substances or persistent organic pollutants.
- Assess the hazardous properties of the waste.
- Assign and describe the classification code.

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The waste types disposed to a landfill site permitted to accept inert waste or recovered at a site permitted or exempted in accordance with UK regulations and statutory guidance should be classified as inert. No hazardous or contaminated wastes, as defined in the Waste Acceptance Criteria (WAC) and Procedures Directive (2003/33/EC), should be accepted at such sites. The source and origin of the waste along with a description (e.g. physical form, consistency, composition, colour, odour and likely behaviour etc.) should be determined for all material accepted at such inert waste facilities. The materials should be stable, non-reactive and with a sufficient bearing capacity for the end use.

In accordance with the Landfill Directive and UK statutory guidance, the only materials allowed for disposal or recovery at such inert waste facilities without more detailed information (e.g. chemical analyses, site investigation data etc.) should be restricted to single source material from a known site and a reliable producer. The material from the site or source should not be contaminated and should not contain significant quantities of deleterious materials such as wood, plastic etc. Materials potentially suitable for recovery at such inert waste facilities without laboratory analysis should be restricted to the following:

LoW Code	Description	Restrictions
170101	Concrete	Selected CD&E waste only
170102	Bricks	Selected CD&E waste only
170103	Tiles & Ceramics	Selected CD&E waste only
170107	Mixture of Concrete, Bricks, Tiles & Ceramics	Selected CD&E waste only
170504	Soil & Stones (e.g. natural clay & sand etc.)	Selected CD&E waste not from contaminated sites*
200202	Soil & Stones (e.g. natural clay & sand etc.)	Selected garden & park waste only*

- *Excluding topsoil or peat when used as subsoil or fill.
- Selected CD&E or garden & park waste with low (non-significant) contents of other types of materials (i.e. metals, plastics, organics, wood, rubber etc.). The origin of the waste must be known and relevant information regarding the waste must have been assessed.
- No CD&E waste from buildings or land contaminated with dangerous substances (e.g. 170106 & 170503).
- No CD&E waste from buildings treated or painted with dangerous substances in significant amounts.
- These materials should only be accepted if they arise from a single identified source.
- Mixtures of different types of these wastes from the same single source are acceptable without testing.
- Mixtures of these wastes from different sources are not acceptable unless pre-testing is carried out.

If the waste materials were determined as hazardous or potentially inert and required disposal to landfill, then a further stage of assessment would be required to determine if the waste meets the requirements for disposal at a particular category of landfill facility. This is done in the form of WAC testing. It should be noted that the associated regulations and statutory guidance do not apply to the use of suitable uncontaminated waste for redevelopment, restoration and filling in work or for construction purposes, or for recovery activities.

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LIMITATIONS AND USE OF THE REPORT

IMPORTANT: This section should be read before reliance is placed on any of the opinions, advice, recommendations or conclusions set out in this report.

a) This report has been prepared for the purpose of providing interpretation on analytical results supplied by the Client pursuant to its appointment of Terragen Environmental Consultants Limited to act as a Consultant.

b) These comments are given in good faith on the basis of the results provided. Terragen Environmental Consultants Limited can bear no responsibility for any inaccuracies that may arise from the laboratory testing.

c) This report does not constitute a qualitative risk assessment of the site or the soils and is not based upon a conceptual site model as we have been provided with insufficient information to establish the existence of potential sources of contamination, plausible pathways, or sensitive receptors and therefore assumes that they exist.

d) The report is unable to comment on the potential risks to controlled waters (groundwater or surface water), although where contaminant concentrations are below relevant threshold criteria in most circumstances it may be considered that the risk is low.

e) We have assumed that the results are representative of the area sampled. This does not imply that they may be considered representative of the site itself. Terragen Environmental Consultants Limited can accept no responsibility for the integrity of the sampling regime.

f) Save for the Client no duty is undertaken or warranty or representation made to any party in respect of the opinions, advice, recommendations or conclusions herein set out.

g) All work carried out in preparing this report has used, and is based upon, our professional knowledge and understanding of the current relevant English and European Community standards, approved codes of practice, technology and legislation.
Changes in the above may cause the opinion, advice, recommendations or conclusions set out in this report to become inappropriate or incorrect. However, in giving its opinions, advice, recommendations and conclusions, Terragen Environmental Consultants Limited has considered pending changes to environmental legislation and regulations of which it is currently aware. Following delivery of this report, we will have no obligation to advise the Client of any such changes, or of their repercussions.

h) Terragen Environmental Consultants Limited acknowledges that it is being retained, in part, because of its knowledge and experience with respect to environmental matters. Terragen Environmental Consultants Limited will consider and analyse all information provided to it in the context of our knowledge and experience and all other relevant information known to us. To the extent that the information provided to us is not inconsistent or incompatible therewith, Terragen Environmental Consultants Limited shall be entitled to rely upon and assume, without independent verification, the accuracy and completeness of such information.

i) The content of this report represents the professional opinion of experienced environmental consultants. Terragen Environmental Consultants Limited does not provide specialist legal advice and the advice of lawyers may be required.

j) In the Summary and Recommendations sections of this report, Terragen Environmental Consultants Limited has set out our key findings and provided a summary and overview of our advice, opinions and recommendations. However, other parts of this report will often indicate the limitations of the information obtained by Terragen Environmental Consultants Limited and therefore any advice, opinions or recommendations set out in the Executive Summary, Summary and Recommendations sections ought not to be relied upon unless they are considered in the context of the whole report.

k) The lack of evidence of the presence of hazardous or harmful materials at the subject property does not guarantee the absence of such materials; rather it indicates only that none were found as a result of the services provided. The services described in this report were performed in accordance with the general practices and procedures accepted in the consulting field.

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Appendix A Laboratory Test Reports.

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e: reception@i2analytical.com

Analytical Report Number : 23-62444

Project / Site name:	Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE	**Samples received on:**	13/10/2023
Your job number:	TJ3994A01	**Samples instructed on/ Analysis started on:**	13/10/2023
Your order number:	TJ3994A01	**Analysis completed by:**	20/10/2023
Report Issue Number:	1	**Report issued on:**	20/10/2023
Samples Analysed:	3 soil samples		

Signed:

Dominika Liana
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

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
asbestos	- 6 months from reporting

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

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.

Analytical Report Number: 23-62444
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE
Your Order No: TJ3994A01

Lab Sample Number				2844527	2844528	2844529
Sample Reference				MG/1210/01	MG/1210/02	MG/1210/03
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				12/10/2023	12/10/2023	12/10/2023
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	%	0.01	NONE	12	11	11
Total mass of sample received	kg	0.001	NONE	1.4	1.4	1.3
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	SSZ	SSZ	SSZ

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	12	12	10.5
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	5900	5400	3900
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	440	440	1600
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.219	0.221	0.798
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	219	221	798
Sulphide	mg/kg	1	MCERTS	88	120	29
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.4	0.5	0.4

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.35	0.16	0.22
Acenaphthylene	mg/kg	0.05	MCERTS	0.05	0.05	0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.08	0.06	0.06
Fluorene	mg/kg	0.05	MCERTS	0.09	< 0.05	0.06
Phenanthrene	mg/kg	0.05	MCERTS	0.36	0.4	0.46
Anthracene	mg/kg	0.05	MCERTS	0.08	0.09	0.11
Fluoranthene	mg/kg	0.05	MCERTS	0.57	0.59	0.87
Pyrene	mg/kg	0.05	MCERTS	0.57	0.56	0.86
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.26	0.27	0.44
Chrysene	mg/kg	0.05	MCERTS	0.28	0.28	0.4
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.32	0.32	0.49
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.17	0.14	0.21
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.28	0.29	0.41
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.15	0.15	0.22
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.06
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.17	0.17	0.24
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	3.78	3.53	5.16

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Analytical Report Number: 23-62444
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE
Your Order No: TJ3994A01

Lab Sample Number				2844527	2844528	2844529
Sample Reference				MG/1210/01	MG/1210/02	MG/1210/03
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				12/10/2023	12/10/2023	12/10/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Heavy Metals / Metalloids						
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	3.2	< 1.0	3.6
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	12	12
Barium (aqua regia extractable)	mg/kg	1	MCERTS	120	120	110
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.78	0.88	0.81
Boron (water soluble)	mg/kg	0.2	MCERTS	1	1.2	1.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	19	21	21
Copper (aqua regia extractable)	mg/kg	1	MCERTS	43	53	52
Lead (aqua regia extractable)	mg/kg	1	MCERTS	61	67	88
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	1.6	1.1	0.94
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	16	15	17
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	37	35	37
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	96	88	94
Petroleum Hydrocarbons						
TPH C10 - C40 EH_CU_1D_TOTAL	mg/kg	10	MCERTS	89	< 10	55

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

This certificate should not be reproduced, except in full, without the express permission of the laboratory.

Analytical Report Number : 23-62444
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE

* 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 loam (MCERTS) 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 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2844527	MG/1210/01	None Supplied	None Supplied	Brown sandy clay with gravel.
2844528	MG/1210/02	None Supplied	None Supplied	Brown clay and sand with gravel.
2844529	MG/1210/03	None Supplied	None Supplied	Brown clay and sand with gravel.

Analytical Report Number : 23-62444
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated WAC-17 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
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-62444
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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Analytical Report Number : 23-62446

Project / Site name:	Ferry Island,Tottenham Hale (Plot B), High Cross Road, London N17 9NU	**Samples received on:**	13/10/2023
Your job number:	TJ3994A02	**Samples instructed on/ Analysis started on:**	13/10/2023
Your order number:	TJ3994A02	**Analysis completed by:**	20/10/2023
Report Issue Number:	1	**Report issued on:**	20/10/2023
Samples Analysed:	1 soil sample		

Signed:

Dominika Liana
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

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
asbestos	- 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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Analytical Report Number: 23-62446
Project / Site name: Ferry Island,Tottenham Hale (Plot B), High Cross Road, London N17 9NU
Your Order No: TJ3994A02

Lab Sample Number				2844586
Sample Reference				NAT/1210/01
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				12/10/2023
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	16
Total mass of sample received	kg	0.001	NONE	1.4

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	SSZ

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	9
Total Cyanide	mg/kg	1	MCERTS	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	1600
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	1400
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.708
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	708
Sulphide	mg/kg	1	MCERTS	120
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.6

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.41
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.07
Anthracene	mg/kg	0.05	MCERTS	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.07
Pyrene	mg/kg	0.05	MCERTS	0.06
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	< 0.85

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-62446
Project / Site name: Ferry Island,Tottenham Hale (Plot B), High Cross Road, London N17 9NU
Your Order No: TJ3994A02

Lab Sample Number				2844586
Sample Reference				NAT/1210/01
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				12/10/2023
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Heavy Metals / Metalloids				
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	< 1.0
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12
Barium (aqua regia extractable)	mg/kg	1	MCERTS	54
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.9
Boron (water soluble)	mg/kg	0.2	MCERTS	0.6
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	26
Copper (aqua regia extractable)	mg/kg	1	MCERTS	34
Lead (aqua regia extractable)	mg/kg	1	MCERTS	24
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	1.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	34
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	42
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	62
Petroleum Hydrocarbons				
TPH C10 - C40 EH_CU_1D_TOTAL	mg/kg	10	MCERTS	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 23-62446
Project / Site name: Ferry Island,Tottenham Hale (Plot B), High Cross Road, London N17 9NU

* 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 loam (MCERTS) 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 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2844586	NAT/1210/01	None Supplied	None Supplied	Brown sandy clay with gravel.

Analytical Report Number : 23-62446
Project / Site name: Ferry Island,Tottenham Hale (Plot B), High Cross Road, London N17 9NU

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated WAC-17 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
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-62446
Project / Site name: Ferry Island,Tottenham Hale (Plot B), High Cross Road, London N17 9NU

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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31st October 2023

FAO: Lee Armstrong

Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU

Waste Classification Report

Please find attached the results of laboratory testing carried out on four samples of soil recovered from Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU (the site) by a geo-environmental engineer from Terragen Environmental Consultants Limited (TGEN) on 19/10/2023. The samples represent made ground and natural ground (soil and stones) being generated from enabling works excavations and will be excess to requirements and need to be removed from site.

2.0 SITE DESCRIPTION

The Tottenham Hale Centre (THC) development consists of five different sites: Welbourne, North Island, Ferry Island, Ashley Road East and Ashley Road West. Prior to 1864, Ferry Island (Plot B) was predominantly residential with a pumping station occupying the E boundary. By 1936, the residential properties in the SW had been developed into a single building and the pumping station was no longer present. During the 1970s and 80s the site was cleared and a new road junction constructed in the SE corner of the site. More recently and prior to the current development Ferry Island has been occupied by three commercial units including KFC, Pizza Hut and Maplin, with associated car parking.

The proposed THC development essentially comprises the demolition of the existing structures and the construction of residential-led development with retail/business uses alongside; servicing, highways improvements and public amenity space including soft and hard landscaped areas creating an improved public realm.

We understand that as part of the development there will be a shallow reduced level excavation followed by placement of a pile mat, piling, pile cap excavations and a deep basement excavation, which will generate in total circa 26790m^3 of material for disposal from site as waste. It is likely that circa 7170m^3 (27%) of the arisings will be made ground of which circa 2870m^3 will be pile mat and hardstanding, and circa 19620m^3 (73%) will be uncontaminated and inert natural soil and pile arisings.

The anticipated geology at the Ferry Island site comprises made ground overlying superficial deposits of Enfield Silt and River Terrace Deposits. The London Clay is at depth and in the order of 15m thick, underlain by the Lambeth Group, Thanet Sand and White Chalk.

Two site investigation reports have been prepared by Langan International (ref. 841011101 dated 26/07/2018 and 04/11/2021) on behalf of Whitby Wood, which comprised the progression of thirteen exploratory holes. The strata encountered confirmed the anticipated geology and comprised made ground, on average circa 1.7m thick, typically containing only a small quantity of deleterious materials, such as fragments of clinker and tarmac, with no visual or olfactory evidence of significant contamination. Asbestos containing material was not visible during the previous site investigations but it was detected at low concentrations in three samples of made ground tested. The made ground overlies natural and uncontaminated (inert) Enfield Silt, Kempton Park Gravel and London Clay.

During the previous investigations thirty-five samples were taken from the thirteen exploratory hole locations to depths of up to 6.2mbgl representing circa 26790m^3 of enabling works excavations at the site.

3.0 SITE SAMPLING

A geo-environmental engineer from TGEN visited the site on 19/10/2023 to assess the nature of the strata encountered. This included:

- A physical description of the arisings in accordance with relevant AGS and BSI standards.
- An assessment of visual and olfactory evidence of contamination.
- The recovery of representative samples.
- The submission of samples to a UKAS/MCERTS accredited laboratory for analysis.

During the visit, routine reassurance samples of materials were recovered and included the following:

- Three samples of made ground from arisings from the reduced level excavations (MG).
- One sample of natural ground from a stockpile of piling arisings (NAT).

4.0 MATERIALS ASSESSMENT

In accordance with the LoW (as amended), the CD&E arisings encountered during this sampling exercise are mirror entries with a mirror hazardous (MH) entry and a mirror non-hazardous (MN) entry as follows:

- Soil and stones containing dangerous substances (LoW Code 170503*) – MH.
- Soil and stones not containing dangerous substances (LoW Code 170504) - MN.

4.1 Physical Appearance of the Waste

Made Ground Arisings (MG)

Sampling Date	Reference	Physical Description	Photograph
19/10/2023	MG/1910/01 MG/1910/02 MG/1910/03	Grey/ brown, slightly sandy, silty, clay with gravel and frequent fragments of brick and concrete, and rare fragments of wood and metal. There was no significant odour and the PID reading was <1ppm. No asbestos was seen during the sampling and there was no visual or olfactory evidence of contamination. Based on the physical description, the made ground arisings could be described as: Soil and stones not containing dangerous substances (LoW Code 170504) - MN.	

Natural Ground Arisings (NAT)

Sampling Date	Reference	Physical Description	Photograph
19/10/2023	NAT/1910/01	Grey/brown and yellow/brown, silty, clay with rare gravel. There was no significant odour and the PID reading was <1ppm. No asbestos was seen during the sampling and there was no visual or olfactory evidence of contamination. Based on the physical description, the natural ground arisings could be described as: Soil and stones not containing dangerous substances (LoW Code 170504) - MN.	

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4.2 Chemical Nature of the Waste

The samples were subjected to a programme of laboratory testing, which included an asbestos screen and a suite of potential contaminants associated with a wide range of potential activities to confirm the preliminary waste classification based on the physical description of the material sampled. The laboratory test reports are presented in Appendix A, which can be summarised as follows.

Made Ground Arisings (MG)

Ref	Chemical Summary		Waste Classification
	Asbestos	Solid	LoW Code
MG/1910/01	NAD	No significant contamination.	170504
MG/1910/02	NAD		170504
MG/1910/03	NAD	Elevated pH, considered to be due to the presence of alkaline construction materials (e.g., concrete) in the sample that are crushed during sample preparation. Otherwise, no significant contamination.	170504

NAD No asbestos observed during sample preparation or detected in the sample.

Natural Ground Arisings (NAT)

Ref	Chemical Summary		Waste Classification
	Asbestos	Solid	LoW Code
NAT/1910/01	NAD	No significant contamination	170504

NAD No asbestos observed during sample preparation or detected in the sample.

5.0 SUMMARY

No asbestos was observed during the sampling, and none was detected in the samples, which all returned low concentrations of potential contaminants. One sample (MG/1910/03) did return an elevated pH, but this is considered to be due to the presence of alkaline construction materials (e.g. concrete) in the sample that are crushed during sample preparation rather than the presence of other corrosive materials. As such, the material represented by the samples would be classified as:

- **Soil and stones not containing hazardous substances (LoW Code 170504).**

In addition, material represented by the samples can be described for waste disposal purposes as follows:

- *MG/1910/01 No significant contamination (Uncontaminated waste).*
- *MG/1910/02 No significant contamination (Uncontaminated waste).*
- *MG/1910/03 No significant contamination (Uncontaminated waste).*
- *NAT/1910/01 No significant contamination (Uncontaminated and inert waste).*

We would recommend that during any excavation associated with future phases of the development, should materials previously unidentified during the various investigations be encountered (e.g., an unusual appearance and/or odour etc.), works are halted in that area and the advice of a geo-environmental specialist be sought to determine an appropriate course of action. We would also advise you to employ routine waste practices when managing the disposal of the waste material (i.e. visual and olfactory inspections of all loads leaving the site) to ensure that the material remains consistent and suitable for recovery or disposal at your chosen facility in accordance with level 1, level 2 and level 3 waste acceptance procedures. Please be aware that your duty of care paperwork now needs to include the following:

- The relevant UK SIC Code.
- A declaration that you have fulfilled your duty to apply the waste hierarchy.
- The relevant LoW Code.

We trust that this report meets your requirements, but please contact us should you require clarification on any of the matters raised. Thank you for your custom and we hope that we can be of further assistance to you in the future.

Paul Brewer
BSc (Hons), MSc, MI Soil Sci
Senior Environmental Consultant

Dr. Barry Powell
BSc (Hons), PhD, MCIWM
Principal Consultant

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(for and on behalf of Terragen Environmental Consultants Limited)

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WASTE CLASSIFICATION FRAMEWORK

One of the relevant objectives of the Revised Waste Framework (WFD) Directive (2018/851/EC) is to ensure that waste is recovered or disposed without endangering human health and without using processes or methods which could harm the environment, and without:

- Risk to water, air, soil, plants, or animals.
- Causing nuisance through noise or odours.
- Adversely affecting the countryside or places of special interest.

It also provides the general framework of waste management requirements and sets the basic EU waste management definitions. The List of Waste (LoW) Amendment Decision (2014/955/EU) establishes the classification system, including the distinction between hazardous and non-hazardous wastes. It is closely linked to the main characteristics that render waste hazardous as contained in Annex III of the WFD. The amendments came into force to align waste classification with relevant sections of and approaches used in EU chemicals regulations, such as REACH (1907/2006/EC) and the CLP (1272/2008/EC), which in turn adapt for the EU the UN globally harmonised system for chemicals classification. In 2020 and 2021, GB and the UK introduced its own set of waste classification regulations, such as the CLP, REACH and the mandatory classification and labelling list, which retain, mirror and/or replace relevant EU regulations.

Waste is not considered to be a substance, a mixture or an article. Consequently, obligations under the REACH and the CLP regulations do not apply for producers or holders of waste. Nevertheless, information generated in the frameworks of REACH and the CLP that set criteria for substances to be classified as hazardous are related to some of the hazardous properties applicable to the classification of waste. Annex VI of the CLP contains official harmonised classifications of substances, which must be used where the classification of waste depends on the presence of hazardous substances. The classification of substances is periodically updated by the European Chemicals Agency in the form of a new EU regulation, which automatically amends the CLP.

The Landfill Directive (1999/31/EC) defines the categories of waste applicable to landfill sites as hazardous, non-hazardous, municipal and inert. A landfill is defined as a waste disposal site for the deposit of waste onto or into land. Landfills are divided into three classes:

- Landfills for hazardous waste.
- Landfills for non-hazardous waste.
- Landfills for inert waste.

The three main categories of waste and the options for landfilling are as follows:

- Hazardous with or without additional treatment prior to landfill or stable non-reactive hazardous waste (SNRHW) suitable for placement in a dedicated cell in a suitably permitted non-hazardous landfill site.
- Non-hazardous.
- Inert and suitable for disposal to an appropriately permitted landfill site.

To determine the presence and significance of hazards associated with any construction, demolition and earthworks (CD&E) arisings and therefore the resultant options for management of the materials, and where necessary the appropriate class of facility the waste can be taken to, it is therefore necessary to:

- Determine the presence of hazardous properties within the materials.
- Determine the category of the waste.
- Determine if the waste meets the requirements for reuse onsite, recovery or recycling on or offsite, or disposal offsite as waste.

The main statutory guidance document used to properly classify waste as either hazardous or non-hazardous in the UK is Guidance on the Classification and Assessment of Waste (WM3). The stepped methodology for classifying a waste and assessing any hazardous properties is as follows:

- Check if the waste needs to be classified.
- Identify the code that may apply to the waste.
- Identify the assessment required to select the correct code.
- Determine the chemical composition of the waste.
- Determine if the substances in the waste are hazardous substances or persistent organic pollutants.
- Assess the hazardous properties of the waste.
- Assign and describe the classification code.

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The waste types disposed to a landfill site permitted to accept inert waste or recovered at a site permitted or exempted in accordance with UK regulations and statutory guidance should be classified as inert. No hazardous or contaminated wastes, as defined in the Waste Acceptance Criteria (WAC) and Procedures Directive (2003/33/EC), should be accepted at such sites. The source and origin of the waste along with a description (e.g. physical form, consistency, composition, colour, odour and likely behaviour etc.) should be determined for all material accepted at such inert waste facilities. The materials should be stable, non-reactive and with a sufficient bearing capacity for the end use.

In accordance with the Landfill Directive and UK statutory guidance, the only materials allowed for disposal or recovery at such inert waste facilities without more detailed information (e.g. chemical analyses, site investigation data etc.) should be restricted to single source material from a known site and a reliable producer. The material from the site or source should not be contaminated and should not contain significant quantities of deleterious materials such as wood, plastic etc. Materials potentially suitable for recovery at such inert waste facilities without laboratory analysis should be restricted to the following:

LoW Code	Description	Restrictions
170101	Concrete	Selected CD&E waste only
170102	Bricks	Selected CD&E waste only
170103	Tiles & Ceramics	Selected CD&E waste only
170107	Mixture of Concrete, Bricks, Tiles & Ceramics	Selected CD&E waste only
170504	Soil & Stones (e.g. natural clay & sand etc.)	Selected CD&E waste not from contaminated sites*
200202	Soil & Stones (e.g. natural clay & sand etc.)	Selected garden & park waste only*

- *Excluding topsoil or peat when used as subsoil or fill.
- Selected CD&E or garden & park waste with low (non-significant) contents of other types of materials (i.e. metals, plastics, organics, wood, rubber etc.). The origin of the waste must be known and relevant information regarding the waste must have been assessed.
- No CD&E waste from buildings or land contaminated with dangerous substances (e.g. 170106 & 170503).
- No CD&E waste from buildings treated or painted with dangerous substances in significant amounts.
- These materials should only be accepted if they arise from a single identified source.
- Mixtures of different types of these wastes from the same single source are acceptable without testing.
- Mixtures of these wastes from different sources are not acceptable unless pre-testing is carried out.

If the waste materials were determined as hazardous or potentially inert and required disposal to landfill, then a further stage of assessment would be required to determine if the waste meets the requirements for disposal at a particular category of landfill facility. This is done in the form of WAC testing. It should be noted that the associated regulations and statutory guidance do not apply to the use of suitable uncontaminated waste for redevelopment, restoration and filling in work or for construction purposes, or for recovery activities.

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LIMITATIONS AND USE OF THE REPORT

IMPORTANT: This section should be read before reliance is placed on any of the opinions, advice, recommendations or conclusions set out in this report.

a) This report has been prepared for the purpose of providing interpretation on analytical results supplied by the Client pursuant to its appointment of Terragen Environmental Consultants Limited to act as a Consultant.

b) These comments are given in good faith on the basis of the results provided. Terragen Environmental Consultants Limited can bear no responsibility for any inaccuracies that may arise from the laboratory testing.

c) This report does not constitute a qualitative risk assessment of the site or the soils and is not based upon a conceptual site model as we have been provided with insufficient information to establish the existence of potential sources of contamination, plausible pathways, or sensitive receptors and therefore assumes that they exist.

d) The report is unable to comment on the potential risks to controlled waters (groundwater or surface water), although where contaminant concentrations are below relevant threshold criteria in most circumstances it may be considered that the risk is low.

e) We have assumed that the results are representative of the area sampled. This does not imply that they may be considered representative of the site itself. Terragen Environmental Consultants Limited can accept no responsibility for the integrity of the sampling regime.

f) Save for the Client no duty is undertaken or warranty or representation made to any party in respect of the opinions, advice, recommendations or conclusions herein set out.

g) All work carried out in preparing this report has used, and is based upon, our professional knowledge and understanding of the current relevant English and European Community standards, approved codes of practice, technology and legislation.
Changes in the above may cause the opinion, advice, recommendations or conclusions set out in this report to become inappropriate or incorrect. However, in giving its opinions, advice, recommendations and conclusions, Terragen Environmental Consultants Limited has considered pending changes to environmental legislation and regulations of which it is currently aware. Following delivery of this report, we will have no obligation to advise the Client of any such changes, or of their repercussions.

h) Terragen Environmental Consultants Limited acknowledges that it is being retained, in part, because of its knowledge and experience with respect to environmental matters. Terragen Environmental Consultants Limited will consider and analyse all information provided to it in the context of our knowledge and experience and all other relevant information known to us. To the extent that the information provided to us is not inconsistent or incompatible therewith, Terragen Environmental Consultants Limited shall be entitled to rely upon and assume, without independent verification, the accuracy and completeness of such information.

i) The content of this report represents the professional opinion of experienced environmental consultants. Terragen Environmental Consultants Limited does not provide specialist legal advice and the advice of lawyers may be required.

j) In the Summary and Recommendations sections of this report, Terragen Environmental Consultants Limited has set out our key findings and provided a summary and overview of our advice, opinions and recommendations. However, other parts of this report will often indicate the limitations of the information obtained by Terragen Environmental Consultants Limited and therefore any advice, opinions or recommendations set out in the Executive Summary, Summary and Recommendations sections ought not to be relied upon unless they are considered in the context of the whole report.

k) The lack of evidence of the presence of hazardous or harmful materials at the subject property does not guarantee the absence of such materials; rather it indicates only that none were found as a result of the services provided. The services described in this report were performed in accordance with the general practices and procedures accepted in the consulting field.

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Appendix A Laboratory Test Reports.

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Analytical Report Number : 23-63705

Project / Site name:	Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU	**Samples received on:**	19/10/2023
Your job number:	TJ3994A04	**Samples instructed on/ Analysis started on:**	19/10/2023
Your order number:	TJ3994A04	**Analysis completed by:**	26/10/2023
Report Issue Number:	1	**Report issued on:**	26/10/2023
Samples Analysed:	1 soil sample		

Signed:

Joanna Wawrzeczko
Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

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
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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Analytical Report Number: 23-63705
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU
Your Order No: TJ3994A04

Lab Sample Number				2851511
Sample Reference				NAT/1910/01
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				19/10/2023
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	13
Total mass of sample received	kg	0.001	NONE	1.8

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	ASE

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	9.1
Total Cyanide	mg/kg	1	MCERTS	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	1600
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	150
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0742
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	74.2
Sulphide	mg/kg	1	MCERTS	20
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.9

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.7
Anthracene	mg/kg	0.05	MCERTS	0.15
Fluoranthene	mg/kg	0.05	MCERTS	1.4
Pyrene	mg/kg	0.05	MCERTS	1.2
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.73
Chrysene	mg/kg	0.05	MCERTS	0.77
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	1.1
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.42
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.86
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.51
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.14
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.59
Coronene	mg/kg	0.05	NONE	0.37

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	8.9

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-63705
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU
Your Order No: TJ3994A04

Lab Sample Number				2851511
Sample Reference				NAT/1910/01
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				19/10/2023
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Heavy Metals / Metalloids				
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	3.2
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13
Barium (aqua regia extractable)	mg/kg	1	MCERTS	110
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.76
Boron (water soluble)	mg/kg	0.2	MCERTS	0.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.4
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	22
Copper (aqua regia extractable)	mg/kg	1	MCERTS	30
Lead (aqua regia extractable)	mg/kg	1	MCERTS	94
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	1
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	19
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	37
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	100
Petroleum Hydrocarbons				
TPH C10 - C40 EH_CU_1D_TOTAL	mg/kg	10	MCERTS	25

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 23-63705
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU

* 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 loam (MCERTS) 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 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2851511	NAT/1910/01	None Supplied	None Supplied	Brown sand with gravel and brick.

Analytical Report Number : 23-63705
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated WAC-17 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
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-63705
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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Analytical Report Number : 23-63709

Project / Site name:	Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE	**Samples received on:**	19/10/2023
Your job number:	TJ3994A03	**Samples instructed on/ Analysis started on:**	19/10/2023
Your order number:	TJ3994A03	**Analysis completed by:**	26/10/2023
Report Issue Number:	1	**Report issued on:**	26/10/2023
Samples Analysed:	3 soil samples		

Signed:

Joanna Szwagrzak
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

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
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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Analytical Report Number: 23-63709
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE
Your Order No: TJ3994A03

Lab Sample Number				2851516	2851517	2851518
Sample Reference				MG/1910/01	MG/1910/02	MG/1910/03
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				19/10/2023	19/10/2023	19/10/2023
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	46	58
Moisture Content	%	0.01	NONE	16	11	12
Total mass of sample received	kg	0.001	NONE	1.7	1.7	1.8
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	EWS	EWS	EWS

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	11.2	11.3	11.6
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	5100	7200	6300
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	1300	680	460
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.646	0.338	0.23
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	646	338	230
Sulphide	mg/kg	1	MCERTS	100	40	40
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.5	0.5	0.4

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.21	0.64	0.34
Anthracene	mg/kg	0.05	MCERTS	< 0.05	0.12	0.09
Fluoranthene	mg/kg	0.05	MCERTS	0.31	1	0.65
Pyrene	mg/kg	0.05	MCERTS	0.28	0.91	0.59
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.15	0.44	0.28
Chrysene	mg/kg	0.05	MCERTS	0.13	0.46	0.32
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.19	0.46	0.37
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.07	0.29	0.16
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.13	0.38	0.29
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.06	0.21	0.14
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.07	0.27	0.19
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	1.6	5.18	3.42

This certificate should not be reproduced, except in full, without the express permission of the laboratory.

