F18A/0552	Transfer Pedestrian Walkway	Covered 80m pedestrian walkway at Pier 4 (total floor area 160sqm)	The scheme is for works in the same vicinity as the Proposed Development. However, due to the programme of the works it is unlikely there will be significant cumulative effects during construction. No cumulative operational effects are likely. Therefore, no cumulative significant effects are likely to occur.
F21A/0518 Ref: ABP-313157-22	Drop Off Pick Up Project	Revised Application for traffic barriers on Dublin Airport private roads and associated works including lane realignment.	The scheme is the same vicinity of the Proposed Development and there is potential for cumulative impacts during construction. However, given the nature and scale of the scheme it is unlikely there will be significant cumulative effects during construction. No cumulative operational effects are likely. Therefore, no cumulative significant effects are likely to occur.
F22A/0029	Car Park	Rehabilitation works to existing 'Purple Zone' staff car park	The scheme is located east of the Proposed Development and there is potential for cumulative impacts from construction. However, given the nature and scale of the scheme it is unlikely there will be significant cumulative effects during construction. No cumulative operational effects are likely. Therefore, no cumulative significant effects are likely to occur.
F20A/0668 ABP Ref: V Add ABP Ref: ABP-314485-22	Night-Time use of Runway System	'Relevant Action' to amend the operating restriction set out in condition no. 3(d) and the replacement of the operating restriction in condition no. 5 of the North Runway Planning Permission and mitigation measures	This scheme relates to the night-time use of the runway system at Dublin Airport. Due to the programme, nature and scale of the scheme it is unlikely there will be significant cumulative effects during construction. No cumulative operational effects are likely. Therefore, no cumulative significant effects are likely to occur.
F22A/0460	Underpass	Airfield Underpass of Runway 16/34	The scheme is located within the same vicinity of the Proposed Development and there is potential for cumulative impacts from construction. However, given the nature and scale of the scheme it is unlikely there will be significant cumulative effects during construction. No cumulative operational effects are likely. Therefore, no cumulative significant effects are likely to occur.
F23A/0039	South apron Animal Welfare Relocations	Planning amendment to F19A/0426	Based on the nature, location and scale of the development, no cumulative significant effects are likely to occur.

Table 18-2 - Cumulative Impacts Assessment for Consented Projects - Wider Environs

Figure	Project Applicant	Project Summary	Cumulative Impacts Assessment
ABP Ref: NA29N.314724	MetroLink Rail Order Application	This project comprises the development of a proposed railway, approximately 18.8 kilometres in length, which is mostly underground, through Swords, Dublin Airport, Ballymun, Glasnevin and City Centre to Charlemont, Co. Dublin. It includes a 9.4km section of single bore tunnel running beneath Dublin City Centre running from Charlemont to Northwood Station and a 2.3km section of single bore tunnel running beneath Dublin Airport. This application was lodged by TII (accompanied by an EIAR and NIS) and is due to be decided by 22/05/2023. The construction period provided for in the draft Railway Order is ten years from the date it comes into effect. The works will generally comprise but are not limited to the construction of a Railway approximately 18.8 kilometres in length which is mostly underground. It includes a 9.4km section of single bore tunnel running beneath Dublin City Centre running from Charlemont to Northwood Station and a 2.3km section of single bore tunnel running beneath Dublin Airport. Tunnel sections include intervention access facilities for emergency services including Dublin Airport. Tunnel Portal structures will be provided including at Dublin Airport. North of Dublin Airport the railway will emerge from tunnel and will run at surface level and in cut and cover structures to Estuary Station. There will be a total of 16 stations, including at Dublin Airport. The works will also include railway signalling, command and control and communications systems; provision of electrical substations; establishment of temporary construction compounds; establishment of temporary traffic management and road diversions; and other infrastructural modifications to facilitate the overall project.	The extent of the proposed works in the vicinity of Dublin Airport comprise tunnelling, emergency access, Dublin Airport station, north portal and south portal, and associated site compounds (3no.). Subject to the outcome of the planning and procurement processes, construction of MetroLink is anticipated to commence in 2025 with a view to operation in the early 2030s. The extent of the proposed works in the vicinity of Dublin Airport comprise tunnelling, emergency access, Dublin Airport station, north portal and south portal, and associated site compounds (3no.). Taking into account the nature and scale of the proposed development, and based on available planning documentation submitted for the proposed MetroLink project, significant cumulative environmental effects (with respect to the proposed MetroLink project) are not likely to occur.
F17A/0244	Dublin Cemeteries t/a Glasnevin Trust	Permission for the installation of 1 no. ecolation unit, associated internal alterations and plant area within the existing crematorium building (permitted under Reg. Ref: F14A/0216). The proposal also seeks permission for the retention and completion of the car park adjacent to the crematorium to provide 95 no. car parking spaces, 11 no. car parking spaces adjacent to the substation and lodge, 24 no. car parking spaces at the Entrance Plaza together with associated landscaping, upgrade of internal road network, traffic management measures including electronic barrier and site works.	Due to the location of the scheme, ca. 1km south east of the Proposed development it is unlikely there will be significant cumulative effects during construction and/ or operation. Therefore, no cumulative significant effects are likely to occur.

FW21A/0187	Keelings UC	The development will comprise the construction of a warehouse unit with associated facilities, 69no. car parking spaces and other vehicular spaces and all other associated works.	Due to the location of the scheme, ca. 2.5km north west of the Proposed Development it is unlikely there will be significant cumulative effects during construction and/ or operation. Therefore, no cumulative significant effects are likely to occur.
FW20A/0202	AGRO Merchants Dublin RE Limited	The development will comprise the provision of a food processing warehouse facility (11,696 sq m)	Due to the location of the scheme, ca. 1.9km south east of the Proposed development it is unlikely there will be significant cumulative effects during construction and/ or operation. Therefore, no cumulative significant effects are likely to occur.
ABP Ref: 301798	Uisce Eireann	10-year permission for development of the Ringsend wastewater treatment plant upgrade project including a regional biosolids storage facility	Due to the location of the scheme, ca. 1.9km south east of the Proposed development it is unlikely there will be significant cumulative effects during construction and/ or operation. Therefore, no cumulative significant effects are likely to occur.
FW20A/0187	HPREF Dublin Office DevCo1 Limited (nr 1)	Permission of the construction of 8 no light industrial/warehouse (including wholesale use) / logistics units including ancillary office use and entrance/reception areas. The demolition of 2 no. existing agricultural sheds and the construction of a link road; implementation of a new internal road network with all access points, internal access roads and footpaths, service yards and access roads, cycle paths and landscaping; The construction of 2 no. new roundabouts on Estate Road No. 4, the construction of Estate Road No. 3 branching west and the extension of Estate Road No. 2 which currently serves Horizon Logistics Park; The development of 2 no. ESB substation buildings and switchrooms and associated facilities	Due to the location of the scheme, ca. 2.8km south west of the Proposed development it is unlikely there will be significant cumulative effects during construction and/ or operation. Therefore, no cumulative significant effects are likely to occur.
FW22A/0079	HPREF Dublin Office DevCo1 Limited (nr 2)	Permission for two sites (C&E) Site C consists of the construction of 1no. light industrial/warehouse, 58no. car parking spaces & 14no. bicycle spaces and provision of an ESB Substation and switchroom with all associated construction works Site E consists of the construction of 2no. light industrial/warehouse, 239no. car parking spaces & 76no. bicycle spaces and provision of an ESB Substation and switchroom 2 no. sprinkler tanks and 2 no. pumprooms with all associated construction works	Due to the location of the scheme, ca. 2.5km south west of the Proposed development it is unlikely there will be significant cumulative effects during construction and/ or operation. Therefore, no cumulative significant effects are likely to occur.

F19A/0149	IDA Ireland	Remediation by excavation and removal of circa 22,000 cubic metres	Due to the location of the scheme, ca. 1.6km south west of the Proposed development it is unlikely there will be significant cumulative effects during construction and/ or operation. Therefore, no cumulative significant effects are likely to occur.
F21A/0255	Arora Dublin T2 Limited	The development will 410 bedroom hotel in T2	The scheme is located within the same vicinity of the Proposed Development and there is potential for cumulative impacts from construction. However, based on the nature and scale of the project it is unlikely there will be significant cumulative effects during construction and/ or operation. Therefore, no cumulative significant effects are likely to occur.
FW22A/0021	Dublin Port Authority	The development comprises a new solar photovoltaic solar farm at site bounded by Harristown Lane (L3151), St Margaret's Road (R122), and South Parallel Road (R108) in the townland of Sanganhill Td, Finglas ED, Co. Dublin. The development will consist of the installation of a ground mounted solar photovoltaic (PV) array with associated development and ancillary works including inverters, modules and transformers; site cabling; 2 no. substation building; a storage container on a concrete base; an internal access road and attendant surface water drainage; the formation of a new site entrance onto South Parallel Road (R108); security boundary fencing and landscaping; and a security controlled entry gate and lighting.	Due to the location of the scheme, ca. 4.9km south west of the Proposed development it is unlikely there will be significant cumulative effects during construction and/ or operation. Therefore, no cumulative significant effects are likely to occur.
F18A/0436	Darragh Hall	The development includes completion of partially constructed part-two, part-three storey Core Aviation type office building as approved under Reg. Ref. F07A/1659 (subsequently extended under F07A/1659/E1). Permission is also sought for alterations and extensions to previously approved building to result in a four storey office building	The scheme is located within the same vicinity of the Proposed Development. However, due to the programme, nature and scale of the project it is unlikely there will be significant cumulative effects during construction and/ or operation. Therefore, no cumulative significant effects are likely to occur.
FW/20A/0126	IPUT	4 No. warehouses with marshalling offices, ancillary office space, staff facilities and associated development	Due to the location of the scheme, ca. 4.6km west of the Proposed development it is unlikely there will be significant cumulative effects during construction and/ or operation.

			Therefore, no cumulative significant effects are likely to occur.
FW19A/0143	Rohan Holdings Ltd	The construction of 2 no. Single-Storey Units for industrial and/or Warehouse use with ancillary Two-Storey offices with a gross floor area 11,157.90 square meters	Due to the location of the scheme, ca. 4.7km south west of the Proposed development it is unlikely there will be significant cumulative effects during construction and/ or operation. Therefore, no cumulative significant effects are likely to occur.
FW21A/0240	Alan & Yvonne Fitzachary	Retention permission for as constructed agricultural dairy milk pasturing shed & permission to complete the development works	Due to the location of the scheme, ca. 4.4km west of the Proposed development it is unlikely there will be significant cumulative effects during construction and/ or operation. Therefore, no cumulative significant effects are likely to occur.

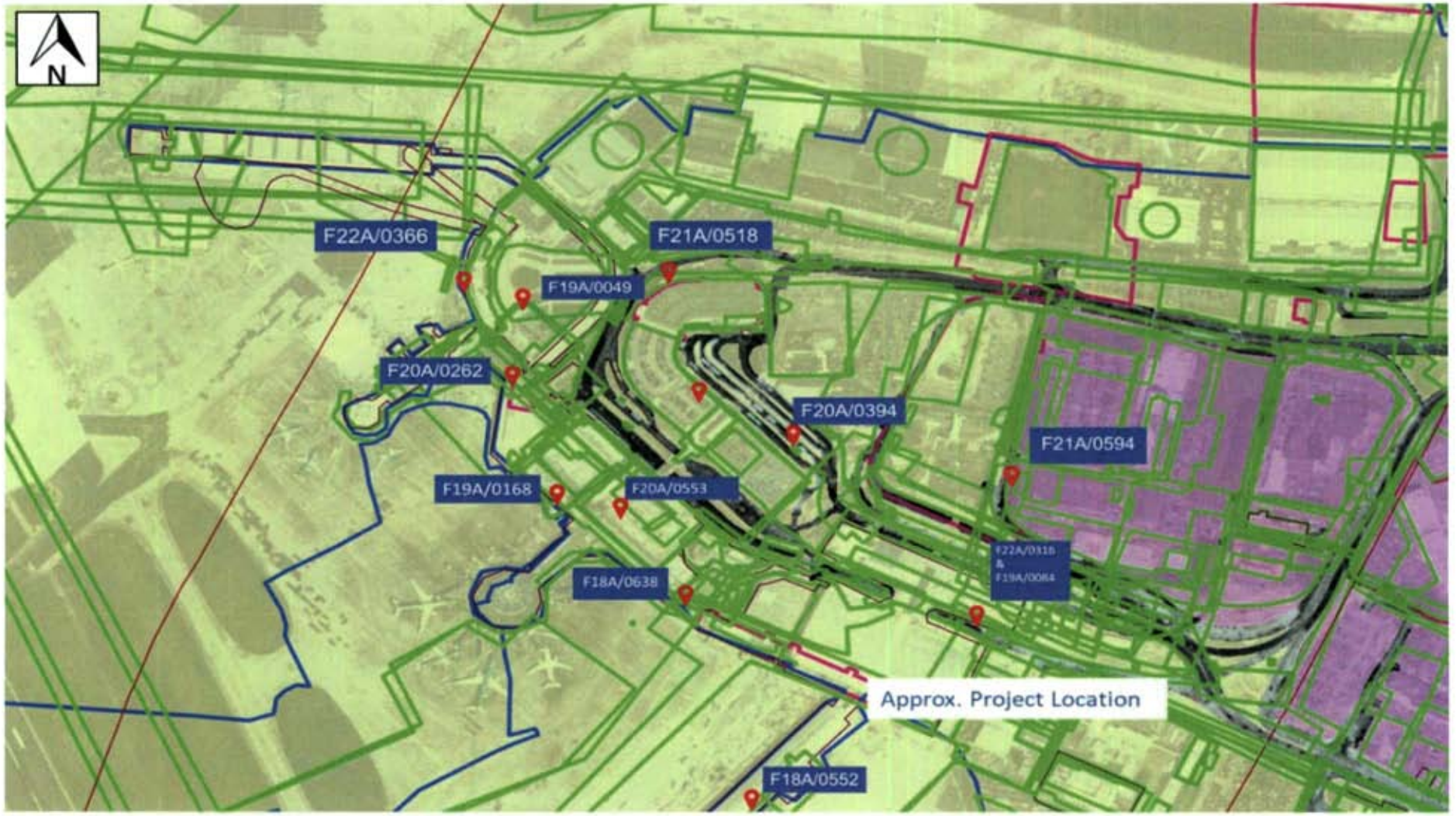

Figure 18-1 - Committed daa Development – Airside Lands

Figure 18-2 - Committed daa development – Wider Airport Complex

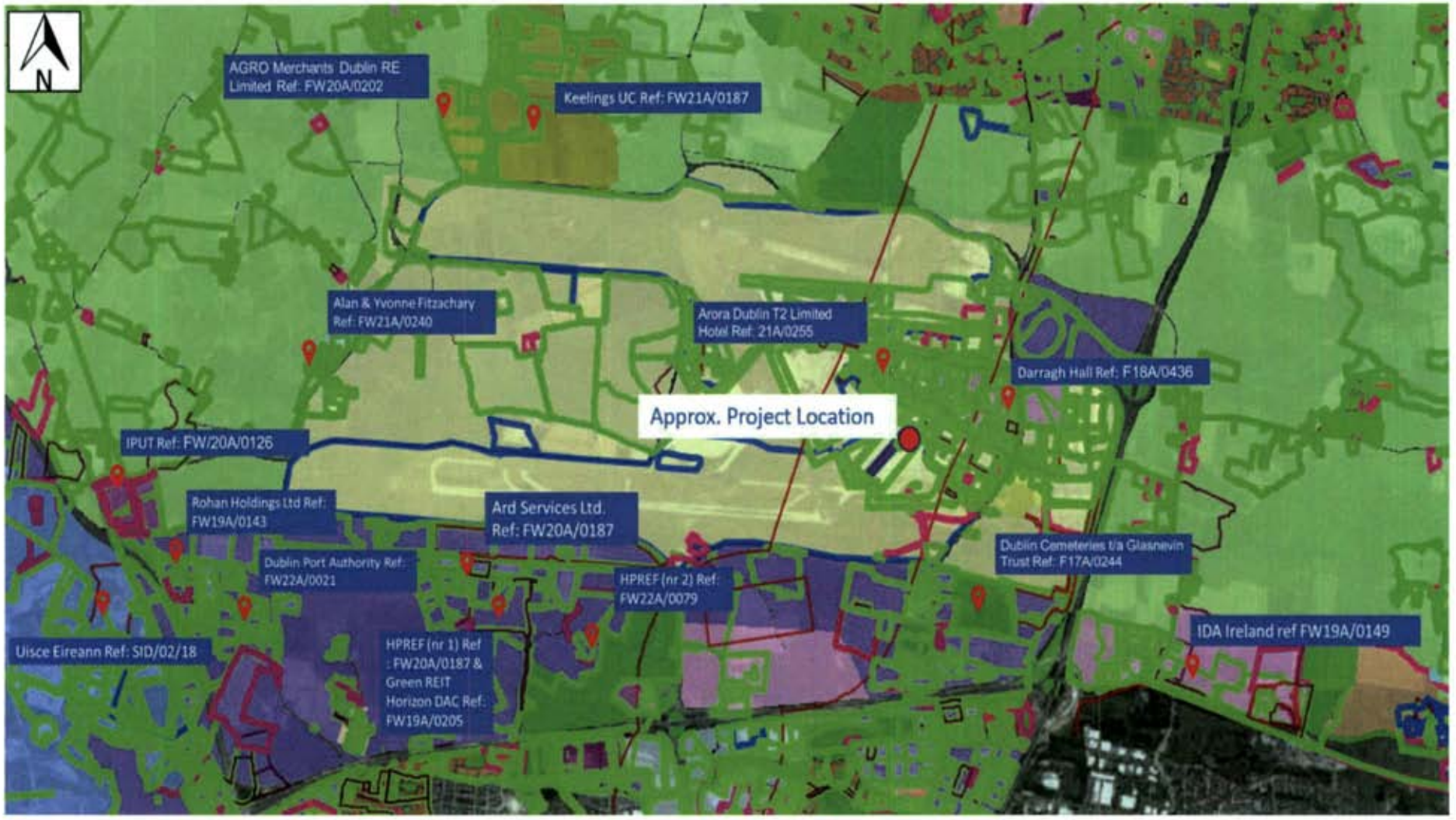

Figure 18-3 – Committed Development in the Vicinity of the Project (outside of Dublin Airport)

18.3.1. Population and Human Health

The proposed development will not have any significant negative effects on population and human health and it is considered that the mitigation measures and monitoring requirements outlined in regard to the other environmental topics will ensure that the proposed development is unlikely to result in any significant cumulative effects in relation to population and human health.

18.3.2. Biodiversity

The proposed development will not result in the loss of any habitats. The proposed development site is comprised of existing buildings within a built-up area of Dublin Airport and is of low ecological value. The site is generally bound by existing airport infrastructure. Provided ecological mitigation measures (including in relation to surface water run-off) are implemented no significant cumulative effects are expected as a result of the proposed development.

18.3.3. Landscape and Visual

There would be no additional cumulative landscape and visual effects arising from the proposed development to those already described in Chapter 6 – Landscape and Visual.

No significant cumulative effects are likely.

18.3.4. Air Quality

As noted in Chapter 7, there is potential for cumulative construction dust impacts. Permitted and existing developments under construction within 350m of the site have been reviewed in conjunction with the impacts of the proposed development to determine the potential for cumulative construction dust impacts.

There are currently no developments within 350m of the site that have the potential for cumulative construction dust impacts to air quality. Should the construction phases of any development coincide with that of the proposed development then there is the potential for cumulative construction dust impacts to nearby receptors.

However, provided the mitigation measures outlined in Chapter 7 – Air Quality are in place for the duration of the construction phase cumulative dust related effects to nearby sensitive receptors are not predicted to be significant. Cumulative effects to air quality will be direct, short-term, localised, negative and imperceptible.

Furthermore, the operational stage effects from the proposed development are predicted to be long-term, localised, direct, neutral and imperceptible in relation to air quality.

No significant cumulative effects are likely.

18.3.5. Climate

By presenting the GHG impact of a project in the context of its alignment to Ireland's trajectory of net zero and any sectoral carbon budgets, this assessment will demonstrate the potential for the project to affect Ireland's ability to meet its national carbon reduction target. Therefore, the assessment approach is considered to be inherently cumulative.

No significant cumulative effects are likely.

18.3.6. Noise and Vibration

There would be no additional cumulative noise and vibration effects arising from the proposed development to those already described in Chapter 9 – Noise and Vibration.

No significant cumulative effects are likely.

18.3.7. Traffic

The proposed development will occur in a phased manner over at least 3 years (Q1 2024 – Q2 2027). The most intense construction traffic phases were identified and analysed for assumed peak trips on key junctions. In accordance with the thresholds set out in TII's Traffic and Transport Guidelines, no junctions were required to be brought forward for detailed assessment and it is considered that the cumulative construction traffic impacts due to the construction activity for the proposed development is below the thresholds outlined in the TII guidelines.

No significant cumulative effects are likely.

18.3.8. Land, Soils and Geology

Provided the mitigation measures outlined in Chapter 11 – Land, Soils and Geology are in place for the duration of the construction phase, cumulative effects are not likely to be significant. There will be no effects with regards to land (including land take), soils or geology during the operational phase.

Therefore no significant cumulative effects are likely.

18.3.9. Water

Provided the mitigation measures outlined in Chapter 12 – Water are in place for the duration of the construction phase, anticipated effects on surface water or groundwater will be temporary and slight adverse during the Construction Phase. Taking account of proposed mitigation measures, effects on surface water or groundwater will be temporary and slight adverse during the Operational Phase of the proposed development.

Therefore no significant cumulative effects are likely.

18.3.10. Cultural Heritage

Subject to the implementation of the appropriate archaeological mitigation measures during the construction phase of the development, no significant cumulative effects on archaeological, architectural and cultural heritage are likely.

Therefore no significant cumulative effects are likely.

18.3.11. Material Assets

Subject to the implementation of proposed mitigation measures during the construction and operational phases of the development, no significant cumulative effects on material assets are likely.

Therefore no significant cumulative effects are likely.

18.4. Summary

No likely significant effects have been identified as a result of potential cumulative effects between effects identified in the technical chapters of the EIAR and other committed developments.

Furthermore, in most cases such interactions are unlikely to occur.

No significant cumulative effects are likely to arise from the Proposed Development.

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US Customs and Border Protection (CBP) - Proposed Reconfiguration & Expansion & South Apron Support Centre (SASC) - Partial Demolition, Refurbishment & Upgrade Project

Environmental Impact Assessment Report – Volume 3 Appendices

daa

May 2023

Appendix 2: Consultation

Project: US CBP - Reconfiguration Expansion SASC – Project
Schedule of prescribed and non-prescribed bodies to whom notification of the making of the application has been sent

Consultee	Contact Address	Date of Letter Issue
Irish Aviation Authority (IAA)	The Times Building, 11-12 D'Olier Street, Dublin 2	20/01/2023
Aircraft Noise Competent Authority	Aircraft Noise Competent Authority Fingal County Council County Hall Main St Swords, Co. Dublin, K67 X8Y2	20/01/2023
An Chomhairle Ealaíon (The Arts Council)	70 Merrion Square Sq., Dublin 2.	20/01/2023
An Taisce	The National Trust for Ireland, Tailors' Hall, Back Lane, Dublin, D08 X2A3, Ireland	20/01/2023
Birdwatch Ireland	Unit 20, Block D, Bullford Business Campus, Kilcoole, Greystones, Co. Wicklow, A63 RW83	20/01/2023
Development Applications Unit	Development Applications Unit Department of Culture, Heritage and the Gaeltacht Newtown Road Wexford Y35 AP90	20/01/2023
Dublin City Council (DCC) - Planning	Dublin City Council Planning and Property Development Department Civic Offices Wood Quay Dublin 8	20/01/2023
The Department of Transport	The Department of Transport Leeson Lane Dublin 2 D02 TR60	20/01/2023
Dublin Bus	59 Upper O'Connell Street, Dublin 1, Ireland. D01RX04	20/01/2023
Environmental Protection Agency (EPA)	Environmental Licensing Programme, Office of Environmental Sustainability, Environmental Protection Agency, Regional Inspectorate, Inniscarra, Co Cork	20/01/2023
Failte Ireland	88-95 Amiens Street Dublin 1	20/01/2023
FCC Biodiveristy Officer	County Hall Main Street Swords County Dublin K67 X8Y2	20/01/2023
FCC Drainage	County Hall, Main Street, Swords, County Dublin, K67 X8Y2.	20/01/2023
FCC Heritage Officer	County Hall Main Street Swords County Dublin K67 X8Y2	20/01/2023
FCC Traffic	Senior Executive Engineer Transport Planning Section Planning and Strategic Infrastructure Department Fingal County Council Civic Offices, Grove Rd. Blanchardstown 15, Co. Dublin	20/01/2023
FCC Planning	County Hall, Main Street, Swords, County Dublin, K67 X8Y2.	20/01/2023
Geological Survey of Ireland	Beggars Bush Haddington Road Dublin D04 K7X4	20/01/2023
Iarnród Éireann (Irish Rail)	Connolly Station, Amiens Street, Dublin 1, D01 V6V6	

Project: US CBP - Reconfiguration Expansion SASC – Project
Schedule of prescribed and non-prescribed bodies to whom notification of the making of the application has been sent

Consultee	Contact Address	Date of Letter Issue
Inland Fisheries Ireland (IFI)	Inland Fisheries Ireland 3044 Lake Drive Citywest Business Campus Dublin D24 CK66	20/01/2023
Irish Wildlife Trust	The irish Wildlife Trust, 8 Cabra Road, Dublin 7, D07bT1W2	20/01/2023
National Transport Authority (NTA)	Dún Scéine, Harcourt Lane, Dublin 2, D02 WT20.	20/01/2023
The Department of Culture, Heritage and the Gaeltacht,	23 Kildare Street, Dublin, D02 TD30.	20/01/2023
National Parks and Wildlife Service (NPWS)	Development Applications Unit Department of Culture, Heritage and the Gaeltacht Newtown Road Wexford Y35 AP90	22/01/2023
National Monuments / Archictecture	Development Applications Unit Department of Culture, Heritage and the Gaeltacht Newtown Road	20/01/2023
The Eastern & Midland Regional Assembly	Ballymun Civic Centre, Main Street, Ballymun, Dublin 9, Ireland.	20/01/2023
The Health Services Executive, Environmental Health	The Health Services Executive Swords Business Campus Balheary Rd Balheary Demesne	20/01/2023
The Heritage Council	The Heritage Council Áras na hOidhreachta Church Lane Kilkenny RX95 X264	20/01/2023
Transport Infrastructure Ireland (TII)	Parkgate Business Centre, Parkgate Street, Dublin 8, D08 DK10.	20/01/2023
The Health and Safety Authority	The Metropolitan Building, James Joyce Street, Mountjoy, Dublin 1	20/01/2023
Irish Water (Uisce Éireann)	110 Amiens Street, North Dock, Dublin 1	20/01/2023
The Department of Transport, Tourism and Sport	2 Leeson Lane, Dublin	20/01/2023
National Transport Authority	National Transport Authority Dún Scéine, Harcourt Lane Dublin 2 D02 WT20	20/01/2023
The Minister for state Local Governement and planning	The Customs Houe, north Dock, Dublin, D01 W6X0	20/01/2023
The Deaprtment of Agriculture, Food and Marine	Department of Agriculture, Food and the Marine, Agriculture House, Kildare street, Dublin	20/01/2023

ATKINS

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Our reference: 5218354

The Manager
Birdwatch Ireland
Unit 20, Block D,
Bullford Business Campus,
Greystones, Co. Wicklow,
A63 RW83

Dear Sir / Madam

RE: Consultation for EIA Scoping Stage - US Customs and Border Protection (CBP) - Proposed Reconfiguration & Expansion & South Apron Support Centre (SASC) - Partial Demolition, Refurbishment & Upgrade Project

Atkins Ireland Ltd. (Atkins) on behalf of Dublin Airport Authority plc. (daa) are currently in the process of compiling an Environmental Impact Assessment Report (EIAR), Appropriate Assessment (AA) Screening and providing planning and environmental services for the above project, which is the subject of a proposed planning application to be lodged to Fingal County Council (FCC).

The preliminary project description of the proposed development is as follows:

(1) the reconfiguration and expansion of the existing 2-storey US Customs and Border Protection (CBP) pre-clearance facility at Pier 4, Terminal 2, Dublin Airport, and

(2) the partial demolition, refurbishment and upgrade of the existing two-storey South Apron Support Centre (SASC) to the southeast of the Terminal 2 building at Dublin Airport, to be used initially as a temporary construction compound for the proposed works to the CBP facility, and then for continued use as an Airport Operational Building for airside support/operations. (See Figure 1)

It should be noted that the description of the development may be subject to change as the project progresses.

Figure 1: Proposed Site Location

Specifically, the proposed development will include:

(1) CBP

(1a) demolition of 2no. existing Pier 4 link bridges, 2no. external vertical circulation cores (VCC), part of the north, east and south elevations of the existing CBP facility, and part of the existing apron pavement;

(1b) reconfiguration of part of Pier 4 and the existing CBP facility and the construction of an expanded 2-storey, part 3-storey CBP facility to the east of the existing CBP facility, to include:

(i) pre-clearance clearance passenger processing facilities at Level 10 (ground floor), including 5no. entry E-gates, queuing areas, 8no. screening lanes (1no. for training/contingency and 1no. for staff access), 22no. booths, transit lounge area, welfare facilities, and ancillary staff facilities.

(ii) lounge, retail/food and beverage area, swing gateroom, welfare facilities, airline lounge, staff facilities, including ancillary offices at Level 15 (first floor).

(iii) construction of 2no. external vertical circulation cores (VCC).

(iv) construction of a new link bridge at Level 20 to the Terminal 2 building.

(v) fallow space at Level 10 to allow for future CBP security facilities, and at Level 20 (second floor) and a lift core extending to Level 30 to safeguard for future expansion, to merge with the remaining parts of the existing facility at Pier 4.

(vi) reconfiguration of the existing airside road on site with pedestrian walkways and zebra crossings; and

(vii) provision of 17no. airside car parking spaces, including 2no. PRM/platinum parking spaces; 2no. GIWA (goods vehicles) spaces; 4no. passenger stair parking spaces; and 2no. bus set down areas.

(1c) decommissioning of existing aircraft stands 409 L/C/R and 410T, and the provision of temporary MARS aircraft stand 409T.

(2) SASC

(2a) upgrade of the façade of the existing SASC building, to include partial demolition of the later attritions/extensions to the south and west flanks of the building; demolition of the existing pedestrian link bridge to Shamrock House to the east (making good the elevation of Shamrock House to match the existing), and demolition of an existing substation internal to the building;

(2b) the refurbishment of the remaining SASC structure to provide offices, meeting rooms, staff welfare facilities, storage and plant rooms on the ground and first floors, including an external dining courtyard at ground floor; and refurbished rooftop plant enclosure and new rooftop balustrades;

(2c) the temporary use of the upgraded and refurbished SASC building and its existing external hardstanding area to the north-west of the SASC building as office storage and a pre-screening/ logistics/ staff welfare facility, as well as 10no. parking spaces, 2no. PRM car parking spaces and 50no. cycle storage racks during the construction of the proposed extension to the CBP facility, A temporary construction access road is also proposed, which will involve the temporary removal of landscaping and boundary treatments, to be reinstated once construction is completed;

(2d) revised external pedestrian and vehicular circulation arrangements; and

(2e) separate external smoking shelter and separate external bin storage.