Analytical Report Number: 23-63709
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE
Your Order No: TJ3994A03

Lab Sample Number				2851516	2851517	2851518
Sample Reference				MG/1910/01	MG/1910/02	MG/1910/03
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				19/10/2023	19/10/2023	19/10/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Heavy Metals / Metalloids						
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	< 1.0	3.9	2.9
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.8	12	9.9
Barium (aqua regia extractable)	mg/kg	1	MCERTS	89	110	100
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.83	0.73	0.7
Boron (water soluble)	mg/kg	0.2	MCERTS	0.7	1.8	1.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	0.4	0.4
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	23	38	20
Copper (aqua regia extractable)	mg/kg	1	MCERTS	32	48	30
Lead (aqua regia extractable)	mg/kg	1	MCERTS	27	87	68
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.71	1.2	0.63
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	18	17	15
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	37	35	33
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	60	81	70
Petroleum Hydrocarbons						
TPH C10 - C40 EH_CU_1D_TOTAL	mg/kg	10	MCERTS	48	110	91

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 23-63709
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE

* 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 loam (MCERTS) 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 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2851516	MG/1910/01	None Supplied	None Supplied	Brown clay and sand with gravel.
2851517	MG/1910/02	None Supplied	None Supplied	Brown clay and sand with gravel and stones.
2851518	MG/1910/03	None Supplied	None Supplied	Brown sandy clay with gravel and stones.

Analytical Report Number : 23-63709
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated WAC-17 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
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-63709
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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8th November 2023

FAO: Lee Armstrong

Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU

Waste Classification Report

Please find attached the results of laboratory testing carried out on two samples of soil recovered from Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU (the site) by a geo-environmental engineer from Terragen Environmental Consultants Limited (TGEN) on 26/10/2023. The samples represent made ground (soil and stones) being generated from enabling works excavations and will be excess to requirements and need to be removed from site.

2.0 SITE DESCRIPTION

The Tottenham Hale Centre (THC) development consists of five different sites: Welbourne, North Island, Ferry Island, Ashley Road East and Ashley Road West. Prior to 1864, Ferry Island (Plot B) was predominantly residential with a pumping station occupying the E boundary. By 1936, the residential properties in the SW had been developed into a single building and the pumping station was no longer present. During the 1970s and 80s the site was cleared and a new road junction constructed in the SE corner of the site. More recently and prior to the current development Ferry Island has been occupied by three commercial units including KFC, Pizza Hut and Maplin, with associated car parking.

The proposed THC development essentially comprises the demolition of the existing structures and the construction of residential-led development with retail/business uses alongside; servicing, highways improvements and public amenity space including soft and hard landscaped areas creating an improved public realm.

We understand that as part of the development there will be a shallow reduced level excavation followed by placement of a pile mat, piling, pile cap excavations and a deep basement excavation, which will generate in total circa 26790m^3 of material for disposal from site as waste. It is likely that circa 7170m^3 (27%) of the arisings will be made ground of which circa 2870m^3 will be pile mat and hardstanding, and circa 19620m^3 (73%) will be uncontaminated and inert natural soil and pile arisings.

The anticipated geology at the Ferry Island site comprises made ground overlying superficial deposits of Enfield Silt and River Terrace Deposits. The London Clay is at depth and in the order of 15m thick, underlain by the Lambeth Group, Thanet Sand and White Chalk.

Two site investigation reports have been prepared by Langan International (ref. 841011101 dated 26/07/2018 and 04/11/2021) on behalf of Whitby Wood, which comprised the progression of thirteen exploratory holes. The strata encountered confirmed the anticipated geology and comprised made ground, on average circa 1.7m thick, typically containing only a small quantity of deleterious materials, such as fragments of clinker and tarmac, with no visual or olfactory evidence of significant contamination. Asbestos containing material was not visible during the previous site investigations but it was detected at low concentrations in three samples of made ground tested. The made ground overlies natural and uncontaminated (inert) Enfield Silt, Kempton Park Gravel and London Clay.

During the previous investigations thirty-five samples were taken from the thirteen exploratory hole locations to depths of up to 6.2mbgl representing circa 26790m^3 of enabling works excavations at the site.

3.0 SITE SAMPLING

A geo-environmental engineer from TGEN visited the site on 26/10/2023 to assess the nature of the strata encountered. This included:

- A physical description of the arisings in accordance with relevant AGS and BSI standards.
- An assessment of visual and olfactory evidence of contamination.
- The recovery of representative samples.
- The submission of samples to a UKAS/MCERTS accredited laboratory for analysis.

During the visit, routine reassurance samples of materials were recovered and included the following:

- Two samples of made ground from arisings from the reduced level excavations (MG).

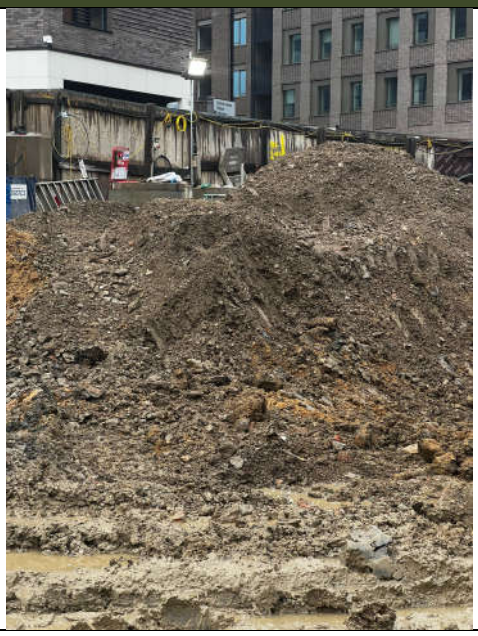
4.0 MATERIALS ASSESSMENT

In accordance with the LoW (as amended), the CD&E arisings encountered during this sampling exercise are mirror entries with a mirror hazardous (MH) entry and a mirror non-hazardous (MN) entry as follows:

- Soil and stones containing dangerous substances (LoW Code 170503*) – MH.
- Soil and stones not containing dangerous substances (LoW Code 170504) - MN.

4.1 Physical Appearance of the Waste

Made Ground Arisings (MG)

Sampling Date	Reference	Physical Description	Photograph
26/10/2023	MG/2610/01 MG/2610/02	Brown, slightly sandy, silty, clay with gravel and frequent fragments of brick and concrete, and rare fragments of wood and metal. There was no significant odour and the PID reading was <1ppm. No asbestos was seen during the sampling and there was no visual or olfactory evidence of contamination. Based on the physical description, the made ground arisings could be described as: Soil and stones not containing dangerous substances (LoW Code 170504) - MN.	

4.2 Chemical Nature of the Waste

The samples were subjected to a programme of laboratory testing, which included an asbestos screen and a suite of potential contaminants associated with a wide range of potential activities to confirm the preliminary waste classification based on the physical description of the material sampled. The laboratory test reports are presented in Appendix A, which can be summarised as follows.

Made Ground Arisings (MG)

Ref	Chemical Summary		Waste Classification
	Asbestos	Solid	LoW Code
MG/2610/01	NAD	No significant contamination.	170504
MG/2610/02	NAD		170504

NAD No asbestos observed during sample preparation or detected in the sample.

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5.0 SUMMARY

No asbestos was observed during the sampling, and none was detected in the samples, which all returned low concentrations of potential contaminants. As such, the material represented by the samples would be classified as:

- **Soil and stones not containing hazardous substances (LoW Code 170504).**

In addition, material represented by the samples can be described for waste disposal purposes as follows:

- *MG/2610/01* *No significant contamination (Uncontaminated waste).*
- *MG/2610/02* *No significant contamination (Uncontaminated waste).*

We would recommend that during any excavation associated with future phases of the development, should materials previously unidentified during the various investigations be encountered (e.g., an unusual appearance and/or odour etc.), works are halted in that area and the advice of a geo-environmental specialist be sought to determine an appropriate course of action. We would also advise you to employ routine waste practices when managing the disposal of the waste material (i.e. visual and olfactory inspections of all loads leaving the site) to ensure that the material remains consistent and suitable for recovery or disposal at your chosen facility in accordance with level 1, level 2 and level 3 waste acceptance procedures. Please be aware that your duty of care paperwork now needs to include the following:

- The relevant UK SIC Code.
- A declaration that you have fulfilled your duty to apply the waste hierarchy.
- The relevant LoW Code.

We trust that this report meets your requirements, but please contact us should you require clarification on any of the matters raised. Thank you for your custom and we hope that we can be of further assistance to you in the future.

Paul Brewer
BSc (Hons), MSc, MI Soil Sci
Senior Environmental Consultant

Dr. Barry Powell
BSc (Hons), PhD, MCIWM
Principal Consultant

(for and on behalf of Terragen Environmental Consultants Limited)

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WASTE CLASSIFICATION FRAMEWORK

One of the relevant objectives of the Revised Waste Framework (WFD) Directive (2018/851/EC) is to ensure that waste is recovered or disposed without endangering human health and without using processes or methods which could harm the environment, and without:

- Risk to water, air, soil, plants, or animals.
- Causing nuisance through noise or odours.
- Adversely affecting the countryside or places of special interest.

It also provides the general framework of waste management requirements and sets the basic EU waste management definitions. The List of Waste (LoW) Amendment Decision (2014/955/EU) establishes the classification system, including the distinction between hazardous and non-hazardous wastes. It is closely linked to the main characteristics that render waste hazardous as contained in Annex III of the WFD. The amendments came into force to align waste classification with relevant sections of and approaches used in EU chemicals regulations, such as REACH (1907/2006/EC) and the CLP (1272/2008/EC), which in turn adapt for the EU the UN globally harmonised system for chemicals classification. In 2020 and 2021, GB and the UK introduced its own set of waste classification regulations, such as the CLP, REACH and the mandatory classification and labelling list, which retain, mirror and/or replace relevant EU regulations.

Waste is not considered to be a substance, a mixture or an article. Consequently, obligations under the REACH and the CLP regulations do not apply for producers or holders of waste. Nevertheless, information generated in the frameworks of REACH and the CLP that set criteria for substances to be classified as hazardous are related to some of the hazardous properties applicable to the classification of waste. Annex VI of the CLP contains official harmonised classifications of substances, which must be used where the classification of waste depends on the presence of hazardous substances. The classification of substances is periodically updated by the European Chemicals Agency in the form of a new EU regulation, which automatically amends the CLP.

The Landfill Directive (1999/31/EC) defines the categories of waste applicable to landfill sites as hazardous, non-hazardous, municipal and inert. A landfill is defined as a waste disposal site for the deposit of waste onto or into land. Landfills are divided into three classes:

- Landfills for hazardous waste.
- Landfills for non-hazardous waste.
- Landfills for inert waste.

The three main categories of waste and the options for landfilling are as follows:

- Hazardous with or without additional treatment prior to landfill or stable non-reactive hazardous waste (SNRHW) suitable for placement in a dedicated cell in a suitably permitted non-hazardous landfill site.
- Non-hazardous.
- Inert and suitable for disposal to an appropriately permitted landfill site.

To determine the presence and significance of hazards associated with any construction, demolition and earthworks (CD&E) arisings and therefore the resultant options for management of the materials, and where necessary the appropriate class of facility the waste can be taken to, it is therefore necessary to:

- Determine the presence of hazardous properties within the materials.
- Determine the category of the waste.
- Determine if the waste meets the requirements for reuse onsite, recovery or recycling on or offsite, or disposal offsite as waste.

The main statutory guidance document used to properly classify waste as either hazardous or non-hazardous in the UK is Guidance on the Classification and Assessment of Waste (WM3). The stepped methodology for classifying a waste and assessing any hazardous properties is as follows:

- Check if the waste needs to be classified.
- Identify the code that may apply to the waste.
- Identify the assessment required to select the correct code.
- Determine the chemical composition of the waste.
- Determine if the substances in the waste are hazardous substances or persistent organic pollutants.
- Assess the hazardous properties of the waste.
- Assign and describe the classification code.

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The waste types disposed to a landfill site permitted to accept inert waste or recovered at a site permitted or exempted in accordance with UK regulations and statutory guidance should be classified as inert. No hazardous or contaminated wastes, as defined in the Waste Acceptance Criteria (WAC) and Procedures Directive (2003/33/EC), should be accepted at such sites. The source and origin of the waste along with a description (e.g. physical form, consistency, composition, colour, odour and likely behaviour etc.) should be determined for all material accepted at such inert waste facilities. The materials should be stable, non-reactive and with a sufficient bearing capacity for the end use.

In accordance with the Landfill Directive and UK statutory guidance, the only materials allowed for disposal or recovery at such inert waste facilities without more detailed information (e.g. chemical analyses, site investigation data etc.) should be restricted to single source material from a known site and a reliable producer. The material from the site or source should not be contaminated and should not contain significant quantities of deleterious materials such as wood, plastic etc. Materials potentially suitable for recovery at such inert waste facilities without laboratory analysis should be restricted to the following:

LoW Code	Description	Restrictions
170101	Concrete	Selected CD&E waste only
170102	Bricks	Selected CD&E waste only
170103	Tiles & Ceramics	Selected CD&E waste only
170107	Mixture of Concrete, Bricks, Tiles & Ceramics	Selected CD&E waste only
170504	Soil & Stones (e.g. natural clay & sand etc.)	Selected CD&E waste not from contaminated sites*
200202	Soil & Stones (e.g. natural clay & sand etc.)	Selected garden & park waste only*

- *Excluding topsoil or peat when used as subsoil or fill.
- Selected CD&E or garden & park waste with low (non-significant) contents of other types of materials (i.e. metals, plastics, organics, wood, rubber etc.). The origin of the waste must be known and relevant information regarding the waste must have been assessed.
- No CD&E waste from buildings or land contaminated with dangerous substances (e.g. 170106 & 170503).
- No CD&E waste from buildings treated or painted with dangerous substances in significant amounts.
- These materials should only be accepted if they arise from a single identified source.
- Mixtures of different types of these wastes from the same single source are acceptable without testing.
- Mixtures of these wastes from different sources are not acceptable unless pre-testing is carried out.

If the waste materials were determined as hazardous or potentially inert and required disposal to landfill, then a further stage of assessment would be required to determine if the waste meets the requirements for disposal at a particular category of landfill facility. This is done in the form of WAC testing. It should be noted that the associated regulations and statutory guidance do not apply to the use of suitable uncontaminated waste for redevelopment, restoration and filling in work or for construction purposes, or for recovery activities.

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LIMITATIONS AND USE OF THE REPORT

IMPORTANT: This section should be read before reliance is placed on any of the opinions, advice, recommendations or conclusions set out in this report.

a) This report has been prepared for the purpose of providing interpretation on analytical results supplied by the Client pursuant to its appointment of Terragen Environmental Consultants Limited to act as a Consultant.

b) These comments are given in good faith on the basis of the results provided. Terragen Environmental Consultants Limited can bear no responsibility for any inaccuracies that may arise from the laboratory testing.

c) This report does not constitute a qualitative risk assessment of the site or the soils and is not based upon a conceptual site model as we have been provided with insufficient information to establish the existence of potential sources of contamination, plausible pathways, or sensitive receptors and therefore assumes that they exist.

d) The report is unable to comment on the potential risks to controlled waters (groundwater or surface water), although where contaminant concentrations are below relevant threshold criteria in most circumstances it may be considered that the risk is low.

e) We have assumed that the results are representative of the area sampled. This does not imply that they may be considered representative of the site itself. Terragen Environmental Consultants Limited can accept no responsibility for the integrity of the sampling regime.

f) Save for the Client no duty is undertaken or warranty or representation made to any party in respect of the opinions, advice, recommendations or conclusions herein set out.

g) All work carried out in preparing this report has used, and is based upon, our professional knowledge and understanding of the current relevant English and European Community standards, approved codes of practice, technology and legislation.
Changes in the above may cause the opinion, advice, recommendations or conclusions set out in this report to become inappropriate or incorrect. However, in giving its opinions, advice, recommendations and conclusions, Terragen Environmental Consultants Limited has considered pending changes to environmental legislation and regulations of which it is currently aware. Following delivery of this report, we will have no obligation to advise the Client of any such changes, or of their repercussions.

h) Terragen Environmental Consultants Limited acknowledges that it is being retained, in part, because of its knowledge and experience with respect to environmental matters. Terragen Environmental Consultants Limited will consider and analyse all information provided to it in the context of our knowledge and experience and all other relevant information known to us. To the extent that the information provided to us is not inconsistent or incompatible therewith, Terragen Environmental Consultants Limited shall be entitled to rely upon and assume, without independent verification, the accuracy and completeness of such information.

i) The content of this report represents the professional opinion of experienced environmental consultants. Terragen Environmental Consultants Limited does not provide specialist legal advice and the advice of lawyers may be required.

j) In the Summary and Recommendations sections of this report, Terragen Environmental Consultants Limited has set out our key findings and provided a summary and overview of our advice, opinions and recommendations. However, other parts of this report will often indicate the limitations of the information obtained by Terragen Environmental Consultants Limited and therefore any advice, opinions or recommendations set out in the Executive Summary, Summary and Recommendations sections ought not to be relied upon unless they are considered in the context of the whole report.

k) The lack of evidence of the presence of hazardous or harmful materials at the subject property does not guarantee the absence of such materials; rather it indicates only that none were found as a result of the services provided. The services described in this report were performed in accordance with the general practices and procedures accepted in the consulting field.

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Appendix A Laboratory Test Reports.

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Analytical Report Number : 23-65031

Project / Site name:	Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE	**Samples received on:**	26/10/2023
Your job number:	TJ3994A05	**Samples instructed on/ Analysis started on:**	26/10/2023
Your order number:	TJ3994A05	**Analysis completed by:**	02/11/2023
Report Issue Number:	1	**Report issued on:**	02/11/2023
Samples Analysed:	2 soil samples		

Signed:

Joanna Szwagrzak
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

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
asbestos	- 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-65031
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE
Your Order No: TJ3994A05

Lab Sample Number				2858547	2858548
Sample Reference				MG/2610/01	MG/2610/02
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				26/10/2023	26/10/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	11	12
Total mass of sample received	kg	0.001	NONE	1.1	1.2

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MWI	MWI

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	11.3	11.1
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	5900	5600
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	1000	1300
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.512	0.64
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	512	640
Sulphide	mg/kg	1	MCERTS	< 1.0	< 1.0
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.3	0.4

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	0.06	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.06	< 0.05
Fluorene	mg/kg	0.05	MCERTS	0.08	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.74	0.41
Anthracene	mg/kg	0.05	MCERTS	0.16	0.12
Fluoranthene	mg/kg	0.05	MCERTS	1.3	0.95
Pyrene	mg/kg	0.05	MCERTS	1.2	0.9
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.6	0.47
Chrysene	mg/kg	0.05	MCERTS	0.59	0.47
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.59	0.54
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.34	0.23
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.58	0.45
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.24	0.2
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.07	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.29	0.24
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	6.86	4.98

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Analytical Report Number: 23-65031
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE
Your Order No: TJ3994A05

Lab Sample Number				2858547	2858548
Sample Reference				MG/2610/01	MG/2610/02
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				26/10/2023	26/10/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Heavy Metals / Metalloids					
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	2.4	3.1
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11	11
Barium (aqua regia extractable)	mg/kg	1	MCERTS	120	110
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.83	0.75
Boron (water soluble)	mg/kg	0.2	MCERTS	2.2	1.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.4	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	23	20
Copper (aqua regia extractable)	mg/kg	1	MCERTS	30	34
Lead (aqua regia extractable)	mg/kg	1	MCERTS	64	66
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.87	0.77
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	18	16
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	38	33
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	79	100
Petroleum Hydrocarbons					
TPH C10 - C40 $_{EH\_CU\_1D\_TOTAL}$	mg/kg	10	MCERTS	45	28

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 23-65031
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE

* 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 loam (MCERTS) 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 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2858547	MG/2610/01	None Supplied	None Supplied	Brown clay and sand with gravel.
2858548	MG/2610/02	None Supplied	None Supplied	Brown clay and sand with gravel and brick.

Analytical Report Number : 23-65031
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated WAC-17 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
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-65031
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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Borehamwood
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8th November 2023

FAO: Lee Armstrong

Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU

Waste Classification Report

Please find attached the results of laboratory testing carried out on five samples of soil recovered from Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU (the site) by a geo-environmental engineer from Terragen Environmental Consultants Limited (TGEN) on 02/11/2023. The samples represent made ground and natural ground (soil and stones) being generated from enabling works excavations and will be excess to requirements and need to be removed from site.

2.0 SITE DESCRIPTION

The Tottenham Hale Centre (THC) development consists of five different sites: Welbourne, North Island, Ferry Island, Ashley Road East and Ashley Road West. Prior to 1864, Ferry Island (Plot B) was predominantly residential with a pumping station occupying the E boundary. By 1936, the residential properties in the SW had been developed into a single building and the pumping station was no longer present. During the 1970s and 80s the site was cleared and a new road junction constructed in the SE corner of the site. More recently and prior to the current development Ferry Island has been occupied by three commercial units including KFC, Pizza Hut and Maplin, with associated car parking.

The proposed THC development essentially comprises the demolition of the existing structures and the construction of residential-led development with retail/business uses alongside; servicing, highways improvements and public amenity space including soft and hard landscaped areas creating an improved public realm.

We understand that as part of the development there will be a shallow reduced level excavation followed by placement of a pile mat, piling, pile cap excavations and a deep basement excavation, which will generate in total circa 26790m^3 of material for disposal from site as waste. It is likely that circa 7170m^3 (27%) of the arisings will be made ground of which circa 2870m^3 will be pile mat and hardstanding, and circa 19620m^3 (73%) will be uncontaminated and inert natural soil and pile arisings.

The anticipated geology at the Ferry Island site comprises made ground overlying superficial deposits of Enfield Silt and River Terrace Deposits. The London Clay is at depth and in the order of 15m thick, underlain by the Lambeth Group, Thanet Sand and White Chalk.

Two site investigation reports have been prepared by Langan International (ref. 841011101 dated 26/07/2018 and 04/11/2021) on behalf of Whitby Wood, which comprised the progression of thirteen exploratory holes. The strata encountered confirmed the anticipated geology and comprised made ground, on average circa 1.7m thick, typically containing only a small quantity of deleterious materials, such as fragments of clinker and tarmac, with no visual or olfactory evidence of significant contamination. Asbestos containing material was not visible during the previous site investigations but it was detected at low concentrations in three samples of made ground tested. The made ground overlies natural and uncontaminated (inert) Enfield Silt, Kempton Park Gravel and London Clay.

During the previous investigations thirty-five samples were taken from the thirteen exploratory hole locations to depths of up to 6.2mbgl representing circa 26790m^3 of enabling works excavations at the site.

3.0 SITE SAMPLING

A geo-environmental engineer from TGEN visited the site on 02/11/2023 to assess the nature of the strata encountered. This included:

- A physical description of the arisings in accordance with relevant AGS and BSI standards.
- An assessment of visual and olfactory evidence of contamination.
- The recovery of representative samples.
- The submission of samples to a UKAS/MCERTS accredited laboratory for analysis.

During the visit, routine reassurance samples of materials were recovered and included the following:

- Two samples of made ground from arisings from the reduced level excavations (MG).
- Three samples of natural ground from a stockpile of piling arisings (NAT).

4.0 MATERIALS ASSESSMENT

In accordance with the LoW (as amended), the CD&E arisings encountered during this sampling exercise are mirror entries with a mirror hazardous (MH) entry and a mirror non-hazardous (MN) entry as follows:

- Soil and stones containing dangerous substances (LoW Code 170503*) – MH.
- Soil and stones not containing dangerous substances (LoW Code 170504) - MN.

4.1 Physical Appearance of the Waste

Made Ground Arisings (MG)

Sampling Date	Reference	Physical Description	Photograph
02/11/2023	MG/0211/01 MG/0211/02	Dark grey/brown, slightly sandy, silty, clay with gravel and occasional fragments of brick and concrete, and rare fragments of wood and metal. There was no significant odour and the PID reading was <1ppm. No asbestos was seen during the sampling and there was no visual or olfactory evidence of contamination. Based on the physical description, the made ground arisings could be described as: Soil and stones not containing dangerous substances (LoW Code 170504) - MN.	

Natural Ground Arisings (NAT)

Sampling Date	Reference	Physical Description	Photograph
02/11/2023	NAT/0211/01 NAT/0211/02 NAT/0211/03	Yellow/brown, silty, clay with rare gravel. There was no significant odour and the PID reading was <1ppm. No asbestos was seen during the sampling and there was no visual or olfactory evidence of contamination. Based on the physical description, the natural ground arisings could be described as: Soil and stones not containing dangerous substances (LoW Code 170504) - MN.	

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4.2 Chemical Nature of the Waste

The samples were subjected to a programme of laboratory testing, which included an asbestos screen and a suite of potential contaminants associated with a wide range of potential activities to confirm the preliminary waste classification based on the physical description of the material sampled. The laboratory test reports are presented in Appendix A, which can be summarised as follows.

Made Ground Arisings (MG)

Ref	Chemical Summary		Waste Classification
	Asbestos	Solid	LoW Code
MG/0211/01	NAD	Elevated pH, considered to be due to the presence of alkaline construction materials (e.g., concrete) in the sample that are crushed during sample preparation. Otherwise, no significant contamination.	170504
MG/0211/02	NAD	No significant contamination	170504

NAD No asbestos observed during sample preparation or detected in the sample.

Natural Ground Arisings (NAT)

Ref	Chemical Summary		Waste Classification
	Asbestos	Solid	LoW Code
NAT/0211/01	NAD	No significant contamination	170504
NAT/0211/02	NAD	No significant contamination	170504
NAT/0211/03	NAD	No significant contamination	170504

NAD No asbestos observed during sample preparation or detected in the sample.

5.0 SUMMARY

No asbestos was observed during the sampling, and none was detected in the samples, which all returned low concentrations of potential contaminants. One sample (MG/0211/01) did return an elevated pH, but this is considered to be due to the presence of alkaline construction materials (e.g. concrete) in the sample that are crushed during sample preparation rather than the presence of other corrosive materials. As such, the material represented by the samples would be classified as:

- **Soil and stones not containing hazardous substances (LoW Code 170504).**

In addition, material represented by the samples can be described for waste disposal purposes as follows:

- *MG/0211/01 No significant contamination (Uncontaminated waste).*
- *MG/0211/02 No significant contamination (Uncontaminated waste).*
- *NAT/0211/01 No significant contamination (Uncontaminated and inert waste).*
- *NAT/0211/02 No significant contamination (Uncontaminated and inert waste).*
- *NAT/0211/03 No significant contamination (Uncontaminated and inert waste).*

We would recommend that during any excavation associated with future phases of the development, should materials previously unidentified during the various investigations be encountered (e.g., an unusual appearance and/or odour etc.), works are halted in that area and the advice of a geo-environmental specialist be sought to determine an appropriate course of action. We would also advise you to employ routine waste practices when managing the disposal of the waste material (i.e. visual and olfactory inspections of all loads leaving the site) to ensure that the material remains consistent and suitable for recovery or disposal at your chosen facility in accordance with level 1, level 2 and level 3 waste acceptance procedures. Please be aware that your duty of care paperwork now needs to include the following:

- The relevant UK SIC Code.
- A declaration that you have fulfilled your duty to apply the waste hierarchy.
- The relevant LoW Code.

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We trust that this report meets your requirements, but please contact us should you require clarification on any of the matters raised. Thank you for your custom and we hope that we can be of further assistance to you in the future.

Paul Brewer
BSc (Hons), MSc, MI Soil Sci
Senior Environmental Consultant

Dr. Barry Powell
BSc (Hons), PhD, MCIWM
Principal Consultant

(for and on behalf of Terragen Environmental Consultants Limited)

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WASTE CLASSIFICATION FRAMEWORK

One of the relevant objectives of the Revised Waste Framework (WFD) Directive (2018/851/EC) is to ensure that waste is recovered or disposed without endangering human health and without using processes or methods which could harm the environment, and without:

- Risk to water, air, soil, plants, or animals.
- Causing nuisance through noise or odours.
- Adversely affecting the countryside or places of special interest.

It also provides the general framework of waste management requirements and sets the basic EU waste management definitions. The List of Waste (LoW) Amendment Decision (2014/955/EU) establishes the classification system, including the distinction between hazardous and non-hazardous wastes. It is closely linked to the main characteristics that render waste hazardous as contained in Annex III of the WFD. The amendments came into force to align waste classification with relevant sections of and approaches used in EU chemicals regulations, such as REACH (1907/2006/EC) and the CLP (1272/2008/EC), which in turn adapt for the EU the UN globally harmonised system for chemicals classification. In 2020 and 2021, GB and the UK introduced its own set of waste classification regulations, such as the CLP, REACH and the mandatory classification and labelling list, which retain, mirror and/or replace relevant EU regulations.

Waste is not considered to be a substance, a mixture or an article. Consequently, obligations under the REACH and the CLP regulations do not apply for producers or holders of waste. Nevertheless, information generated in the frameworks of REACH and the CLP that set criteria for substances to be classified as hazardous are related to some of the hazardous properties applicable to the classification of waste. Annex VI of the CLP contains official harmonised classifications of substances, which must be used where the classification of waste depends on the presence of hazardous substances. The classification of substances is periodically updated by the European Chemicals Agency in the form of a new EU regulation, which automatically amends the CLP.

The Landfill Directive (1999/31/EC) defines the categories of waste applicable to landfill sites as hazardous, non-hazardous, municipal and inert. A landfill is defined as a waste disposal site for the deposit of waste onto or into land. Landfills are divided into three classes:

- Landfills for hazardous waste.
- Landfills for non-hazardous waste.
- Landfills for inert waste.

The three main categories of waste and the options for landfilling are as follows:

- Hazardous with or without additional treatment prior to landfill or stable non-reactive hazardous waste (SNRHW) suitable for placement in a dedicated cell in a suitably permitted non-hazardous landfill site.
- Non-hazardous.
- Inert and suitable for disposal to an appropriately permitted landfill site.

To determine the presence and significance of hazards associated with any construction, demolition and earthworks (CD&E) arisings and therefore the resultant options for management of the materials, and where necessary the appropriate class of facility the waste can be taken to, it is therefore necessary to:

- Determine the presence of hazardous properties within the materials.
- Determine the category of the waste.
- Determine if the waste meets the requirements for reuse onsite, recovery or recycling on or offsite, or disposal offsite as waste.

The main statutory guidance document used to properly classify waste as either hazardous or non-hazardous in the UK is Guidance on the Classification and Assessment of Waste (WM3). The stepped methodology for classifying a waste and assessing any hazardous properties is as follows:

- Check if the waste needs to be classified.
- Identify the code that may apply to the waste.
- Identify the assessment required to select the correct code.
- Determine the chemical composition of the waste.
- Determine if the substances in the waste are hazardous substances or persistent organic pollutants.
- Assess the hazardous properties of the waste.
- Assign and describe the classification code.

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The waste types disposed to a landfill site permitted to accept inert waste or recovered at a site permitted or exempted in accordance with UK regulations and statutory guidance should be classified as inert. No hazardous or contaminated wastes, as defined in the Waste Acceptance Criteria (WAC) and Procedures Directive (2003/33/EC), should be accepted at such sites. The source and origin of the waste along with a description (e.g. physical form, consistency, composition, colour, odour and likely behaviour etc.) should be determined for all material accepted at such inert waste facilities. The materials should be stable, non-reactive and with a sufficient bearing capacity for the end use.

In accordance with the Landfill Directive and UK statutory guidance, the only materials allowed for disposal or recovery at such inert waste facilities without more detailed information (e.g. chemical analyses, site investigation data etc.) should be restricted to single source material from a known site and a reliable producer. The material from the site or source should not be contaminated and should not contain significant quantities of deleterious materials such as wood, plastic etc. Materials potentially suitable for recovery at such inert waste facilities without laboratory analysis should be restricted to the following:

LoW Code	Description	Restrictions
170101	Concrete	Selected CD&E waste only
170102	Bricks	Selected CD&E waste only
170103	Tiles & Ceramics	Selected CD&E waste only
170107	Mixture of Concrete, Bricks, Tiles & Ceramics	Selected CD&E waste only
170504	Soil & Stones (e.g. natural clay & sand etc.)	Selected CD&E waste not from contaminated sites*
200202	Soil & Stones (e.g. natural clay & sand etc.)	Selected garden & park waste only*

- *Excluding topsoil or peat when used as subsoil or fill.
- Selected CD&E or garden & park waste with low (non-significant) contents of other types of materials (i.e. metals, plastics, organics, wood, rubber etc.). The origin of the waste must be known and relevant information regarding the waste must have been assessed.
- No CD&E waste from buildings or land contaminated with dangerous substances (e.g. 170106 & 170503).
- No CD&E waste from buildings treated or painted with dangerous substances in significant amounts.
- These materials should only be accepted if they arise from a single identified source.
- Mixtures of different types of these wastes from the same single source are acceptable without testing.
- Mixtures of these wastes from different sources are not acceptable unless pre-testing is carried out.

If the waste materials were determined as hazardous or potentially inert and required disposal to landfill, then a further stage of assessment would be required to determine if the waste meets the requirements for disposal at a particular category of landfill facility. This is done in the form of WAC testing. It should be noted that the associated regulations and statutory guidance do not apply to the use of suitable uncontaminated waste for redevelopment, restoration and filling in work or for construction purposes, or for recovery activities.

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LIMITATIONS AND USE OF THE REPORT

IMPORTANT: This section should be read before reliance is placed on any of the opinions, advice, recommendations or conclusions set out in this report.

a) This report has been prepared for the purpose of providing interpretation on analytical results supplied by the Client pursuant to its appointment of Terragen Environmental Consultants Limited to act as a Consultant.

b) These comments are given in good faith on the basis of the results provided. Terragen Environmental Consultants Limited can bear no responsibility for any inaccuracies that may arise from the laboratory testing.

c) This report does not constitute a qualitative risk assessment of the site or the soils and is not based upon a conceptual site model as we have been provided with insufficient information to establish the existence of potential sources of contamination, plausible pathways, or sensitive receptors and therefore assumes that they exist.

d) The report is unable to comment on the potential risks to controlled waters (groundwater or surface water), although where contaminant concentrations are below relevant threshold criteria in most circumstances it may be considered that the risk is low.

e) We have assumed that the results are representative of the area sampled. This does not imply that they may be considered representative of the site itself. Terragen Environmental Consultants Limited can accept no responsibility for the integrity of the sampling regime.

f) Save for the Client no duty is undertaken or warranty or representation made to any party in respect of the opinions, advice, recommendations or conclusions herein set out.

g) All work carried out in preparing this report has used, and is based upon, our professional knowledge and understanding of the current relevant English and European Community standards, approved codes of practice, technology and legislation.
Changes in the above may cause the opinion, advice, recommendations or conclusions set out in this report to become inappropriate or incorrect. However, in giving its opinions, advice, recommendations and conclusions, Terragen Environmental Consultants Limited has considered pending changes to environmental legislation and regulations of which it is currently aware. Following delivery of this report, we will have no obligation to advise the Client of any such changes, or of their repercussions.

h) Terragen Environmental Consultants Limited acknowledges that it is being retained, in part, because of its knowledge and experience with respect to environmental matters. Terragen Environmental Consultants Limited will consider and analyse all information provided to it in the context of our knowledge and experience and all other relevant information known to us. To the extent that the information provided to us is not inconsistent or incompatible therewith, Terragen Environmental Consultants Limited shall be entitled to rely upon and assume, without independent verification, the accuracy and completeness of such information.

i) The content of this report represents the professional opinion of experienced environmental consultants. Terragen Environmental Consultants Limited does not provide specialist legal advice and the advice of lawyers may be required.

j) In the Summary and Recommendations sections of this report, Terragen Environmental Consultants Limited has set out our key findings and provided a summary and overview of our advice, opinions and recommendations. However, other parts of this report will often indicate the limitations of the information obtained by Terragen Environmental Consultants Limited and therefore any advice, opinions or recommendations set out in the Executive Summary, Summary and Recommendations sections ought not to be relied upon unless they are considered in the context of the whole report.

k) The lack of evidence of the presence of hazardous or harmful materials at the subject property does not guarantee the absence of such materials; rather it indicates only that none were found as a result of the services provided. The services described in this report were performed in accordance with the general practices and procedures accepted in the consulting field.

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Appendix A Laboratory Test Reports.

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Analytical Report Number : 23-66291

Project / Site name:	Ferry Island, Tottenham Hale Plot B, High Cross Road, London N17 9NU JRLE	**Samples received on:**	02/11/2023
Your job number:	TJ3994B01	**Samples instructed on/ Analysis started on:**	02/11/2023
Your order number:	106471.2	**Analysis completed by:**	08/11/2023
Report Issue Number:	1	**Report issued on:**	08/11/2023
Samples Analysed:	2 soil samples		

Signed:

Joanna Szwagrzak
Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

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
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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Analytical Report Number: 23-66291
Project / Site name: Ferry Island, Tottenham Hale Plot B, High Cross Road, London N17 9NU JRLE
Your Order No: 106471.2

Lab Sample Number				2865401	2865402
Sample Reference				MG/0211/01	MG/0211/02
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				02/11/2023	02/11/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	16	18
Total mass of sample received	kg	0.001	NONE	1.2	1.3

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MJN	MJN

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	11.6	11.4
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	7100	6000
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	390	540
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.196	0.271
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	196	271
Sulphide	mg/kg	1	MCERTS	90	83
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.6	0.6

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.06
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.09	< 0.05
Fluorene	mg/kg	0.05	MCERTS	0.06	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.64	0.47
Anthracene	mg/kg	0.05	MCERTS	0.11	0.08
Fluoranthene	mg/kg	0.05	MCERTS	0.8	0.76
Pyrene	mg/kg	0.05	MCERTS	0.7	0.63
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.38	0.39
Chrysene	mg/kg	0.05	MCERTS	0.36	0.31
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.44	0.47
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.24	0.16
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.4	0.39
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.17	0.18
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.19	0.21
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	4.58	4.11

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Analytical Report Number: 23-66291
Project / Site name: Ferry Island, Tottenham Hale Plot B, High Cross Road, London N17 9NU JRLE
Your Order No: 106471.2

Lab Sample Number				2865401	2865402
Sample Reference				MG/0211/01	MG/0211/02
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				02/11/2023	02/11/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Heavy Metals / Metalloids					
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	3.4	2.9
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	16
Barium (aqua regia extractable)	mg/kg	1	MCERTS	110	130
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.71	0.75
Boron (water soluble)	mg/kg	0.2	MCERTS	2.5	1.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	22	24
Copper (aqua regia extractable)	mg/kg	1	MCERTS	34	36
Lead (aqua regia extractable)	mg/kg	1	MCERTS	68	94
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.3	0.4
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	1	1.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	15	16
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	34	35
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	76	96
Petroleum Hydrocarbons					
TPH C10 - C40 EH_CU_1D_TOTAL	mg/kg	10	MCERTS	120	150

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 23-66291
Project / Site name: Ferry Island, Tottenham Hale Plot B, High Cross Road, London N17 9NU JRLE

* 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 loam (MCERTS) 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 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2865401	MG/0211/01	None Supplied	None Supplied	Brown sandy clay with gravel.
2865402	MG/0211/02	None Supplied	None Supplied	Brown sandy clay with gravel.

Analytical Report Number : 23-66291
Project / Site name: Ferry Island, Tottenham Hale Plot B, High Cross Road, London N17 9NU JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated WAC-17 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
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-66291
Project / Site name: Ferry Island, Tottenham Hale Plot B, High Cross Road, London N17 9NU JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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Analytical Report Number : 23-66294

Project / Site name:	Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU (JRL	**Samples received on:**	02/11/2023
Your job number:	TJ3994B02	**Samples instructed on/ Analysis started on:**	02/11/2023
Your order number:	TJ3994B02	**Analysis completed by:**	08/11/2023
Report Issue Number:	1	**Report issued on:**	08/11/2023
Samples Analysed:	3 soil samples		

Signed:

Joanna Szwagrzak
Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

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
asbestos	- 6 months from reporting

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

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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Analytical Report Number: 23-66294
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU (JRL
Your Order No: TJ3994B02

Lab Sample Number				2865412	2865413	2865414
Sample Reference				NAT/0211/01	NAT/0211/02	NAT/0211/03
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				02/11/2023	02/11/2023	02/11/2023
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	%	0.01	NONE	16	15	22
Total mass of sample received	kg	0.001	NONE	1.4	1.2	1.2
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	IZJ	IZJ	IZJ

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	10.6	10.7	9.8
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	1400	6000	2600
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	1100	3700	1400
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.542	1.87	0.708
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	542	1870	708
Sulphide	mg/kg	1	MCERTS	170	200	140
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.6	0.4	0.6

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.05	0.13	0.24
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.09
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.06
Fluorene	mg/kg	0.05	MCERTS	< 0.05	0.07	0.13
Phenanthrene	mg/kg	0.05	MCERTS	0.08	0.27	0.5
Anthracene	mg/kg	0.05	MCERTS	< 0.05	0.05	0.1
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.18	0.27
Pyrene	mg/kg	0.05	MCERTS	< 0.05	0.17	0.28
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.09	0.14
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.08	0.13
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	0.1
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	0.09
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.14
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	< 0.85	1.04	2.27

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Analytical Report Number: 23-66294
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU (JRL
Your Order No: TJ3994B02

Lab Sample Number				2865412	2865413	2865414
Sample Reference				NAT/0211/01	NAT/0211/02	NAT/0211/03
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				02/11/2023	02/11/2023	02/11/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Heavy Metals / Metalloids						
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.9	7	9.8
Barium (aqua regia extractable)	mg/kg	1	MCERTS	60	69	130
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.95	0.78	1
Boron (water soluble)	mg/kg	0.2	MCERTS	1.5	1.3	1.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	23	21	28
Copper (aqua regia extractable)	mg/kg	1	MCERTS	22	22	26
Lead (aqua regia extractable)	mg/kg	1	MCERTS	12	13	16
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.69	0.46	0.44
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	21	16	25
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	39	34	45
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	47	39	53
Petroleum Hydrocarbons						
TPH C10 - C40 EH_CU_1D_TOTAL	mg/kg	10	MCERTS	< 10	10	29

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 23-66294
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU (JRL

* 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 loam (MCERTS) 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 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2865412	NAT/0211/01	None Supplied	None Supplied	Brown clay and sand with gravel.
2865413	NAT/0211/02	None Supplied	None Supplied	Brown clay and sand with gravel.
2865414	NAT/0211/03	None Supplied	None Supplied	Brown clay and sand with gravel.

Analytical Report Number : 23-66294
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU (JRL

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated WAC-17 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
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-66294
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU (JRL

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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30th November 2023

FAO: Lee Armstrong

Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU

Waste Classification Report

Please find attached the results of laboratory testing carried out on five samples of soil recovered from Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU (the site) by a geo-environmental engineer from Terragen Environmental Consultants Limited (TGEN) on 09/11/2023. The samples represent made ground and natural ground (soil and stones) being generated from enabling works excavations and will be excess to requirements and need to be removed from site.

2.0 SITE DESCRIPTION

The Tottenham Hale Centre (THC) development consists of five different sites: Welbourne, North Island, Ferry Island, Ashley Road East and Ashley Road West. Prior to 1864, Ferry Island (Plot B) was predominantly residential with a pumping station occupying the E boundary. By 1936, the residential properties in the SW had been developed into a single building and the pumping station was no longer present. During the 1970s and 80s the site was cleared and a new road junction constructed in the SE corner of the site. More recently and prior to the current development Ferry Island has been occupied by three commercial units including KFC, Pizza Hut and Maplin, with associated car parking.

The proposed THC development essentially comprises the demolition of the existing structures and the construction of residential-led development with retail/business uses alongside; servicing, highways improvements and public amenity space including soft and hard landscaped areas creating an improved public realm.

We understand that as part of the development there will be a shallow reduced level excavation followed by placement of a pile mat, piling, pile cap excavations and a deep basement excavation, which will generate in total circa 26790m^3 of material for disposal from site as waste. It is likely that circa 7170m^3 (27%) of the arisings will be made ground of which circa 2870m^3 will be pile mat and hardstanding, and circa 19620m^3 (73%) will be uncontaminated and inert natural soil and pile arisings.

The anticipated geology at the Ferry Island site comprises made ground overlying superficial deposits of Enfield Silt and River Terrace Deposits. The London Clay is at depth and in the order of 15m thick, underlain by the Lambeth Group, Thanet Sand and White Chalk.

Two site investigation reports have been prepared by Langan International (ref. 841011101 dated 26/07/2018 and 04/11/2021) on behalf of Whitby Wood, which comprised the progression of thirteen exploratory holes. The strata encountered confirmed the anticipated geology and comprised made ground, on average circa 1.7m thick, typically containing only a small quantity of deleterious materials, such as fragments of clinker and tarmac, with no visual or olfactory evidence of significant contamination. Asbestos containing material was not visible during the previous site investigations but it was detected at low concentrations in three samples of made ground tested. The made ground overlies natural and uncontaminated (inert) Enfield Silt, Kempton Park Gravel and London Clay.

During the previous investigations thirty-five samples were taken from the thirteen exploratory hole locations to depths of up to 6.2mbgl representing circa 26790m^3 of enabling works excavations at the site.

3.0 SITE SAMPLING

A geo-environmental engineer from TGEN visited the site on 09/11/2023 to assess the nature of the strata encountered. This included:

- A physical description of the arisings in accordance with relevant AGS and BSI standards.
- An assessment of visual and olfactory evidence of contamination.
- The recovery of representative samples.
- The submission of samples to a UKAS/MCERTS accredited laboratory for analysis.

During the visit, routine reassurance samples of materials were recovered and included the following:

- Two samples of made ground from arisings from the reduced level excavations (MG).
- Three samples of natural ground from a stockpile of piling arisings (NAT).

4.0 MATERIALS ASSESSMENT

In accordance with the LoW (as amended), the CD&E arisings encountered during this sampling exercise are mirror entries with a mirror hazardous (MH) entry and a mirror non-hazardous (MN) entry as follows:

- Soil and stones containing dangerous substances (LoW Code 170503*) – MH.
- Soil and stones not containing dangerous substances (LoW Code 170504) - MN.

4.1 Physical Appearance of the Waste

Made Ground Arisings (MG)

Sampling Date	Reference	Physical Description	Photograph
09/11/2023	MG/0911/01 MG/0911/02	Grey/brown, slightly sandy, silty, clay with gravel and occasional fragments of brick and concrete, and rare fragments of wood and metal. There was no significant odour and the PID reading was <1ppm. No asbestos was seen during the sampling and there was no visual or olfactory evidence of contamination. Based on the physical description, the made ground arisings could be described as: Soil and stones not containing dangerous substances (LoW Code 170504) - MN.	

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Natural Ground Arisings (NAT)

Sampling Date	Reference	Physical Description	Photograph
09/11/2023	NAT/0911/01 NAT/0911/02 NAT/0911/03	Yellow/brown and grey/brown, silty, gravely clay and sand. There was no significant odour and the PID reading was <1ppm. No asbestos was seen during the sampling and there was no visual or olfactory evidence of contamination. Based on the physical description, the natural ground arisings could be described as: Soil and stones not containing dangerous substances (LoW Code 170504) - MN.	

4.2 Chemical Nature of the Waste

The samples were subjected to a programme of laboratory testing, which included an asbestos screen and a suite of potential contaminants associated with a wide range of potential activities to confirm the preliminary waste classification based on the physical description of the material sampled. The laboratory test reports are presented in Appendix A, which can be summarised as follows.

Made Ground Arisings (MG)

Ref	Chemical Summary		Waste Classification
	Asbestos	Solid	LoW Code
MG/0911/01	NAD	No significant contamination	170504
MG/0911/02	NAD	No significant contamination	170504

NAD No asbestos observed during sample preparation or detected in the sample.

Natural Ground Arisings (NAT)

Ref	Chemical Summary		Waste Classification
	Asbestos	Solid	LoW Code
NAT/0911/01	NAD	No significant contamination	170504
NAT/0911/02	NAD	No significant contamination	170504
NAT/0911/03	NAD	No significant contamination	170504

NAD No asbestos observed during sample preparation or detected in the sample.

5.0 SUMMARY

No asbestos was observed during the sampling, and none was detected in the samples, which all returned low concentrations of potential contaminants. As such, the material represented by the samples would be classified as:

- **Soil and stones not containing hazardous substances (LoW Code 170504).**

In addition, material represented by the samples can be described for waste disposal purposes as follows:

- *MG/0911/01 No significant contamination (Uncontaminated waste).*
- *MG/0911/02 No significant contamination (Uncontaminated waste).*

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- *NAT/0911/01 No significant contamination (Uncontaminated and inert waste).*
- *NAT/0911/02 No significant contamination (Uncontaminated and inert waste).*
- *NAT/0911/03 No significant contamination (Uncontaminated and inert waste).*

We would recommend that during any excavation associated with future phases of the development, should materials previously unidentified during the various investigations be encountered (e.g., an unusual appearance and/or odour etc.), works are halted in that area and the advice of a geo-environmental specialist be sought to determine an appropriate course of action. We would also advise you to employ routine waste practices when managing the disposal of the waste material (i.e. visual and olfactory inspections of all loads leaving the site) to ensure that the material remains consistent and suitable for recovery or disposal at your chosen facility in accordance with level 1, level 2 and level 3 waste acceptance procedures. Please be aware that your duty of care paperwork now needs to include the following:

- The relevant UK SIC Code.
- A declaration that you have fulfilled your duty to apply the waste hierarchy.
- The relevant LoW Code.

We trust that this report meets your requirements, but please contact us should you require clarification on any of the matters raised. Thank you for your custom and we hope that we can be of further assistance to you in the future.

Paul Brewer
BSc (Hons), MSc, MI Soil Sci
Senior Environmental Consultant

Dr. Barry Powell
BSc (Hons), PhD, MCIWM
Principal Consultant

(for and on behalf of Terragen Environmental Consultants Limited)

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WASTE CLASSIFICATION FRAMEWORK

One of the relevant objectives of the Revised Waste Framework (WFD) Directive (2018/851/EC) is to ensure that waste is recovered or disposed without endangering human health and without using processes or methods which could harm the environment, and without:

- Risk to water, air, soil, plants, or animals.
- Causing nuisance through noise or odours.
- Adversely affecting the countryside or places of special interest.

It also provides the general framework of waste management requirements and sets the basic EU waste management definitions. The List of Waste (LoW) Amendment Decision (2014/955/EU) establishes the classification system, including the distinction between hazardous and non-hazardous wastes. It is closely linked to the main characteristics that render waste hazardous as contained in Annex III of the WFD. The amendments came into force to align waste classification with relevant sections of and approaches used in EU chemicals regulations, such as REACH (1907/2006/EC) and the CLP (1272/2008/EC), which in turn adapt for the EU the UN globally harmonised system for chemicals classification. In 2020 and 2021, GB and the UK introduced its own set of waste classification regulations, such as the CLP, REACH and the mandatory classification and labelling list, which retain, mirror and/or replace relevant EU regulations.

Waste is not considered to be a substance, a mixture or an article. Consequently, obligations under the REACH and the CLP regulations do not apply for producers or holders of waste. Nevertheless, information generated in the frameworks of REACH and the CLP that set criteria for substances to be classified as hazardous are related to some of the hazardous properties applicable to the classification of waste. Annex VI of the CLP contains official harmonised classifications of substances, which must be used where the classification of waste depends on the presence of hazardous substances. The classification of substances is periodically updated by the European Chemicals Agency in the form of a new EU regulation, which automatically amends the CLP.

The Landfill Directive (1999/31/EC) defines the categories of waste applicable to landfill sites as hazardous, non-hazardous, municipal and inert. A landfill is defined as a waste disposal site for the deposit of waste onto or into land. Landfills are divided into three classes:

- Landfills for hazardous waste.
- Landfills for non-hazardous waste.
- Landfills for inert waste.

The three main categories of waste and the options for landfilling are as follows:

- Hazardous with or without additional treatment prior to landfill or stable non-reactive hazardous waste (SNRHW) suitable for placement in a dedicated cell in a suitably permitted non-hazardous landfill site.
- Non-hazardous.
- Inert and suitable for disposal to an appropriately permitted landfill site.

To determine the presence and significance of hazards associated with any construction, demolition and earthworks (CD&E) arisings and therefore the resultant options for management of the materials, and where necessary the appropriate class of facility the waste can be taken to, it is therefore necessary to:

- Determine the presence of hazardous properties within the materials.
- Determine the category of the waste.
- Determine if the waste meets the requirements for reuse onsite, recovery or recycling on or offsite, or disposal offsite as waste.

The main statutory guidance document used to properly classify waste as either hazardous or non-hazardous in the UK is Guidance on the Classification and Assessment of Waste (WM3). The stepped methodology for classifying a waste and assessing any hazardous properties is as follows:

- Check if the waste needs to be classified.
- Identify the code that may apply to the waste.
- Identify the assessment required to select the correct code.
- Determine the chemical composition of the waste.
- Determine if the substances in the waste are hazardous substances or persistent organic pollutants.
- Assess the hazardous properties of the waste.
- Assign and describe the classification code.

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The waste types disposed to a landfill site permitted to accept inert waste or recovered at a site permitted or exempted in accordance with UK regulations and statutory guidance should be classified as inert. No hazardous or contaminated wastes, as defined in the Waste Acceptance Criteria (WAC) and Procedures Directive (2003/33/EC), should be accepted at such sites. The source and origin of the waste along with a description (e.g. physical form, consistency, composition, colour, odour and likely behaviour etc.) should be determined for all material accepted at such inert waste facilities. The materials should be stable, non-reactive and with a sufficient bearing capacity for the end use.

In accordance with the Landfill Directive and UK statutory guidance, the only materials allowed for disposal or recovery at such inert waste facilities without more detailed information (e.g. chemical analyses, site investigation data etc.) should be restricted to single source material from a known site and a reliable producer. The material from the site or source should not be contaminated and should not contain significant quantities of deleterious materials such as wood, plastic etc. Materials potentially suitable for recovery at such inert waste facilities without laboratory analysis should be restricted to the following:

LoW Code	Description	Restrictions
170101	Concrete	Selected CD&E waste only
170102	Bricks	Selected CD&E waste only
170103	Tiles & Ceramics	Selected CD&E waste only
170107	Mixture of Concrete, Bricks, Tiles & Ceramics	Selected CD&E waste only
170504	Soil & Stones (e.g. natural clay & sand etc.)	Selected CD&E waste not from contaminated sites*
200202	Soil & Stones (e.g. natural clay & sand etc.)	Selected garden & park waste only*

- *Excluding topsoil or peat when used as subsoil or fill.
- Selected CD&E or garden & park waste with low (non-significant) contents of other types of materials (i.e. metals, plastics, organics, wood, rubber etc.). The origin of the waste must be known and relevant information regarding the waste must have been assessed.
- No CD&E waste from buildings or land contaminated with dangerous substances (e.g. 170106 & 170503).
- No CD&E waste from buildings treated or painted with dangerous substances in significant amounts.
- These materials should only be accepted if they arise from a single identified source.
- Mixtures of different types of these wastes from the same single source are acceptable without testing.
- Mixtures of these wastes from different sources are not acceptable unless pre-testing is carried out.

If the waste materials were determined as hazardous or potentially inert and required disposal to landfill, then a further stage of assessment would be required to determine if the waste meets the requirements for disposal at a particular category of landfill facility. This is done in the form of WAC testing. It should be noted that the associated regulations and statutory guidance do not apply to the use of suitable uncontaminated waste for redevelopment, restoration and filling in work or for construction purposes, or for recovery activities.

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LIMITATIONS AND USE OF THE REPORT

IMPORTANT: This section should be read before reliance is placed on any of the opinions, advice, recommendations or conclusions set out in this report.

a) This report has been prepared for the purpose of providing interpretation on analytical results supplied by the Client pursuant to its appointment of Terragen Environmental Consultants Limited to act as a Consultant.

b) These comments are given in good faith on the basis of the results provided. Terragen Environmental Consultants Limited can bear no responsibility for any inaccuracies that may arise from the laboratory testing.

c) This report does not constitute a qualitative risk assessment of the site or the soils and is not based upon a conceptual site model as we have been provided with insufficient information to establish the existence of potential sources of contamination, plausible pathways, or sensitive receptors and therefore assumes that they exist.

d) The report is unable to comment on the potential risks to controlled waters (groundwater or surface water), although where contaminant concentrations are below relevant threshold criteria in most circumstances it may be considered that the risk is low.

e) We have assumed that the results are representative of the area sampled. This does not imply that they may be considered representative of the site itself. Terragen Environmental Consultants Limited can accept no responsibility for the integrity of the sampling regime.

f) Save for the Client no duty is undertaken or warranty or representation made to any party in respect of the opinions, advice, recommendations or conclusions herein set out.

g) All work carried out in preparing this report has used, and is based upon, our professional knowledge and understanding of the current relevant English and European Community standards, approved codes of practice, technology and legislation.
Changes in the above may cause the opinion, advice, recommendations or conclusions set out in this report to become inappropriate or incorrect. However, in giving its opinions, advice, recommendations and conclusions, Terragen Environmental Consultants Limited has considered pending changes to environmental legislation and regulations of which it is currently aware. Following delivery of this report, we will have no obligation to advise the Client of any such changes, or of their repercussions.

h) Terragen Environmental Consultants Limited acknowledges that it is being retained, in part, because of its knowledge and experience with respect to environmental matters. Terragen Environmental Consultants Limited will consider and analyse all information provided to it in the context of our knowledge and experience and all other relevant information known to us. To the extent that the information provided to us is not inconsistent or incompatible therewith, Terragen Environmental Consultants Limited shall be entitled to rely upon and assume, without independent verification, the accuracy and completeness of such information.

i) The content of this report represents the professional opinion of experienced environmental consultants. Terragen Environmental Consultants Limited does not provide specialist legal advice and the advice of lawyers may be required.

j) In the Summary and Recommendations sections of this report, Terragen Environmental Consultants Limited has set out our key findings and provided a summary and overview of our advice, opinions and recommendations. However, other parts of this report will often indicate the limitations of the information obtained by Terragen Environmental Consultants Limited and therefore any advice, opinions or recommendations set out in the Executive Summary, Summary and Recommendations sections ought not to be relied upon unless they are considered in the context of the whole report.

k) The lack of evidence of the presence of hazardous or harmful materials at the subject property does not guarantee the absence of such materials; rather it indicates only that none were found as a result of the services provided. The services described in this report were performed in accordance with the general practices and procedures accepted in the consulting field.

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Appendix A Laboratory Test Reports.

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Analytical Report Number : 23-67904

Project / Site name:	Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU(JRLE	**Samples received on:**	09/11/2023
Your job number:	TJ3994B03	**Samples instructed on/ Analysis started on:**	09/11/2023
Your order number:	TJ3994B03	**Analysis completed by:**	17/11/2023
Report Issue Number:	1	**Report issued on:**	17/11/2023
Samples Analysed:	2 soil samples		

Signed:

Joanna Szwagrzak
Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

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
asbestos	- 6 months from reporting

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

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.

Analytical Report Number: 23-67904
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU(JRLE
Your Order No: TJ3994B03

Lab Sample Number				2873389	2873390
Sample Reference				MG/0911/01	MG/0911/02
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				09/11/2023	09/11/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	12	12
Total mass of sample received	kg	0.001	NONE	1	1.1
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MLO	MLO

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	9.6	10.5
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	1900	1900
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	310	220
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.154	0.111
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	154	111
Sulphide	mg/kg	1	MCERTS	4.6	4
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.8	1

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	0.08	0.1
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.52	0.53
Anthracene	mg/kg	0.05	MCERTS	0.14	0.14
Fluoranthene	mg/kg	0.05	MCERTS	1.2	1.4
Pyrene	mg/kg	0.05	MCERTS	1.1	1.2
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.71	0.81
Chrysene	mg/kg	0.05	MCERTS	0.67	0.74
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.88	1.2
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.46	0.43
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.69	0.84
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.44	0.52
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.11	0.12
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.55	0.62
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	7.58	8.63

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-67904
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU(JRLE
Your Order No: TJ3994B03

Lab Sample Number				2873389	2873390
Sample Reference				MG/0911/01	MG/0911/02
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				09/11/2023	09/11/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Heavy Metals / Metalloids					
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	4.2	3.8
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	12
Barium (aqua regia extractable)	mg/kg	1	MCERTS	120	130
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.73	0.61
Boron (water soluble)	mg/kg	0.2	MCERTS	2.6	0.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	21	19
Copper (aqua regia extractable)	mg/kg	1	MCERTS	36	37
Lead (aqua regia extractable)	mg/kg	1	MCERTS	110	120
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.83	0.67
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	18	16
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	39	34
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	130
Petroleum Hydrocarbons					
TPH C10 - C40 EH_CU_1D_TOTAL	mg/kg	10	MCERTS	29	33

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 23-67904
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU(JRLE

* 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 loam (MCERTS) 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 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2873389	MG/0911/01	None Supplied	None Supplied	Brown sand with gravel.
2873390	MG/0911/02	None Supplied	None Supplied	Brown sand with gravel.

Analytical Report Number : 23-67904
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU(JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated WAC-17 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
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-67904
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU(JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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Analytical Report Number : 23-67906

Project / Site name:	Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE	**Samples received on:**	09/11/2023
Your job number:	TJ3994B04	**Samples instructed on/ Analysis started on:**	09/11/2023
Your order number:	TJ3994B04	**Analysis completed by:**	17/11/2023
Report Issue Number:	1	**Report issued on:**	17/11/2023
Samples Analysed:	3 soil samples		

Signed:

Dominika Liana
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

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
asbestos	- 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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Analytical Report Number: 23-67906
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE
Your Order No: TJ3994B04

Lab Sample Number				2873392	2873393	2873394
Sample Reference				NAT/0911/01	NAT/0911/02	NAT/0911/03
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				09/11/2023	09/11/2023	09/11/2023
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	25	38
Moisture Content	%	0.01	NONE	16	5.6	5.9
Total mass of sample received	kg	0.001	NONE	1.1	1.2	1.2
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	EC	EC	EC

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	11.2	9.1	9.3
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	1200	230	320
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	860	120	190
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.431	0.0614	0.0947
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	431	61.4	94.7
Sulphide	mg/kg	1	MCERTS	3.6	4.3	4.3
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.5	0.2	0.1

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.07	< 0.05	0.05
Pyrene	mg/kg	0.05	MCERTS	0.06	< 0.05	0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	< 0.85	< 0.85	< 0.85

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Analytical Report Number: 23-67906
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE
Your Order No: TJ3994B04

Lab Sample Number				2873392	2873393	2873394
Sample Reference				NAT/0911/01	NAT/0911/02	NAT/0911/03
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				09/11/2023	09/11/2023	09/11/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Heavy Metals / Metalloids						
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	2.5	< 1.0	2
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	14	15	13
Barium (aqua regia extractable)	mg/kg	1	MCERTS	68	49	21
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.83	0.39	0.3
Boron (water soluble)	mg/kg	0.2	MCERTS	1.4	0.3	0.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	26	13	11
Copper (aqua regia extractable)	mg/kg	1	MCERTS	24	5.9	8.5
Lead (aqua regia extractable)	mg/kg	1	MCERTS	18	10	11
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.73	0.59	0.51
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	29	17	13
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	52	26	22
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	57	24	25
Petroleum Hydrocarbons						
TPH C10 - C40 $_{EH\_CU\_1D\_TOTAL}$	mg/kg	10	MCERTS	< 10	< 10	24

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 23-67906

Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE

* 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 loam (MCERTS) 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 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2873392	NAT/0911/01	None Supplied	None Supplied	Brown sand with gravel.
2873393	NAT/0911/02	None Supplied	None Supplied	Brown sand with gravel and stones.
2873394	NAT/0911/03	None Supplied	None Supplied	Brown sand with gravel and stones.

Analytical Report Number : 23-67906
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated WAC-17 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
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-67906
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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J. Reddington Limited
4 Elstree Way
Borehamwood
WD6 1RN

30th November 2023

FAO: Lee Armstrong

Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU

Waste Classification Report

Please find attached the results of laboratory testing carried out on four samples of soil recovered from Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU (the site) by a geo-environmental engineer from Terragen Environmental Consultants Limited (TGEN) on 16/11/2023. The samples represent made ground and natural ground (soil and stones) being generated from enabling works excavations and will be excess to requirements and need to be removed from site.