The proposed development at the existing CBP and SASC buildings will also require the diversion and extension of the existing watermain on site, and a new foul and surface water drainage system, as well as all associated site development and landscaping works

The proposed development at the existing CBP and SASC buildings will not result in any increase in passenger or operational capacity at Dublin Airport. There will also be no increase in staff parking, either airside or landside, as a result of the proposed development.

As part of the consultation phase, we would like to inform you of the proposed planning application for the daa project and seek any feedback, opinions or background information you may have in relation to the proposal. This information will be used to inform the environmental elements of our assessments.

If you require any further information regarding the project, please do not hesitate to contact Deirdre Larkin on 01 810 8000.

We would greatly appreciate it if you could provide any comments you may have at your earliest convenience to Deirdre Larkin by either email Deirdre.larkin@atkinsglobal.com or the above address,

Yours faithfully,

Deirdre Larkin

An Roinn Comhshaoil,
Aeráide agus Cumarsáide
Department of the Environment,
Climate and Communications

Geological Survey
Suirbhéireacht Gheolaíochta
Ireland | Éireann

Deirdre Larkin
Atkins
Atkins House
150 Airside Business Park
Swords
Co. Dublin K67 K5W4

08 February 2023

Re: Consultation for EIA Scoping Stage – US Customs and Border Protection (CBP) – Proposed Reconfiguration & Expansion & South Apron Support Centre (SASC) – Partial Demolition, Refurbishment & Upgrade Project

Your Ref: 5218354
Our Ref: 23/24

Dear Deirdre,

Geological Survey Ireland is the national earth science agency and is a division of the Department of the Environment, Climate and Communications. We provide independent geological information and advice and gather various data for that purpose. Please see our website for data availability. We recommend using these various data sets, when conducting the EIAR, SEA, planning and scoping processes. Use of our data or maps should be attributed correctly to 'Geological Survey Ireland'.

With reference to your letter received on the 26 January 2023, concerning the Consultation for EIA Scoping for the Partial Demolition, Refurbishment & Upgrade Project at Dublin Airport, Geological Survey Ireland would encourage use of and reference to our datasets. Please find attached a list of our publicly available datasets that may be useful to the environmental assessment and planning process. We recommend that you review this list and refer to any datasets you consider relevant to your assessment. The remainder of this letter and following sections provide more detail on some of these datasets.

Geoheritage

A national inventory of geoheritage sites known as County Geological Sites (CGSs) is managed by the Geoheritage Programme of Geological Survey Ireland. CGSs, as adopted under the National Heritage Plan, include sites that are of national importance which have been selected as the very best examples for NHA (Natural Heritage Areas) designation. NHA designation will be completed in partnership with the National Parks and Wildlife Service (NPWS). CGSs are now routinely included in County Development Plans and in the GIS of planning departments, to ensure the recognition and appropriate protection of geological heritage within the planning system. CGSs can be viewed online under the Geological Heritage tab on the online Map Viewer.

The County Geological Heritage Audit for Fingal was completed out in 2007. The full report details can be found here. **Our records show that there are no CGSs in the vicinity of the proposed Dublin Airport development.**

Groundwater

Geological Survey Ireland's Groundwater and Geothermal Unit, provides advice, data and maps relating to groundwater distribution, quality and use, which is especially relevant for safe and secure drinking water supplies and healthy ecosystems.

Proposed developments need to consider any potential impact on specific groundwater abstractions and on groundwater resources in general. We recommend using the groundwater maps on our Map viewer which should include: wells; drinking water source protection areas; the national map suite - aquifer, groundwater vulnerability, groundwater recharge and subsoil permeability maps. For areas underlain by limestone, please refer to the karst specific data layers (karst features, tracer test database; turlough water levels (gwlevel.ie). Background information is also provided in the Groundwater Body Descriptions. Please read all disclaimers carefully when using Geological Survey Ireland data.

The Groundwater Data Viewer indicates an aquifer classed as a 'Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones' underlies the proposed development.The Groundwater Vulnerability map indicates the range of groundwater vulnerabilities within the area covered is variable. We would therefore recommend use of the Groundwater Viewer to identify areas of High to Extreme Vulnerability and 'Rock at or near surface' in your assessments, as any groundwater-surface water interactions that might occur would be greatest in these areas.

GWClimate is a groundwater monitoring and modelling project that aims to investigate the impact of climate change on groundwater in Ireland. This is a follow on from a previous project (GWFlood) and the data may be useful in relation to Flood Risk Assessment (FRA) and management plans. Maps and data are available on the Map viewer.

Geological Survey Ireland has completed Groundwater Protection Schemes (GWPSs) in partnership with Local Authorities, and there is now national coverage of GWPS mapping. A Groundwater Protection Scheme provides guidelines for the planning and licensing authorities in carrying out their functions, and a framework to assist in decision-making on the location, nature and control of developments and activities in order to protect groundwater. **The Groundwater Protection Response overview and link to the main reports is here: https://www.gsi.ie/en-ie/programmes-and-projects/groundwater/projects/protecting-drinking-water/what-is-drinking-water-protection/county-groundwater-protection-schemes/Pages/default.aspx**

Geological Mapping

Geological Survey Ireland maintains online datasets of bedrock and subsoils geological mapping that are reliable and accessible. We would encourage you to use these data which can be found here, in your future assessments.

Our 3D models can help stakeholders visualize, understand and characterise geology, for deposit and resource mapping, for flooding and for urban geology applications including basement impact assessment, Sustainable Drainage Systems (SuDS), and subsurface management. Our 3D models offer a key element of geotechnical risk management by identifying areas requiring further site investigation.

Further information on the bedrock and Quaternary 3D models of Dublin is available here and here.

Please note we have recently launched QGIS compatible bedrock (100K) and Quaternary geology map data, with instructional manuals and videos. This makes our data more accessible to general public and external stakeholders. QGIS compatible data can be found in our downloadable bedrock 100k .zip file on the Data & Maps section of our website.

Geotechnical Database Resources

Geological Survey Ireland continues to populate and develop our national geotechnical database and viewer with site investigation data submitted voluntarily by industry. The current database holding is over 7500 reports with 134,000 boreholes; 31,000 of which are digitised which can be accessed through downloads from our Geotechnical Map Viewer. We would encourage the use of this database as part of any baseline geological assessment of the proposed development as it can provide invaluable baseline data for the region or vicinity of proposed development areas. This information may be beneficial and cost saving for any site-specific investigations that may be designed as part of the project.

Natural Resources (Minerals/Aggregates)

Geological Survey Ireland provides data, maps, interpretations and advice on matters related to minerals, their use and their development in our Minerals section of the website. The Active Quarries, Mineral Localities and the Aggregate Potential maps are available on our Map Viewer.

We would recommend use of the Aggregate Potential Mapping viewer to identify areas of High to Very High source aggregate potential within the area. In keeping with a sustainable approach we would recommend use of our data and mapping viewers to identify and ensure that natural resources used in the proposed refurbishment and upgrade projectare sustainably sourced from properly recognised and licensed facilities, and that consideration of future resource sterilization is considered.

Geochemistry of soils, surface waters and sediments

Geological Survey Ireland provides baseline geochemistry data for Ireland as part of the Tellus programme. Data is available at https://www.gsi.ie/en-ie/data-and-maps/Pages/Geochemistry.aspx. **This page also hosts urban geochemistry mapping (Dublin SURGE project) which may be useful to the project.**

Geological Survey Ireland has completed a geochemical characterization of the subsoil beneath large parts of Dublin, known colloquially as the Dublin Boulder Clay. The report documents the analysis completed on a third-party geochemical dataset obtained from the private sector and is accompanied by an excel spreadsheet containing the database of geochemical observations. Further details can be found at: https://www.gsi.ie/en-ie/publications/Pages/Geochemical-characterization-of-the-Dublin-Boulder-Clay.aspx

Guidelines

The following guidelines may also be of assistance:

- Institute of Geologists of Ireland, 2013. Guidelines for the Preparation of the Soils, Geology and Hydrogeology Chapters of Geology in Environmental Impact Statements.
- EPA, 2022. Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR)

Other Comments

Should development go ahead, all other factors considered, Geological Survey Ireland would much appreciate a copy of reports detailing any site investigations carried out. The data would be added to Geological Survey Ireland's national database of site investigation boreholes, implemented to provide a better service to the civil engineering sector. Data can be sent to the Geological Mapping Unit, at mailto:GeologicalMappingInfo@gsi.ie, 01-678 2795.

I hope that these comments are of assistance, and if we can be of any further help, please do not hesitate to contact me Clare Glanville, or my colleague Trish Smullen at GSIPlanning@gsi.ie.

Yours sincerely,

Dr. Clare Glanville
Senior Geologist
Geological Survey Ireland

Trish Smullen
Geoheritage and Planning Programme
Geological Survey Ireland

Enc: Table - Geological Survey Ireland's Publicly Available Datasets Relevant to Planning, EIA and SEA processes.

Geological Survey Ireland's Publicly Available Datasets Relevant to Planning, EIA and SEA processes

following European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018
(S.I. No. 296 of 2018)

Geological Survey Ireland Programme	Dataset	Relevant EIA Topic	Coverage	Description / Notes / Limitations	Link to Geological Survey Ireland map viewer
Geohazards	Landslide: National landslide database and landslide susceptibility map	Land & Soil/Climate/Landscape	National	Associated guidance documentation relating to the National Landslide Susceptibility Map is also available.	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=b68cf1e4a9044a598E1f950a9b9c5625c
Geohazards	Groundwater Flooding (Historic)	Water	Regional	Provide information of historic flooding, both surface water and groundwater. [A lack of flooding presented in any specific location of the map only indicates that a flood has not been detected. It does not indicate that a flood cannot occur in that location at present or in the future]	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=848f83c857994360b80865Jf9c735b1cc
Geohazards	Groundwater Flooding (Predictive)	Water	Regional	Provides information on the probability of future karst groundwater flooding (where available). (The maps do not, and are not intended to, constitute advice. Professional or specialist advice should be sought before taking, or refraining from, any action on the basis of the flood maps]	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=848f83c857994360b80865Jf9c735b1cc
Geohazards	Radon Map	Land & Soils/Air	National		http://www.epa.ie/radiation/radonmap/
Geoheritage	County Geological Sites as adopted by National Heritage Plan and listed in County Development Pla	Land & Soils/Landscape	Regional	All geological heritage sites identified by Geological Survey Ireland are categorised as CGS pending any further NHA designation by NPWS.	https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228
Geological Mapping	Bedrock geology:	Land & Soils	National	1:100,000 scale and associated memoirs.	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=de7012a99d2748ea9106e7ee1b6ab8d5&scale=0
Geological Mapping	Bedrock geology:	Land & Soils	Regional	1:50,000 scale	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=de7012a99d2748ea9106e7ee1b6ab8d5&scale=0
Geological Mapping	Quaternary geology: Sediments	Land & Soils	National	1:50,000 scale	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=de7012a99d2748ea9106e7ee1b6ab8d5&scale=0
Geological Mapping	Quaternary geology: Geomorphology	Land & Soils	National	1:50,000 scale	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=de7012a99d2748ea9106e7ee1b6ab8d5&scale=0
Geological Mapping	Physiographic units:	Land & Soils	National	Broad-scale physical landscape units mapped at 1:100,000 scale in order to be represented as a cartographic digital map at 1:250,000 scale	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=afa76a420fc54877843ac13b07bc62b
Geological Mapping	GeoUrban: Spatial geological data for the greater Dublin and Cork areas	Land & Soils	Regional	includes 3D models	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=976bf4818b7941609306b2212a850ce6&scale=0
Geological Mapping	Geotechnical database	Land & Soils	National	Digitised geotechnical and Site Investigation Reports and boreholes which can be accessed through online downloads	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=a27188e1873d47a585a3f0415b4a724c
Goldmine	Historical data sets including geological memoirs and 6" to 1 mile geological mapping records	land & Soils/Water	National	available online	https://secure.dccae.gov.ie/goldmine/index.html
Groundwater & Geothermal	Groundwater resources (aquifers)	Water	National	Data limited to 1:100,000 scale; sites should be investigated at local scale	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a2023015946f87ab14629a10b748ef
Groundwater & Geothermal	Groundwater recharge	Water	National	Data limited to 1:40,000 scale; sites should be investigated at local scale; long term annual average recharge	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a2023015946f87ab14629a10b748ef
Groundwater & Geothermal	Groundwater vulnerability	Water	National	Data limited to 1:40,000 scale; sites should be investigated at local scale	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a2023015946f87ab14629a10b748ef
Groundwater & Geothermal	Group scheme and public supply source protection areas.	Water	National	Not all PWS / GWS have SPZ / ZOC. Check with IW / coco / NFGWS for private supplies.	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a2023015946f87ab14629a10b748ef
Groundwater & Geothermal	Groundwater Protection Schemes	Water	National	Data is limited to scale of 1:40,000. Data does not include all of the source protections areas	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a2023015946f87ab14629a10b748ef
Groundwater & Geothermal	Catchment and WFD management units.	Water	National		https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a2023015946f87ab14629a10b748ef
Groundwater & Geothermal	karst specific data layers	water	National	For areas underlain by limestone, includes karst features, tracer test database; turlough water levels (gwlevel.ie).	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a2023015946f87ab14629a10b748ef
Groundwater & Geothermal	Wells and Springs	Water	National	Not comprehensive, there may be unrecorded wells and springs	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a2023015946f87ab14629a10b748ef
Groundwater & Geothermal	Groundwater body Descriptions	Water	National	Not exhaustive; only those in designated SACs; could be other GWDTEs; for more information contact NPWS / EPA / site investigations	https://www.gsi.ie/en-ie/programmes-and-projects/groundwater-and-geothermal-unit/activities/understanding-ireland-groundwater/Pages/Groundwater-bodies.aspx
Groundwater & Geothermal	Geothermal Suitability maps	land & Soils/Water	National	Also, Roadmap for a Policy and Regulatory Framework for Geothermal Energy, November 2020	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=9ee46bee08de41278b90a9f1d60c0b9e
Marine & Coastal Unit	INFOMAR - Ireland's national marine mapping programme; providing key baseline data for Ireland's	Water	National		https://secure.dccae.gov.ie/GSI/INFOMAR_VIEWER/
Marine & Coastal Unit	CHERISH - Coastal change project (Climate, Heritage and Environments of Reefs, Islands, and Headla	Water	Regional		http://www.cherishproject.eu/en/
Marine & Coastal Unit	Coastal Vulnerability Index (CVI).	water /Land & Soils	Regional	Currently the project is being carried out on the east coast and will be rolled out nationally	https://www.gsi.ie/en-ie/programmes-and-projects/marine-and-coastal-unit/projects/Pages/Coastal-Vulnerability-Index.aspx
Minerals	Aggregate potential	Land & Soils/Materiel Assets	National	Consideration of mineral resources and potential resources as a material asset which should be explicitly recognised within the environmental assessment process	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=ee8c4c285a49413aa6f134441 6dc9956
Minerals	Active quarries	Land & Soils	National		https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=ee8c4c285a49413aa6f134441 6dc9956
Minerals	Historic mines	Land & Soils/Cultural Heritage	National	Inventory and Risk Classification 2009. Environmental Protection Agency, Economic Minerals Division and Geological Survey Ireland (DECC).	https://gis.epa.ie/EPAMaps/default?eastng=?&northing=?&lid=EPA_LEMA_Facilities_Extractive_Facilities https://www.epa.ie/enforcement/mines/
Tellus	Geochemical data: multi-element data for shallow soil, stream sediment and stream water	Land & Soils	Regional	A national mapping programme	https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=6304e122b7134980b996427079ff72f754
Tellus	Airborne geophysical data including radiometrics, electromagnetics and magnetics	Land & Soils	Regional	A national mapping programme	https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=6304e122b7134980b996427079ff72f754
Tellus	urban geochemistry mapping (Dublin SURGE project).	Land & Soils	Regional		https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=6304e122b7134980b996427079ff72f754

Notes:

1. The maps and data listed above are available on the Geological Survey Ireland map viewer https://www.gsi.ie/en-ie/data-and-maps/Pages/default.aspx

2. Please read all disclaimers carefully when using Geological Survey Ireland data

3. Geological Survey Ireland and Irish Concrete Federation published guidelines for the treatment of geological heritage in the extractive industry in 2008.