2.0 SITE DESCRIPTION

The Tottenham Hale Centre (THC) development consists of five different sites: Welbourne, North Island, Ferry Island, Ashley Road East and Ashley Road West. Prior to 1864, Ferry Island (Plot B) was predominantly residential with a pumping station occupying the E boundary. By 1936, the residential properties in the SW had been developed into a single building and the pumping station was no longer present. During the 1970s and 80s the site was cleared and a new road junction constructed in the SE corner of the site. More recently and prior to the current development Ferry Island has been occupied by three commercial units including KFC, Pizza Hut and Maplin, with associated car parking.

The proposed THC development essentially comprises the demolition of the existing structures and the construction of residential-led development with retail/business uses alongside; servicing, highways improvements and public amenity space including soft and hard landscaped areas creating an improved public realm.

We understand that as part of the development there will be a shallow reduced level excavation followed by placement of a pile mat, piling, pile cap excavations and a deep basement excavation, which will generate in total circa 26790m^3 of material for disposal from site as waste. It is likely that circa 7170m^3 (27%) of the arisings will be made ground of which circa 2870m^3 will be pile mat and hardstanding, and circa 19620m^3 (73%) will be uncontaminated and inert natural soil and pile arisings.

The anticipated geology at the Ferry Island site comprises made ground overlying superficial deposits of Enfield Silt and River Terrace Deposits. The London Clay is at depth and in the order of 15m thick, underlain by the Lambeth Group, Thanet Sand and White Chalk.

Two site investigation reports have been prepared by Langan International (ref. 841011101 dated 26/07/2018 and 04/11/2021) on behalf of Whitby Wood, which comprised the progression of thirteen exploratory holes. The strata encountered confirmed the anticipated geology and comprised made ground, on average circa 1.7m thick, typically containing only a small quantity of deleterious materials, such as fragments of clinker and tarmac, with no visual or olfactory evidence of significant contamination. Asbestos containing material was not visible during the previous site investigations but it was detected at low concentrations in three samples of made ground tested. The made ground overlies natural and uncontaminated (inert) Enfield Silt, Kempton Park Gravel and London Clay.

During the previous investigations thirty-five samples were taken from the thirteen exploratory hole locations to depths of up to 6.2mbgl representing circa 26790m^3 of enabling works excavations at the site.

3.0 SITE SAMPLING

A geo-environmental engineer from TGEN visited the site on 16/11/2023 to assess the nature of the strata encountered. This included:

- A physical description of the arisings in accordance with relevant AGS and BSI standards.
- An assessment of visual and olfactory evidence of contamination.
- The recovery of representative samples.
- The submission of samples to a UKAS/MCERTS accredited laboratory for analysis.

During the visit, routine reassurance samples of materials were recovered and included the following:

- Two samples of made ground from arisings from the reduced level excavations (MG).
- Two samples of natural ground from a stockpile of piling arisings (NAT).

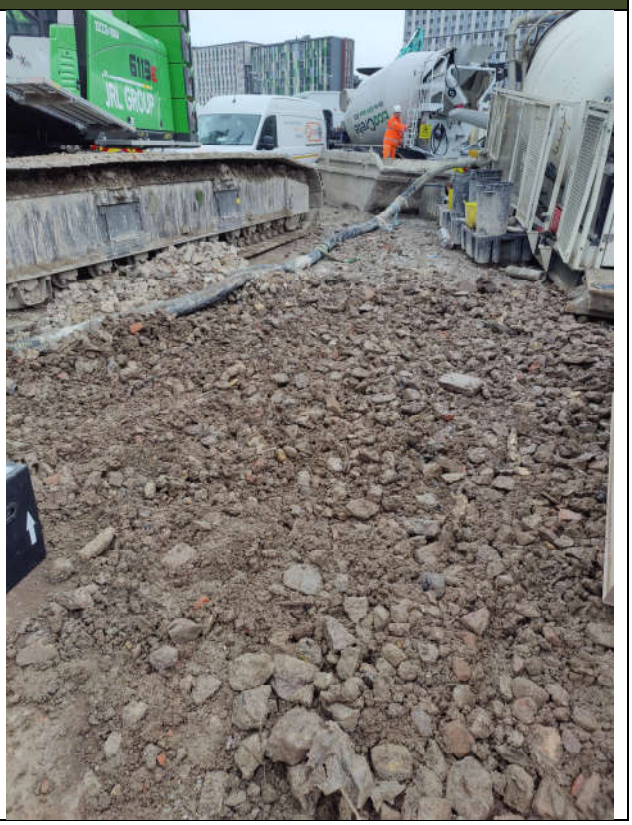
4.0 MATERIALS ASSESSMENT

In accordance with the LoW (as amended), the CD&E arisings encountered during this sampling exercise are mirror entries with a mirror hazardous (MH) entry and a mirror non-hazardous (MN) entry as follows:

- Soil and stones containing dangerous substances (LoW Code 170503*) – MH.
- Soil and stones not containing dangerous substances (LoW Code 170504) - MN.

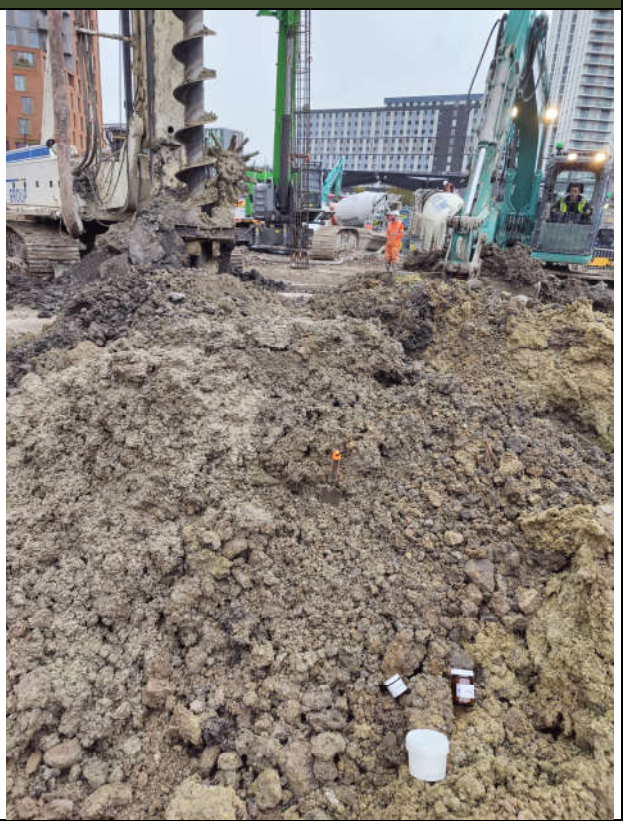
4.1 Physical Appearance of the Waste

Made Ground Arisings (MG)

Sampling Date	Reference	Physical Description	Photograph
16/11/2023	MG/1611/01 MG/1611/02	Grey/brown, sandy, gravel of crushed concrete with frequent fragments of brick, and rare fragments of wood and metal. There was no significant odour and the PID reading was <1ppm. No asbestos was seen during the sampling and there was no visual or olfactory evidence of contamination. Based on the physical description, the made ground arisings could be described as: Soil and stones not containing dangerous substances (LoW Code 170504) - MN.	

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Natural Ground Arisings (NAT)

Sampling Date	Reference	Physical Description	Photograph
16/11/2023	NAT/1611/01 NAT/1611/02	Light brown, slightly gravelly, silty sand. Brown, slightly gravelly clayey sand. There was no significant odour and the PID reading was <1ppm. No asbestos was seen during the sampling and there was no visual or olfactory evidence of contamination. Based on the physical description, the natural ground arisings could be described as: Soil and stones not containing dangerous substances (LoW Code 170504) - MN.	

4.2 Chemical Nature of the Waste

The samples were subjected to a programme of laboratory testing, which included an asbestos screen and a suite of potential contaminants associated with a wide range of potential activities to confirm the preliminary waste classification based on the physical description of the material sampled. The laboratory test reports are presented in Appendix A, which can be summarised as follows.

Made Ground Arisings (MG)

Ref	Chemical Summary		Waste Classification
	Asbestos	Solid	LoW Code
MG/1611/01	NAD	No significant contamination	170504
MG/1611/02	NAD	No significant contamination (elevated pH*)	170504

NAD No asbestos observed during sample preparation or detected in the sample.

Natural Ground Arisings (NAT)

Ref	Chemical Summary		Waste Classification
	Asbestos	Solid	LoW Code
NAT/1611/01	NAD	No significant contamination	170504
NAT/1611/02	NAD	No significant contamination (elevated pH*)	170504

NAD No asbestos observed during sample preparation or detected in the sample.

5.0 SUMMARY

No asbestos was observed during the sampling, and none was detected in the samples, which all returned low concentrations of potential contaminants. One sample of made ground (MG/1611/02) and one sample of natural ground (NAT/1611/02) returned an elevated pH, but in both instances this is considered to be due to the presence of alkaline construction materials (e.g. concrete) in the sample that are crushed during sample preparation together with the low buffering capacity of sand and gravel rather than the presence of other corrosive materials

As such, the material represented by the samples would be classified as:

- **Soil and stones not containing hazardous substances (LoW Code 170504).**

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In addition, material represented by the samples can be described for waste disposal purposes as follows:

- *MG/1611/01* *No significant contamination (Uncontaminated waste).*
- *MG/1611/02* *No significant contamination (Uncontaminated waste).*
- *NAT/1611/01* *No significant contamination (Uncontaminated and inert waste).*
- *NAT/1611/02* *No significant contamination (Uncontaminated and inert waste).*

We would recommend that during any excavation associated with future phases of the development, should materials previously unidentified during the various investigations be encountered (e.g., an unusual appearance and/or odour etc.), works are halted in that area and the advice of a geo-environmental specialist be sought to determine an appropriate course of action. We would also advise you to employ routine waste practices when managing the disposal of the waste material (i.e. visual and olfactory inspections of all loads leaving the site) to ensure that the material remains consistent and suitable for recovery or disposal at your chosen facility in accordance with level 1, level 2 and level 3 waste acceptance procedures. Please be aware that your duty of care paperwork now needs to include the following:

- The relevant UK SIC Code.
- A declaration that you have fulfilled your duty to apply the waste hierarchy.
- The relevant LoW Code.

We trust that this report meets your requirements, but please contact us should you require clarification on any of the matters raised. Thank you for your custom and we hope that we can be of further assistance to you in the future.

Paul Brewer
BSc (Hons), MSc, MI Soil Sci
Senior Environmental Consultant

Dr. Barry Powell
BSc (Hons), PhD, MCIWM
Principal Consultant

(for and on behalf of Terragen Environmental Consultants Limited)

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WASTE CLASSIFICATION FRAMEWORK

One of the relevant objectives of the Revised Waste Framework (WFD) Directive (2018/851/EC) is to ensure that waste is recovered or disposed without endangering human health and without using processes or methods which could harm the environment, and without:

- Risk to water, air, soil, plants, or animals.
- Causing nuisance through noise or odours.
- Adversely affecting the countryside or places of special interest.

It also provides the general framework of waste management requirements and sets the basic EU waste management definitions. The List of Waste (LoW) Amendment Decision (2014/955/EU) establishes the classification system, including the distinction between hazardous and non-hazardous wastes. It is closely linked to the main characteristics that render waste hazardous as contained in Annex III of the WFD. The amendments came into force to align waste classification with relevant sections of and approaches used in EU chemicals regulations, such as REACH (1907/2006/EC) and the CLP (1272/2008/EC), which in turn adapt for the EU the UN globally harmonised system for chemicals classification. In 2020 and 2021, GB and the UK introduced its own set of waste classification regulations, such as the CLP, REACH and the mandatory classification and labelling list, which retain, mirror and/or replace relevant EU regulations.

Waste is not considered to be a substance, a mixture or an article. Consequently, obligations under the REACH and the CLP regulations do not apply for producers or holders of waste. Nevertheless, information generated in the frameworks of REACH and the CLP that set criteria for substances to be classified as hazardous are related to some of the hazardous properties applicable to the classification of waste. Annex VI of the CLP contains official harmonised classifications of substances, which must be used where the classification of waste depends on the presence of hazardous substances. The classification of substances is periodically updated by the European Chemicals Agency in the form of a new EU regulation, which automatically amends the CLP.

The Landfill Directive (1999/31/EC) defines the categories of waste applicable to landfill sites as hazardous, non-hazardous, municipal and inert. A landfill is defined as a waste disposal site for the deposit of waste onto or into land. Landfills are divided into three classes:

- Landfills for hazardous waste.
- Landfills for non-hazardous waste.
- Landfills for inert waste.

The three main categories of waste and the options for landfilling are as follows:

- Hazardous with or without additional treatment prior to landfill or stable non-reactive hazardous waste (SNRHW) suitable for placement in a dedicated cell in a suitably permitted non-hazardous landfill site.
- Non-hazardous.
- Inert and suitable for disposal to an appropriately permitted landfill site.

To determine the presence and significance of hazards associated with any construction, demolition and earthworks (CD&E) arisings and therefore the resultant options for management of the materials, and where necessary the appropriate class of facility the waste can be taken to, it is therefore necessary to:

- Determine the presence of hazardous properties within the materials.
- Determine the category of the waste.
- Determine if the waste meets the requirements for reuse onsite, recovery or recycling on or offsite, or disposal offsite as waste.

The main statutory guidance document used to properly classify waste as either hazardous or non-hazardous in the UK is Guidance on the Classification and Assessment of Waste (WM3). The stepped methodology for classifying a waste and assessing any hazardous properties is as follows:

- Check if the waste needs to be classified.
- Identify the code that may apply to the waste.
- Identify the assessment required to select the correct code.
- Determine the chemical composition of the waste.
- Determine if the substances in the waste are hazardous substances or persistent organic pollutants.
- Assess the hazardous properties of the waste.
- Assign and describe the classification code.

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The waste types disposed to a landfill site permitted to accept inert waste or recovered at a site permitted or exempted in accordance with UK regulations and statutory guidance should be classified as inert. No hazardous or contaminated wastes, as defined in the Waste Acceptance Criteria (WAC) and Procedures Directive (2003/33/EC), should be accepted at such sites. The source and origin of the waste along with a description (e.g. physical form, consistency, composition, colour, odour and likely behaviour etc.) should be determined for all material accepted at such inert waste facilities. The materials should be stable, non-reactive and with a sufficient bearing capacity for the end use.

In accordance with the Landfill Directive and UK statutory guidance, the only materials allowed for disposal or recovery at such inert waste facilities without more detailed information (e.g. chemical analyses, site investigation data etc.) should be restricted to single source material from a known site and a reliable producer. The material from the site or source should not be contaminated and should not contain significant quantities of deleterious materials such as wood, plastic etc. Materials potentially suitable for recovery at such inert waste facilities without laboratory analysis should be restricted to the following:

LoW Code	Description	Restrictions
170101	Concrete	Selected CD&E waste only
170102	Bricks	Selected CD&E waste only
170103	Tiles & Ceramics	Selected CD&E waste only
170107	Mixture of Concrete, Bricks, Tiles & Ceramics	Selected CD&E waste only
170504	Soil & Stones (e.g. natural clay & sand etc.)	Selected CD&E waste not from contaminated sites*
200202	Soil & Stones (e.g. natural clay & sand etc.)	Selected garden & park waste only*

- *Excluding topsoil or peat when used as subsoil or fill.
- Selected CD&E or garden & park waste with low (non-significant) contents of other types of materials (i.e. metals, plastics, organics, wood, rubber etc.). The origin of the waste must be known and relevant information regarding the waste must have been assessed.
- No CD&E waste from buildings or land contaminated with dangerous substances (e.g. 170106 & 170503).
- No CD&E waste from buildings treated or painted with dangerous substances in significant amounts.
- These materials should only be accepted if they arise from a single identified source.
- Mixtures of different types of these wastes from the same single source are acceptable without testing.
- Mixtures of these wastes from different sources are not acceptable unless pre-testing is carried out.

If the waste materials were determined as hazardous or potentially inert and required disposal to landfill, then a further stage of assessment would be required to determine if the waste meets the requirements for disposal at a particular category of landfill facility. This is done in the form of WAC testing. It should be noted that the associated regulations and statutory guidance do not apply to the use of suitable uncontaminated waste for redevelopment, restoration and filling in work or for construction purposes, or for recovery activities.

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LIMITATIONS AND USE OF THE REPORT

IMPORTANT: This section should be read before reliance is placed on any of the opinions, advice, recommendations or conclusions set out in this report.

a) This report has been prepared for the purpose of providing interpretation on analytical results supplied by the Client pursuant to its appointment of Terragen Environmental Consultants Limited to act as a Consultant.

b) These comments are given in good faith on the basis of the results provided. Terragen Environmental Consultants Limited can bear no responsibility for any inaccuracies that may arise from the laboratory testing.

c) This report does not constitute a qualitative risk assessment of the site or the soils and is not based upon a conceptual site model as we have been provided with insufficient information to establish the existence of potential sources of contamination, plausible pathways, or sensitive receptors and therefore assumes that they exist.

d) The report is unable to comment on the potential risks to controlled waters (groundwater or surface water), although where contaminant concentrations are below relevant threshold criteria in most circumstances it may be considered that the risk is low.

e) We have assumed that the results are representative of the area sampled. This does not imply that they may be considered representative of the site itself. Terragen Environmental Consultants Limited can accept no responsibility for the integrity of the sampling regime.

f) Save for the Client no duty is undertaken or warranty or representation made to any party in respect of the opinions, advice, recommendations or conclusions herein set out.

g) All work carried out in preparing this report has used, and is based upon, our professional knowledge and understanding of the current relevant English and European Community standards, approved codes of practice, technology and legislation.
Changes in the above may cause the opinion, advice, recommendations or conclusions set out in this report to become inappropriate or incorrect. However, in giving its opinions, advice, recommendations and conclusions, Terragen Environmental Consultants Limited has considered pending changes to environmental legislation and regulations of which it is currently aware. Following delivery of this report, we will have no obligation to advise the Client of any such changes, or of their repercussions.

h) Terragen Environmental Consultants Limited acknowledges that it is being retained, in part, because of its knowledge and experience with respect to environmental matters. Terragen Environmental Consultants Limited will consider and analyse all information provided to it in the context of our knowledge and experience and all other relevant information known to us. To the extent that the information provided to us is not inconsistent or incompatible therewith, Terragen Environmental Consultants Limited shall be entitled to rely upon and assume, without independent verification, the accuracy and completeness of such information.

i) The content of this report represents the professional opinion of experienced environmental consultants. Terragen Environmental Consultants Limited does not provide specialist legal advice and the advice of lawyers may be required.

j) In the Summary and Recommendations sections of this report, Terragen Environmental Consultants Limited has set out our key findings and provided a summary and overview of our advice, opinions and recommendations. However, other parts of this report will often indicate the limitations of the information obtained by Terragen Environmental Consultants Limited and therefore any advice, opinions or recommendations set out in the Executive Summary, Summary and Recommendations sections ought not to be relied upon unless they are considered in the context of the whole report.

k) The lack of evidence of the presence of hazardous or harmful materials at the subject property does not guarantee the absence of such materials; rather it indicates only that none were found as a result of the services provided. The services described in this report were performed in accordance with the general practices and procedures accepted in the consulting field.

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Appendix A Laboratory Test Reports.

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WD18 8YS

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e: reception@i2analytical.com

Analytical Report Number : 23-69565

Project / Site name:	Ferry Island, Tottenham Hale (Okot B), High Cross Road, London N17 9 NU	**Samples received on:**	17/11/2023
Your job number:	TJ3994B06	**Samples instructed on/ Analysis started on:**	17/11/2023
Your order number:	TJ3994B06	**Analysis completed by:**	24/11/2023
Report Issue Number:	1	**Report issued on:**	24/11/2023
Samples Analysed:	2 soil samples		

Signed: A. Czerwińska

Agnieszka Czerwińska
Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

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
asbestos - 6 months from reporting

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

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 23-69565
Project / Site name: Ferry Island, Tottenham Hale (Okot B), High Cross Road, London N17 9 NU
Your Order No: TJ3994B06

Lab Sample Number				2882350	2882351
Sample Reference				NAT/1611/01	NAT/1611/02
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				16/11/2023	16/11/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	12	12
Total mass of sample received	kg	0.001	NONE	1.8	1
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MLO	MLO
General Inorganics					
pH - Automated	pH Units	N/A	MCERTS	11.4	11.5
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	1400	1800
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	380	790
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.191	0.396
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	191	396
Sulphide	mg/kg	1	MCERTS	110	170
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	< 0.1	< 0.1
Total Phenols					
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0
Speciated PAHs					
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	0.2
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.23
Pyrene	mg/kg	0.05	MCERTS	< 0.05	0.19
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.08
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.1
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.09
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.08
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05
Total PAH					
Total WAC-17 PAHs	mg/kg	0.85	NONE	< 0.85	1.07

Analytical Report Number: 23-69565
Project / Site name: Ferry Island, Tottenham Hale (Okot B), High Cross Road, London N17 9 NU
Your Order No: TJ3994B06

Lab Sample Number				2882350	2882351
Sample Reference				NAT/1611/01	NAT/1611/02
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				16/11/2023	16/11/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Heavy Metals / Metalloids					
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	< 1.0	< 1.0
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	3.6	6.9
Barium (aqua regia extractable)	mg/kg	1	MCERTS	45	66
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.58	0.87
Boron (water soluble)	mg/kg	0.2	MCERTS	1.3	1
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	12	21
Copper (aqua regia extractable)	mg/kg	1	MCERTS	17	25
Lead (aqua regia extractable)	mg/kg	1	MCERTS	11	15
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	< 0.25	0.47
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	6.8	18
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	28	36
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	35	46
Petroleum Hydrocarbons					
TPH C10 - C40 $_{EH\_CU\_1D\_TOTAL}$	mg/kg	10	MCERTS	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 23-69565
Project / Site name: Ferry Island, Tottenham Hale (Okot B), High Cross Road, London N17 9 NU

* 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 loam (MCERTS) 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 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2882350	NAT/1611/01	None Supplied	None Supplied	Brown clay and sand with gravel.
2882351	NAT/1611/02	None Supplied	None Supplied	Brown clay and sand with gravel.

Analytical Report Number : 23-69565
Project / Site name: Ferry Island, Tottenham Hale (Okot B), High Cross Road, London N17 9 NU

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated WAC-17 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
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-69565
Project / Site name: Ferry Island, Tottenham Hale (Okot B), High Cross Road, London N17 9 NU

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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Analytical Report Number : 23-69566

Project / Site name:	Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU(JRLE	**Samples received on:**	17/11/2023
Your job number:	TJ3994B05	**Samples instructed on/ Analysis started on:**	17/11/2023
Your order number:	TJ3994B05	**Analysis completed by:**	24/11/2023
Report Issue Number:	1	**Report issued on:**	24/11/2023
Samples Analysed:	2 soil samples		

Signed:

Anna Goc
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

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
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 23-69566
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU(JRLE
Your Order No: TJ3994B05

Lab Sample Number				2882352	2882353
Sample Reference				MG/1611/01	MG/1611/02
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				16/11/2023	16/11/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	11	10
Total mass of sample received	kg	0.001	NONE	1	1
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MLO	MLO

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	9.7	11.9
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	2400	4600
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	1200	140
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.613	0.0697
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	613	69.7
Sulphide	mg/kg	1	MCERTS	62	53
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.4	0.4

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.1	0.11
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	0.06
Phenanthrene	mg/kg	0.05	MCERTS	0.45	0.35
Anthracene	mg/kg	0.05	MCERTS	0.1	0.09
Fluoranthene	mg/kg	0.05	MCERTS	0.79	0.62
Pyrene	mg/kg	0.05	MCERTS	0.72	0.62
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.39	0.34
Chrysene	mg/kg	0.05	MCERTS	0.38	0.32
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.41	0.57
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.25	0.57
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.37	0.31
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.19	0.15
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.23	0.2
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	4.38	4.41

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Your Order No: TJ3994B05

Lab Sample Number				2882352	2882353
Sample Reference				MG/1611/01	MG/1611/02
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				16/11/2023	16/11/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Heavy Metals / Metalloids					
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	2.8	2.7
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	17
Barium (aqua regia extractable)	mg/kg	1	MCERTS	400	250
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.59	0.67
Boron (water soluble)	mg/kg	0.2	MCERTS	0.9	1.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.6	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	18	19
Copper (aqua regia extractable)	mg/kg	1	MCERTS	22	33
Lead (aqua regia extractable)	mg/kg	1	MCERTS	65	51
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.81	1.5
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	14	17
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	27	33
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	120	150
Petroleum Hydrocarbons					
TPH C10 - C40 EH_CU_1D_TOTAL	mg/kg	10	MCERTS	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 23-69566
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* 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 loam (MCERTS) 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 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2882352	MG/1611/01	None Supplied	None Supplied	Brown clay and sand with gravel.
2882353	MG/1611/02	None Supplied	None Supplied	Brown clay and sand with gravel and vegetation.

Analytical Report Number : 23-69566
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU(JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated WAC-17 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
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-69566
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Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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30th November 2023

FAO: Lee Armstrong

Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU

Waste Classification Report

Please find attached the results of laboratory testing carried out on four samples of soil recovered from Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU (the site) by a geo-environmental engineer from Terragen Environmental Consultants Limited (TGEN) on 23/11/2023. The samples represent made ground and natural ground (soil and stones) being generated from enabling works excavations and will be excess to requirements and need to be removed from site.

2.0 SITE DESCRIPTION

The Tottenham Hale Centre (THC) development consists of five different sites: Welbourne, North Island, Ferry Island, Ashley Road East and Ashley Road West. Prior to 1864, Ferry Island (Plot B) was predominantly residential with a pumping station occupying the E boundary. By 1936, the residential properties in the SW had been developed into a single building and the pumping station was no longer present. During the 1970s and 80s the site was cleared and a new road junction constructed in the SE corner of the site. More recently and prior to the current development Ferry Island has been occupied by three commercial units including KFC, Pizza Hut and Maplin, with associated car parking.

The proposed THC development essentially comprises the demolition of the existing structures and the construction of residential-led development with retail/business uses alongside; servicing, highways improvements and public amenity space including soft and hard landscaped areas creating an improved public realm.

We understand that as part of the development there will be a shallow reduced level excavation followed by placement of a pile mat, piling, pile cap excavations and a deep basement excavation, which will generate in total circa 26790m^3 of material for disposal from site as waste. It is likely that circa 7170m^3 (27%) of the arisings will be made ground of which circa 2870m^3 will be pile mat and hardstanding, and circa 19620m^3 (73%) will be uncontaminated and inert natural soil and pile arisings.

The anticipated geology at the Ferry Island site comprises made ground overlying superficial deposits of Enfield Silt and River Terrace Deposits. The London Clay is at depth and in the order of 15m thick, underlain by the Lambeth Group, Thanet Sand and White Chalk.

Two site investigation reports have been prepared by Langan International (ref. 841011101 dated 26/07/2018 and 04/11/2021) on behalf of Whitby Wood, which comprised the progression of thirteen exploratory holes. The strata encountered confirmed the anticipated geology and comprised made ground, on average circa 1.7m thick, typically containing only a small quantity of deleterious materials, such as fragments of clinker and tarmac, with no visual or olfactory evidence of significant contamination. Asbestos containing material was not visible during the previous site investigations but it was detected at low concentrations in three samples of made ground tested. The made ground overlies natural and uncontaminated (inert) Enfield Silt, Kempton Park Gravel and London Clay.

During the previous investigations thirty-five samples were taken from the thirteen exploratory hole locations to depths of up to 6.2mbgl representing circa 26790m^3 of enabling works excavations at the site.

3.0 SITE SAMPLING

A geo-environmental engineer from TGEN visited the site on 23/11/2023 to assess the nature of the strata encountered. This included:

- A physical description of the arisings in accordance with relevant AGS and BSI standards.
- An assessment of visual and olfactory evidence of contamination.
- The recovery of representative samples.
- The submission of samples to a UKAS/MCERTS accredited laboratory for analysis.

During the visit, routine reassurance samples of materials were recovered and included the following:

- Two samples of made ground from arisings from the reduced level excavations (MG).
- Two samples of natural ground from a stockpile of piling arisings (NAT).

4.0 MATERIALS ASSESSMENT

In accordance with the LoW (as amended), the CD&E arisings encountered during this sampling exercise are mirror entries with a mirror hazardous (MH) entry and a mirror non-hazardous (MN) entry as follows:

- Soil and stones containing dangerous substances (LoW Code 170503*) – MH.
- Soil and stones not containing dangerous substances (LoW Code 170504) - MN.

4.1 Physical Appearance of the Waste

Made Ground Arisings (MG)

Sampling Date	Reference	Physical Description	Photograph
23/11/2023	MG/2311/01 MG/2311/02	Light brown, sandy, silty clay soil with frequent fragments of brick, vegetation and stone. There was no significant odour and the PID reading was <1ppm. No asbestos was seen during the sampling and there was no visual or olfactory evidence of contamination. Based on the physical description, the made ground arisings could be described as: Soil and stones not containing dangerous substances (LoW Code 170504) - MN.	

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Natural Ground Arisings (NAT)

Sampling Date	Reference	Physical Description	Photograph
23/11/2023	NAT/2311/01 NAT/2311/02	Dark clay, firm to stiff, silty clay. There was no significant odour and the PID reading was <1ppm. No asbestos was seen during the sampling and there was no visual or olfactory evidence of contamination. Based on the physical description, the natural ground arisings could be described as: Soil and stones not containing dangerous substances (LoW Code 170504) - MN.	

4.2 Chemical Nature of the Waste

The samples were subjected to a programme of laboratory testing, which included an asbestos screen and a suite of potential contaminants associated with a wide range of potential activities to confirm the preliminary waste classification based on the physical description of the material sampled. The laboratory test reports are presented in Appendix A, which can be summarised as follows.

Made Ground Arisings (MG)

Ref	Chemical Summary		Waste Classification
	Asbestos	Solid	LoW Code
MG/2311/01	NAD	No significant contamination	170504
MG/2311/02	NAD	No significant contamination	170504

NAD No asbestos observed during sample preparation or detected in the sample.

Natural Ground Arisings (NAT)

Ref	Chemical Summary		Waste Classification
	Asbestos	Solid	LoW Code
NAT/2311/01	NAD	No significant contamination	170504
NAT/2311/02	NAD	No significant contamination	170504

NAD No asbestos observed during sample preparation or detected in the sample.

5.0 SUMMARY

No asbestos was observed during the sampling, and none was detected in the samples, which all returned low concentrations of potential contaminants. As such, the material represented by the samples would be classified as:

- **Soil and stones not containing hazardous substances (LoW Code 170504).**

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In addition, material represented by the samples can be described for waste disposal purposes as follows:

- *MG/2311/01* *No significant contamination (Uncontaminated waste).*
- *MG/2311/02* *No significant contamination (Uncontaminated waste).*
- *NAT/2311/01* *No significant contamination (Uncontaminated and inert waste).*
- *NAT/2311/02* *No significant contamination (Uncontaminated and inert waste).*

We would recommend that during any excavation associated with future phases of the development, should materials previously unidentified during the various investigations be encountered (e.g., an unusual appearance and/or odour etc.), works are halted in that area and the advice of a geo-environmental specialist be sought to determine an appropriate course of action. We would also advise you to employ routine waste practices when managing the disposal of the waste material (i.e. visual and olfactory inspections of all loads leaving the site) to ensure that the material remains consistent and suitable for recovery or disposal at your chosen facility in accordance with level 1, level 2 and level 3 waste acceptance procedures. Please be aware that your duty of care paperwork now needs to include the following:

- The relevant UK SIC Code.
- A declaration that you have fulfilled your duty to apply the waste hierarchy.
- The relevant LoW Code.

We trust that this report meets your requirements, but please contact us should you require clarification on any of the matters raised. Thank you for your custom and we hope that we can be of further assistance to you in the future.