From: INFO <Information@tii.ie>
Sent: 2023-02-14 09:31
To:
Subject: 5218354 - Consultation for EIA Scoping Stage - US Customs and Border Protection (CBP)

Dear Ms. ,

Thank you for your letter, which was received by Transport Infrastructure Ireland (TII) on 2 February 2023, regarding the above. The position in relation to your enquiry is as follows.

TII will endeavour to consider and respond to planning applications referred to it given its status and duties as a statutory consultee under the Planning Acts. The approach to be adopted by TII in making such submissions or comments will seek to uphold official policy and guidelines as outlined in the Section 28 Ministerial Guidelines 'Spatial Planning and National Roads Guidelines for Planning Authorities' (DoECLG, 2012). Regard should also be had to other relevant guidance available at www.TII.ie.

The issuing of this correspondence is provided as best practice guidance only and does not prejudice TII's statutory right to make any observations, requests for further information, objections or appeals following the examination of any valid planning application referred.

With respect to EIAR scoping issues, the recommendations indicated below provide only general guidance for the preparation of an EIAR, which may affect the national road network.

TII would be specifically concerned as to potential significant impacts the development would have on the national road network (and junctions with national roads) in the proximity of the proposed development.

The developer/scheme promoter should have regard, inter alia, to the following:

- It would be required that a Traffic and Transport Assessment (TTA) be carried out in accordance with relevant guidelines, noting traffic volumes attending the site and traffic routes to/from the site with reference to impacts on the national road network and junctions of lower category roads with national roads. TII's Traffic and Transport Assessment Guidelines (2014) should be referred to in relation to proposed development with potential impacts on the national road network. Having regard to the nature of the proposed development and location, the TTA should be undertaken in accordance with the TII TTA Guidelines (2014):
    - A mobility management plan should accompany the transport assessment,
    - Modal share targets (pre. and post light rail) should be outlined and how any PT modal share is accommodated in advance of light rail,
    - What measures that are proposed to reduce car dependency should be outlined,
    - Detailed phasing proposals of development with associated transport infrastructure provision is required,
    - Consider and address cumulative impacts of other development and impacts on limited national road capacity,
    - The traffic and transport assessment should consider all road users,
    - Mitigation measures should be aligned with phasing of road infrastructure improvements and required public transport interventions; all clearly outlined.

- Consultations should be had with the relevant Local Authority with regard to locations of existing and future public road schemes and potential improvements which may be necessary.
- Consultations should be had with the relevant Local Authority/National Transport Authority (NTA) with regard to locations of existing and future public transport and sustainable mobility schemes.

- The developer should have regard to any EIS/EIAR and all conditions and/or modifications imposed by An Bord Pleanála relating to transport in the area. The developer should in particular have regard to any potential cumulative impacts.
- The developer, in conducting EIAR, should have regard to the TII Publications (formerly NRA DMRB and the NRA Manual of Contract Documents for Road Works).
- The developer, in conducting EIAR, should have regard to TII's Environmental Assessment and Construction Guidelines, including the Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes (National Roads Authority, 2006).
- The designers are asked to consult TII Publications to determine whether a Road Safety Audit is required.
- Regard should also be had to other relevant guidance available at www.tii.ie.

The developer is advised that any additional mitigations/works/structures required as a result of these Assessments should be funded by the developer.

Notwithstanding any of the above, the developer should be aware that this list is non-exhaustive and therefore site and development specific issues should be addressed in accordance with best practice.

I hope that the above comments are of use in your scoping process.

Yours sincerely,

Alban Mills
Senior Regulatory & Administration Executive
Ref No. TII23-121841

www.tii.ie info@tii.ie +353 (0)1 646 3600

From: @failteireland.ie>
Sent: 2023-02-08 14:39
To:
Subject: Consultation EIA Scoping-Dublin Airport

Hello

Thank you for contacting Fáilte Ireland and for your letter (ref: 5218354) regarding the Consultation for EIA Scoping Stage- US Customs and Border Protection (CBP) – Proposed Reconfiguration & Expansion & south Apron Support Centre (SASC) – Partial Demolition, Refurbishment & Upgrade Project at Dublin Airport. We have reviewed the details and have no comments or queries at this time.

Just for your information, Fáilte Ireland has a dedicated mailbox for all planning notifications/applications, consultations etc. Please use the following email address planning.applications@failteireland.ie when sending future planning notifications/applications, consultations etc. We would prefer, if possible, to receive these notifications by email rather than post.

By using the email address, it will ensure information/notifications will go directly to the Environment & Planning Manager (Mr Shane Dineen) and team and will be reviewed and actioned in a timely manner by the Manager and the Environment & Planning Team.

Regards & thanks,

Yvonne

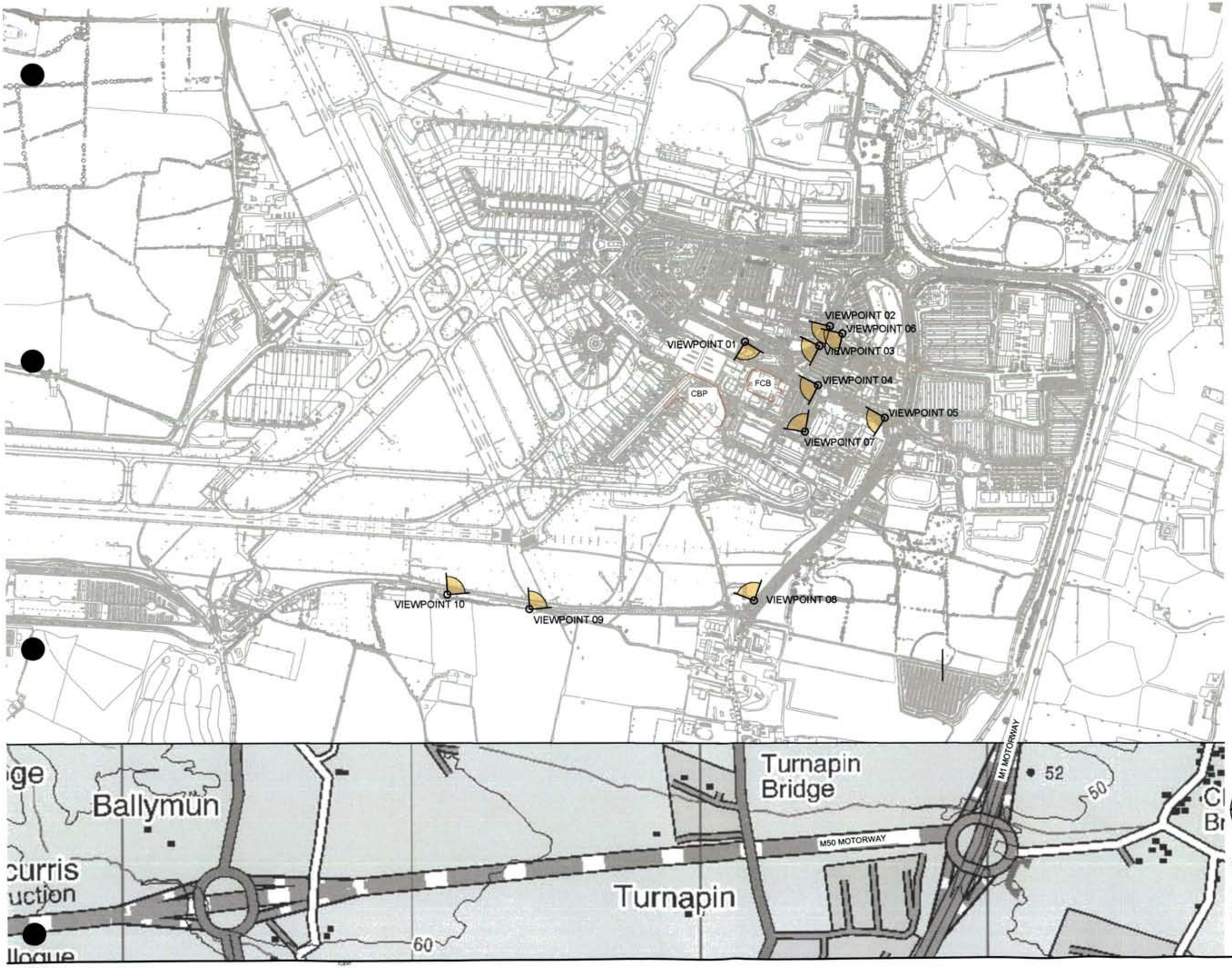
Yvonne Jackson
Product Development-Environment & Planning Support | Fáilte Ireland

88-95 Amiens Street, Dublin 1, D01 WR86
M +353 (0)86 0357590

Fáilte Ireland

LinkedIn | Twitter | YouTube | Facebook

Appendix 6: Landscape and Visual



LEGEND:

SYM.	DESCRIPTION
	APPROXIMATE SITE LOCATION
	VIEWPOINT LOCATION

N

0 250m 500m

ebla
eamonn byrne
landscape architects
5-6 King's Court, York, YO1 7LD, UK
T +44 (0)1904 623 144 E mail@eb-la.com
www.eb-la.com

CLIENT
daa

PROJECT/DRAWING TITLE
US CUSTOMS AND BORDER PROTECTION (CBP) & FACILITIES CATERING BUILDING (FCB)- VISIBILITY

LOCATION
DUBLIN AIRPORT, CO. DUBLIN

DRAWING NUMBER
LP-01-REV-0

SCALE
1:12,500@A3

DATE
24-02-2023

Date:	19/02/2023
Height above ground:	1.6M
Range:	106M to FCB
Direction:	South East
Viewing distance at A3:	400MM

Viewpoint 1

ebla
eamonn byrne landscape architects
5-6 King's Court, Shambles, York, YO1 7LD, UK
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US CUSTOMS AND BORDER PROTECTION (CBP) & SASC -DUBLIN AIRPORT

VIEWPOINTS

daa

SHEET-01

REV 0

22.02.2023

Date:	19/02/2023
Height above ground:	1.6M
Range:	260M to FCB
Direction:	South West
Viewing distance at A3:	400MM

Viewpoint 2

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US CUSTOMS AND BORDER PROTECTION (CBP) & SASC -DUBLIN AIRPORT

VIEWPOINTS

daa

SHEET-02

REV 0

22.02.2023

Date:	19/02/2023
Height above ground:	1.6M
Range:	180M to FCB
Direction:	South West
Viewing distance at A3:	400MM

Viewpoint 3

ebla
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US CUSTOMS AND BORDER PROTECTION (CBP) & SASC -DUBLIN AIRPORT

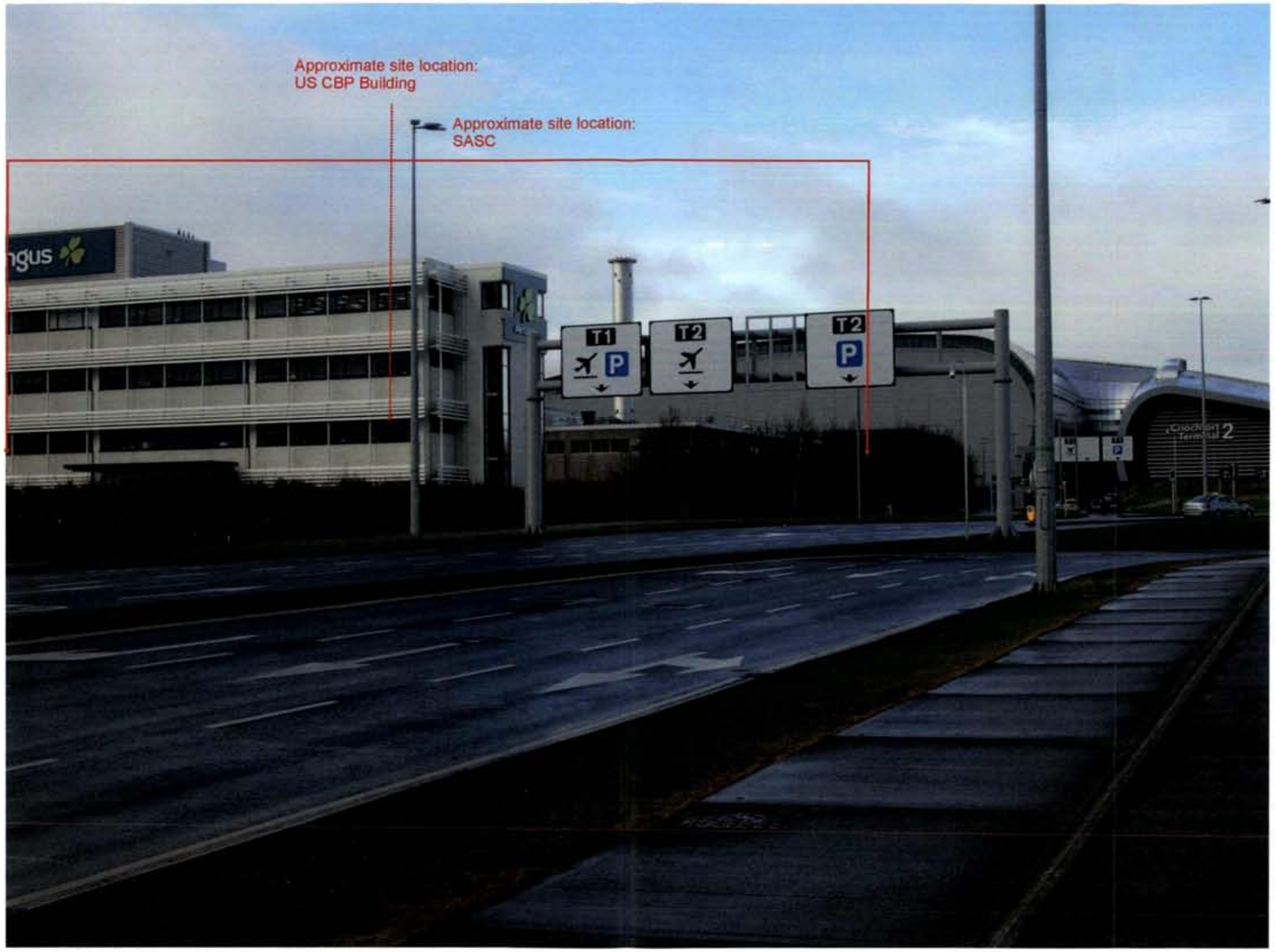
VIEWPOINTS

daa

SHEET-03

REV 0

22.02.2023



Date:	19/02/2023
Height above ground:	1.6M
Range:	132M to FCB
Direction:	West
Viewing distance at A3:	400MM

Viewpoint 4

eamonn byrne
landscape architects
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US CUSTOMS AND BORDER PROTECTION (CBP) & SASC -DUBLIN AIRPORT

VIEWPOINTS

daa

SHEET-04

REV 0

22.02.2023

Date:	19/02/2023
Height above ground:	1.6M
Range:	390M to FCB
Direction:	North West
Viewing distance at A3:	400MM

Viewpoint 5

ebla
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US CUSTOMS AND BORDER PROTECTION (CBP) & SASC -DUBLIN AIRPORT

VIEWPOINTS

daa

SHEET-05

REV 0

22.02.2023

Date:	19/02/2023
Height above ground:	1.6M
Range:	272M to FCB
Direction:	South West
Viewing distance at A3:	400MM