Paul Brewer
BSc (Hons), MSc, MI Soil Sci
Senior Environmental Consultant

Dr. Barry Powell
BSc (Hons), PhD, MCIWM
Principal Consultant

(for and on behalf of Terragen Environmental Consultants Limited)

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WASTE CLASSIFICATION FRAMEWORK

One of the relevant objectives of the Revised Waste Framework (WFD) Directive (2018/851/EC) is to ensure that waste is recovered or disposed without endangering human health and without using processes or methods which could harm the environment, and without:

- Risk to water, air, soil, plants, or animals.
- Causing nuisance through noise or odours.
- Adversely affecting the countryside or places of special interest.

It also provides the general framework of waste management requirements and sets the basic EU waste management definitions. The List of Waste (LoW) Amendment Decision (2014/955/EU) establishes the classification system, including the distinction between hazardous and non-hazardous wastes. It is closely linked to the main characteristics that render waste hazardous as contained in Annex III of the WFD. The amendments came into force to align waste classification with relevant sections of and approaches used in EU chemicals regulations, such as REACH (1907/2006/EC) and the CLP (1272/2008/EC), which in turn adapt for the EU the UN globally harmonised system for chemicals classification. In 2020 and 2021, GB and the UK introduced its own set of waste classification regulations, such as the CLP, REACH and the mandatory classification and labelling list, which retain, mirror and/or replace relevant EU regulations.

Waste is not considered to be a substance, a mixture or an article. Consequently, obligations under the REACH and the CLP regulations do not apply for producers or holders of waste. Nevertheless, information generated in the frameworks of REACH and the CLP that set criteria for substances to be classified as hazardous are related to some of the hazardous properties applicable to the classification of waste. Annex VI of the CLP contains official harmonised classifications of substances, which must be used where the classification of waste depends on the presence of hazardous substances. The classification of substances is periodically updated by the European Chemicals Agency in the form of a new EU regulation, which automatically amends the CLP.

The Landfill Directive (1999/31/EC) defines the categories of waste applicable to landfill sites as hazardous, non-hazardous, municipal and inert. A landfill is defined as a waste disposal site for the deposit of waste onto or into land. Landfills are divided into three classes:

- Landfills for hazardous waste.
- Landfills for non-hazardous waste.
- Landfills for inert waste.

The three main categories of waste and the options for landfilling are as follows:

- Hazardous with or without additional treatment prior to landfill or stable non-reactive hazardous waste (SNRHW) suitable for placement in a dedicated cell in a suitably permitted non-hazardous landfill site.
- Non-hazardous.
- Inert and suitable for disposal to an appropriately permitted landfill site.

To determine the presence and significance of hazards associated with any construction, demolition and earthworks (CD&E) arisings and therefore the resultant options for management of the materials, and where necessary the appropriate class of facility the waste can be taken to, it is therefore necessary to:

- Determine the presence of hazardous properties within the materials.
- Determine the category of the waste.
- Determine if the waste meets the requirements for reuse onsite, recovery or recycling on or offsite, or disposal offsite as waste.

The main statutory guidance document used to properly classify waste as either hazardous or non-hazardous in the UK is Guidance on the Classification and Assessment of Waste (WM3). The stepped methodology for classifying a waste and assessing any hazardous properties is as follows:

- Check if the waste needs to be classified.
- Identify the code that may apply to the waste.
- Identify the assessment required to select the correct code.
- Determine the chemical composition of the waste.
- Determine if the substances in the waste are hazardous substances or persistent organic pollutants.
- Assess the hazardous properties of the waste.
- Assign and describe the classification code.

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The waste types disposed to a landfill site permitted to accept inert waste or recovered at a site permitted or exempted in accordance with UK regulations and statutory guidance should be classified as inert. No hazardous or contaminated wastes, as defined in the Waste Acceptance Criteria (WAC) and Procedures Directive (2003/33/EC), should be accepted at such sites. The source and origin of the waste along with a description (e.g. physical form, consistency, composition, colour, odour and likely behaviour etc.) should be determined for all material accepted at such inert waste facilities. The materials should be stable, non-reactive and with a sufficient bearing capacity for the end use.

In accordance with the Landfill Directive and UK statutory guidance, the only materials allowed for disposal or recovery at such inert waste facilities without more detailed information (e.g. chemical analyses, site investigation data etc.) should be restricted to single source material from a known site and a reliable producer. The material from the site or source should not be contaminated and should not contain significant quantities of deleterious materials such as wood, plastic etc. Materials potentially suitable for recovery at such inert waste facilities without laboratory analysis should be restricted to the following:

LoW Code	Description	Restrictions
170101	Concrete	Selected CD&E waste only
170102	Bricks	Selected CD&E waste only
170103	Tiles & Ceramics	Selected CD&E waste only
170107	Mixture of Concrete, Bricks, Tiles & Ceramics	Selected CD&E waste only
170504	Soil & Stones (e.g. natural clay & sand etc.)	Selected CD&E waste not from contaminated sites*
200202	Soil & Stones (e.g. natural clay & sand etc.)	Selected garden & park waste only*

- *Excluding topsoil or peat when used as subsoil or fill.
- Selected CD&E or garden & park waste with low (non-significant) contents of other types of materials (i.e. metals, plastics, organics, wood, rubber etc.). The origin of the waste must be known and relevant information regarding the waste must have been assessed.
- No CD&E waste from buildings or land contaminated with dangerous substances (e.g. 170106 & 170503).
- No CD&E waste from buildings treated or painted with dangerous substances in significant amounts.
- These materials should only be accepted if they arise from a single identified source.
- Mixtures of different types of these wastes from the same single source are acceptable without testing.
- Mixtures of these wastes from different sources are not acceptable unless pre-testing is carried out.

If the waste materials were determined as hazardous or potentially inert and required disposal to landfill, then a further stage of assessment would be required to determine if the waste meets the requirements for disposal at a particular category of landfill facility. This is done in the form of WAC testing. It should be noted that the associated regulations and statutory guidance do not apply to the use of suitable uncontaminated waste for redevelopment, restoration and filling in work or for construction purposes, or for recovery activities.

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LIMITATIONS AND USE OF THE REPORT

IMPORTANT: This section should be read before reliance is placed on any of the opinions, advice, recommendations or conclusions set out in this report.

a) This report has been prepared for the purpose of providing interpretation on analytical results supplied by the Client pursuant to its appointment of Terragen Environmental Consultants Limited to act as a Consultant.

b) These comments are given in good faith on the basis of the results provided. Terragen Environmental Consultants Limited can bear no responsibility for any inaccuracies that may arise from the laboratory testing.

c) This report does not constitute a qualitative risk assessment of the site or the soils and is not based upon a conceptual site model as we have been provided with insufficient information to establish the existence of potential sources of contamination, plausible pathways, or sensitive receptors and therefore assumes that they exist.

d) The report is unable to comment on the potential risks to controlled waters (groundwater or surface water), although where contaminant concentrations are below relevant threshold criteria in most circumstances it may be considered that the risk is low.

e) We have assumed that the results are representative of the area sampled. This does not imply that they may be considered representative of the site itself. Terragen Environmental Consultants Limited can accept no responsibility for the integrity of the sampling regime.

f) Save for the Client no duty is undertaken or warranty or representation made to any party in respect of the opinions, advice, recommendations or conclusions herein set out.

g) All work carried out in preparing this report has used, and is based upon, our professional knowledge and understanding of the current relevant English and European Community standards, approved codes of practice, technology and legislation.
Changes in the above may cause the opinion, advice, recommendations or conclusions set out in this report to become inappropriate or incorrect. However, in giving its opinions, advice, recommendations and conclusions, Terragen Environmental Consultants Limited has considered pending changes to environmental legislation and regulations of which it is currently aware. Following delivery of this report, we will have no obligation to advise the Client of any such changes, or of their repercussions.

h) Terragen Environmental Consultants Limited acknowledges that it is being retained, in part, because of its knowledge and experience with respect to environmental matters. Terragen Environmental Consultants Limited will consider and analyse all information provided to it in the context of our knowledge and experience and all other relevant information known to us. To the extent that the information provided to us is not inconsistent or incompatible therewith, Terragen Environmental Consultants Limited shall be entitled to rely upon and assume, without independent verification, the accuracy and completeness of such information.

i) The content of this report represents the professional opinion of experienced environmental consultants. Terragen Environmental Consultants Limited does not provide specialist legal advice and the advice of lawyers may be required.

j) In the Summary and Recommendations sections of this report, Terragen Environmental Consultants Limited has set out our key findings and provided a summary and overview of our advice, opinions and recommendations. However, other parts of this report will often indicate the limitations of the information obtained by Terragen Environmental Consultants Limited and therefore any advice, opinions or recommendations set out in the Executive Summary, Summary and Recommendations sections ought not to be relied upon unless they are considered in the context of the whole report.

k) The lack of evidence of the presence of hazardous or harmful materials at the subject property does not guarantee the absence of such materials; rather it indicates only that none were found as a result of the services provided. The services described in this report were performed in accordance with the general practices and procedures accepted in the consulting field.

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Appendix A Laboratory Test Reports.

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Analytical Report Number : 23-70772

Project / Site name:	Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE	**Samples received on:**	23/11/2023
Your job number:		**Samples instructed on/ Analysis started on:**	23/11/2023
Your order number:	TJ3994B07	**Analysis completed by:**	30/11/2023
Report Issue Number:	1	**Report issued on:**	30/11/2023
Samples Analysed:	2 soil samples		

Signed:

Dominika Liana
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

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
asbestos	- 6 months from reporting

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

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-70772
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE
Your Order No: TJ3994B07

Lab Sample Number				2888492	2888493
Sample Reference				MG/2311/01	MG/2311/02
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				23/11/2023	23/11/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	9.3	11
Total mass of sample received	kg	0.001	NONE	1.5	1.4

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	WEM	WEM

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	10.1	10.3
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	3200	2000
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	910	480
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.454	0.238
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	454	238
Sulphide	mg/kg	1	MCERTS	28	17
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.8	0.8

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.18	0.19
Acenaphthylene	mg/kg	0.05	MCERTS	0.05	0.07
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.34	0.34
Anthracene	mg/kg	0.05	MCERTS	0.09	0.1
Fluoranthene	mg/kg	0.05	MCERTS	0.83	0.88
Pyrene	mg/kg	0.05	MCERTS	0.8	0.83
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.57	0.58
Chrysene	mg/kg	0.05	MCERTS	0.56	0.58
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	1.2	1.1
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.27	0.32
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.91	0.77
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.39	0.35
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.45	0.42
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	6.66	6.54

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Analytical Report Number: 23-70772
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE
Your Order No: TJ3994B07

Lab Sample Number				2888492	2888493
Sample Reference				MG/2311/01	MG/2311/02
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				23/11/2023	23/11/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Heavy Metals / Metalloids					
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	2.9	3.3
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.7	11
Barium (aqua regia extractable)	mg/kg	1	MCERTS	99	96
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.58	0.69
Boron (water soluble)	mg/kg	0.2	MCERTS	1.9	1.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.4	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	17	22
Copper (aqua regia extractable)	mg/kg	1	MCERTS	24	25
Lead (aqua regia extractable)	mg/kg	1	MCERTS	66	64
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.83	1
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	15	15
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	28	30
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	82	75
Petroleum Hydrocarbons					
TPH C10 - C40 EH_CU_1D_TOTAL	mg/kg	10	MCERTS	120	160

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 23-70772
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE

* 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 loam (MCERTS) 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 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2888492	MG/2311/01	None Supplied	None Supplied	Brown sand with gravel and vegetation.
2888493	MG/2311/02	None Supplied	None Supplied	Brown sand with gravel and vegetation.

Analytical Report Number : 23-70772
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated WAC-17 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
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-70772
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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Analytical Report Number : 23-70789

Project / Site name:	Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE	**Samples received on:**	23/11/2023
Your job number:	TJ3994B08	**Samples instructed on/ Analysis started on:**	23/11/2023
Your order number:	TJ3994B08	**Analysis completed by:**	30/11/2023
Report Issue Number:	1	**Report issued on:**	30/11/2023
Samples Analysed:	2 soil samples		

Signed:

Dominika Liana
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

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
asbestos	- 6 months from reporting

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

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-70789
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE
Your Order No: TJ3994B08

Lab Sample Number				2888602	2888603
Sample Reference				NAT/2311/01	NAT/2311/02
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				23/11/2023	23/11/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	19	20
Total mass of sample received	kg	0.001	NONE	0.6	1.4

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	WEM	WEM

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	9	8.7
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	590	480
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	500	410
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.249	0.207
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	249	207
Sulphide	mg/kg	1	MCERTS	110	120
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.6	0.9

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.44	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	< 0.85	< 0.85

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-70789
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE
Your Order No: TJ3994B08

Lab Sample Number				2888602	2888603
Sample Reference				NAT/2311/01	NAT/2311/02
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				23/11/2023	23/11/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Heavy Metals / Metalloids					
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	3.3	3.4
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	12
Barium (aqua regia extractable)	mg/kg	1	MCERTS	59	67
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.2	1.4
Boron (water soluble)	mg/kg	0.2	MCERTS	2.7	2.1
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	39	44
Copper (aqua regia extractable)	mg/kg	1	MCERTS	29	33
Lead (aqua regia extractable)	mg/kg	1	MCERTS	16	19
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.34	0.31
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	37	39
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	64	72
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	74	79
Petroleum Hydrocarbons					
TPH C10 - C40 EH_CU_1D_TOTAL	mg/kg	10	MCERTS	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 23-70789
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE

* 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 loam (MCERTS) 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 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2888602	NAT/2311/01	None Supplied	None Supplied	Brown clay with gravel.
2888603	NAT/2311/02	None Supplied	None Supplied	Brown clay.

Analytical Report Number : 23-70789
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated WAC-17 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
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-70789
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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14th December 2023

FAO: Rob Welling

Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU

Waste Classification Report

Please find attached the results of laboratory testing carried out on four samples of soil recovered from Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU (the site) by a geo-environmental engineer from Terragen Environmental Consultants Limited (TGEN) on 30/11/2023. The samples represent made ground and natural ground (soil and stones) being generated from enabling works excavations and will be excess to requirements and need to be removed from site.

2.0 SITE DESCRIPTION

The Tottenham Hale Centre (THC) development consists of five different sites: Welbourne, North Island, Ferry Island, Ashley Road East and Ashley Road West. Prior to 1864, Ferry Island (Plot B) was predominantly residential with a pumping station occupying the E boundary. By 1936, the residential properties in the SW had been developed into a single building and the pumping station was no longer present. During the 1970s and 80s the site was cleared and a new road junction constructed in the SE corner of the site. More recently and prior to the current development Ferry Island has been occupied by three commercial units including KFC, Pizza Hut and Maplin, with associated car parking.

The proposed THC development essentially comprises the demolition of the existing structures and the construction of residential-led development with retail/business uses alongside; servicing, highways improvements and public amenity space including soft and hard landscaped areas creating an improved public realm.

We understand that as part of the development there will be a shallow reduced level excavation followed by placement of a pile mat, piling, pile cap excavations and a deep basement excavation, which will generate in total circa 26790m^3 of material for disposal from site as waste. It is likely that circa 7170m^3 (27%) of the arisings will be made ground of which circa 2870m^3 will be pile mat and hardstanding, and circa 19620m^3 (73%) will be uncontaminated and inert natural soil and pile arisings.

The anticipated geology at the Ferry Island site comprises made ground overlying superficial deposits of Enfield Silt and River Terrace Deposits. The London Clay is at depth and in the order of 15m thick, underlain by the Lambeth Group, Thanet Sand and White Chalk.

Two site investigation reports have been prepared by Langan International (ref. 841011101 dated 26/07/2018 and 04/11/2021) on behalf of Whitby Wood, which comprised the progression of thirteen exploratory holes. The strata encountered confirmed the anticipated geology and comprised made ground, on average circa 1.7m thick, typically containing only a small quantity of deleterious materials, such as fragments of clinker and tarmac, with no visual or olfactory evidence of significant contamination. Asbestos containing material was not visible during the previous site investigations but it was detected at low concentrations in three samples of made ground tested. The made ground overlies natural and uncontaminated (inert) Enfield Silt, Kempton Park Gravel and London Clay.

During the previous investigations thirty-five samples were taken from the thirteen exploratory hole locations to depths of up to 6.2mbgl representing circa 26790m^3 of enabling works excavations at the site.

3.0 SITE SAMPLING

A geo-environmental engineer from TGEN visited the site on 30/11/2023 to assess the nature of the strata encountered. This included:

- A physical description of the arisings in accordance with relevant AGS and BSI standards.
- An assessment of visual and olfactory evidence of contamination.
- The recovery of representative samples.
- The submission of samples to a UKAS/MCERTS accredited laboratory for analysis.

During the visit, routine reassurance samples of materials were recovered and included the following:

- Two samples of made ground from arisings from the reduced level excavations (MG).
- Two samples of natural ground from a stockpile of piling arisings (NAT).

4.0 MATERIALS ASSESSMENT

In accordance with the LoW (as amended), the CD&E arisings encountered during this sampling exercise are mirror entries with a mirror hazardous (MH) entry and a mirror non-hazardous (MN) entry as follows:

- Soil and stones containing dangerous substances (LoW Code 170503*) – MH.
- Soil and stones not containing dangerous substances (LoW Code 170504) - MN.

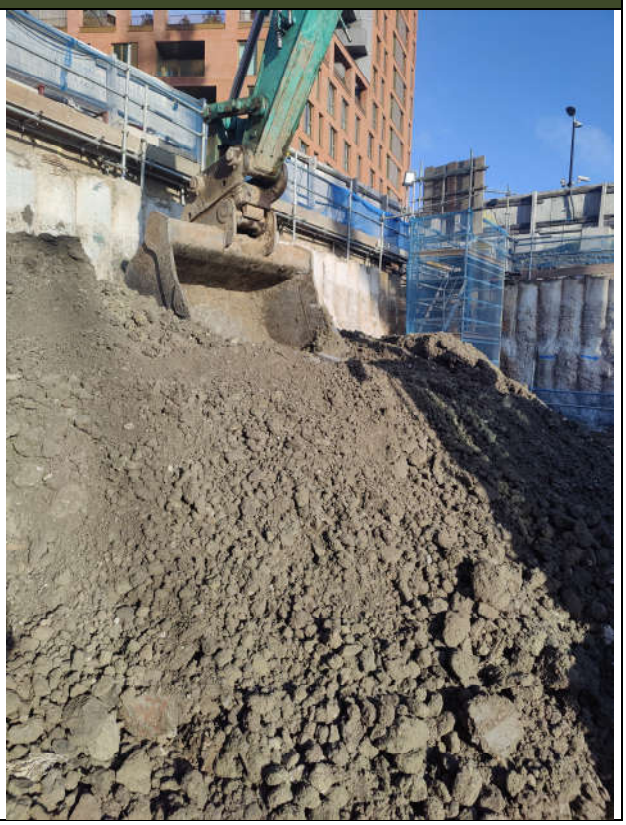
4.1 Physical Appearance of the Waste

Made Ground Arisings (MG)

Sampling Date	Reference	Physical Description	Photograph
30/11/2023	MG/3011/01 MG/3011/02	Light brown, sandy, silty clay soil with frequent fragments of brick, vegetation and stone. There was no significant odour and the PID reading was <1ppm. No asbestos was seen during the sampling and there was no visual or olfactory evidence of contamination. Based on the physical description, the made ground arisings could be described as: Soil and stones not containing dangerous substances (LoW Code 170504) - MN.	

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Natural Ground Arisings (NAT)

Sampling Date	Reference	Physical Description	Photograph
30/11/2023	NAT/3011/01 NAT/3011/02	Dark clay, firm to stiff, silty clay. There was no significant odour and the PID reading was <1ppm. No asbestos was seen during the sampling and there was no visual or olfactory evidence of contamination. Based on the physical description, the natural ground arisings could be described as: Soil and stones not containing dangerous substances (LoW Code 170504) - MN.	

4.2 Chemical Nature of the Waste

The samples were subjected to a programme of laboratory testing, which included an asbestos screen and a suite of potential contaminants associated with a wide range of potential activities to confirm the preliminary waste classification based on the physical description of the material sampled. The laboratory test reports are presented in Appendix A, which can be summarised as follows.

Made Ground Arisings (MG)

Ref	Chemical Summary		Waste Classification
	Asbestos	Solid	LoW Code
MG/3011/01	NAD	No significant contamination	170504
MG/3011/02	NAD	No significant contamination	170504

NAD No asbestos observed during sample preparation or detected in the sample.

Natural Ground Arisings (NAT)

Ref	Chemical Summary		Waste Classification
	Asbestos	Solid	LoW Code
NAT/3011/01	NAD	No significant contamination	170504
NAT/3011/02	NAD	No significant contamination	170504

NAD No asbestos observed during sample preparation or detected in the sample.

5.0 SUMMARY

No asbestos was observed during the sampling, and none was detected in the samples, which all returned low concentrations of potential contaminants.

As such, the material represented by the samples (made ground and natural) would be classified as:

- **Soil and stones not containing hazardous substances (LoW Code 170504).**

The concentrations returned by the samples of made ground were not hazardous and as such, it is likely that the material represented by these samples would be suitable for acceptance and treatment at a typical soil and aggregates recycling facility (e.g., SR2010 No12).

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The naturally occurring soils (London Clay) was free from visual and/or olfactory evidence or any suspicion of contamination, as confirmed by returning low concentrations of all potential contaminants and would be classified as soil and stones not containing hazardous substances (LoW Code 170504), suitable for disposal to an inert permitted landfill/facility without the need for testing. Furthermore, it is likely that the uncontaminated, naturally occurring arisings would be considered suitable for direct transfer to and reuse on a development site in line with a materials management plan in accordance with the CL:AIRE Definition of Waste: Development Industry Code of Practice (DoWCoP).

We would recommend that during any excavation associated with future phases of the development, should materials previously unidentified during the various investigations be encountered (e.g., an unusual appearance and/or odour etc.), works are halted in that area and the advice of a geo-environmental specialist be sought to determine an appropriate course of action. We would also advise you to employ routine waste practices when managing the disposal of the waste material (i.e. visual and olfactory inspections of all loads leaving the site) to ensure that the material remains consistent and suitable for recovery or disposal at your chosen facility in accordance with level 1, level 2 and level 3 waste acceptance procedures. Please be aware that your duty of care paperwork now needs to include the following:

- The relevant UK SIC Code.
- A declaration that you have fulfilled your duty to apply the waste hierarchy.
- The relevant LoW Code.

We trust that this report meets your requirements, but please contact us should you require clarification on any of the matters raised. Thank you for your custom and we hope that we can be of further assistance to you in the future.

Paul Brewer
BSc (Hons), MSc, MI Soil Sci
Senior Environmental Consultant

Dr. Barry Powell
BSc (Hons), PhD, MCIWM
Principal Consultant

(for and on behalf of Terragen Environmental Consultants Limited)

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WASTE CLASSIFICATION FRAMEWORK

One of the relevant objectives of the Revised Waste Framework (WFD) Directive (2018/851/EC) is to ensure that waste is recovered or disposed without endangering human health and without using processes or methods which could harm the environment, and without:

- Risk to water, air, soil, plants, or animals.
- Causing nuisance through noise or odours.
- Adversely affecting the countryside or places of special interest.

It also provides the general framework of waste management requirements and sets the basic EU waste management definitions. The List of Waste (LoW) Amendment Decision (2014/955/EU) establishes the classification system, including the distinction between hazardous and non-hazardous wastes. It is closely linked to the main characteristics that render waste hazardous as contained in Annex III of the WFD. The amendments came into force to align waste classification with relevant sections of and approaches used in EU chemicals regulations, such as REACH (1907/2006/EC) and the CLP (1272/2008/EC), which in turn adapt for the EU the UN globally harmonised system for chemicals classification. In 2020 and 2021, GB and the UK introduced its own set of waste classification regulations, such as the CLP, REACH and the mandatory classification and labelling list, which retain, mirror and/or replace relevant EU regulations.

Waste is not considered to be a substance, a mixture or an article. Consequently, obligations under the REACH and the CLP regulations do not apply for producers or holders of waste. Nevertheless, information generated in the frameworks of REACH and the CLP that set criteria for substances to be classified as hazardous are related to some of the hazardous properties applicable to the classification of waste. Annex VI of the CLP contains official harmonised classifications of substances, which must be used where the classification of waste depends on the presence of hazardous substances. The classification of substances is periodically updated by the European Chemicals Agency in the form of a new EU regulation, which automatically amends the CLP.

The Landfill Directive (1999/31/EC) defines the categories of waste applicable to landfill sites as hazardous, non-hazardous, municipal and inert. A landfill is defined as a waste disposal site for the deposit of waste onto or into land. Landfills are divided into three classes:

- Landfills for hazardous waste.
- Landfills for non-hazardous waste.
- Landfills for inert waste.

The three main categories of waste and the options for landfilling are as follows:

- Hazardous with or without additional treatment prior to landfill or stable non-reactive hazardous waste (SNRHW) suitable for placement in a dedicated cell in a suitably permitted non-hazardous landfill site.
- Non-hazardous.
- Inert and suitable for disposal to an appropriately permitted landfill site.

To determine the presence and significance of hazards associated with any construction, demolition and earthworks (CD&E) arisings and therefore the resultant options for management of the materials, and where necessary the appropriate class of facility the waste can be taken to, it is therefore necessary to:

- Determine the presence of hazardous properties within the materials.
- Determine the category of the waste.
- Determine if the waste meets the requirements for reuse onsite, recovery or recycling on or offsite, or disposal offsite as waste.

The main statutory guidance document used to properly classify waste as either hazardous or non-hazardous in the UK is Guidance on the Classification and Assessment of Waste (WM3). The stepped methodology for classifying a waste and assessing any hazardous properties is as follows:

- Check if the waste needs to be classified.
- Identify the code that may apply to the waste.
- Identify the assessment required to select the correct code.
- Determine the chemical composition of the waste.
- Determine if the substances in the waste are hazardous substances or persistent organic pollutants.
- Assess the hazardous properties of the waste.
- Assign and describe the classification code.

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The waste types disposed to a landfill site permitted to accept inert waste or recovered at a site permitted or exempted in accordance with UK regulations and statutory guidance should be classified as inert. No hazardous or contaminated wastes, as defined in the Waste Acceptance Criteria (WAC) and Procedures Directive (2003/33/EC), should be accepted at such sites. The source and origin of the waste along with a description (e.g. physical form, consistency, composition, colour, odour and likely behaviour etc.) should be determined for all material accepted at such inert waste facilities. The materials should be stable, non-reactive and with a sufficient bearing capacity for the end use.

In accordance with the Landfill Directive and UK statutory guidance, the only materials allowed for disposal or recovery at such inert waste facilities without more detailed information (e.g. chemical analyses, site investigation data etc.) should be restricted to single source material from a known site and a reliable producer. The material from the site or source should not be contaminated and should not contain significant quantities of deleterious materials such as wood, plastic etc. Materials potentially suitable for recovery at such inert waste facilities without laboratory analysis should be restricted to the following:

LoW Code	Description	Restrictions
170101	Concrete	Selected CD&E waste only
170102	Bricks	Selected CD&E waste only
170103	Tiles & Ceramics	Selected CD&E waste only
170107	Mixture of Concrete, Bricks, Tiles & Ceramics	Selected CD&E waste only
170504	Soil & Stones (e.g. natural clay & sand etc.)	Selected CD&E waste not from contaminated sites*
200202	Soil & Stones (e.g. natural clay & sand etc.)	Selected garden & park waste only*

- *Excluding topsoil or peat when used as subsoil or fill.
- Selected CD&E or garden & park waste with low (non-significant) contents of other types of materials (i.e. metals, plastics, organics, wood, rubber etc.). The origin of the waste must be known and relevant information regarding the waste must have been assessed.
- No CD&E waste from buildings or land contaminated with dangerous substances (e.g. 170106 & 170503).
- No CD&E waste from buildings treated or painted with dangerous substances in significant amounts.
- These materials should only be accepted if they arise from a single identified source.
- Mixtures of different types of these wastes from the same single source are acceptable without testing.
- Mixtures of these wastes from different sources are not acceptable unless pre-testing is carried out.

If the waste materials were determined as hazardous or potentially inert and required disposal to landfill, then a further stage of assessment would be required to determine if the waste meets the requirements for disposal at a particular category of landfill facility. This is done in the form of WAC testing. It should be noted that the associated regulations and statutory guidance do not apply to the use of suitable uncontaminated waste for redevelopment, restoration and filling in work or for construction purposes, or for recovery activities.

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LIMITATIONS AND USE OF THE REPORT

IMPORTANT: This section should be read before reliance is placed on any of the opinions, advice, recommendations or conclusions set out in this report.

a) This report has been prepared for the purpose of providing interpretation on analytical results supplied by the Client pursuant to its appointment of Terragen Environmental Consultants Limited to act as a Consultant.

b) These comments are given in good faith on the basis of the results provided. Terragen Environmental Consultants Limited can bear no responsibility for any inaccuracies that may arise from the laboratory testing.

c) This report does not constitute a qualitative risk assessment of the site or the soils and is not based upon a conceptual site model as we have been provided with insufficient information to establish the existence of potential sources of contamination, plausible pathways, or sensitive receptors and therefore assumes that they exist.

d) The report is unable to comment on the potential risks to controlled waters (groundwater or surface water), although where contaminant concentrations are below relevant threshold criteria in most circumstances it may be considered that the risk is low.

e) We have assumed that the results are representative of the area sampled. This does not imply that they may be considered representative of the site itself. Terragen Environmental Consultants Limited can accept no responsibility for the integrity of the sampling regime.

f) Save for the Client no duty is undertaken or warranty or representation made to any party in respect of the opinions, advice, recommendations or conclusions herein set out.

g) All work carried out in preparing this report has used, and is based upon, our professional knowledge and understanding of the current relevant English and European Community standards, approved codes of practice, technology and legislation.
Changes in the above may cause the opinion, advice, recommendations or conclusions set out in this report to become inappropriate or incorrect. However, in giving its opinions, advice, recommendations and conclusions, Terragen Environmental Consultants Limited has considered pending changes to environmental legislation and regulations of which it is currently aware. Following delivery of this report, we will have no obligation to advise the Client of any such changes, or of their repercussions.

h) Terragen Environmental Consultants Limited acknowledges that it is being retained, in part, because of its knowledge and experience with respect to environmental matters. Terragen Environmental Consultants Limited will consider and analyse all information provided to it in the context of our knowledge and experience and all other relevant information known to us. To the extent that the information provided to us is not inconsistent or incompatible therewith, Terragen Environmental Consultants Limited shall be entitled to rely upon and assume, without independent verification, the accuracy and completeness of such information.

i) The content of this report represents the professional opinion of experienced environmental consultants. Terragen Environmental Consultants Limited does not provide specialist legal advice and the advice of lawyers may be required.

j) In the Summary and Recommendations sections of this report, Terragen Environmental Consultants Limited has set out our key findings and provided a summary and overview of our advice, opinions and recommendations. However, other parts of this report will often indicate the limitations of the information obtained by Terragen Environmental Consultants Limited and therefore any advice, opinions or recommendations set out in the Executive Summary, Summary and Recommendations sections ought not to be relied upon unless they are considered in the context of the whole report.

k) The lack of evidence of the presence of hazardous or harmful materials at the subject property does not guarantee the absence of such materials; rather it indicates only that none were found as a result of the services provided. The services described in this report were performed in accordance with the general practices and procedures accepted in the consulting field.

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Appendix A Laboratory Test Reports.

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e: reception@i2analytical.com

Analytical Report Number : 23-72595

Project / Site name:	Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE	**Samples received on:**	01/12/2023
Your job number:	TJ3994B10	**Samples instructed on/ Analysis started on:**	01/12/2023
Your order number:	TJ3994B10	**Analysis completed by:**	07/12/2023
Report Issue Number:	1	**Report issued on:**	07/12/2023
Samples Analysed:	2 soil samples		

Signed:

Joanna Szwagrzak
Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

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
asbestos - 6 months from reporting

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

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.

Analytical Report Number: 23-72595
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE
Your Order No: TJ3994B10

Lab Sample Number				2897881	2897882
Sample Reference				NAT/3011/01	NAT/3011/02
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				30/11/2023	30/11/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	14	14
Total mass of sample received	kg	0.001	NONE	1.3	1.3

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	KSZ	KSZ

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	10.2	9.5
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	940	700
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	1000	760
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.506	0.381
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	506	381
Sulphide	mg/kg	1	MCERTS	140	150
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.5	0.5

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.11	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.14	< 0.05
Pyrene	mg/kg	0.05	MCERTS	0.12	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.08	< 0.05
Chrysene	mg/kg	0.05	MCERTS	0.09	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	< 0.85	< 0.85

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Analytical Report Number: 23-72595
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE
Your Order No: TJ3994B10

Lab Sample Number				2897881	2897882
Sample Reference				NAT/3011/01	NAT/3011/02
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				30/11/2023	30/11/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Heavy Metals / Metalloids					
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	< 1.0	2.1
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.2	9
Barium (aqua regia extractable)	mg/kg	1	MCERTS	42	49
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.1	0.95
Boron (water soluble)	mg/kg	0.2	MCERTS	2.9	3.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	24	26
Copper (aqua regia extractable)	mg/kg	1	MCERTS	25	26
Lead (aqua regia extractable)	mg/kg	1	MCERTS	12	12
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.52	0.54
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	29	26
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.6	1.4
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	40	47
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	54	57
Petroleum Hydrocarbons					
TPH C10 - C40 EH_CU_1D_TOTAL	mg/kg	10	MCERTS	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 23-72595
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE

* 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 loam (MCERTS) 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 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2897881	NAT/3011/01	None Supplied	None Supplied	Brown clay and sand.
2897882	NAT/3011/02	None Supplied	None Supplied	Brown clay and sand.

Analytical Report Number : 23-72595
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated WAC-17 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
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-72595
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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Analytical Report Number : 23-72600

Project / Site name:	Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE	**Samples received on:**	01/12/2023
Your job number:	TJ3994B09	**Samples instructed on/ Analysis started on:**	01/12/2023
Your order number:	TJ3994B09	**Analysis completed by:**	07/12/2023
Report Issue Number:	1	**Report issued on:**	07/12/2023
Samples Analysed:	2 soil samples		

Signed:

Joanna Szwagrzak
Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

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
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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Analytical Report Number: 23-72600
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE
Your Order No: TJ3994B09

Lab Sample Number				2897946	2897947
Sample Reference				MG/3011/01	MG/3011/02
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				30/11/2023	30/11/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	11	12
Total mass of sample received	kg	0.001	NONE	1.4	1.4

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	KSZ	KSZ

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	11.3	9.5
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	3400	1800
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	220	780
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.112	0.388
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	112	388
Sulphide	mg/kg	1	MCERTS	23	17
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.6	0.7

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.06	0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.34	0.38
Anthracene	mg/kg	0.05	MCERTS	0.06	0.1
Fluoranthene	mg/kg	0.05	MCERTS	0.67	1.1
Pyrene	mg/kg	0.05	MCERTS	0.64	1.1
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.43	0.86
Chrysene	mg/kg	0.05	MCERTS	0.53	0.79
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.67	1.2
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.32	0.52
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.57	1
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.32	0.55
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.34	0.64
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	4.95	8.37

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Analytical Report Number: 23-72600
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE
Your Order No: TJ3994B09

Lab Sample Number				2897946	2897947
Sample Reference				MG/3011/01	MG/3011/02
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				30/11/2023	30/11/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Heavy Metals / Metalloids					
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	4.6	< 1.0
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.8	10
Barium (aqua regia extractable)	mg/kg	1	MCERTS	240	93
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.67	0.64
Boron (water soluble)	mg/kg	0.2	MCERTS	1.5	1.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	20	20
Copper (aqua regia extractable)	mg/kg	1	MCERTS	28	22
Lead (aqua regia extractable)	mg/kg	1	MCERTS	76	54
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	1.2	0.58
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	15	15
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	35	32
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	93	79
Petroleum Hydrocarbons					
TPH C10 - C40 EH_CU_1D_TOTAL	mg/kg	10	MCERTS	83	390

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 23-72600
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE

* 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 loam (MCERTS) 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 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2897946	MG/3011/01	None Supplied	None Supplied	Brown loam and clay with gravel and vegetation.
2897947	MG/3011/02	None Supplied	None Supplied	Brown loam and clay with gravel and vegetation.

Analytical Report Number : 23-72600
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated WAC-17 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
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-72600
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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WD6 1RN

14th December 2023

FAO: Rob Welling

Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU

Waste Classification Report

Please find attached the results of laboratory testing carried out on four samples of soil recovered from Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU (the site) by a geo-environmental engineer from Terragen Environmental Consultants Limited (TGEN) on 07/12/2023. The samples represent made ground and natural ground (soil and stones) being generated from enabling works excavations and will be excess to requirements and need to be removed from site.

2.0 SITE DESCRIPTION

The Tottenham Hale Centre (THC) development consists of five different sites: Welbourne, North Island, Ferry Island, Ashley Road East and Ashley Road West. Prior to 1864, Ferry Island (Plot B) was predominantly residential with a pumping station occupying the E boundary. By 1936, the residential properties in the SW had been developed into a single building and the pumping station was no longer present. During the 1970s and 80s the site was cleared and a new road junction constructed in the SE corner of the site. More recently and prior to the current development Ferry Island has been occupied by three commercial units including KFC, Pizza Hut and Maplin, with associated car parking.

The proposed THC development essentially comprises the demolition of the existing structures and the construction of residential-led development with retail/business uses alongside; servicing, highways improvements and public amenity space including soft and hard landscaped areas creating an improved public realm.

We understand that as part of the development there will be a shallow reduced level excavation followed by placement of a pile mat, piling, pile cap excavations and a deep basement excavation, which will generate in total circa 26790m^3 of material for disposal from site as waste. It is likely that circa 7170m^3 (27%) of the arisings will be made ground of which circa 2870m^3 will be pile mat and hardstanding, and circa 19620m^3 (73%) will be uncontaminated and inert natural soil and pile arisings.

The anticipated geology at the Ferry Island site comprises made ground overlying superficial deposits of Enfield Silt and River Terrace Deposits. The London Clay is at depth and in the order of 15m thick, underlain by the Lambeth Group, Thanet Sand and White Chalk.

Two site investigation reports have been prepared by Langan International (ref. 841011101 dated 26/07/2018 and 04/11/2021) on behalf of Whitby Wood, which comprised the progression of thirteen exploratory holes. The strata encountered confirmed the anticipated geology and comprised made ground, on average circa 1.7m thick, typically containing only a small quantity of deleterious materials, such as fragments of clinker and tarmac, with no visual or olfactory evidence of significant contamination. Asbestos containing material was not visible during the previous site investigations but it was detected at low concentrations in three samples of made ground tested. The made ground overlies natural and uncontaminated (inert) Enfield Silt, Kempton Park Gravel and London Clay.

During the previous investigations thirty-five samples were taken from the thirteen exploratory hole locations to depths of up to 6.2mbgl representing circa 26790m^3 of enabling works excavations at the site.

3.0 SITE SAMPLING

A geo-environmental engineer from TGEN visited the site on 07/12/2023 to assess the nature of the strata encountered. This included:

- A physical description of the arisings in accordance with relevant AGS and BSI standards.
- An assessment of visual and olfactory evidence of contamination.
- The recovery of representative samples.
- The submission of samples to a UKAS/MCERTS accredited laboratory for analysis.

During the visit, routine reassurance samples of materials were recovered and included the following:

- Two samples of made ground from arisings from the reduced level excavations (MG).
- Two samples of natural ground from a stockpile of piling arisings (NAT).

4.0 MATERIALS ASSESSMENT

In accordance with the LoW (as amended), the CD&E arisings encountered during this sampling exercise are mirror entries with a mirror hazardous (MH) entry and a mirror non-hazardous (MN) entry as follows:

- Soil and stones containing dangerous substances (LoW Code 170503*) – MH.
- Soil and stones not containing dangerous substances (LoW Code 170504) - MN.

4.1 Physical Appearance of the Waste

Made Ground Arisings (MG)

Sampling Date	Reference	Physical Description	Photograph
07/12/2023	MG/0712/01 MG/0712/02	Light brown, sandy, silty clay soil with frequent fragments of brick and concrete. There was no significant odour and the PID reading was <1ppm. No asbestos was seen during the sampling and there was no visual or olfactory evidence of contamination. Based on the physical description, the made ground arisings could be described as: Soil and stones not containing dangerous substances (LoW Code 170504) - MN.	

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Natural Ground Arisings (NAT)

Sampling Date	Reference	Physical Description	Photograph
07/12/2023	NAT/0712/01 NAT/0712/02	Dark clay, firm to stiff, silty clay. There was no significant odour and the PID reading was <1ppm. No asbestos was seen during the sampling and there was no visual or olfactory evidence of contamination. Based on the physical description, the natural ground arisings could be described as: Soil and stones not containing dangerous substances (LoW Code 170504) - MN.	

4.2 Chemical Nature of the Waste

The samples were subjected to a programme of laboratory testing, which included an asbestos screen and a suite of potential contaminants associated with a wide range of potential activities to confirm the preliminary waste classification based on the physical description of the material sampled. The laboratory test reports are presented in Appendix A, which can be summarised as follows.

Made Ground Arisings (MG)

Ref	Chemical Summary		Waste Classification
	Asbestos	Solid	LoW Code
MG/0712/01	NAD	No significant contamination	170504
MG/0712/02	NAD	No significant contamination	170504

NAD No asbestos observed during sample preparation or detected in the sample.

Natural Ground Arisings (NAT)

Ref	Chemical Summary		Waste Classification
	Asbestos	Solid	LoW Code
NAT/0712/01	NAD	No significant contamination	170504
NAT/0712/02	NAD	No significant contamination	170504

NAD No asbestos observed during sample preparation or detected in the sample.

5.0 SUMMARY

No asbestos was observed during the sampling, and none was detected in the samples, which all returned low concentrations of potential contaminants.

As such, the material represented by the samples (made ground and natural) would be classified as:

- **Soil and stones not containing hazardous substances (LoW Code 170504).**

The concentrations returned by the samples of made ground were not hazardous and as such, it is likely that the material represented by these samples would be suitable for acceptance and treatment at a typical soil and aggregates recycling facility (e.g., SR2010 No12).

The naturally occurring soils (London Clay) was free from visual and/or olfactory evidence or any suspicion of contamination, as confirmed by returning low concentrations of all potential contaminants and would be classified as soil and stones not containing hazardous substances (LoW Code 170504), suitable for disposal to an inert permitted landfill/facility without the need for testing. Furthermore, it is likely that the uncontaminated, naturally occurring arisings would be considered suitable for direct transfer to and reuse on a development site in line with a materials management plan in accordance with the CL:AIRE Definition of Waste: Development Industry Code of Practice (DoWCoP).

We would recommend that during any excavation associated with future phases of the development, should materials previously unidentified during the various investigations be encountered (e.g., an unusual appearance and/or odour etc.), works are halted in that area and the advice of a geo-environmental specialist

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be sought to determine an appropriate course of action. We would also advise you to employ routine waste practices when managing the disposal of the waste material (i.e. visual and olfactory inspections of all loads leaving the site) to ensure that the material remains consistent and suitable for recovery or disposal at your chosen facility in accordance with level 1, level 2 and level 3 waste acceptance procedures. Please be aware that your duty of care paperwork now needs to include the following:

- The relevant UK SIC Code.
- A declaration that you have fulfilled your duty to apply the waste hierarchy.
- The relevant LoW Code.

We trust that this report meets your requirements, but please contact us should you require clarification on any of the matters raised. Thank you for your custom and we hope that we can be of further assistance to you in the future.

Paul Brewer
BSc (Hons), MSc, MI Soil Sci
Senior Environmental Consultant

Dr. Barry Powell
BSc (Hons), PhD, MCIWM
Principal Consultant

(for and on behalf of Terragen Environmental Consultants Limited)

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WASTE CLASSIFICATION FRAMEWORK

One of the relevant objectives of the Revised Waste Framework (WFD) Directive (2018/851/EC) is to ensure that waste is recovered or disposed without endangering human health and without using processes or methods which could harm the environment, and without:

- Risk to water, air, soil, plants, or animals.
- Causing nuisance through noise or odours.
- Adversely affecting the countryside or places of special interest.

It also provides the general framework of waste management requirements and sets the basic EU waste management definitions. The List of Waste (LoW) Amendment Decision (2014/955/EU) establishes the classification system, including the distinction between hazardous and non-hazardous wastes. It is closely linked to the main characteristics that render waste hazardous as contained in Annex III of the WFD. The amendments came into force to align waste classification with relevant sections of and approaches used in EU chemicals regulations, such as REACH (1907/2006/EC) and the CLP (1272/2008/EC), which in turn adapt for the EU the UN globally harmonised system for chemicals classification. In 2020 and 2021, GB and the UK introduced its own set of waste classification regulations, such as the CLP, REACH and the mandatory classification and labelling list, which retain, mirror and/or replace relevant EU regulations.

Waste is not considered to be a substance, a mixture or an article. Consequently, obligations under the REACH and the CLP regulations do not apply for producers or holders of waste. Nevertheless, information generated in the frameworks of REACH and the CLP that set criteria for substances to be classified as hazardous are related to some of the hazardous properties applicable to the classification of waste. Annex VI of the CLP contains official harmonised classifications of substances, which must be used where the classification of waste depends on the presence of hazardous substances. The classification of substances is periodically updated by the European Chemicals Agency in the form of a new EU regulation, which automatically amends the CLP.

The Landfill Directive (1999/31/EC) defines the categories of waste applicable to landfill sites as hazardous, non-hazardous, municipal and inert. A landfill is defined as a waste disposal site for the deposit of waste onto or into land. Landfills are divided into three classes:

- Landfills for hazardous waste.
- Landfills for non-hazardous waste.
- Landfills for inert waste.

The three main categories of waste and the options for landfilling are as follows:

- Hazardous with or without additional treatment prior to landfill or stable non-reactive hazardous waste (SNRHW) suitable for placement in a dedicated cell in a suitably permitted non-hazardous landfill site.
- Non-hazardous.
- Inert and suitable for disposal to an appropriately permitted landfill site.

To determine the presence and significance of hazards associated with any construction, demolition and earthworks (CD&E) arisings and therefore the resultant options for management of the materials, and where necessary the appropriate class of facility the waste can be taken to, it is therefore necessary to:

- Determine the presence of hazardous properties within the materials.
- Determine the category of the waste.
- Determine if the waste meets the requirements for reuse onsite, recovery or recycling on or offsite, or disposal offsite as waste.

The main statutory guidance document used to properly classify waste as either hazardous or non-hazardous in the UK is Guidance on the Classification and Assessment of Waste (WM3). The stepped methodology for classifying a waste and assessing any hazardous properties is as follows:

- Check if the waste needs to be classified.
- Identify the code that may apply to the waste.
- Identify the assessment required to select the correct code.
- Determine the chemical composition of the waste.
- Determine if the substances in the waste are hazardous substances or persistent organic pollutants.
- Assess the hazardous properties of the waste.
- Assign and describe the classification code.

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The waste types disposed to a landfill site permitted to accept inert waste or recovered at a site permitted or exempted in accordance with UK regulations and statutory guidance should be classified as inert. No hazardous or contaminated wastes, as defined in the Waste Acceptance Criteria (WAC) and Procedures Directive (2003/33/EC), should be accepted at such sites. The source and origin of the waste along with a description (e.g. physical form, consistency, composition, colour, odour and likely behaviour etc.) should be determined for all material accepted at such inert waste facilities. The materials should be stable, non-reactive and with a sufficient bearing capacity for the end use.

In accordance with the Landfill Directive and UK statutory guidance, the only materials allowed for disposal or recovery at such inert waste facilities without more detailed information (e.g. chemical analyses, site investigation data etc.) should be restricted to single source material from a known site and a reliable producer. The material from the site or source should not be contaminated and should not contain significant quantities of deleterious materials such as wood, plastic etc. Materials potentially suitable for recovery at such inert waste facilities without laboratory analysis should be restricted to the following:

LoW Code	Description	Restrictions
170101	Concrete	Selected CD&E waste only
170102	Bricks	Selected CD&E waste only
170103	Tiles & Ceramics	Selected CD&E waste only
170107	Mixture of Concrete, Bricks, Tiles & Ceramics	Selected CD&E waste only
170504	Soil & Stones (e.g. natural clay & sand etc.)	Selected CD&E waste not from contaminated sites*
200202	Soil & Stones (e.g. natural clay & sand etc.)	Selected garden & park waste only*

- *Excluding topsoil or peat when used as subsoil or fill.
- Selected CD&E or garden & park waste with low (non-significant) contents of other types of materials (i.e. metals, plastics, organics, wood, rubber etc.). The origin of the waste must be known and relevant information regarding the waste must have been assessed.
- No CD&E waste from buildings or land contaminated with dangerous substances (e.g. 170106 & 170503).
- No CD&E waste from buildings treated or painted with dangerous substances in significant amounts.
- These materials should only be accepted if they arise from a single identified source.
- Mixtures of different types of these wastes from the same single source are acceptable without testing.
- Mixtures of these wastes from different sources are not acceptable unless pre-testing is carried out.

If the waste materials were determined as hazardous or potentially inert and required disposal to landfill, then a further stage of assessment would be required to determine if the waste meets the requirements for disposal at a particular category of landfill facility. This is done in the form of WAC testing. It should be noted that the associated regulations and statutory guidance do not apply to the use of suitable uncontaminated waste for redevelopment, restoration and filling in work or for construction purposes, or for recovery activities.

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LIMITATIONS AND USE OF THE REPORT

IMPORTANT: This section should be read before reliance is placed on any of the opinions, advice, recommendations or conclusions set out in this report.

a) This report has been prepared for the purpose of providing interpretation on analytical results supplied by the Client pursuant to its appointment of Terragen Environmental Consultants Limited to act as a Consultant.

b) These comments are given in good faith on the basis of the results provided. Terragen Environmental Consultants Limited can bear no responsibility for any inaccuracies that may arise from the laboratory testing.

c) This report does not constitute a qualitative risk assessment of the site or the soils and is not based upon a conceptual site model as we have been provided with insufficient information to establish the existence of potential sources of contamination, plausible pathways, or sensitive receptors and therefore assumes that they exist.

d) The report is unable to comment on the potential risks to controlled waters (groundwater or surface water), although where contaminant concentrations are below relevant threshold criteria in most circumstances it may be considered that the risk is low.

e) We have assumed that the results are representative of the area sampled. This does not imply that they may be considered representative of the site itself. Terragen Environmental Consultants Limited can accept no responsibility for the integrity of the sampling regime.

f) Save for the Client no duty is undertaken or warranty or representation made to any party in respect of the opinions, advice, recommendations or conclusions herein set out.

g) All work carried out in preparing this report has used, and is based upon, our professional knowledge and understanding of the current relevant English and European Community standards, approved codes of practice, technology and legislation.
Changes in the above may cause the opinion, advice, recommendations or conclusions set out in this report to become inappropriate or incorrect. However, in giving its opinions, advice, recommendations and conclusions, Terragen Environmental Consultants Limited has considered pending changes to environmental legislation and regulations of which it is currently aware. Following delivery of this report, we will have no obligation to advise the Client of any such changes, or of their repercussions.

h) Terragen Environmental Consultants Limited acknowledges that it is being retained, in part, because of its knowledge and experience with respect to environmental matters. Terragen Environmental Consultants Limited will consider and analyse all information provided to it in the context of our knowledge and experience and all other relevant information known to us. To the extent that the information provided to us is not inconsistent or incompatible therewith, Terragen Environmental Consultants Limited shall be entitled to rely upon and assume, without independent verification, the accuracy and completeness of such information.

i) The content of this report represents the professional opinion of experienced environmental consultants. Terragen Environmental Consultants Limited does not provide specialist legal advice and the advice of lawyers may be required.

j) In the Summary and Recommendations sections of this report, Terragen Environmental Consultants Limited has set out our key findings and provided a summary and overview of our advice, opinions and recommendations. However, other parts of this report will often indicate the limitations of the information obtained by Terragen Environmental Consultants Limited and therefore any advice, opinions or recommendations set out in the Executive Summary, Summary and Recommendations sections ought not to be relied upon unless they are considered in the context of the whole report.

k) The lack of evidence of the presence of hazardous or harmful materials at the subject property does not guarantee the absence of such materials; rather it indicates only that none were found as a result of the services provided. The services described in this report were performed in accordance with the general practices and procedures accepted in the consulting field.

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Appendix A Laboratory Test Reports.

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Analytical Report Number : 23-73506

Project / Site name:	Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE	**Samples received on:**	07/12/2023
Your job number:	TJ3994C01	**Samples instructed on/ Analysis started on:**	07/12/2023
Your order number:	TJ3994C01	**Analysis completed by:**	14/12/2023
Report Issue Number:	1	**Report issued on:**	14/12/2023
Samples Analysed:	2 soil samples		

Signed:

Anna Goc
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

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
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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Analytical Report Number: 23-73506
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE
Your Order No: TJ3994C01

Lab Sample Number				2903140	2903141
Sample Reference				MG/0712/01	MG/0712/02
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				07/12/2023	07/12/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	13	11
Total mass of sample received	kg	0.001	NONE	1.9	1.9

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MLO	MLO

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	11.3	11.4
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	11000	10000
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	0.74	0.93
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	1500	1900
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	744	926
Sulphide	mg/kg	1	MCERTS	84	91
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.6	0.5

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.31	0.26
Acenaphthylene	mg/kg	0.05	MCERTS	0.07	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.2	0.11
Fluorene	mg/kg	0.05	MCERTS	0.2	0.11
Phenanthrene	mg/kg	0.05	MCERTS	2.6	0.78
Anthracene	mg/kg	0.05	MCERTS	0.65	0.17
Fluoranthene	mg/kg	0.05	MCERTS	4.1	1.3
Pyrene	mg/kg	0.05	MCERTS	3.4	1.2
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.5	0.58
Chrysene	mg/kg	0.05	MCERTS	1.3	0.54
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	1.6	0.63
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.54	0.3
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.3	0.56
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.6	0.25
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.16	0.07
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.7	0.32
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	19.2	7.16

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Analytical Report Number: 23-73506
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE
Your Order No: TJ3994C01

Lab Sample Number				2903140	2903141
Sample Reference				MG/0712/01	MG/0712/02
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				07/12/2023	07/12/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Heavy Metals / Metalloids					
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	2.2	2.4
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.8	11
Barium (aqua regia extractable)	mg/kg	1	MCERTS	120	110
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.7	0.71
Boron (water soluble)	mg/kg	0.2	MCERTS	1	2.6
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	19	17
Copper (aqua regia extractable)	mg/kg	1	MCERTS	34	27
Lead (aqua regia extractable)	mg/kg	1	MCERTS	55	43
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	1
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	1	0.95
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	13	12
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	30	28
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	86	89
Petroleum Hydrocarbons					
TPH C10 - C40 EH_CU_1D_TOTAL	mg/kg	10	MCERTS	160	220

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 23-73506

Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE

* 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 loam (MCERTS) 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 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2903140	MG/0712/01	None Supplied	None Supplied	Brown clay and sand with gravel.
2903141	MG/0712/02	None Supplied	None Supplied	Brown clay and sand with gravel.

Analytical Report Number : 23-73506
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated WAC-17 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
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-73506
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil (1hr extraction)	Sulphate, water soluble, in soil (1hr extraction)	In-house method	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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Analytical Report Number : 23-73508

Project / Site name:	Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE	**Samples received on:**	07/12/2023
Your job number:	TJ3994C02	**Samples instructed on/ Analysis started on:**	07/12/2023
Your order number:	TJ3994C02	**Analysis completed by:**	13/12/2023
Report Issue Number:	1	**Report issued on:**	14/12/2023
Samples Analysed:	2 soil samples		

Signed:

Anna Goc
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

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
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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Analytical Report Number: 23-73508
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE
Your Order No: TJ3994C02

Lab Sample Number				2903149	2903150
Sample Reference				NAT/0712/01	NAT/0712/02
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				07/12/2023	07/12/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	17	15
Total mass of sample received	kg	0.001	NONE	2	1.8

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MJN	MJN

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	10.2	11.2
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	1300	2000
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	0.43	0.43
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	860	850
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	431	426
Sulphide	mg/kg	1	MCERTS	82	190
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.3	0.5

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.19	0.32
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.06	0.15
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.09
Pyrene	mg/kg	0.05	MCERTS	< 0.05	0.09
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	< 0.85	< 0.85

This certificate should not be reproduced, except in full, without the express permission of the laboratory.

Analytical Report Number: 23-73508
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE
Your Order No: TJ3994C02

Lab Sample Number				2903149	2903150
Sample Reference				NAT/0712/01	NAT/0712/02
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				07/12/2023	07/12/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Heavy Metals / Metalloids					
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	2	< 1.0
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	6.8	9.1
Barium (aqua regia extractable)	mg/kg	1	MCERTS	40	52
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.76	0.92
Boron (water soluble)	mg/kg	0.2	MCERTS	1.3	0.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	22	26
Copper (aqua regia extractable)	mg/kg	1	MCERTS	26	27
Lead (aqua regia extractable)	mg/kg	1	MCERTS	12	11
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.33	0.48
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	20	24
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	35	38
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	41	56
Petroleum Hydrocarbons					
TPH C10 - C40 EH_CU_1D_TOTAL	mg/kg	10	MCERTS	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 23-73508
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE

* 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 loam (MCERTS) 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 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2903149	NAT/0712/01	None Supplied	None Supplied	Brown clay and sand with gravel.
2903150	NAT/0712/02	None Supplied	None Supplied	Brown clay and sand with gravel.

Analytical Report Number : 23-73508
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated WAC-17 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
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-73508
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil (1hr extraction)	Sulphate, water soluble, in soil (1hr extraction)	In-house method	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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4 Elstree Way
Borehamwood
WD6 1RN

4th January 2024

FAO: Rob Welling

Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU

Waste Classification Report

Please find attached the results of laboratory testing carried out on four samples of soil recovered from Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU (the site) by a geo-environmental engineer from Terragen Environmental Consultants Limited (TGEN) on 14/12/2023. The samples represent made ground and natural ground (soil and stones) being generated from enabling works excavations and will be excess to requirements and need to be removed from site.

2.0 SITE DESCRIPTION

The Tottenham Hale Centre (THC) development consists of five different sites: Welbourne, North Island, Ferry Island, Ashley Road East, and Ashley Road West. Prior to 1864, Ferry Island (Plot B) was predominantly residential with a pumping station occupying the E boundary. By 1936, the residential properties in the SW had been developed into a single building and the pumping station was no longer present. During the 1970s and 80s the site was cleared, and a new road junction constructed, in the SE corner of the site. More recently and prior to the current development Ferry Island has been occupied by three commercial units including KFC, Pizza Hut, and Maplin, with associated car parking.

The proposed THC development essentially comprises the demolition of the existing structures and the construction of residential-led development with retail/business uses alongside; servicing, highways improvements and public amenity space including soft and hard landscaped areas creating an improved public realm.

We understand that as part of the development there will be a shallow reduced level excavation followed by placement of a pile mat, piling, pile cap excavations and a deep basement excavation, which will generate in total circa 26790m^3 of material for disposal from site as waste. It is likely that circa 7170m^3 (27%) of the arisings will be made ground, of which circa 2870m^3 will be pile mat and hardstanding, and circa 19620m^3 (73%) will be uncontaminated and inert natural soil and pile arisings.

The anticipated geology at the Ferry Island site comprises made ground overlying superficial deposits of Enfield Silt and River Terrace Deposits. The London Clay is at depth and in the order of 15m thick, underlain by the Lambeth Group, Thanet Sand and White Chalk.

Two site investigation reports have been prepared by Langan International (ref. 841011101 dated 26/07/2018 and 04/11/2021) on behalf of Whitby Wood, which comprised the progression of thirteen exploratory holes. The strata encountered confirmed the anticipated geology and comprised made ground, on average circa 1.7m thick, typically containing only a small quantity of deleterious materials, such as fragments of clinker and tarmac, with no visual or olfactory evidence of significant contamination. Asbestos containing material was not visible during the previous site investigations, but it was detected at low concentrations in three samples of made ground tested. Made ground overlies natural and uncontaminated (inert) Enfield Silt, Kempton Park Gravel, and London Clay.

During the previous investigations thirty-five samples were taken from the thirteen exploratory hole locations to depths of up to 6.2mbgl representing circa 26790m^3 of enabling works excavations at the site.

3.0 SITE SAMPLING

A geo-environmental engineer from TGEN visited the site on 14/12/2023 to assess the nature of the strata encountered. This included:

- A physical description of the arisings in accordance with relevant AGS and BSI standards.
- An assessment of visual and olfactory evidence of contamination.
- The recovery of representative samples.
- The submission of samples to a UKAS/MCERTS accredited laboratory for analysis.

During the visit, routine reassurance samples of materials were recovered and included the following:

- Two samples of made ground from arisings from the reduced level excavations (MG).
- Two samples of natural ground from a stockpile of piling arisings (NAT).

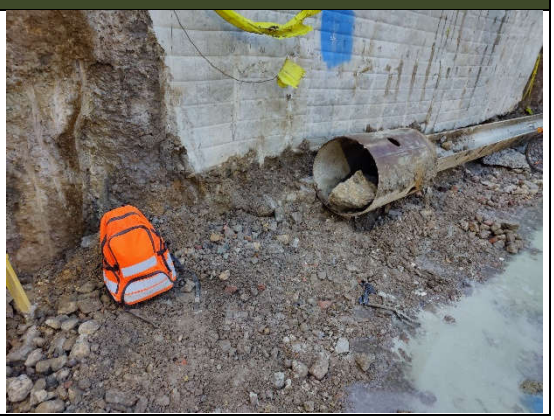
4.0 MATERIALS ASSESSMENT

In accordance with the LoW (as amended), the CD&E arisings encountered during this sampling exercise are mirror entries with a mirror hazardous (MH) entry and a mirror non-hazardous (MN) entry as follows:

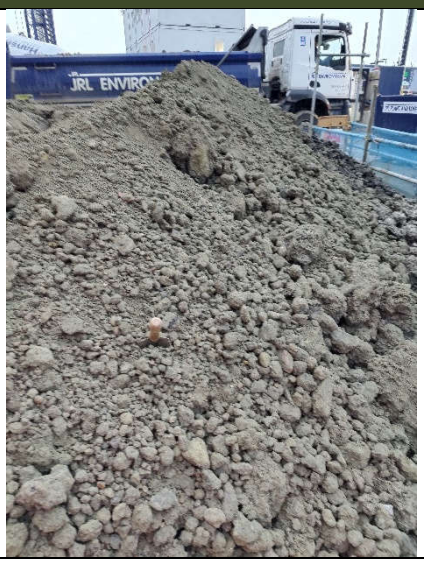
- Soil and stones containing dangerous substances (LoW Code 170503*) – MH.
- Soil and stones not containing dangerous substances (LoW Code 170504) - MN.

4.1 Physical Appearance of the Waste

Made Ground Arisings (MG)

Sampling Date	Reference	Physical Description	Photograph
14/12/2023	MG/1412/01 MG/1412/02	Grey/brown, sandy, silty gravel with frequent fragments of brick and concrete. There was no significant odour and the PID reading was <1ppm. No asbestos was seen during the sampling and there was no visual or olfactory evidence of contamination. Based on the physical description, the made ground arisings could be described as: Soil and stones not containing dangerous substances (LoW Code 170504) - MN.	

Natural Ground Arisings (NAT)

Sampling Date	Reference	Physical Description	Photograph
14/12/2023	NAT/1412/01 NAT/1412/02	Dark clay, firm to stiff, slightly sandy, slightly gravelly clay. There was no significant odour and the PID reading was <1ppm. No asbestos was seen during the sampling and there was no visual or olfactory evidence of contamination. Based on the physical description, the natural ground arisings could be described as: Soil and stones not containing dangerous substances (LoW Code 170504) - MN.	

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4.2 Chemical Nature of the Waste

The samples were subjected to a programme of laboratory testing, which included an asbestos screen and a suite of potential contaminants associated with a wide range of potential activities to confirm the preliminary waste classification based on the physical description of the material sampled. The laboratory test reports are presented in Appendix A, which can be summarised as follows.