Viewpoint 6

eamonn byrne
landscape architects
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US CUSTOMS AND BORDER PROTECTION (CBP) & SASC -DUBLIN AIRPORT

VIEWPOINTS

daa

SHEET-06

REV 0

22.02.2023

Date:	19/02/2023
Height above ground:	1.6M
Range:	172M to FCB 432M to CBP
Direction:	North West
Viewing distance at A3:	400MM

Viewpoint 7

ebla
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landscape architects
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US CUSTOMS AND BORDER PROTECTION (CBP) & SASC -DUBLIN AIRPORT

VIEWPOINTS

daa

SHEET-07

REV 0

22.02.2023

Date:	19/02/2023
Height above ground:	1.6M
Range:	705M to FCB 782M to CBP
Direction:	North West
Viewing distance at A3:	400MM

Viewpoint 8

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US CUSTOMS AND BORDER PROTECTION (CBP) & SASC -DUBLIN AIRPORT

VIEWPOINTS

daa

SHEET-08

REV 0

22.02.2023

Date:	19/02/2023
Height above ground:	1.6M
Range:	1.08KM to FCB 955M to CBP
Direction:	North West
Viewing distance at A3:	400MM

Viewpoint 9

ebla
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landscape architects
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US CUSTOMS AND BORDER PROTECTION (CBP) & SASC -DUBLIN AIRPORT

VIEWPOINTS

daa

SHEET-09

REV 0

22.02.2023

Date:	19/02/2023
Height above ground:	1.6M
Range:	1.08KM to FCB 955M to CBP
Direction:	North West
Viewing distance at A3:	400MM

Viewpoint 10

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US CUSTOMS AND BORDER PROTECTION (CBP) & SASC -DUBLIN AIRPORT

VIEWPOINTS

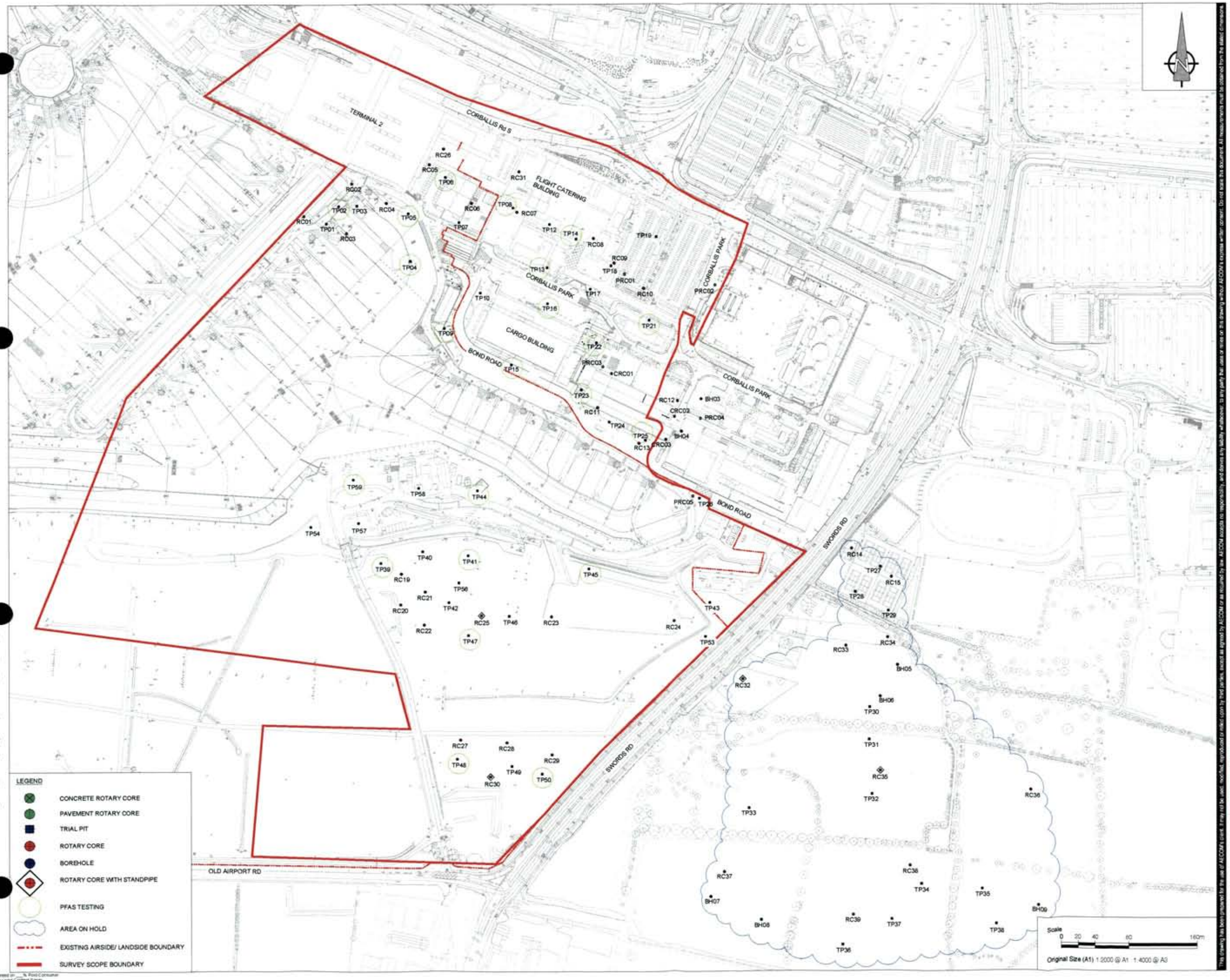
daa

SHEET-10

REV 0

22.02.2023

Appendix 11: Land, Soils and Geology



AECOM
PASCALL +WATSON

Project

Dublin Airport
60592409

Client

DAA ltd
Old Central Terminal Building
Dublin Airport
Co. Dublin, Ireland
+353 1 814 11 11
info@daa.ie

CONSULTANT

AECOM
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George's Street Upper,
Dun Laoghaire,
Co Dublin
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Fax:+353(0)1 2383199
www.aecom.com

NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ARCHITECTURAL AND ENGINEERING DRAWINGS. ANY DISCREPANCIES, ERRORS OR OMISSIONS TO BE BROUGHT TO THE ATTENTION OF THE DESIGNER.
2. ALL DIMENSIONS TO BE CHECKED BY THE CONTRACTOR ON SITE PRIOR TO COMMENCEMENT OF WORKS.
3. AECOM LIMITED TO BE INFORMED BY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO THE COMMENCEMENT OF WORKS ON SITE.
4. DIMENSIONS OF ALL BOUNDARIES AND ADJOINING ROADS TO BE CHECKED ON SITE PRIOR TO COMMENCEMENT OF WORKS.
5. DO NOT SCALE. ALL MEASUREMENTS AND COORDINATES TO BE CHECKED ON SITE.
6. FOR DETAILS OF SURFACE FINISHES AND MATERIALS REFER TO LANDSCAPE ARCHITECTS DRAWINGS.

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P06	22.06.2022	UPDATED LOCATIONS
P05	02.06.2022	UPDATED LOCATIONS
P04	31.05.2022	UPDATED LOCATIONS
P03	25.05.2022	UPDATED LOCATIONS
P02	13.05.2022	UPDATED LOCATIONS
P01	13.01.2021	ISSUED FOR INFORMATION

FOR INFORMATION ONLY

Suitability Status

S4 - Suitable for Stage Approval

PROJECT NUMBER

60592409

SHEET TITLE

PROPOSED GROUND INVESTIGATION

SHEET NUMBER

60592409-ACM-SAH-XX-DR-ZZ-01-0005

Scale 1:2000 **Rev.** P06

CAUSEWAY GEOTECH

NASAH North Apron & South Apron GI – Ground Investigation

Client:	Dublin Airport Authority
Report No.:	D18362-01-CWG-XXX-XX-XXX-RP-W-XXX-0002, 7 SOUTH
Date:	November 2022
Status:	Weekly Update only **Not** to be used for tendering or design purposes

Causeway Geotech Ltd
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Co. Antrim, N. Ireland, BT53 7QL

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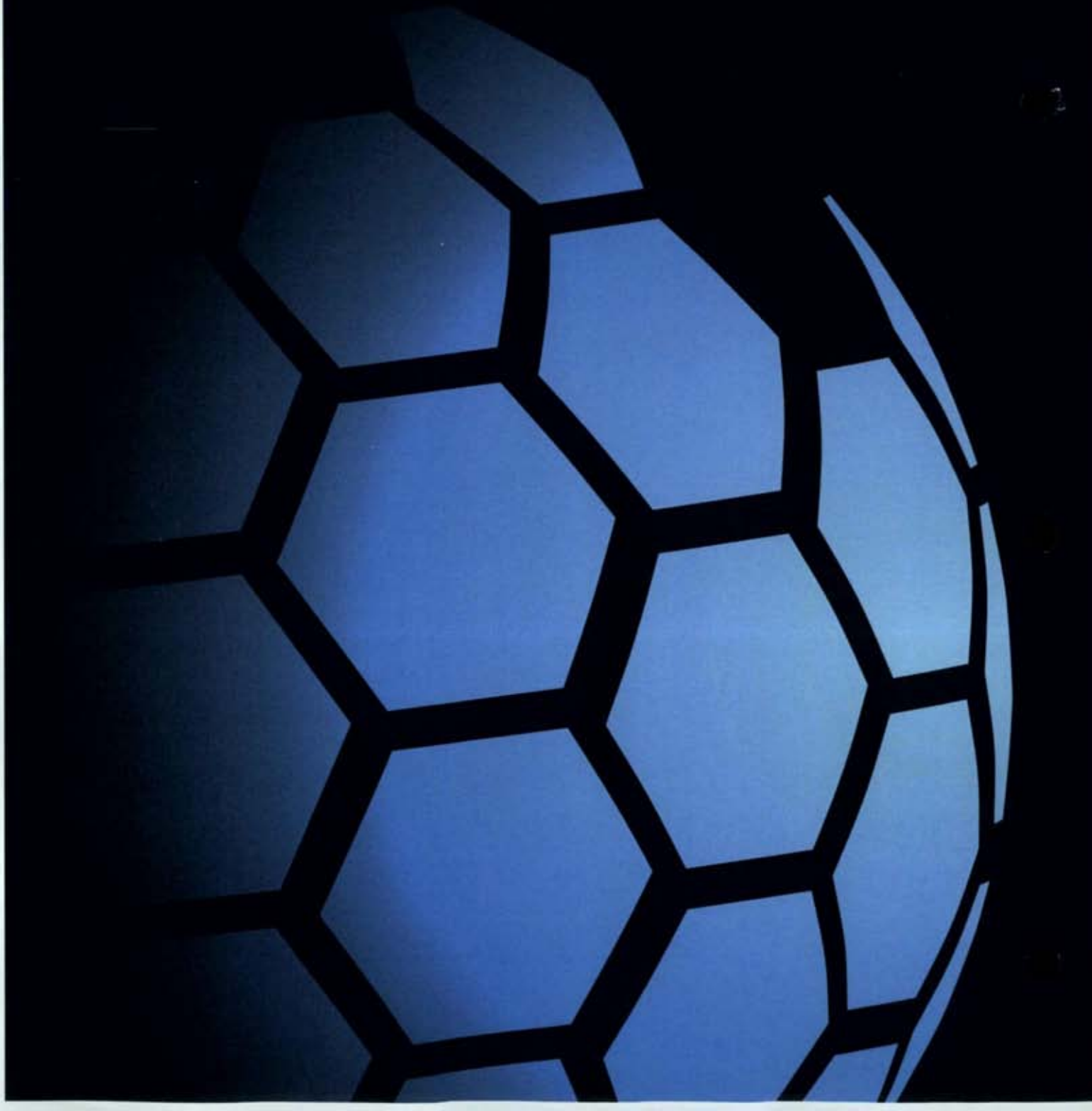
www.causewaygeotech.com

Registered in Northern Ireland. Company Number. NI610766
Approved: ISO 9001 • ISO 14001 • OHSAS 18001

CAUSEWAY
GEOTECH

APPENDIX A

Draft Borehole Logss



CAUSEWAY GEOTECH

Project No.	Project Name: NASAH North Apron & South Apron GI Kilwex	Borehole ID
21-0403S	Client: Dublin Airport Authority	BH03
	Client's Rep: AECOM	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth: 4.50 m	Start Date: 15/06/2022	Driller: CC	Sheet 1 of 1 Scale: 1:40
Cable Percussion	Dando 3000	0.00	4.50	E N	Elevation: mOD	End Date: 15/06/2022	Logger: CH	DRAFT

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
0.10 - 1.20	B5					0.20		TOPSOIL		
0.30	ES1							MADE GROUND: Stiff brown slightly sandy slightly gravelly CLAY with low cobble content and fragments of red brick and sheets of plastic. Sand is fine to coarse. Gravel is subangular fine to coarse of various lithologies predominantly limestone. Cobbles are subrounded of limestone.		
0.50	ES									
0.50	ES2									
0.50		PID = 0.60ppm								
1.20 - 1.65	U14	Ublow=37 100%	1.20	Dry		1.40				
1.40 - 2.00	B7							Firm becoming stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse of various lithologies predominantly limestone.		
1.50	ES3									
1.50		PID = 1.80ppm								
1.70	D6									
2.00	D8									
2.00 - 2.45	SPT (S)	N=14 (2,3/3,3,4,4)	2.00	Dry		2.50				
2.50	ES4							Very stiff dark grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse of limestone.		
2.50 - 3.50	B9									
2.50		PID = 1.60ppm								
3.00 - 3.45	U15	Ublow=151 100%	3.00	Dry						
3.50	D10									
3.50 - 4.50	B11									
3.50		PID = 1.50ppm								
4.00	D12									
4.00 - 4.30	SPT (S)	N=50 (9,15/50 for 150mm)	4.00	Dry		4.50				
4.50	D13							End of Borehole at 4.50m		
4.50 - 4.70	SPT (S)	N=50 (25 for 50mm/50 for 150mm)	4.50	Dry						
4.50		PID = 1.20ppm								

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diameter
4.50	200

Water Added

From (m)	To (m)

Chiselling Details

From (m)	To (m)	Time (hh:mm)

Remarks

Hand dug inspection pit excavated to 1.20m.
No groundwater encountered.

Termination Reason

Terminated on refusal.

Last Updated

07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-0403S	NASAH North Apron & South Apron GI Kilwex	BH04
	Client: Dublin Airport Authority	
	Client's Rep: AECOM	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Cable Percussion	Dando 3000	0.00	1.30	E N

Final Depth:	Start Date:	Driller:	Sheet 1 of 1 Scale: 1:40
1.30 m	15/06/2022	CC	
Elevation: mOD	**End Date:** 16/06/2022	**Logger:** CH	DRAFT

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
						0.20		Reinforced CONCRETE		
0.20 - 1.20	B3							MADE GROUND: Grey slightly sandy silty subangular fine to coarse GRAVEL of limestone with low cobble content. Sand is fine to coarse. Cobbles are subangular fine to coarse of limestone.		
0.30	ES					0.60		MADE GROUND: Firm becoming stiff greyish brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mixed lithologies predominantly limestone. Cobbles are subrounded of limestone.		
0.30	ES1									
0.50	ES2									
0.55	EW	Seepage at 0.60m				1.30		End of Borehole at 1.30m		

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)
0.60	0.60	20	0.50

Casing Details

To (m)	Diameter

Water Added

From (m)	To (m)

Chiselling Details

From (m)	To (m)	Time (hh:mm)

Remarks

Hand dug inspection pit excavated to 1.20m.

Termination Reason

Terminated on concrete and instructed to move by Client.