Made Ground Arisings (MG)

Ref	Chemical Summary		Waste Classification
	Asbestos	Solid	LoW Code
MG/1412/01	NAD	No significant contamination*	170504
MG/1412/02	NAD	No significant contamination*	170504

NAD No asbestos observed during sample preparation or detected in the sample.

* Both samples of made ground returned an elevated pH value. During sample preparation, soil samples are dried and then ground. If they contain fragments of concrete, the process increases the surface area of the concrete, thus temporarily exposing a significantly increased amount of calcium hydroxide to the analytical substrates (e.g. water), which frequently results in a temporarily increased pH value (≥11.5) during standard laboratory analysis of samples of aggregates or made ground containing fragments of concrete. In this case, the elevated pH is therefore considered to be due to the presence of alkaline construction materials (e.g. frequent fragments of concrete) in the sample that are crushed during sample preparation rather than the presence of other corrosive materials.

Natural Ground Arisings (NAT)

Ref	Chemical Summary		Waste Classification
	Asbestos	Solid	LoW Code
NAT/1412/01	NAD	No significant contamination	170504
NAT/1412/02	NAD	No significant contamination	170504

NAD No asbestos observed during sample preparation or detected in the sample.

5.0 SUMMARY

No asbestos was observed during the sampling, and none was detected in the samples, which all returned low concentrations of potential contaminants.

As such, the material represented by the samples (made ground and natural) would be classified as:

- **Soil and stones not containing hazardous substances (LoW Code 170504).**

The concentrations returned by the samples of made ground were not hazardous and as such, it is likely that the material represented by these samples would be suitable for acceptance and treatment at a typical soil and aggregates recycling facility (e.g., SR2010 No12).

The naturally occurring soils (London Clay) was free from visual and/or olfactory evidence or any suspicion of contamination, as confirmed by returning low concentrations of all potential contaminants and would be classified as soil and stones not containing hazardous substances (LoW Code 170504), suitable for disposal to an inert permitted landfill/facility without the need for testing. Furthermore, it is likely that the uncontaminated, naturally occurring arisings would be considered suitable for direct transfer to and reuse on a development site in line with a materials management plan in accordance with the CL:AIRE Definition of Waste: Development Industry Code of Practice (DoWCoP).

We would recommend that during any excavation associated with future phases of the development, should materials previously unidentified during the various investigations be encountered (e.g., an unusual appearance and/or odour etc.), works are halted in that area and the advice of a geo-environmental specialist be sought to determine an appropriate course of action. We would also advise you to employ routine waste practices when managing the disposal of the waste material (i.e. visual and olfactory inspections of all loads leaving the site) to ensure that the material remains consistent and suitable for recovery or disposal at your chosen facility in accordance with level 1, level 2 and level 3 waste acceptance procedures. Please be aware that your duty of care paperwork now needs to include the following:

- The relevant UK SIC Code.
- A declaration that you have fulfilled your duty to apply the waste hierarchy.
- The relevant LoW Code.

We trust that this report meets your requirements, but please contact us should you require clarification on

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any of the matters raised. Thank you for your custom and we hope that we can be of further assistance to you in the future.

Paul Brewer
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Senior Environmental Consultant

Dr. Barry Powell
BSc (Hons), PhD, MCIWM
Principal Consultant

(for and on behalf of Terragen Environmental Consultants Limited)

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WASTE CLASSIFICATION FRAMEWORK

One of the relevant objectives of the Revised Waste Framework (WFD) Directive (2018/851/EC) is to ensure that waste is recovered or disposed without endangering human health and without using processes or methods which could harm the environment, and without:

- Risk to water, air, soil, plants, or animals.
- Causing nuisance through noise or odours.
- Adversely affecting the countryside or places of special interest.

It also provides the general framework of waste management requirements and sets the basic EU waste management definitions. The List of Waste (LoW) Amendment Decision (2014/955/EU) establishes the classification system, including the distinction between hazardous and non-hazardous wastes. It is closely linked to the main characteristics that render waste hazardous as contained in Annex III of the WFD. The amendments came into force to align waste classification with relevant sections of and approaches used in EU chemicals regulations, such as REACH (1907/2006/EC) and the CLP (1272/2008/EC), which in turn adapt for the EU the UN globally harmonised system for chemicals classification. In 2020 and 2021, GB and the UK introduced its own set of waste classification regulations, such as the CLP, REACH and the mandatory classification and labelling list, which retain, mirror and/or replace relevant EU regulations.

Waste is not considered to be a substance, a mixture or an article. Consequently, obligations under the REACH and the CLP regulations do not apply for producers or holders of waste. Nevertheless, information generated in the frameworks of REACH and the CLP that set criteria for substances to be classified as hazardous are related to some of the hazardous properties applicable to the classification of waste. Annex VI of the CLP contains official harmonised classifications of substances, which must be used where the classification of waste depends on the presence of hazardous substances. The classification of substances is periodically updated by the European Chemicals Agency in the form of a new EU regulation, which automatically amends the CLP.

The Landfill Directive (1999/31/EC) defines the categories of waste applicable to landfill sites as hazardous, non-hazardous, municipal and inert. A landfill is defined as a waste disposal site for the deposit of waste onto or into land. Landfills are divided into three classes:

- Landfills for hazardous waste.
- Landfills for non-hazardous waste.
- Landfills for inert waste.

The three main categories of waste and the options for landfilling are as follows:

- Hazardous with or without additional treatment prior to landfill or stable non-reactive hazardous waste (SNRHW) suitable for placement in a dedicated cell in a suitably permitted non-hazardous landfill site.
- Non-hazardous.
- Inert and suitable for disposal to an appropriately permitted landfill site.

To determine the presence and significance of hazards associated with any construction, demolition and earthworks (CD&E) arisings and therefore the resultant options for management of the materials, and where necessary the appropriate class of facility the waste can be taken to, it is therefore necessary to:

- Determine the presence of hazardous properties within the materials.
- Determine the category of the waste.
- Determine if the waste meets the requirements for reuse onsite, recovery or recycling on or offsite, or disposal offsite as waste.

The main statutory guidance document used to properly classify waste as either hazardous or non-hazardous in the UK is Guidance on the Classification and Assessment of Waste (WM3). The stepped methodology for classifying a waste and assessing any hazardous properties is as follows:

- Check if the waste needs to be classified.
- Identify the code that may apply to the waste.
- Identify the assessment required to select the correct code.
- Determine the chemical composition of the waste.
- Determine if the substances in the waste are hazardous substances or persistent organic pollutants.
- Assess the hazardous properties of the waste.
- Assign and describe the classification code.

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The waste types disposed to a landfill site permitted to accept inert waste or recovered at a site permitted or exempted in accordance with UK regulations and statutory guidance should be classified as inert. No hazardous or contaminated wastes, as defined in the Waste Acceptance Criteria (WAC) and Procedures Directive (2003/33/EC), should be accepted at such sites. The source and origin of the waste along with a description (e.g. physical form, consistency, composition, colour, odour and likely behaviour etc.) should be determined for all material accepted at such inert waste facilities. The materials should be stable, non-reactive and with a sufficient bearing capacity for the end use.

In accordance with the Landfill Directive and UK statutory guidance, the only materials allowed for disposal or recovery at such inert waste facilities without more detailed information (e.g. chemical analyses, site investigation data etc.) should be restricted to single source material from a known site and a reliable producer. The material from the site or source should not be contaminated and should not contain significant quantities of deleterious materials such as wood, plastic etc. Materials potentially suitable for recovery at such inert waste facilities without laboratory analysis should be restricted to the following:

LoW Code	Description	Restrictions
170101	Concrete	Selected CD&E waste only
170102	Bricks	Selected CD&E waste only
170103	Tiles & Ceramics	Selected CD&E waste only
170107	Mixture of Concrete, Bricks, Tiles & Ceramics	Selected CD&E waste only
170504	Soil & Stones (e.g. natural clay & sand etc.)	Selected CD&E waste not from contaminated sites*
200202	Soil & Stones (e.g. natural clay & sand etc.)	Selected garden & park waste only*

- *Excluding topsoil or peat when used as subsoil or fill.
- Selected CD&E or garden & park waste with low (non-significant) contents of other types of materials (i.e. metals, plastics, organics, wood, rubber etc.). The origin of the waste must be known and relevant information regarding the waste must have been assessed.
- No CD&E waste from buildings or land contaminated with dangerous substances (e.g. 170106 & 170503).
- No CD&E waste from buildings treated or painted with dangerous substances in significant amounts.
- These materials should only be accepted if they arise from a single identified source.
- Mixtures of different types of these wastes from the same single source are acceptable without testing.
- Mixtures of these wastes from different sources are not acceptable unless pre-testing is carried out.

If the waste materials were determined as hazardous or potentially inert and required disposal to landfill, then a further stage of assessment would be required to determine if the waste meets the requirements for disposal at a particular category of landfill facility. This is done in the form of WAC testing. It should be noted that the associated regulations and statutory guidance do not apply to the use of suitable uncontaminated waste for redevelopment, restoration and filling in work or for construction purposes, or for recovery activities.

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LIMITATIONS AND USE OF THE REPORT

IMPORTANT: This section should be read before reliance is placed on any of the opinions, advice, recommendations or conclusions set out in this report.

a) This report has been prepared for the purpose of providing interpretation on analytical results supplied by the Client pursuant to its appointment of Terragen Environmental Consultants Limited to act as a Consultant.

b) These comments are given in good faith on the basis of the results provided. Terragen Environmental Consultants Limited can bear no responsibility for any inaccuracies that may arise from the laboratory testing.

c) This report does not constitute a qualitative risk assessment of the site or the soils and is not based upon a conceptual site model as we have been provided with insufficient information to establish the existence of potential sources of contamination, plausible pathways, or sensitive receptors and therefore assumes that they exist.

d) The report is unable to comment on the potential risks to controlled waters (groundwater or surface water), although where contaminant concentrations are below relevant threshold criteria in most circumstances it may be considered that the risk is low.

e) We have assumed that the results are representative of the area sampled. This does not imply that they may be considered representative of the site itself. Terragen Environmental Consultants Limited can accept no responsibility for the integrity of the sampling regime.

f) Save for the Client no duty is undertaken or warranty or representation made to any party in respect of the opinions, advice, recommendations or conclusions herein set out.

g) All work carried out in preparing this report has used, and is based upon, our professional knowledge and understanding of the current relevant English and European Community standards, approved codes of practice, technology and legislation.
Changes in the above may cause the opinion, advice, recommendations or conclusions set out in this report to become inappropriate or incorrect. However, in giving its opinions, advice, recommendations and conclusions, Terragen Environmental Consultants Limited has considered pending changes to environmental legislation and regulations of which it is currently aware. Following delivery of this report, we will have no obligation to advise the Client of any such changes, or of their repercussions.

h) Terragen Environmental Consultants Limited acknowledges that it is being retained, in part, because of its knowledge and experience with respect to environmental matters. Terragen Environmental Consultants Limited will consider and analyse all information provided to it in the context of our knowledge and experience and all other relevant information known to us. To the extent that the information provided to us is not inconsistent or incompatible therewith, Terragen Environmental Consultants Limited shall be entitled to rely upon and assume, without independent verification, the accuracy and completeness of such information.

i) The content of this report represents the professional opinion of experienced environmental consultants. Terragen Environmental Consultants Limited does not provide specialist legal advice and the advice of lawyers may be required.

j) In the Summary and Recommendations sections of this report, Terragen Environmental Consultants Limited has set out our key findings and provided a summary and overview of our advice, opinions and recommendations. However, other parts of this report will often indicate the limitations of the information obtained by Terragen Environmental Consultants Limited and therefore any advice, opinions or recommendations set out in the Executive Summary, Summary and Recommendations sections ought not to be relied upon unless they are considered in the context of the whole report.

k) The lack of evidence of the presence of hazardous or harmful materials at the subject property does not guarantee the absence of such materials; rather it indicates only that none were found as a result of the services provided. The services described in this report were performed in accordance with the general practices and procedures accepted in the consulting field.

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Appendix A Laboratory Test Reports.

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Analytical Report Number : 23-75076

Project / Site name:	Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE	**Samples received on:**	14/12/2023
Your job number:	TJ3994C03	**Samples instructed on/ Analysis started on:**	14/12/2023
Your order number:	TJ3994C03	**Analysis completed by:**	27/12/2023
Report Issue Number:	1	**Report issued on:**	27/12/2023
Samples Analysed:	2 soil samples		

Signed:

Joanna Szwagrzak
Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

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
asbestos	- 6 months from reporting

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

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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Analytical Report Number: 23-75076
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE
Your Order No: TJ3994C03

Lab Sample Number				2911910	2911911
Sample Reference				MG/1412/01	MG/1412/02
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				14/12/2023	14/12/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Stone Content	%	0.1	NONE	50	42
Moisture Content	%	0.01	NONE	12	14
Total mass of sample received	kg	0.001	NONE	0.9	1

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	EWS	EWS

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	11.6	11.5
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	6100	9000
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	460	950
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.23	0.475
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	230	475
Sulphide	mg/kg	1	MCERTS	77	110
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.5	0.6

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	0.06	0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.06	0.07
Fluorene	mg/kg	0.05	MCERTS	0.08	0.06
Phenanthrene	mg/kg	0.05	MCERTS	0.83	0.73
Anthracene	mg/kg	0.05	MCERTS	0.37	0.19
Fluoranthene	mg/kg	0.05	MCERTS	1.5	1.2
Pyrene	mg/kg	0.05	MCERTS	1.4	1
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.69	0.47
Chrysene	mg/kg	0.05	MCERTS	0.64	0.45
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.72	0.55
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.32	0.22
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.63	0.46
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.31	0.24
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.08	0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.36	0.3
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	8.05	6

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Analytical Report Number: 23-75076
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE
Your Order No: TJ3994C03

Lab Sample Number				2911910	2911911
Sample Reference				MG/1412/01	MG/1412/02
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				14/12/2023	14/12/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Heavy Metals / Metalloids					
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	2.2	2.6
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11	11
Barium (aqua regia extractable)	mg/kg	1	MCERTS	110	110
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.65	0.7
Boron (water soluble)	mg/kg	0.2	MCERTS	0.9	1.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	19	18
Copper (aqua regia extractable)	mg/kg	1	MCERTS	40	30
Lead (aqua regia extractable)	mg/kg	1	MCERTS	54	54
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.84	1
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	15	13
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	30	30
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	80
Petroleum Hydrocarbons					
TPH C10 - C40 EH_CU_1D_TOTAL	mg/kg	10	MCERTS	120	110

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 23-75076
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE

* 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 loam (MCERTS) 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 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2911910	MG/1412/01	None Supplied	None Supplied	Brown loam with stones.
2911911	MG/1412/02	None Supplied	None Supplied	Brown loam with stones.

Analytical Report Number : 23-75076
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated WAC-17 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
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-75076
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU JRLE

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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Analytical Report Number : 23-75077

Project / Site name:	Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU	**Samples received on:**	14/12/2023
Your job number:	TJ3994C04	**Samples instructed on/ Analysis started on:**	14/12/2023
Your order number:	TJ3994C04	**Analysis completed by:**	27/12/2023
Report Issue Number:	1	**Report issued on:**	27/12/2023
Samples Analysed:	2 soil samples		

Signed:

Joanna Szwagrzak
Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

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
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-75077
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU
Your Order No: TJ3994C04

Lab Sample Number				2911912	2911913
Sample Reference				NAT/1412/01	NAT/1412/02
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				14/12/2023	14/12/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	16	19
Total mass of sample received	kg	0.001	NONE	1	0.9
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	DSA	DSA

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	11	11.1
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	2500	2800
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	1400	1600
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.69	0.784
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	690	784
Sulphide	mg/kg	1	MCERTS	190	190
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.6	0.6

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.07	0.08
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.11	0.13
Pyrene	mg/kg	0.05	MCERTS	0.1	0.13
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.05	0.05
Chrysene	mg/kg	0.05	MCERTS	0.05	0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.06
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	< 0.85	< 0.85

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-75077
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU
Your Order No: TJ3994C04

Lab Sample Number				2911912	2911913
Sample Reference				NAT/1412/01	NAT/1412/02
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				14/12/2023	14/12/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Heavy Metals / Metalloids					
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	< 1.0	2
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9	8.9
Barium (aqua regia extractable)	mg/kg	1	MCERTS	54	63
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.86	0.98
Boron (water soluble)	mg/kg	0.2	MCERTS	1.7	1.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	23	25
Copper (aqua regia extractable)	mg/kg	1	MCERTS	23	24
Lead (aqua regia extractable)	mg/kg	1	MCERTS	18	17
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.57	0.42
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	20	21
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	39	43
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	49	56
Petroleum Hydrocarbons					
TPH C10 - C40 EH_CU_1D_TOTAL	mg/kg	10	MCERTS	16	17

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 23-75077
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU

* 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 loam (MCERTS) 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 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2911912	NAT/1412/01	None Supplied	None Supplied	Brown sandy clay with gravel.
2911913	NAT/1412/02	None Supplied	None Supplied	Brown sandy clay with gravel.

Analytical Report Number : 23-75077
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated WAC-17 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
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-75077
Project / Site name: Ferry Island Tottenham Hale Plot B High Cross Road London N17 9NU

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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4th January 2024

FAO: Rob Welling

Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU

Waste Classification Report

Please find attached the results of laboratory testing carried out on four samples of soil recovered from Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU (the site) by a geo-environmental engineer from Terragen Environmental Consultants Limited (TGEN) on 19/12/2023. The samples represent made ground and natural ground (soil and stones) being generated from enabling works excavations and will be excess to requirements and need to be removed from site.

2.0 SITE DESCRIPTION

The Tottenham Hale Centre (THC) development consists of five different sites: Welbourne, North Island, Ferry Island, Ashley Road East, and Ashley Road West. Prior to 1864, Ferry Island (Plot B) was predominantly residential with a pumping station occupying the E boundary. By 1936, the residential properties in the SW had been developed into a single building and the pumping station was no longer present. During the 1970s and 80s the site was cleared, and a new road junction constructed, in the SE corner of the site. More recently and prior to the current development Ferry Island has been occupied by three commercial units including KFC, Pizza Hut, and Maplin, with associated car parking.

The proposed THC development essentially comprises the demolition of the existing structures and the construction of residential-led development with retail/business uses alongside; servicing, highways improvements and public amenity space including soft and hard landscaped areas creating an improved public realm.

We understand that as part of the development there will be a shallow reduced level excavation followed by placement of a pile mat, piling, pile cap excavations and a deep basement excavation, which will generate in total circa 26790m^3 of material for disposal from site as waste. It is likely that circa 7170m^3 (27%) of the arisings will be made ground, of which circa 2870m^3 will be pile mat and hardstanding, and circa 19620m^3 (73%) will be uncontaminated and inert natural soil and pile arisings.

The anticipated geology at the Ferry Island site comprises made ground overlying superficial deposits of Enfield Silt and River Terrace Deposits. The London Clay is at depth and in the order of 15m thick, underlain by the Lambeth Group, Thanet Sand and White Chalk.

Two site investigation reports have been prepared by Langan International (ref. 841011101 dated 26/07/2018 and 04/11/2021) on behalf of Whitby Wood, which comprised the progression of thirteen exploratory holes. The strata encountered confirmed the anticipated geology and comprised made ground, on average circa 1.7m thick, typically containing only a small quantity of deleterious materials, such as fragments of clinker and tarmac, with no visual or olfactory evidence of significant contamination. Asbestos containing material was not visible during the previous site investigations, but it was detected at low concentrations in three samples of made ground tested. Made ground overlies natural and uncontaminated (inert) Enfield Silt, Kempton Park Gravel, and London Clay.

During the previous investigations thirty-five samples were taken from the thirteen exploratory hole locations to depths of up to 6.2mbgl representing circa 26790m^3 of enabling works excavations at the site.

3.0 SITE SAMPLING

A geo-environmental engineer from TGEN visited the site on 19/12/2023 to assess the nature of the strata encountered. This included:

- A physical description of the arisings in accordance with relevant AGS and BSI standards.
- An assessment of visual and olfactory evidence of contamination.
- The recovery of representative samples.
- The submission of samples to a UKAS/MCERTS accredited laboratory for analysis.

During the visit, routine reassurance samples of materials were recovered and included the following:

- Two samples of made ground from arisings from the reduced level excavations (MG).
- Two samples of natural ground from a stockpile of piling arisings (NAT).

4.0 MATERIALS ASSESSMENT

In accordance with the LoW (as amended), the CD&E arisings encountered during this sampling exercise are mirror entries with a mirror hazardous (MH) entry and a mirror non-hazardous (MN) entry as follows:

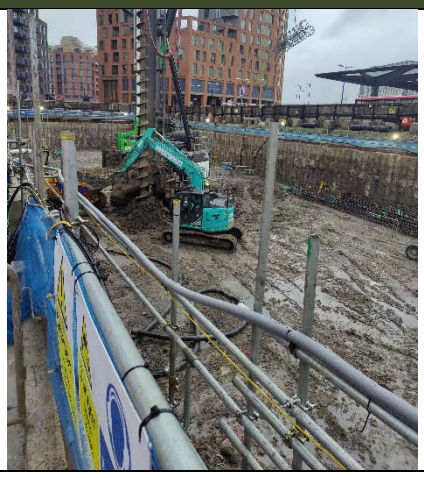
- Soil and stones containing dangerous substances (LoW Code 170503*) – MH.
- Soil and stones not containing dangerous substances (LoW Code 170504) - MN.

4.1 Physical Appearance of the Waste

Made Ground Arisings (MG)

Sampling Date	Reference	Physical Description	Photograph
19/12/2023	MG/1912/01 MG/1912/02	Grey/brown, sandy, silty gravel with frequent fragments of brick and concrete. There was no significant odour and the PID reading was <1ppm. No asbestos was seen during the sampling and there was no visual or olfactory evidence of contamination. Based on the physical description, the made ground arisings could be described as: Soil and stones not containing dangerous substances (LoW Code 170504) - MN.	

Natural Ground Arisings (NAT)

Sampling Date	Reference	Physical Description	Photograph
19/12/2023	NAT/1912/01 NAT/1912/02	Dark clay, firm to stiff, slightly sandy, slightly gravelly clay with occasional fragments of brick and concrete. There was no significant odour and the PID reading was <1ppm. No asbestos was seen during the sampling and there was no visual or olfactory evidence of contamination. Based on the physical description, the natural ground arisings could be described as: Soil and stones not containing dangerous substances (LoW Code 170504) - MN.	

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4.2 Chemical Nature of the Waste

The samples were subjected to a programme of laboratory testing, which included an asbestos screen and a suite of potential contaminants associated with a wide range of potential activities to confirm the preliminary waste classification based on the physical description of the material sampled. The laboratory test reports are presented in Appendix A, which can be summarised as follows.

Made Ground Arisings (MG)

Ref	Chemical Summary		Waste Classification
	Asbestos	Solid	LoW Code
MG/1912/01	NAD	No significant contamination	170504
MG/1912/02	NAD	No significant contamination*	170504

NAD No asbestos observed during sample preparation or detected in the sample.

* One sample of made ground (MG/1912/02) returned an elevated pH value. During sample preparation, soil samples are dried and then ground. If they contain fragments of concrete, the process increases the surface area of the concrete, thus temporarily exposing a significantly increased amount of calcium hydroxide to the analytical substrates (e.g. water), which frequently results in a temporarily increased pH value (≥11.5) during standard laboratory analysis of samples of aggregates or made ground containing fragments of concrete. In this case, the elevated pH is therefore considered to be due to the presence of alkaline construction materials (e.g. frequent fragments of concrete) in the sample that are crushed during sample preparation rather than the presence of other corrosive materials.

Natural Ground Arisings (NAT)

Ref	Chemical Summary		Waste Classification
	Asbestos	Solid	LoW Code
NAT/1912/01	NAD	No significant contamination	170504
NAT/1912/02	NAD	No significant contamination	170504

NAD No asbestos observed during sample preparation or detected in the sample.

* One sample of made ground (MG/1912/02) and one sample of natural ground (NAT/1912/02) returned an elevated pH value. During sample preparation, soil samples are dried and then ground. If they contain fragments of concrete, the process increases the surface area of the concrete, thus temporarily exposing a significantly increased amount of calcium hydroxide to the analytical substrates (e.g. water), which frequently results in a temporarily increased pH value (≥11.5) during standard laboratory analysis of samples of aggregates or made ground containing fragments of concrete. In this case, the elevated pH is therefore considered to be due to the presence of alkaline construction materials (e.g. frequent fragments of concrete) in the sample that are crushed during sample preparation rather than the presence of other corrosive materials.

5.0 SUMMARY

No asbestos was observed during the sampling, and none was detected in the samples, which all returned low concentrations of potential contaminants. As such, the material represented by the samples (made ground and natural) would be classified as:

- **Soil and stones not containing hazardous substances (LoW Code 170504).**

The concentrations returned by the samples of made ground were not hazardous and as such, it is likely that the material represented by these samples would be suitable for acceptance and treatment at a typical soil and aggregates recycling facility (e.g., SR2010 No12).

The naturally occurring soils (London Clay) was free from visual and/or olfactory evidence or any suspicion of contamination, as confirmed by returning low concentrations of all potential contaminants and would be classified as soil and stones not containing hazardous substances (LoW Code 170504), suitable for disposal to an inert permitted landfill/facility without the need for testing. Furthermore, it is likely that the uncontaminated, naturally occurring arisings would be considered suitable for direct transfer to and reuse on a development site in line with a materials management plan in accordance with the CL:AIRE Definition of Waste: Development Industry Code of Practice (DoWCoP).

We would recommend that during any excavation associated with future phases of the development, should materials previously unidentified during the various investigations be encountered (e.g., an unusual appearance and/or odour etc.), works are halted in that area and the advice of a geo-environmental specialist be sought to determine an appropriate course of action. We would also advise you to employ routine waste

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practices when managing the disposal of the waste material (i.e. visual and olfactory inspections of all loads leaving the site) to ensure that the material remains consistent and suitable for recovery or disposal at your chosen facility in accordance with level 1, level 2 and level 3 waste acceptance procedures. Please be aware that your duty of care paperwork now needs to include the following:

- The relevant UK SIC Code.
- A declaration that you have fulfilled your duty to apply the waste hierarchy.
- The relevant LoW Code.

We trust that this report meets your requirements, but please contact us should you require clarification on any of the matters raised. Thank you for your custom and we hope that we can be of further assistance to you in the future.

Paul Brewer
BSc (Hons), MSc, MI Soil Sci
Senior Environmental Consultant

Dr. Barry Powell
BSc (Hons), PhD, MCIWM
Principal Consultant

(for and on behalf of Terragen Environmental Consultants Limited)

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WASTE CLASSIFICATION FRAMEWORK

One of the relevant objectives of the Revised Waste Framework (WFD) Directive (2018/851/EC) is to ensure that waste is recovered or disposed without endangering human health and without using processes or methods which could harm the environment, and without:

- Risk to water, air, soil, plants, or animals.
- Causing nuisance through noise or odours.
- Adversely affecting the countryside or places of special interest.

It also provides the general framework of waste management requirements and sets the basic EU waste management definitions. The List of Waste (LoW) Amendment Decision (2014/955/EU) establishes the classification system, including the distinction between hazardous and non-hazardous wastes. It is closely linked to the main characteristics that render waste hazardous as contained in Annex III of the WFD. The amendments came into force to align waste classification with relevant sections of and approaches used in EU chemicals regulations, such as REACH (1907/2006/EC) and the CLP (1272/2008/EC), which in turn adapt for the EU the UN globally harmonised system for chemicals classification. In 2020 and 2021, GB and the UK introduced its own set of waste classification regulations, such as the CLP, REACH and the mandatory classification and labelling list, which retain, mirror and/or replace relevant EU regulations.

Waste is not considered to be a substance, a mixture or an article. Consequently, obligations under the REACH and the CLP regulations do not apply for producers or holders of waste. Nevertheless, information generated in the frameworks of REACH and the CLP that set criteria for substances to be classified as hazardous are related to some of the hazardous properties applicable to the classification of waste. Annex VI of the CLP contains official harmonised classifications of substances, which must be used where the classification of waste depends on the presence of hazardous substances. The classification of substances is periodically updated by the European Chemicals Agency in the form of a new EU regulation, which automatically amends the CLP.

The Landfill Directive (1999/31/EC) defines the categories of waste applicable to landfill sites as hazardous, non-hazardous, municipal and inert. A landfill is defined as a waste disposal site for the deposit of waste onto or into land. Landfills are divided into three classes:

- Landfills for hazardous waste.
- Landfills for non-hazardous waste.
- Landfills for inert waste.

The three main categories of waste and the options for landfilling are as follows:

- Hazardous with or without additional treatment prior to landfill or stable non-reactive hazardous waste (SNRHW) suitable for placement in a dedicated cell in a suitably permitted non-hazardous landfill site.
- Non-hazardous.
- Inert and suitable for disposal to an appropriately permitted landfill site.

To determine the presence and significance of hazards associated with any construction, demolition and earthworks (CD&E) arisings and therefore the resultant options for management of the materials, and where necessary the appropriate class of facility the waste can be taken to, it is therefore necessary to:

- Determine the presence of hazardous properties within the materials.
- Determine the category of the waste.
- Determine if the waste meets the requirements for reuse onsite, recovery or recycling on or offsite, or disposal offsite as waste.

The main statutory guidance document used to properly classify waste as either hazardous or non-hazardous in the UK is Guidance on the Classification and Assessment of Waste (WM3). The stepped methodology for classifying a waste and assessing any hazardous properties is as follows:

- Check if the waste needs to be classified.
- Identify the code that may apply to the waste.
- Identify the assessment required to select the correct code.
- Determine the chemical composition of the waste.
- Determine if the substances in the waste are hazardous substances or persistent organic pollutants.
- Assess the hazardous properties of the waste.
- Assign and describe the classification code.

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The waste types disposed to a landfill site permitted to accept inert waste or recovered at a site permitted or exempted in accordance with UK regulations and statutory guidance should be classified as inert. No hazardous or contaminated wastes, as defined in the Waste Acceptance Criteria (WAC) and Procedures Directive (2003/33/EC), should be accepted at such sites. The source and origin of the waste along with a description (e.g. physical form, consistency, composition, colour, odour and likely behaviour etc.) should be determined for all material accepted at such inert waste facilities. The materials should be stable, non-reactive and with a sufficient bearing capacity for the end use.

In accordance with the Landfill Directive and UK statutory guidance, the only materials allowed for disposal or recovery at such inert waste facilities without more detailed information (e.g. chemical analyses, site investigation data etc.) should be restricted to single source material from a known site and a reliable producer. The material from the site or source should not be contaminated and should not contain significant quantities of deleterious materials such as wood, plastic etc. Materials potentially suitable for recovery at such inert waste facilities without laboratory analysis should be restricted to the following:

LoW Code	Description	Restrictions
170101	Concrete	Selected CD&E waste only
170102	Bricks	Selected CD&E waste only
170103	Tiles & Ceramics	Selected CD&E waste only
170107	Mixture of Concrete, Bricks, Tiles & Ceramics	Selected CD&E waste only
170504	Soil & Stones (e.g. natural clay & sand etc.)	Selected CD&E waste not from contaminated sites*
200202	Soil & Stones (e.g. natural clay & sand etc.)	Selected garden & park waste only*

- *Excluding topsoil or peat when used as subsoil or fill.
- Selected CD&E or garden & park waste with low (non-significant) contents of other types of materials (i.e. metals, plastics, organics, wood, rubber etc.). The origin of the waste must be known and relevant information regarding the waste must have been assessed.
- No CD&E waste from buildings or land contaminated with dangerous substances (e.g. 170106 & 170503).
- No CD&E waste from buildings treated or painted with dangerous substances in significant amounts.
- These materials should only be accepted if they arise from a single identified source.
- Mixtures of different types of these wastes from the same single source are acceptable without testing.
- Mixtures of these wastes from different sources are not acceptable unless pre-testing is carried out.

If the waste materials were determined as hazardous or potentially inert and required disposal to landfill, then a further stage of assessment would be required to determine if the waste meets the requirements for disposal at a particular category of landfill facility. This is done in the form of WAC testing. It should be noted that the associated regulations and statutory guidance do not apply to the use of suitable uncontaminated waste for redevelopment, restoration and filling in work or for construction purposes, or for recovery activities.

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LIMITATIONS AND USE OF THE REPORT

IMPORTANT: This section should be read before reliance is placed on any of the opinions, advice, recommendations or conclusions set out in this report.

a) This report has been prepared for the purpose of providing interpretation on analytical results supplied by the Client pursuant to its appointment of Terragen Environmental Consultants Limited to act as a Consultant.

b) These comments are given in good faith on the basis of the results provided. Terragen Environmental Consultants Limited can bear no responsibility for any inaccuracies that may arise from the laboratory testing.

c) This report does not constitute a qualitative risk assessment of the site or the soils and is not based upon a conceptual site model as we have been provided with insufficient information to establish the existence of potential sources of contamination, plausible pathways, or sensitive receptors and therefore assumes that they exist.

d) The report is unable to comment on the potential risks to controlled waters (groundwater or surface water), although where contaminant concentrations are below relevant threshold criteria in most circumstances it may be considered that the risk is low.

e) We have assumed that the results are representative of the area sampled. This does not imply that they may be considered representative of the site itself. Terragen Environmental Consultants Limited can accept no responsibility for the integrity of the sampling regime.

f) Save for the Client no duty is undertaken or warranty or representation made to any party in respect of the opinions, advice, recommendations or conclusions herein set out.

g) All work carried out in preparing this report has used, and is based upon, our professional knowledge and understanding of the current relevant English and European Community standards, approved codes of practice, technology and legislation.
Changes in the above may cause the opinion, advice, recommendations or conclusions set out in this report to become inappropriate or incorrect. However, in giving its opinions, advice, recommendations and conclusions, Terragen Environmental Consultants Limited has considered pending changes to environmental legislation and regulations of which it is currently aware. Following delivery of this report, we will have no obligation to advise the Client of any such changes, or of their repercussions.

h) Terragen Environmental Consultants Limited acknowledges that it is being retained, in part, because of its knowledge and experience with respect to environmental matters. Terragen Environmental Consultants Limited will consider and analyse all information provided to it in the context of our knowledge and experience and all other relevant information known to us. To the extent that the information provided to us is not inconsistent or incompatible therewith, Terragen Environmental Consultants Limited shall be entitled to rely upon and assume, without independent verification, the accuracy and completeness of such information.

i) The content of this report represents the professional opinion of experienced environmental consultants. Terragen Environmental Consultants Limited does not provide specialist legal advice and the advice of lawyers may be required.

j) In the Summary and Recommendations sections of this report, Terragen Environmental Consultants Limited has set out our key findings and provided a summary and overview of our advice, opinions and recommendations. However, other parts of this report will often indicate the limitations of the information obtained by Terragen Environmental Consultants Limited and therefore any advice, opinions or recommendations set out in the Executive Summary, Summary and Recommendations sections ought not to be relied upon unless they are considered in the context of the whole report.

k) The lack of evidence of the presence of hazardous or harmful materials at the subject property does not guarantee the absence of such materials; rather it indicates only that none were found as a result of the services provided. The services described in this report were performed in accordance with the general practices and procedures accepted in the consulting field.

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Appendix A Laboratory Test Reports.

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Analytical Report Number : 23-75821

Project / Site name:	Ferry Island, Tottenham Hale, Plot B, High Cross Road, London N17 9NU	**Samples received on:**	19/12/2023
Your job number:	TJ3994C06	**Samples instructed on/ Analysis started on:**	20/12/2023
Your order number:	TJ3994C06	**Analysis completed by:**	29/12/2023
Report Issue Number:	1	**Report issued on:**	29/12/2023
Samples Analysed:	2 soil samples		

Signed:

Dominika Liana
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

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
asbestos	- 6 months from reporting

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

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.

Analytical Report Number: 23-75821
Project / Site name: Ferry Island, Tottenham Hale, Plot B, High Cross Road, London N17 9NU
Your Order No: TJ3994C06

Lab Sample Number				2916074	2916075
Sample Reference				NAT/1912/01	NAT/1912/02
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				19/12/2023	19/12/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	20	16
Total mass of sample received	kg	0.001	NONE	1.1	1.4

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	DSA	DSA

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	9.1	11.5
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	1400	2700
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	1600	920
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.792	0.458
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	792	458
Sulphide	mg/kg	1	MCERTS	190	210
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.8	0.5

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	< 0.85	< 0.85

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-75821
Project / Site name: Ferry Island, Tottenham Hale, Plot B, High Cross Road, London N17 9NU
Your Order No: TJ3994C06

Lab Sample Number				2916074	2916075
Sample Reference				NAT/1912/01	NAT/1912/02
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				19/12/2023	19/12/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Heavy Metals / Metalloids					
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	< 1.0	< 1.0
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.4	11
Barium (aqua regia extractable)	mg/kg	1	MCERTS	37	57
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1	0.94
Boron (water soluble)	mg/kg	0.2	MCERTS	1	1.1
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	33	26
Copper (aqua regia extractable)	mg/kg	1	MCERTS	28	37
Lead (aqua regia extractable)	mg/kg	1	MCERTS	15	8.8
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.6	0.95
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	32	22
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	48	42
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	68	56
Petroleum Hydrocarbons					
TPH C10 - C40 EH_CU_1D_TOTAL	mg/kg	10	MCERTS	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 23-75821
Project / Site name: Ferry Island, Tottenham Hale, Plot B, High Cross Road, London N17 9NU

* 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 loam (MCERTS) 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 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2916074	NAT/1912/01	None Supplied	None Supplied	Brown clay and sand with gravel.
2916075	NAT/1912/02	None Supplied	None Supplied	Brown clay and sand with gravel.

Analytical Report Number : 23-75821
Project / Site name: Ferry Island, Tottenham Hale, Plot B, High Cross Road, London N17 9NU

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated WAC-17 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
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-75821
Project / Site name: Ferry Island, Tottenham Hale, Plot B, High Cross Road, London N17 9NU

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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Analytical Report Number : 23-75825

Project / Site name:	Ferry Island, Tottenham Hale, Plot B, High Cross Road, London N17 9NU	**Samples received on:**	19/12/2023
Your job number:	TJ3994C05	**Samples instructed on/ Analysis started on:**	19/12/2023
Your order number:	TJ3994C05	**Analysis completed by:**	29/12/2023
Report Issue Number:	1	**Report issued on:**	29/12/2023
Samples Analysed:	2 soil samples		

Signed:

Joanna Szwagrzak
Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

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
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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Analytical Report Number: 23-75825
Project / Site name: Ferry Island, Tottenham Hale, Plot B, High Cross Road, London N17 9NU
Your Order No: TJ3994C05

Lab Sample Number				2916088	2916089
Sample Reference				MG/1912/01	MG/1912/02
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				19/12/2023	19/12/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	15	14
Total mass of sample received	kg	0.001	NONE	1.4	1.3
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	DSA	DSA

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	10.9	11.6
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	7000	6500
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	2200	620
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	1.08	0.311
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	1080	311
Sulphide	mg/kg	1	MCERTS	93	110
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.6	0.4

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.06	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.11	0.1
Fluorene	mg/kg	0.05	MCERTS	0.09	0.1
Phenanthrene	mg/kg	0.05	MCERTS	0.82	0.49
Anthracene	mg/kg	0.05	MCERTS	0.18	0.12
Fluoranthene	mg/kg	0.05	MCERTS	1.3	0.76
Pyrene	mg/kg	0.05	MCERTS	1.1	0.69
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.5	0.29
Chrysene	mg/kg	0.05	MCERTS	0.49	0.33
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.58	0.42
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.23	0.16
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.47	0.31
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.28	0.18
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.3	0.21
Coronene	mg/kg	0.05	NONE	0.13	0.07

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	6.65	4.28

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-75825
Project / Site name: Ferry Island, Tottenham Hale, Plot B, High Cross Road, London N17 9NU
Your Order No: TJ3994C05

Lab Sample Number				2916088	2916089
Sample Reference				MG/1912/01	MG/1912/02
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				19/12/2023	19/12/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Heavy Metals / Metalloids					
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	2.7	1.7
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	10	10
Barium (aqua regia extractable)	mg/kg	1	MCERTS	120	140
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.76	0.71
Boron (water soluble)	mg/kg	0.2	MCERTS	1.9	0.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	20	19
Copper (aqua regia extractable)	mg/kg	1	MCERTS	27	25
Lead (aqua regia extractable)	mg/kg	1	MCERTS	53	46
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.89	0.99
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	15	14
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	35	31
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	81	74
Petroleum Hydrocarbons					
TPH C10 - C40 EH_CU_1D_TOTAL	mg/kg	10	MCERTS	53	48

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 23-75825
Project / Site name: Ferry Island, Tottenham Hale, Plot B, High Cross Road, London N17 9NU

* 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 loam (MCERTS) 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 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2916088	MG/1912/01	None Supplied	None Supplied	Brown loam and sand with gravel.
2916089	MG/1912/02	None Supplied	None Supplied	Brown loam and sand with gravel.

Analytical Report Number : 23-75825
Project / Site name: Ferry Island, Tottenham Hale, Plot B, High Cross Road, London N17 9NU

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated WAC-17 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
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-75825
Project / Site name: Ferry Island, Tottenham Hale, Plot B, High Cross Road, London N17 9NU

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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31st January 2024

FAO: Rob Welling

Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU

Waste Classification Report

Please find attached the results of laboratory testing carried out on three samples of soil recovered from Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU (the site) by a geo-environmental engineer from Terragen Environmental Consultants Limited (TGEN) on 15/01/2024. The samples represent made ground and natural ground (soil and stones) being generated from enabling works excavations and will be excess to requirements and need to be removed from site.

2.0 SITE DESCRIPTION

The Tottenham Hale Centre (THC) development consists of five different sites: Welbourne, North Island, Ferry Island, Ashley Road East, and Ashley Road West. Prior to 1864, Ferry Island (Plot B) was predominantly residential with a pumping station occupying the E boundary. By 1936, the residential properties in the SW had been developed into a single building and the pumping station was no longer present. During the 1970s and 80s the site was cleared, and a new road junction constructed, in the SE corner of the site. More recently and prior to the current development Ferry Island has been occupied by three commercial units including KFC, Pizza Hut, and Maplin, with associated car parking.

The proposed THC development essentially comprises the demolition of the existing structures and the construction of residential-led development with retail/business uses alongside; servicing, highways improvements and public amenity space including soft and hard landscaped areas creating an improved public realm.

We understand that as part of the development there will be a shallow reduced level excavation followed by placement of a pile mat, piling, pile cap excavations and a deep basement excavation, which will generate in total circa 26790m^3 of material for disposal from site as waste. It is likely that circa 7170m^3 (27%) of the arisings will be made ground, of which circa 2870m^3 will be pile mat and hardstanding, and circa 19620m^3 (73%) will be uncontaminated and inert natural soil and pile arisings.

The anticipated geology at the Ferry Island site comprises made ground overlying superficial deposits of Enfield Silt and River Terrace Deposits. The London Clay is at depth and in the order of 15m thick, underlain by the Lambeth Group, Thanet Sand and White Chalk.

Two site investigation reports have been prepared by Langan International (ref. 841011101 dated 26/07/2018 and 04/11/2021) on behalf of Whitby Wood, which comprised the progression of thirteen exploratory holes. The strata encountered confirmed the anticipated geology and comprised made ground, on average circa 1.7m thick, typically containing only a small quantity of deleterious materials, such as fragments of clinker and tarmac, with no visual or olfactory evidence of significant contamination. Asbestos containing material was not visible during the previous site investigations, but it was detected at low concentrations in three samples of made ground tested. Made ground overlies natural and uncontaminated (inert) Enfield Silt, Kempton Park Gravel, and London Clay.

During the previous investigations thirty-five samples were taken from the thirteen exploratory hole locations to depths of up to 6.2mbgl representing circa 26790m^3 of enabling works excavations at the site.

3.0 SITE SAMPLING

A geo-environmental engineer from TGEN visited the site on 15/01/2024 to assess the nature of the strata encountered. This included:

- A physical description of the arisings in accordance with relevant AGS and BSI standards.
- An assessment of visual and olfactory evidence of contamination.
- The recovery of representative samples.
- The submission of samples to a UKAS/MCERTS accredited laboratory for analysis.

During the visit, routine reassurance samples of materials were recovered and included the following:

- Three samples of natural ground from foundation level excavations (FL).

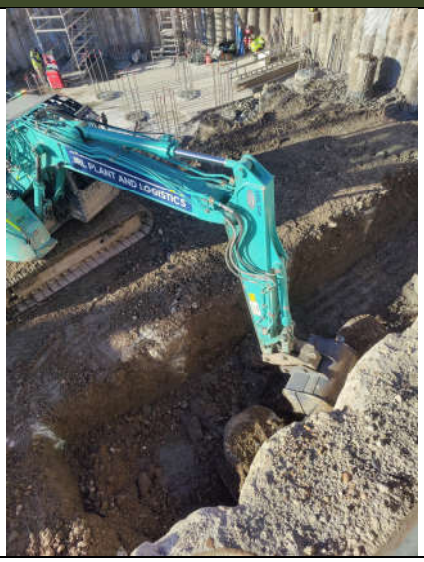
4.0 MATERIALS ASSESSMENT

In accordance with the LoW (as amended), the CD&E arisings encountered during this sampling exercise are mirror entries with a mirror hazardous (MH) entry and a mirror non-hazardous (MN) entry as follows:

- Soil and stones containing dangerous substances (LoW Code 170503*) – MH.
- Soil and stones not containing dangerous substances (LoW Code 170504) - MN.

4.1 Physical Appearance of the Waste

Natural Ground at Foundation Level (FL)

Sampling Date	Reference	Physical Description	Photograph
15/01/2024	FL/1501/01 FL/1501/02 FL/1501/03	Brown and dark grey, firm to stiff, slightly sandy, slightly gravelly clay with occasional fragments of concrete (from pile. There was no significant odour and the PID reading was <1ppm. No asbestos was seen during the sampling and there was no visual or olfactory evidence of contamination. Based on the physical description, the natural ground arisings could be described as: Soil and stones not containing dangerous substances (LoW Code 170504) - MN.	

4.2 Chemical Nature of the Waste

The samples were subjected to a programme of laboratory testing, which included an asbestos screen and a suite of potential contaminants associated with a wide range of potential activities to confirm the preliminary waste classification based on the physical description of the material sampled. The laboratory test reports are presented in Appendix A, which can be summarised as follows.

Natural Ground at Foundation Level (FL)

Ref	Chemical Summary		Waste Classification
	Asbestos	Solid	LoW Code
FL/1501/01	NAD	No significant contamination	170504
FL/1501/02	NAD	No significant contamination	170504
FL/1501/03	NAD	No significant contamination*	170504

NAD No asbestos observed during sample preparation or detected in the sample.

* One sample from foundation level excavations (FL/1501/03) returned an elevated pH value. During sample preparation, soil samples are dried and then ground. If they contain fragments of concrete, the process increases the surface area of the concrete, thus temporarily exposing a significantly increased amount of calcium hydroxide to the analytical substrates (e.g. water), which frequently results in a temporarily increased pH value (≥11.5) during standard laboratory analysis of samples containing fragments of concrete. In this

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case, the elevated pH is therefore considered to be due to the presence of occasional alkaline construction materials (e.g. frequent fragments of concrete) in the sample that are crushed during sample preparation rather than the presence of other corrosive materials.

5.0 SUMMARY

No asbestos was observed during the sampling, and none was detected in the samples, which all returned low concentrations of potential contaminants. As such, the material represented by the samples (made ground and natural) would be classified as:

- **Soil and stones not containing hazardous substances (LoW Code 170504).**

The concentrations returned by the samples of made ground were not hazardous and as such, it is likely that the material represented by these samples would be suitable for acceptance and treatment at a typical soil and aggregates recycling facility (e.g., SR2010 No12).

The naturally occurring soils (London Clay) was free from visual and/or olfactory evidence or any suspicion of contamination, as confirmed by returning low concentrations of all potential contaminants and would be classified as soil and stones not containing hazardous substances (LoW Code 170504), suitable for disposal to an inert permitted landfill/facility without the need for testing. Furthermore, it is likely that the uncontaminated, naturally occurring arisings would be considered suitable for direct transfer to and reuse on a development site in line with a materials management plan in accordance with the CL:AIRE Definition of Waste: Development Industry Code of Practice (DoWCoP).

We would recommend that during any excavation associated with future phases of the development, should materials previously unidentified during the various investigations be encountered (e.g., an unusual appearance and/or odour etc.), works are halted in that area and the advice of a geo-environmental specialist be sought to determine an appropriate course of action. We would also advise you to employ routine waste practices when managing the disposal of the waste material (i.e. visual and olfactory inspections of all loads leaving the site) to ensure that the material remains consistent and suitable for recovery or disposal at your chosen facility in accordance with level 1, level 2 and level 3 waste acceptance procedures. Please be aware that your duty of care paperwork now needs to include the following:

- The relevant UK SIC Code.
- A declaration that you have fulfilled your duty to apply the waste hierarchy.
- The relevant LoW Code.

We trust that this report meets your requirements, but please contact us should you require clarification on any of the matters raised. Thank you for your custom and we hope that we can be of further assistance to you in the future.

Paul Brewer
BSc (Hons), MSc, MI Soil Sci
Senior Environmental Consultant

Dr. Barry Powell
BSc (Hons), PhD, MCIWM
Principal Consultant

(for and on behalf of Terragen Environmental Consultants Limited)

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WASTE CLASSIFICATION FRAMEWORK

One of the relevant objectives of the Revised Waste Framework (WFD) Directive (2018/851/EC) is to ensure that waste is recovered or disposed without endangering human health and without using processes or methods which could harm the environment, and without:

- Risk to water, air, soil, plants, or animals.
- Causing nuisance through noise or odours.
- Adversely affecting the countryside or places of special interest.

It also provides the general framework of waste management requirements and sets the basic EU waste management definitions. The List of Waste (LoW) Amendment Decision (2014/955/EU) establishes the classification system, including the distinction between hazardous and non-hazardous wastes. It is closely linked to the main characteristics that render waste hazardous as contained in Annex III of the WFD. The amendments came into force to align waste classification with relevant sections of and approaches used in EU chemicals regulations, such as REACH (1907/2006/EC) and the CLP (1272/2008/EC), which in turn adapt for the EU the UN globally harmonised system for chemicals classification. In 2020 and 2021, GB and the UK introduced its own set of waste classification regulations, such as the CLP, REACH and the mandatory classification and labelling list, which retain, mirror and/or replace relevant EU regulations.

Waste is not considered to be a substance, a mixture or an article. Consequently, obligations under the REACH and the CLP regulations do not apply for producers or holders of waste. Nevertheless, information generated in the frameworks of REACH and the CLP that set criteria for substances to be classified as hazardous are related to some of the hazardous properties applicable to the classification of waste. Annex VI of the CLP contains official harmonised classifications of substances, which must be used where the classification of waste depends on the presence of hazardous substances. The classification of substances is periodically updated by the European Chemicals Agency in the form of a new EU regulation, which automatically amends the CLP.

The Landfill Directive (1999/31/EC) defines the categories of waste applicable to landfill sites as hazardous, non-hazardous, municipal and inert. A landfill is defined as a waste disposal site for the deposit of waste onto or into land. Landfills are divided into three classes:

- Landfills for hazardous waste.
- Landfills for non-hazardous waste.
- Landfills for inert waste.

The three main categories of waste and the options for landfilling are as follows:

- Hazardous with or without additional treatment prior to landfill or stable non-reactive hazardous waste (SNRHW) suitable for placement in a dedicated cell in a suitably permitted non-hazardous landfill site.
- Non-hazardous.
- Inert and suitable for disposal to an appropriately permitted landfill site.

To determine the presence and significance of hazards associated with any construction, demolition and earthworks (CD&E) arisings and therefore the resultant options for management of the materials, and where necessary the appropriate class of facility the waste can be taken to, it is therefore necessary to:

- Determine the presence of hazardous properties within the materials.
- Determine the category of the waste.
- Determine if the waste meets the requirements for reuse onsite, recovery or recycling on or offsite, or disposal offsite as waste.

The main statutory guidance document used to properly classify waste as either hazardous or non-hazardous in the UK is Guidance on the Classification and Assessment of Waste (WM3). The stepped methodology for classifying a waste and assessing any hazardous properties is as follows:

- Check if the waste needs to be classified.
- Identify the code that may apply to the waste.
- Identify the assessment required to select the correct code.
- Determine the chemical composition of the waste.
- Determine if the substances in the waste are hazardous substances or persistent organic pollutants.
- Assess the hazardous properties of the waste.
- Assign and describe the classification code.

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The waste types disposed to a landfill site permitted to accept inert waste or recovered at a site permitted or exempted in accordance with UK regulations and statutory guidance should be classified as inert. No hazardous or contaminated wastes, as defined in the Waste Acceptance Criteria (WAC) and Procedures Directive (2003/33/EC), should be accepted at such sites. The source and origin of the waste along with a description (e.g. physical form, consistency, composition, colour, odour and likely behaviour etc.) should be determined for all material accepted at such inert waste facilities. The materials should be stable, non-reactive and with a sufficient bearing capacity for the end use.

In accordance with the Landfill Directive and UK statutory guidance, the only materials allowed for disposal or recovery at such inert waste facilities without more detailed information (e.g. chemical analyses, site investigation data etc.) should be restricted to single source material from a known site and a reliable producer. The material from the site or source should not be contaminated and should not contain significant quantities of deleterious materials such as wood, plastic etc. Materials potentially suitable for recovery at such inert waste facilities without laboratory analysis should be restricted to the following:

LoW Code	Description	Restrictions
170101	Concrete	Selected CD&E waste only
170102	Bricks	Selected CD&E waste only
170103	Tiles & Ceramics	Selected CD&E waste only
170107	Mixture of Concrete, Bricks, Tiles & Ceramics	Selected CD&E waste only
170504	Soil & Stones (e.g. natural clay & sand etc.)	Selected CD&E waste not from contaminated sites*
200202	Soil & Stones (e.g. natural clay & sand etc.)	Selected garden & park waste only*

- *Excluding topsoil or peat when used as subsoil or fill.
- Selected CD&E or garden & park waste with low (non-significant) contents of other types of materials (i.e. metals, plastics, organics, wood, rubber etc.). The origin of the waste must be known and relevant information regarding the waste must have been assessed.
- No CD&E waste from buildings or land contaminated with dangerous substances (e.g. 170106 & 170503).
- No CD&E waste from buildings treated or painted with dangerous substances in significant amounts.
- These materials should only be accepted if they arise from a single identified source.
- Mixtures of different types of these wastes from the same single source are acceptable without testing.
- Mixtures of these wastes from different sources are not acceptable unless pre-testing is carried out.

If the waste materials were determined as hazardous or potentially inert and required disposal to landfill, then a further stage of assessment would be required to determine if the waste meets the requirements for disposal at a particular category of landfill facility. This is done in the form of WAC testing. It should be noted that the associated regulations and statutory guidance do not apply to the use of suitable uncontaminated waste for redevelopment, restoration and filling in work or for construction purposes, or for recovery activities.

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LIMITATIONS AND USE OF THE REPORT

IMPORTANT: This section should be read before reliance is placed on any of the opinions, advice, recommendations or conclusions set out in this report.

a) This report has been prepared for the purpose of providing interpretation on analytical results supplied by the Client pursuant to its appointment of Terragen Environmental Consultants Limited to act as a Consultant.

b) These comments are given in good faith on the basis of the results provided. Terragen Environmental Consultants Limited can bear no responsibility for any inaccuracies that may arise from the laboratory testing.

c) This report does not constitute a qualitative risk assessment of the site or the soils and is not based upon a conceptual site model as we have been provided with insufficient information to establish the existence of potential sources of contamination, plausible pathways, or sensitive receptors and therefore assumes that they exist.

d) The report is unable to comment on the potential risks to controlled waters (groundwater or surface water), although where contaminant concentrations are below relevant threshold criteria in most circumstances it may be considered that the risk is low.

e) We have assumed that the results are representative of the area sampled. This does not imply that they may be considered representative of the site itself. Terragen Environmental Consultants Limited can accept no responsibility for the integrity of the sampling regime.

f) Save for the Client no duty is undertaken or warranty or representation made to any party in respect of the opinions, advice, recommendations or conclusions herein set out.

g) All work carried out in preparing this report has used, and is based upon, our professional knowledge and understanding of the current relevant English and European Community standards, approved codes of practice, technology and legislation.
Changes in the above may cause the opinion, advice, recommendations or conclusions set out in this report to become inappropriate or incorrect. However, in giving its opinions, advice, recommendations and conclusions, Terragen Environmental Consultants Limited has considered pending changes to environmental legislation and regulations of which it is currently aware. Following delivery of this report, we will have no obligation to advise the Client of any such changes, or of their repercussions.

h) Terragen Environmental Consultants Limited acknowledges that it is being retained, in part, because of its knowledge and experience with respect to environmental matters. Terragen Environmental Consultants Limited will consider and analyse all information provided to it in the context of our knowledge and experience and all other relevant information known to us. To the extent that the information provided to us is not inconsistent or incompatible therewith, Terragen Environmental Consultants Limited shall be entitled to rely upon and assume, without independent verification, the accuracy and completeness of such information.

i) The content of this report represents the professional opinion of experienced environmental consultants. Terragen Environmental Consultants Limited does not provide specialist legal advice and the advice of lawyers may be required.

j) In the Summary and Recommendations sections of this report, Terragen Environmental Consultants Limited has set out our key findings and provided a summary and overview of our advice, opinions and recommendations. However, other parts of this report will often indicate the limitations of the information obtained by Terragen Environmental Consultants Limited and therefore any advice, opinions or recommendations set out in the Executive Summary, Summary and Recommendations sections ought not to be relied upon unless they are considered in the context of the whole report.

k) The lack of evidence of the presence of hazardous or harmful materials at the subject property does not guarantee the absence of such materials; rather it indicates only that none were found as a result of the services provided. The services described in this report were performed in accordance with the general practices and procedures accepted in the consulting field.

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Appendix A Laboratory Test Reports.

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Herts,
WD18 8YS

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e: reception@i2analytical.com

Analytical Report Number : 24-78238

Project / Site name:	Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU	**Samples received on:**	15/01/2024
Your job number:	TJ3994D01	**Samples instructed on/ Analysis started on:**	15/01/2024
Your order number:	TJ3994D01	**Analysis completed by:**	22/01/2024
Report Issue Number:	1	**Report issued on:**	22/01/2024
Samples Analysed:	3 soil samples		

Signed:

Joanna Szwagrzak
Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

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
asbestos	- 6 months from reporting

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

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 24-78238
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU
Your Order No: TJ3994D01

Lab Sample Number				2928308	2928309	2928310
Sample Reference				FL/1501/01	FL/1501/02	FL/1501/03
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				15/01/2024	15/01/2024	15/01/2024
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	%	0.01	NONE	20	13	12
Total mass of sample received	kg	0.001	NONE	1.2	1.2	1.2
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	KSZ	KSZ	KSZ

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	9	11.4	11.5
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	530	4800	6200
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	450	1000	1100
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.226	0.505	0.567
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	226	505	567
Sulphide	mg/kg	1	MCERTS	110	81	88
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.8	0.4	0.4

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.28
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	0.09	0.11
Fluorene	mg/kg	0.05	MCERTS	< 0.05	0.07	0.09
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	0.76	0.98
Anthracene	mg/kg	0.05	MCERTS	< 0.05	0.19	0.21
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	1.2	1.5
Pyrene	mg/kg	0.05	MCERTS	< 0.05	1.1	1.3
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.52	0.6
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.59	0.63
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.61	0.68
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.28	0.21
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.51	0.56
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.25	0.28
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.28	0.28
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	< 0.85	6.42	7.63

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 24-78238
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU
Your Order No: TJ3994D01

Lab Sample Number				2928308	2928309	2928310
Sample Reference				FL/1501/01	FL/1501/02	FL/1501/03
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				15/01/2024	15/01/2024	15/01/2024
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Heavy Metals / Metalloids						
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	< 1.0	2.4	< 1.0
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	9.7	8.5
Barium (aqua regia extractable)	mg/kg	1	MCERTS	45	100	96
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.5	0.77	0.82
Boron (water soluble)	mg/kg	0.2	MCERTS	2.3	0.9	1.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	47	20	20
Copper (aqua regia extractable)	mg/kg	1	MCERTS	35	33	25
Lead (aqua regia extractable)	mg/kg	1	MCERTS	18	57	47
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.28	0.75	0.75
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	41	14	13
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	80	32	29
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	89	73	72
Petroleum Hydrocarbons						
TPH C10 - C40 $_{EH\_CU\_1D\_TOTAL}$	mg/kg	10	MCERTS	< 10	32	26

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 24-78238
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU

* 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 loam (MCERTS) 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 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2928308	FL/1501/01	None Supplied	None Supplied	Brown clay and sand with gravel.
2928309	FL/1501/02	None Supplied	None Supplied	Brown sandy clay with gravel.
2928310	FL/1501/03	None Supplied	None Supplied	Brown clay and sand with gravel.

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 24-78238
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated WAC-17 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
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE

Analytical Report Number : 24-78238
Project / Site name: Ferry Island, Tottenham Hale (Plot B), High Cross Road, London N17 9NU

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Appendix J
Site Inspection Reports (Hotspot Validation Testing).

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WD6 1RN

27th September 2022

FAO: Frank Everett

Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU

Validation Sampling Report

Please find attached the results of laboratory testing carried out on ten samples of soil recovered from Ferry Island, Tottenham Hale (Plot B), 125-139 High Cross Road, London N17 9NU (the site) by a geo-environmental engineer from Terragen Environmental Consultants Limited (TGEN) on 13/09/2022. The samples represent soils remaining in-situ around the sides and base of excavations undertaken to remove/segregate previously identified contamination.

1.0 SITE DESCRIPTION

The Tottenham Hale Centre (THC) development consists of five different sites: Welbourne, North Island, Ferry Island, Ashley Road East and Ashley Road West. Prior to 1864, Ferry Island (Plot B) was predominantly residential with a pumping station occupying the E boundary. By 1936, the residential properties in the SW had been developed into a single building and the pumping station was no longer present. During the 1970s and 80s the site was cleared and a new road junction constructed in the SE corner of the site. More recently and prior to the current development Ferry Island has been occupied by three commercial units including KFC, Pizza Hut and Maplin, with associated car parking.

The proposed THC development essentially comprises the demolition of the existing structures and the construction of residential-led development with retail/business uses alongside; servicing, highways improvements and public amenity space including soft and hard landscaped areas creating an improved public realm.

We understand that as part of the development there will be a shallow reduced level excavation followed by placement of a pile mat, piling, pile cap excavations and a deep basement excavation, which will generate in total circa 26790m^3 of material for disposal from site as waste. It is likely that circa 7170m^3 (27%) of the arisings will be made ground of which circa 2870m^3 will be pile mat and hardstanding, and circa 19620m^3 (73%) will be uncontaminated and inert natural soil and pile arisings.

The anticipated geology at the Ferry Island site comprises made ground overlying superficial deposits of Enfield Silt and River Terrace Deposits. The London Clay is at depth and in the order of 15m thick, underlain by the Lambeth Group, Thanet Sand and White Chalk.

Two site investigation reports have been prepared by Langan International (ref. 841011101 dated 26/07/2018 and 04/11/2021) on behalf of Whitby Wood, which comprised the progression of thirteen exploratory holes. The strata encountered confirmed the anticipated geology and comprised made ground, on average circa 1.7m thick, typically containing only a small quantity of deleterious materials, such as fragments of clinker and tarmac, with no visual or olfactory evidence of significant contamination. Asbestos containing material was not visible during the site investigation but it was detected at low concentrations in three samples of made ground tested. The made ground overlies natural and uncontaminated (inert) Enfield Silt, Kempton Park Gravel and London Clay.

During the investigations thirty-five samples were taken from the thirteen exploratory hole locations to depths of up to 6.2mbgl representing circa 26790m^3 of enabling works excavations at the site.