Last Updated

07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-0403S	NASAH North Apron & South Apron GI Kilwex	BH04A
	Client: Dublin Airport Authority	
	Client's Rep: AECOM	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Cable Perussion	Dando 3000	0.00	3.40	E N

Final Depth:	Start Date:	Driller:	Sheet 1 of 1 Scale: 1:40
3.40 m	16/06/2022	CC	
Elevation: mOD	**End Date:** 16/06/2022	**Logger:** CH	DRAFT

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
						0.20		Reinforced CONCRETE		
						0.60		MADE GROUND: Dark grey slightly sandy silty subangular fine to coarse GRAVEL of limestone with low cobble content. Sand is fine to coarse. Cobbles are of limestone.		
1.20	D3							MADE GROUND: Stiff becoming very stiff brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse of mixed lithologies predominantly limestone. Cobbles are subrounded of limestone.		
1.20 - 1.65	SPT (S)	N=33 (4,5/7,7,9,10) Hammer SN = 0197	1.20	Dry		1.40				
1.30 - 2.00	B4							Very stiff dark grey slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of limestone. Cobbles are subrounded fine to coarse of limestone.		
1.50	ES1									
1.50		PID = 0.50ppm								
2.00	D5									
2.00 - 3.00	B6									
2.00 - 2.38	SPT (S)	N=50 (8,11/50 for 225mm) Hammer SN = 0197	2.00	Dry						
2.50	ES2									
2.50		PID = 0.70ppm								
3.00	D7									
3.00 - 3.30	SPT (S)	N=50 (17,8/50 for 150mm) Hammer SN = 0197	3.00	Dry		3.40		End of Borehole at 3.40m		

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diameter
3.40	200

Water Added

From (m)	To (m)

Chiselling Details

From (m)	To (m)	Time (hh:mm)

Remarks

Hand dug inspection pit excavated to 1.20m.
No groundwater encountered.

Termination Reason

Terminated on refusal.

Last Updated

07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name	Borehole ID
21-0403S	NASAH North Apron & South Apron GI Kilwex	RC05A
	Client: Dublin Airport Authority	
	Client's Rep: AECOM	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Inspection Pit	8T Tracked Excavator	0.00	2.50	
Rotary Coring	T44	2.50	10.00	E
				N

Final Depth:	10.00 m	Start Date:	22/08/2022	Driller:	GT	Sheet 1 of
Elevation:	mOD	End Date:	24/08/2022	Logger:	MRG +CM	Scale: 1:50
						DRAFT

Depth (m)	Sample / Tests	Field Records	TCR	SCR	RQD	FI	Level mOD	Depth (m)	Legend	Description	Water	Backfill
								0.20		TARMAC		
0.30	ES2							0.45		MADE GROUND: Dark greyish brown slightly silty sandy subangular fine to coarse GRAVEL of various lithologies. Sand is fine to coarse.		
0.30		PID = 4.50ppm						0.55		MADE GROUND: Dark grey slightly sandy slightly silty subangular fine to coarse GRAVEL of limestone. Sand is fine to coarse.	▼	
0.40	B1							0.80		MADE GROUND: TERRAM		
0.50	B3							1.10		MADE GROUND: Firm greenish brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subangular.		
0.50	ES4									MADE GROUND: Firm dark greyish brown slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subrounded fine to coarse. Cobbles are subrounded.		
0.50		PID = 8.90ppm Heavy flow at 0.55m								Firm greyish brown slighty sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subangular of limestone.		
0.70	B5											
0.70	ES6											
0.70		PID = 15.40ppm										
1.00	B7											
1.00	ES8											
1.00		PID = 0.20ppm										
2.00	ES10											
2.00		PID = 0.00ppm										
2.10	B9						2.50 Dry	2.50		Very stiff dark greyish brown gravelly slightly sandy CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of predominantly limestone and sandstone. Cobbles are subangular to subrounded of limestone and sandstone.		
2.50 - 2.94	SPT(C) N=50 (8,10/50 for 290mm)											
2.90	B11	95										
2.90	ES12											
2.90	PID = 0.00ppm											
4.00							2.50 Dry					
4.00 - 4.12	SPT(C) N=50 (25 for 35mm/50 for 88mm)	100						(3.65)				
5.50							2.50 Dry					
5.50 - 5.88	SPT(C) N=50 (10,14/50 for 230mm)	100						6.15		Very stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of various lithologies.		
								(0.85)				
7.00							2.50 Dry	7.00		Very stiff dark greyish brown gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of limestone.		
7.00 - 7.16	SPT(C) N=50 (25 for 72mm/50 for 87mm)	100						(0.50)				
								7.50		Very stiff brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of various lithologies.		
								(0.40)				
								7.90		Very stiff brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is angular to subrounded of various lithologies. Cobbles are subangular to subrounded of predominantly limestone.		
8.50							2.50 Dry					
8.50 - 8.94	SPT(C) N=50 (10,14/50 for 285mm)	100						(2.10)				

Water Strikes			
Struck at (m)	Casing to (m)	Time (min)	Rose to (m)
0.55			

Casing Details	
To (m)	Diam (mm)
2.50	200

Water Added	
From (m)	To (m)

Chiselling Details		
From (m)	To (m)	Time (hh:mm)

Remarks

Hand dug inspection pit excavated to 2.50m.

Core Barrel	Flush Type	Termination Reason	Last Updated
SK6L	Water	Terminated at scheduled depth.	07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-0403S	NASAH North Apron & South Apron GI Kilwex	RC05A
	Client: Dublin Airport Authority	
	Client's Rep: AECOM	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Inspection Pit	8T Tracked Excavator	0.00	2.50	
Rotary Coring	T44	2.50	10.00	E
				N

Final Depth:	10.00 m	Start Date:	22/08/2022	Driller:	GT	Sheet 2 of 2
						Scale: 1:50
Elevation:	mOD	End Date:	24/08/2022	Logger:	MRG +CM	DRAFT

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Level mOD	Depth (m)	Legend	Description	Water	Backfill
									Very stiff brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is angular to subrounded of various lithologies. Cobbles are subangular to subrounded of predominantly limestone.		
10.00							10.00		End of Borehole at 10.00m		

TCR	SCR	RQD	FI

Water Strikes			
Struck at (m)	Casing to (m)	Time (min)	Rose to (m)
0.55			

Casing Details		Water Added	
(m)	Diam (mm)	From (m)	To (m)
2.50	200		

Chiselling Details		
From (m)	To (m)	Time (hh:mm)

Remarks

Hand dug inspection pit excavated to 2.50m.

Core Barrel	Flush Type	Termination Reason	Last Updated
SK6L	Water	Terminated at scheduled depth.	07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-0403S	NASAH North Apron & South Apron GI Kilwex	RC06
	Client: Dublin Airport Authority	
	Client's Rep AECOM	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Inspection Pit	8T Tracked Excavator	0.00	1.60	E
Rotary Coring	T44 Beretta	1.50	10.00	N

Final Depth:	10.00 m	Start Date:	09/08/2022	Driller:	GT	Sheet 1 of 2
Elevation:	mOD	End Date:	10/08/2022	Logger:	MRG +CM	Scale: 1:40
						DRAFT

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
									0.20		CONCRETE with rebar.		
									0.45		MADE GROUND: Grey slightly sandy subangular to subrounded fine to coarse GRAVEL of limestone. Sand is fine to coarse.		
											MADE GROUND: TERRAM		
0.80	B1										MADE GROUND: Very stiff greyish brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobblese are subangular to subrounded of mixed lithologies.		
	Slow seepage at 1.30m												
1.50 - 1.95	SPT(C) N=44 (8,10/10,10,12,12)					1.50			1.50		Very stiff greyish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular fine.		
2.35 - 2.80	B2	100											
3.00 - 3.14	SPT(C) N=50 (25 for 60mm/50 for 75mm)					3.00							
3.00									3.40		Very stiff greyish brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse.		
		100											
4.50 - 4.58	SPT(C) N=50 (0 for 0mm/50 for 75mm)					4.50					*4.50-4.70m: Bed of greyish brown slightly gravelly sandy clay. Sand is fine to coarse. Gravel is subangular fine.*		
4.50													
5.10 - 5.70	B3	100											
6.00 - 6.45	SPT(C) N=50 (10,12/12,14,14,10)					6.00			6.00		Very dense greyish brown gravelly very clayey fine to coarse SAND. Gravel is subangular fine.		
6.00													
		100							6.90		Very stiff greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse.		
		TCR	SCR	RQD	FI								

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)
1.30			

Remarks

Hand dug inspection pit to 1.60m.

Casing Details

To (m)	Diam (mm)
1.50	200
10.00	150

Core Barrel

SK6L

Flush Type

Water

Termination Reason

Terminated on scheduled depth.

Last Updated

07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name	Borehole ID
21-0403S	NASAH North Apron & South Apron GI Kilwex	RC06
	Client: Dublin Airport Authority	
	Client's Rep AECOM	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Inspection Pit	8T Tracked Excavator	0.00	1.60	E
Rotary Coring	T44 Beretta	1.50	10.00	N

Final Depth:	10.00 m	Start Date:	09/08/2022	Driller:	GT	Sheet 2 of 2 Scale: 1:40
Elevation:	mOD	End Date:	10/08/2022	Logger:	MRG +CM	DRAFT

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
7.50 - 7.74 7.50	SPT(C) N=50 (10,15/50 for 92mm)					7.50					Very stiff greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse.		
8.30 - 8.60	U5	92											
9.00 - 9.50 9.00 - 9.45 9.00	B4 SPT(C) N=60 (10,12/14,14,16,16)	100				9.00							
									9.70		Very dense greyish brown slightly gravelly clayey fine to coarse SAND. Gravel is subangular fine.		
10.00									10.00		End of Borehole at 10.00m		
		TCR	SCR	RQD	FI								

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)
1.30			

Casing Details

To (m)	Diam (mm)
1.50	200
10.00	150

Core Barrel

SK6L

Flush Type

Water

Remarks

Hand dug inspection pit to 1.60m.

Termination Reason

Terminated on scheduled depth.

Last Updated

07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-0403S	NASAH North Apron & South Apron GI Kilwex	RC07
	Client: Dublin Airport Authority	
	Client's Rep AECOM	

Method	Plant Used	Top (m)	Base (m)
Inspection Pit	8T Excavator	0.00	2.60
Rotary Drilling	Beretta T44	2.60	3.00
Rotary Coring	Beretta T44	3.00	10.00

Coordinates: E N

Final Depth: 10.00 m | Start Date: 18/08/2022 | Driller: GT | Sheet 1 of 2 | Scale: 1:40

Elevation: mOD | End Date: 18/08/2022 | Logger: MRG +RW | DRAFT

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Level mOD	Depth (m)	Legend	Description	Water	Backfill
							0.02		Brown slightly sandy gravelly TOPSOIL with fragments of plastic. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of various lithologies.		
0.30	ES2								MADE GROUND: Dark grey slightly sandy slightly clayey subangular fine to coarse GRAVEL of mixed lithologies with fragments of red brick, concrete, timber and plastic. Sand is fine to coarse.		
0.50	B1						0.70		Firm greenish brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded.		
0.90	B3										
0.90	ES4						1.20		Firm light brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of mixed lithologies.		
1.50	B5										
1.50	ES6 Medium flow at 1.70m						1.70		Light brownish grey slightly sandy clayey subangular to subrounded fine to coarse GRAVEL of limestone. Sand is fine to coarse.	▼	
2.40	B7						2.40		Stiff dark grey slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.		
2.50	ES8						2.60		Very stiff dark grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse.		
3.00 - 3.40	SPT(C) N=50 (12,12/50 for 250mm) Hammer SN = 0208	100					3.00		Very stiff dark brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of various lithologies.		
4.20 - 4.50	B9						3.50		Very stiff dark brown slightly sandy slightly gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subrounded fine to coarse. Cobbles are subrounded of limestone.		
4.50 - 4.63	SPT(C) N=50 (25 for 55mm/50 for 75mm) Hammer SN = 0208						4.50		Dense dark greyish brown slightly gravelly silty fine to coarse SAND. Gravel is subangular fine to medium.		
4.50											
4.90 - 5.40	B10	100					5.50		Very stiff dark greyish brown sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subrounded fine to coarse. Cobbles are subrounded of limestone.		
6.00 - 6.42	SPT(C) N=50 (8,11/50 for 275mm) Hammer SN = 0208										
6.00		90									
7.10 - 7.50	B11										
		TCR	SCR	RQD	FI						

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)
1.70			

Remarks

Hand dug inspection pit excavated to 2.60m.

Casing Details

To (m)	Diam (mm)

Core Barrel

SK6L

Flush Type

Water

Termination Reason

Terminated at scheduled depth.

Last Updated

07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-0403S	NASAH North Apron & South Apron GI Kilwex	RC07
	Client: Dublin Airport Authority	
	Client's Rep AECOM	

Method	Plant Used	Top (m)	Base (m)
Inspection Pit	8T Excavator	0.00	2.60
Rotary Drilling	Beretta T44	2.60	3.00
Rotary Coring	Beretta T44	3.00	10.00

Coordinates: E N

Final Depth: 10.00 m | Start Date: 18/08/2022 | Driller: GT

Elevation: mOD | End Date: 18/08/2022 | Logger: MRG +RW

Sheet 2 of 2 | Scale: 1:40 | DRAFT

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
7.50											Very stiff dark greyish brown sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subrounded fine to coarse. Cobbles are subrounded of limestone.		
		100							8.10		Very stiff light brownish grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse.		
8.70 - 9.00	C12												
9.00 - 9.15	SPT(C) N=50 (25 for 75mm/50 for 75mm) Hammer SN = 0208												
9.00		100											
9.70 - 10.00	B13												
10.00									10.00		End of Borehole at 10.00m		

TCR	SCR	RQD	FI

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)
1.70			

Casing Details

To (m)	Diam (mm)

Core Barrel: SK6L

Flush Type: Water

Remarks: Hand dug inspection pit excavated to 2.60m.

Termination Reason: Terminated at scheduled depth.

Last Updated: 07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name: NASAH North Apron & South Apron GI Kilwex	Borehole ID
21-0403S	Client: Dublin Airport Authority	RC08
	Client's Rep AECOM	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Inspection Pit	8T Excavator	0.00	1.50	
Rotary Coring	Beretta T44	1.50	10.00	E
				N

Final Depth: 10.00 m	Start Date: 17/08/2022	Driller: MW	Sheet 1 of 2
			Scale: 1:40
Elevation: mOD	End Date:	Logger: RW +MRG	DRAFT

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Level mOD	Depth (m)	Legend	Description	Water	Backfill
							0.10		TOPSOIL with rootlets.		
0.30	B1						0.40		MADE GROUND: Firm greyish brown slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse, Cobbles are subangular to subrounded.		
0.70	B2						0.80		MADE GROUND: Firm light brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of mixed lithologies.		
1.00	B3						1.30		MADE GROUND: Firm greyish brown slightly sandy gravelly CLAY with medium cobble content and fragments of clay pipe. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of mixed lithologies.		
1.50	B4						1.50		Firm greyish brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of various lithologies.		
1.50 - 1.95	SPT(C) N=9 (1,2/2,2,3,2) Hammer SN = 0208										
2.00 - 2.50	B5	90							Very stiff dark brownish grey slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subangular of limestone.		
3.00 - 3.44	SPT(C) N=50 (7,7/50 for 285mm) Hammer SN = 0208										
3.00											
3.70 - 4.00	C6	100					3.70		Very stiff dark grey slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subrounded fine to coarse. Cobbles are subangular of limestone.		
4.50 - 4.62	SPT(C) N=50 (25 for 55mm/50 for 60mm) Hammer SN = 0208										
4.50							4.90				
5.00 - 5.50	B7	100							Very stiff dark grey slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Grave is subangular to subrounded fine to coarse. Cobbles are subangular of limestone.		
6.00 - 6.44	SPT(C) N=50 (9,10/50 for 285mm) Hammer SN = 0208										
6.00							6.40		Dark brownish grey slightly sandy slightly clayey subrounded fine to coarse GRAVEL. Sand is fine to coarse.		
		100					6.70		Very stiff dark brownish grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse.		
7.00 - 7.50	B8										
		TCR	SCR	RQD	FI						

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Remarks

Hand dug inspection pit excavated to 1.50m.
No groundwater encountered.

Casing Details

To (m)	Diam (mm)

Core Barrel

SK6L

Flush Type

Water

Termination Reason

Terminated at scheduled depth.

Last Updated

07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-0403S	NASAH North Apron & South Apron GI Kilwex	RC08
	Client: Dublin Airport Authority	
	Client's Rep AECOM	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Inspection Pit	8T Excavator	0.00	1.50	
Rotary Coring	Beretta T44	1.50	10.00	E
				N

Final Depth:	10.00 m	Start Date:	17/08/2022	Driller:	MW	Sheet 2 of 2
Elevation:	mOD	End Date:		Logger:	RW +MRG	Scale: 1:40
						DRAFT

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
7.50 - 7.94 7.50	SPT(C) N=50 (10,10/50 for 285mm) Hammer SN = 0208								7.60		Very stiff dark brownish grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse.		
8.40 - 8.70	C9	100									Very stiff brownish grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to medium.		
9.00 - 9.14 9.00	SPT(C) N=50 (25 for 75mm/50 for 60mm) Hammer SN = 0208												
10.00									10.00		End of Borehole at 10.00m		

TCR	SCR	RQD	FI

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)

Core Barrel

SK6L

Flush Type

Water

Remarks

Hand dug inspection pit excavated to 1.50m.
No groundwater encountered.

Termination Reason

Terminated at scheduled depth.

Last Updated

07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name: NASAH North Apron & South Apron GI Kilwex	Borehole ID
21-0403S	Client: Dublin Airport Authority	RC10
	Client's Rep AECOM	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Inspection Pit	8T Excavator	0.00	1.50	
Rotary Coring	Beretta T44	1.50	10.00	E
				N

Final Depth: 10.00 m	Start Date: 24/08/2022	Driller: GT	Sheet 1 of 2
			Scale: 1:40
Elevation: mOD	End Date: 24/08/2022	Logger: RW+CH	DRAFT

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
									0.30		BITMAC		
									0.35		MADE GROUND: Grey slightly sandy silty subangular to subrounded fine to coarse GRAVEL of limestone with rootlets. Sand is fine to coarse.		
											MADE GROUND: Soft dark grey slightly sandy slightly gravelly CLAY with low cobble content and rotten rootlets. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of various lithologies. Cobbles are subangular to angular of mixed lithologies.		
									1.10		MADE GROUND: Soft to firm greenish grey slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded of mixed lithologies. Cobbles are subangular to subrounded of mixed lithologies.		
1.50 - 2.00 1.50 - 1.95	B1 SPT(C) N=9 (2,2/2,3,2,2) Hammer SN = 0208	100							1.50		Loose greyish brown gravelly clayey fine to coarse SAND. Gravel is subangular fine to coarse.		
3.00 - 3.44 3.00	SPT(C) N=50 (10,12/50 for 290mm) Hammer SN = 0208								2.80		Very stiff dark brownish grey slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subrounded of limestone.		
3.70 - 4.00	C5	100											
4.50 - 5.00 4.50 - 4.66 4.50	B2 SPT(C) N=50 (25 for 80mm/50 for 75mm) Hammer SN = 0208	100											
6.00		100											
		TCR	SCR	RQD	FI								

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
1.50	200
10.00	150

Core Barrel

SK6L

Flush Type

Water

Remarks

Hand dug inspection pit excavated to 1.50m.
No groundwater encountered.

Termination Reason

Terminated at scheduled depth

Last Updated

07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-0403S	NASAH North Apron & South Apron GI Kilwex	RC10
	Client: Dublin Airport Authority	
	Client's Rep AECOM	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Inspection Pit	8T Excavator	0.00	1.50	
Rotary Coring	Beretta T44	1.50	10.00	E
				N

Final Depth:	Start Date:	Driller:	Sheet 2 of 2
10.00 m	24/08/2022	GT	Scale: 1:40
Elevation: mOD	**End Date:** 24/08/2022	**Logger:** RW+CH	DRAFT

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
7.50 - 7.95 7.50	SPT(C) N=53 (8,10/12,14,14,13) Hammer SN = 0208										Very stiff dark brownish grey slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subrounded of limestone.		
		100							8.10		Very stiff light greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to coarse.		
8.50 - 9.00	B3												
9.00 - 9.45 9.00	SPT(C) N=54 (10,14/15,13,14,12) Hammer SN = 0208												
.60 - 10.00	C4	100											
10.00									10.00		End of Borehole at 10.00m		
		TCR	SCR	RQD	FI								

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Remarks

Hand dug inspection pit excavated to 1.50m.
No groundwater encountered.

Casing Details

To (m)	Diam (mm)
1.50	200
10.00	150

Core Barrel

SK6L

Flush Type

Water

Termination Reason

Terminated at scheduled depth

Last Updated

07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-0403S	NASAH North Apron & South Apron GI Kilwex	RC11
	Client: Dublin Airport Authority	
	Client's Rep AECOM	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Inspection Pit	8T Tracked Excavator	0.00	1.50	E
Rotary Coring	Beretta T44	1.50	10.00	N

Final Depth:	10.00 m	Start Date:	22/08/2022	Driller:	MRG +GT	Sheet 1 of 2
Elevation:	mOD	End Date:	23/08/2022	Logger:	CH+RW	Scale: 1:40
						DRAFT

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Level mOD	Depth (m)	Legend	Description	Water	Backfill
							0.08		BITMAC CONCRETE with rebar		
							0.35		MADE GROUND: Dark greyish brown gravelly clayey medium to coarse SAND. Gravel is subangular to subrounded fine to coarse of various lithologies. Cobbles are subangular to subrounded of various lithologies.		
1.50 - 1.95	SPT(C) N=12 (7,5/4,3,3,2) Hammer SN = 0208						1.50		Medium dense brown slightly gravelly slightly clayey fine to coarse SAND. Gravel is subangular fine to coarse.		
2.40 - 2.90	B4	67									
3.00 - 3.45 3.00	SPT(C) N=16 (7,5/5,4,4,3) Hammer SN = 0208						2.90		Grey subrounded COBBLES of limestone with much gravel. Gravel is subrounded medium to coarse.		
		100					3.40		Very stiff dark greyish brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subrounded of limestone.		
4.50 - 4.90	B3										
4.50 - 4.94 4.50	SPT(C) N=50 (12,14/50 for 290mm) Hammer SN = 0208										
4.95 - 6.15	C2	100									
6.00 - 6.15 6.00	SPT(C) N=50 (25 for 75mm/50 for 75mm) Hammer SN = 0208										
		100									
		TCR	SCR	RQD	FI						

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Remarks

Hand dug inspection pit excavated to 1.50m.
No groundwater encountered.

Casing Details

To (m)	Diam (mm)
1.50	200
10.00	150

Core Barrel

SK6L

Flush Type

Water

Termination Reason

Terminated at scheduled depth.

Last Updated

07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-0403S	NASAH North Apron & South Apron GI Kilwex	RC11
	Client: Dublin Airport Authority	
	Client's Rep AECOM	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Inspection Pit	8T Tracked Excavator	0.00	1.50	E
Rotary Coring	Beretta T44	1.50	10.00	N

Final Depth:	10.00 m	Start Date:	22/08/2022	Driller:	MRG +GT	Sheet 2 of 2
Elevation:	mOD	End Date:	23/08/2022	Logger:	CH+RW	Scale: 1:40
						DRAFT

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Level mOD	Depth (m)	Legend	Description	Water	Backfill
7.50									Very stiff dark greyish brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subrounded of limestone.		
							8.00		Very stiff greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to coarse.		
		100									
8.70 - 9.00	B5										
9.00 - 9.44	SPT(C) N=50 (13,14/50 for 290mm) Hammer SN = 0208										
9.00											
20 - 9.60	C1	90									
10.00							10.00		End of Borehole at 10.00m		

TCR	SCR	RQD	FI

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
1.50	200
10.00	150

Core Barrel

SK6L

Flush Type

Water

Remarks

Hand dug inspection pit excavated to 1.50m.
No groundwater encountered.

Termination Reason

Terminated at scheduled depth.

Last Updated

07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name: NASAH North Apron & South Apron GI Kilwex	Borehole ID
21-0403S	Client: Dublin Airport Authority	RC13
	Client's Rep AECOM	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Inspection Pit	8T Excavator	0.00	1.50	
Rotary Coring	Beretta T44	1.50	10.00	E
				N

Final Depth: 10.00 m	Start Date: 18/08/2022	Driller: GT	Sheet 1 of 2 Scale: 1:40
Elevation: mOD	End Date: 22/08/2022	Logger: CH+RW	DRAFT

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Level mOD	Depth (m)	Legend	Description	Water	Backfill
									BITMAC		
							0.35		CONCRETE with 2 inch rebar		
							0.70		MADE GROUND: Dark greyish brown gravelly clayey medium to coarse SAND. Gravel is subangular to subrounded fine to coarse of various lithologies. Cobbles are subangular to subrounded of various lithologies.		
1.50 - 1.95	SPT(C) N=9 (2,2/2,3,2,2) Hammer SN = 0208						1.50		Medium dense greyish brown gravelly very clayey fine to coarse SAND. Gravel is subangular fine to coarse of various lithologies.		
2.00 - 2.50	C4	83									
3.00 - 3.45 3.00	SPT(C) N=54 (10,12/14,14,12,12,14) Hammer SN = 0208	77									
4.50 - 5.00 4.50 - 4.64 4.50	C3 SPT(C) N=50 (25 for 75mm/50 for 60mm) Hammer SN = 0208	100					4.50		Dense dark greyish brown very clayey fine to coarse SAND.		
							5.05		Stiff dark greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to coarse.		
							5.20		Grey subrounded COBBLES with much gravel. Gravel is subrounded fine to coarse.		
							5.50		Very stiff dark brownish grey slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subrounded fine to coarse. Cobbles are subangular of limestone.		
6.00		100									
		TCR	SCR	RQD	FI						

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Remarks

Hand dug inspection pit excavated to 1.50m.
No groundwater encountered.

Casing Details

To (m)	Diam (mm)
1.50	200
10.00	200

Core Barrel

SK6L

Flush Type

Water

Termination Reason

Terminated at scheduled depth

Last Updated

07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-0403S	NASAH North Apron & South Apron GI Kilwex	RC13
	Client: Dublin Airport Authority	
	Client's Rep AECOM	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Inspection Pit	8T Excavator	0.00	1.50	
Rotary Coring	Beretta T44	1.50	10.00	E
				N

Final Depth:	10.00 m	Start Date:	18/08/2022	Driller:	GT	Sheet 2 of 2
Elevation:	mOD	End Date:	22/08/2022	Logger:	CH+RW	Scale: 1:40
						DRAFT

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
7.50 - 7.95	SPT(C) N=53 (8,10/12,14,14,13) Hammer SN = 0208										Very stiff dark brownish grey slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subrounded fine to coarse. Cobbles are subangular of limestone.		
7.50													
7.70 - 8.20	C2	100											
									8.40		Very stiff light greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse.		
9.00 - 9.45	SPT(C) N=54 (10,14/15,13,14,12) Hammer SN = 0208												
9.00		100											
9.70 - 10.00	C1												
10.00									10.00		End of Borehole at 10.00m		
		TCR	SCR	RQD	FI								

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Remarks

Hand dug inspection pit excavated to 1.50m.
No groundwater encountered.

Casing Details

To (m)	Diam (mm)
1.50	200
10.00	200

Core Barrel

SK6L

Flush Type

Water

Termination Reason

Terminated at scheduled depth

Last Updated

07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-0403S	NASAH North Apron & South Apron GI Kilwex	RC19
	Client: Dublin Airport Authority	
	Client's Rep: AECOM	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Inpsection pit	8T Excavator	0.00	1.20	
Rotary Drilling	Beretta T44	1.20	1.50	E
Rotary Coring	Beretta T44	1.50	10.50	N

Final Depth: 10.50 m	Start Date: 26/07/2022	Driller: GT	Sheet 1 of 1
Elevation: mOD	End Date: 27/07/2022	Logger: MRG	Scale: 1:50
			DRAFT

Depth (m)	Sample / Tests	Field Records	TCR	SCR	RQD	FI	Level mOD	Depth (m)	Legend	Description	Water	Backfill
								0.20		TOPSOIL with rootlets.		
										MADE GROUND: Greyish brown sandy very gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular.		
								0.75		Firm to stiff dark brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of various lithologies.		
								1.20				
1.50 - 1.95	SPT(C) N=16 (3,3/3,4,4,5) Hammer SN = 0208		100					1.50		Firm brown sandy CLAY. Sand is fine to coarse.		
								(0.50)		Light grey slightly sandy clayey subangular fine to coarse GRAVEL of various lithologies with medium cobble content. Sand is fine to coarse. Cobbles are subangular.		
2.50 - 3.00	B1							2.00		Very stiff brown slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangukar fine to coarse of various lithologies. Cobbles are subangular of various lithologies.		
3.00												
3.00 - 3.45	SPT(C) N=40 (4,4/8,10,10,12) Hammer SN = 0208		100									
								(4.00)				
4.50												
4.50 - 5.00	B2											
4.50 - 4.95	SPT(C) N=48 (10,10/10,12,12,14) Hammer SN = 0208		100									
6.00								6.00		Brown slightly gravelly clayey fine to coarse SAND. Gravel is subangular fine of various lithologies.		
			100					(1.15)				
								7.15		Very stiff brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse of various lithologies predominantly limestone. Cobbles are subangular of limestone.		
								(0.35)				
7.50								7.50		Brown gravelly clayey fine to coarse SAND. Gravel is subrounded fine to medium.		
7.50 - 8.10	B3											
7.50 - 7.95	SPT(C) N=40 (7,8/8,10,10,12) Hammer SN = 0208		86					(1.00)				
								8.50		Very stiff brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse of various lithologies predominantly limestone. Cobbles are subrounded .		
								(0.50)				
9.00								9.00		Dense brown clayey fine to coarse SAND.		

Water Strikes			
Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details	
To (m)	Diam (mm)

Water Added	
From (m)	To (m)

Chiselling Details		
From (m)	To (m)	Time (hh:mm)

Remarks

Hand dug inspection pit excavated to 1.20m.
No groundwater encountered.

Core Barrel	Flush Type	Termination Reason	Last Updated
SK6L	Water	Terminated at scheduled depth.	07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-0403S	NASAH North Apron & South Apron GI Kilwex	RC19
	Client: Dublin Airport Authority	
	Client's Rep: AECOM	

Method	Plant Used	Top (m)	Base (m)
Inpsection pit	8T Excavator	0.00	1.20
Rotary Drilling	Beretta T44	1.20	1.50
Rotary Coring	Beretta T44	1.50	10.50

Coordinates: E N

Final Depth: 10.50 m | Start Date: 26/07/2022 | Driller: GT | Sheet 2 of 2 | Scale: 1:50

Elevation: mOD | End Date: 27/07/2022 | Logger: MRG | DRAFT

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Level mOD	Depth (m)	Legend	Description	Water	Backfill
9.00 - 9.15	SPT(C) N=50 (25 for 68mm/50 for 79mm) Hammer SN = 0208	100					(1.50)		Dense brown clayey fine to coarse SAND.		
10.50							10.50		End of Borehole at 10.50m		

Water Strikes			
Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details	
(m)	Diam (mm)

Water Added	
From (m)	To (m)

Chiselling Details		
From (m)	To (m)	Time (hh:mm)

Remarks

Hand dug inspection pit excavated to 1.20m.
No groundwater encountered.

Core Barrel	Flush Type	Termination Reason	Last Updated
SK6L	Water	Terminated at scheduled depth.	07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-0403S	NASAH North Apron & South Apron GI Kilwex	RC20
	Client: Dublin Airport Authority	
	Client's Rep AECOM	

Method	Plant Used	Top (m)	Base (m)
Inspection Pit	8T Excavator	0.00	1.20
Rotary Drilling	Beretta T44	1.20	1.50
Rotary Coring	Beretta T44	1.50	10.50

Coordinates: E N

Final Depth: 10.50 m | Start Date: 27/08/2022 | Driller: GT | Sheet 1 of 2 | Scale: 1:40

Elevation: mOD | End Date: 28/08/2022 | Logger: TH +MRG | DRAFT

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Level mOD	Depth (m)	Legend	Description	Water	Backfill
							0.15		TOPSOIL		
							0.60		MADE GROUND: Firm to stiff greyish brown slightly sandy gravelly CLAY with high cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of limestone. Cobbles are subangular to subrounded of limestone.		
							1.00		Firm brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of mixed lithologies.		
							1.20		Firm greyish brown slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravels are subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.		
1.50 - 1.95	SPT(C) N=35 (4,7/7,8,10,10) Hammer SN = 0208	87					1.50		Very stiff brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse.		
2.50 - 3.00	B1								Very stiff dark greyish brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subangular of limestone.		
3.00 - 3.45	SPT(C) N=48 (8,10/12,12,12,12) Hammer SN = 0208	100									
3.00											
4.50							4.80		Very stiff dark greyish brown slightly sandy gravelly CLAY. Sand is fine t coarse. Gravel is subangular fine to coarse.		
									4.80m to 5.00m: Dark grey angular fine to coarse gravel of limestone.		
5.50 - 6.00	B2	100									
6.00 - 6.45	SPT(C) N=48 (8,10/10,12,12,14) Hammer SN = 0208	100									
6.00							7.10		Very stiff dark brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse.		
		TCR	SCR	RQD	FI						

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Remarks

Hand dug inspection pit excavated to 1.20m.
No groundwater encountered.

Casing Details

To (m)	Diam (mm)
1.50	200

Core Barrel

SK6L

Flush Type

Water

Termination Reason

Terminated at scheduled depth.

Last Updated

07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-0403S	NASAH North Apron & South Apron GI Kilwex	RC20
	Client: Dublin Airport Authority	
	Client's Rep AECOM	

Method	Plant Used	Top (m)	Base (m)
Inspection Pit	8T Excavator	0.00	1.20
Rotary Drilling	Beretta T44	1.20	1.50
Rotary Coring	Beretta T44	1.50	10.50

Coordinates: E N

Final Depth: 10.50 m | Start Date: 27/08/2022 | Driller: GT

Elevation: mOD | End Date: 28/08/2022 | Logger: TH +MRG

Sheet 2 of 2 | Scale: 1:40 | DRAFT

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Level mOD	Depth (m)	Legend	Description	Water	Backfill
7.50 - 7.95 7.50	SPT(C) N=26 (7,7/8,8,0,10) Hammer SN = 0208	100					7.85		Very stiff dark brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse.		
9.00 - 9.50 9.00 - 9.45 9.00	B3 SPT(C) N=39 (6,6/9,9,11,10) Hammer SN = 0208	100					9.35		Dark greyish brown slightly clayey fine GRAVEL		
10.50							10.50		Dark greyish brown slightly clayey fine to coarse SAND. 10.35m to 10.50m: Subangular coarse gravel End of Borehole at 10.50m		

TCR	SCR	RQD	FI

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Remarks

Hand dug inspection pit excavated to 1.20m.
No groundwater encountered.

Casing Details

To (m)	Diam (mm)
1.50	200

Core Barrel

SK6L

Flush Type

Water

Termination Reason

Terminated at scheduled depth.

Last Updated

07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name: NASAH North Apron & South Apron GI Kilwex	Borehole ID
21-0403S	Client: Dublin Airport Authority	RC21
	Client's Rep AECOM	

Method	Plant Used	Top (m)	Base (m)
Inspection Pit	8T Excavator	0.00	1.20
Rotary Drilling	Beretta T44	1.20	1.50
Rotary Coring	Beretta T44	1.50	10.50

Coordinates: E N

Final Depth: 10.50 m | Start Date: 29/07/2022 | Driller: GT | Sheet 1 of 2 | Scale: 1:40

Elevation: mOD | End Date: 29/07/2022 | Logger: MRG +TH | DRAFT

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Level mOD	Depth (m)	Legend	Description	Water	Backfill
							0.15		TOPSOIL		
									MADE GROUND: Firm to stiff greyish brown slightly sandy gravelly CLAY with high cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to angular of limestone.		
							0.80		Firm brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded.		
							1.20		Stiff brown sandy silty CLAY. Sand is fine to coarse.		
1.50 - 1.95	SPT(C) N=30 (4,4/7,7,8,8) Hammer SN = 0208						1.50		Very stiff brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse.		
							1.90		Dark brown slightly sandy CLAY with occasional rootlets. Sand is fine to coarse.		
2.30 - 2.80	B1	100					2.25		Very stiff dark greyish brown slightly sandy slightly gravelly CLAY with widely spaced thin beds of subangular fine to coarse GRAVEL of limestone.		
3.00 - 3.00 3.00	SPT(C) N=50 (25 for 0mm/50 for 0mm) Hammer SN = 0208	100									
							4.25		Brown slightly sandy CLAY. Sand is fine to medium.		
4.50 - 5.00	B2						4.50		Very stiff dark greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse.		
4.50 - 4.95 4.50	SPT(C) N=48 (10,10/10,12,12,14) Hammer SN = 0208	93					4.90		Dark greyish brown sandy very clayey angular fine to coarse GRAVEL of limestone with low cobble content. Sand is fine to coarse. Cobbles are subangular of limestone.		
							5.85		Dark greyish brown sandy CLAY. Sand is fine to medium.		
6.00 - 6.45 6.00	SPT(C) N=48 (8,8/10,12,12,14) Hammer SN = 0208						6.00		Very stiff dark brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse.		
6.10 - 6.60	B3	100									
							7.20		Dark greyish brown clayey fine to coarse SAND.		
		TCR	SCR	RQD	FI						

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)

Core Barrel: SK6L

Flush Type: Water

Remarks

Hand dug inspection pit excavated to 1.20m.
No groundwater encountered.

Termination Reason: Terminated at scheduled depth.

Last Updated: 07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-0403S	NASAH North Apron & South Apron GI Kilwex	RC21
	Client: Dublin Airport Authority	
	Client's Rep AECOM	

Method	Plant Used	Top (m)	Base (m)
Inspection Pit	8T Excavator	0.00	1.20
Rotary Drilling	Beretta T44	1.20	1.50
Rotary Coring	Beretta T44	1.50	10.50

Coordinates: E N

Final Depth: 10.50 m | Start Date: 29/07/2022 | Driller: GT

Elevation: mOD | End Date: 29/07/2022 | Logger: MRG +TH

Sheet 2 of 2 | Scale: 1:40 | DRAFT

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
7.50 - 7.95 7.50	SPT(C) N=36 (4,4/8,8,10,10) Hammer SN = 0208	100							7.50		Dark greyish brown clayey fine to coarse SAND.		
											Dark grey fine to coarse SAND 7.50m to 7.70m: Subangular coarse gravel of limestone.		
									8.60		Dark grey clayey fine to medium SAND. 8.60m to 8.80m: Dark greyish brown clayey fine to medium sand.		
9.00 - 9.18 9.00	SPT(C) N=50 (25 for 79mm/50 for 98mm) Hammer SN = 0208	100									9.50m to 9.80m: Subangular coarse gravel of limestone.		
10.50									10.50		End of Borehole at 10.50m		

TCR	SCR	RQD	FI

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Remarks

Hand dug inspection pit excavated to 1.20m.
No groundwater encountered.

Casing Details

To (m)	Diam (mm)

Core Barrel

SK6L

Flush Type

Water

Termination Reason

Terminated at scheduled depth.

Last Updated

07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-0403S	NASAH North Apron & South Apron GI Kilwex	RC22
	Client: Dublin Airport Authority	
	Client's Rep AECOM	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Inspection pit	8T Tracked Excavator	0.00	1.50	E
Rotary Coring	Beretta T44	1.50	10.50	N

Final Depth:	10.50 m	Start Date:	27/07/2022	Driller:	GT+8T Excavator	Sheet 1 of 2
Elevation:	mOD	End Date:	02/08/2022	Logger:	CH	Scale: 1:40
						DRAFT

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
									0.15		TOPSOIL		
											MADE GROUND: Firm to stiff greyish brown sandy very gravelly CLAY with high cobble content. Sand is fine to coarse. Gravel is subangular to angular of limestone. Cobbles are subangular to angular of limestone.		
									1.10		Firm brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse.		
1.50 - 2.00 1.50 - 1.95	B1 SPT(C) N=38 (4,4/8,10,10,10)	100							1.50		Very stiff dark greyish brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subangular of limestone.		
3.00 - 3.44 3.00	SPT(S) N=50 (10,10/50 for 290mm)	100											
4.50 - 5.00 4.50	B2	100							4.50		Dark greyish brown sandy CLAY. Sand is fine to medium.		
									5.10		Dark greyish brown very clayey fine to coarse SAND.		
									5.60		Dark grey subangular fine to coarse GRAVEL of limestone with much dark greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse.		
6.00 - 6.45 6.00	SPT(C) N=50 (7,10/10,12,12,16)	100							6.00		Dark greyish brown slightly gravelly clayey fine to coarse SAND. Gravel is subrounded fine to coarse.		
		TCR	SCR	RQD	FI								

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Remarks

Hand dug inspection pit excavated to 1.50m.
No groundwater encountered.

Casing Details

To (m)	Diam (mm)

Core Barrel

SK6L

Flush Type

Water

Termination Reason

Terminated at scheduled depth

Last Updated

07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-0403S	NASAH North Apron & South Apron GI Kilwex	RC22
	Client: Dublin Airport Authority	
	Client's Rep AECOM	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Inspection pit	8T Tracked Excavator	0.00	1.50	E
Rotary Coring	Beretta T44	1.50	10.50	N

Final Depth:	10.50 m	Start Date:	27/07/2022	Driller:	GT+8T Excavator
Elevation:	mOD	End Date:	02/08/2022	Logger:	CH

Sheet 2 of 2
Scale: 1:40
DRAFT

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
7.50 - 7.90 7.50	B3										Dark greyish brown slightly gravelly clayey fine to coarse SAND. Gravel is subrounded fine to coarse. 7.30m to 7.50m: Gravel of limestone		
		100							7.90		Dark greyish brown slightly sandy fine GRAVEL. Sand is fine to coarse. 8.80m to 9.00: Subangular coarse gravel of limestone		
9.00 - 9.14 9.00	SPT(C) N=50 (25 for 60mm/50 for 75mm)												
		100							9.90		Dark grey subangular fine to corse GRAVEL with low cobble conetent. Cobbles are subrounded of limestone.		
10.50									10.50		End of Borehole at 10.50m		
		TCR	SCR	RQD	FI								

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Remarks

Hand dug inspection pit excavated to 1.50m.
No groundwater encountered.

Casing Details

To (m)	Diam (mm)

Core Barrel

SK6L

Flush Type

Water

Termination Reason

Terminated at scheduled depth

Last Updated

07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name: NASAH North Apron & South Apron GI Kilwex	Borehole ID
21-0403S	Client: Dublin Airport Authority	RC25
	Client's Rep AECOM	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth: 10.50 m	Start Date: 27/07/2022	Driller: GT	Sheet 1 of 2
Trial Pitting	8T Excavator	0.00	1.50					Scale: 1:40
Rotary Coring	Beretta T44	1.50	10.50	E	Elevation: mOD	End Date:	Logger: EM+CH	DRAFT
				N				

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Level mOD	Depth (m)	Legend	Description	Water	Backfill
							0.15		TOPSOIL		
									MADE GROUND: Firm to stiff greyish brown sandy very gravelly CLAY with high cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse.		
							1.00		Stiff dark grey slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.		
							1.40		Firm light brown slightly gravelly sandy CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded.		
1.50 - 2.10	B1						1.50		Firm greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium.		
1.50 - 1.95	SPT(C) N=50 (4,8/10,10,14,16) Hammer SN = 0208	87					2.10		Firm brown slightly sandy slightly gravelly CLAY with high cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse of various lithologies predominantly limestone. Cobbles are subrounded of limestone.		
3.00 - 3.15	SPT(C) N=50 (25 for 75mm/50 for 75mm) Hammer SN = 0208						3.00		Firm greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine of various lithologies predominantly limestone.		
3.00		100					3.55		Stiff brownish grey sandy very gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse of various lithologies predominantly limestone. Cobbles are subangular of limestone.		
4.50 - 5.00	B2						4.50		Soft greyish brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine of various lithologies predominantly limestone.		
4.50		100					5.00		Very stiff brown slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse of various lithologies predominantly limestone. Cobbles are subangular of limestone.		
6.00							6.00		Soft greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to medium of various lithologies predominantly limestone.		
		100					6.25		Very stiff brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse of various lithologies predominantly limestone.		
		TCR	SCR	RQD	FI						

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Remarks

Hand dug inspection pit excavated to 1.5m.
No groundwater encountered.

Casing Details

To (m)	Diam (mm)

Core Barrel

SK6L

Flush Type

Water

Termination Reason

Services cleared. Rotary Drilling to follow.

Last Updated

07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name: NASAH North Apron & South Apron GI Kilwex	Borehole ID
21-0403S	Client: Dublin Airport Authority	RC25
	Client's Rep AECOM	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Trial Pitting	8T Excavator	0.00	1.50	
Rotary Coring	Beretta T44	1.50	10.50	E
				N

Final Depth: 10.50 m	Start Date: 27/07/2022	Driller: GT	Sheet 2 of 2 Scale: 1:40
Elevation: mOD	End Date:	Logger: EM+CH	DRAFT

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
7.50 - 8.00	B3								7.50		Very stiff brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse of various lithologies predominantly limestone.		
7.50 - 7.93	SPT(C) N=50 (10,10/50 for 280mm) Hammer SN = 0208	100									Brown very clayey fine to medium SAND.		
7.50									8.50		Brown sandy very clayey subangular fine to coarse GRAVEL of various lithologies with medium cobble content. Sand is fine to coarse. Cobbles are subangular.		
9.00 - 9.44	SPT(C) N=50 (10,10/50 for 290mm) Hammer SN = 0208								9.00		Soft brown very sandy CLAY. Sand is fine to medium.		
9.00		100							9.30		Brown slightly clayey gravelly fine to coarse SAND. Gravel is angular fine to medium of various lithologies.		
									10.10		Grey slightly clayey subrounded to subangular COBBLES of various lithologies.		
10.50									10.50		End of Borehole at 10.50m		
		TCR	SCR	RQD	FI								

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Remarks

Hand dug inspection pit excavated to 1.5m.
No groundwater encountered.

Casing Details

To (m)	Diam (mm)

Core Barrel

SK6L

Flush Type

Water

Termination Reason

Services cleared. Rotary Drilling to follow.

Last Updated

07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-0403S	NASAH North Apron & South Apron GI Kilwex	RC27
	Client: Dublin Airport Authority	
	Client's Rep AECOM	

Method	Plant Used	Top (m)	Base (m)
Inspection Pit	8T Excavator	0.00	1.20
Rotary Drilling	Beretta T44	1.20	1.50
Rotary Coring	Beretta T44	1.50	10.00

Coordinates: 317126.20 E, 242415.80 N

Final Depth: 10.50 m | Start Date: 03/08/2022 | Driller: GT | Sheet 1 of 2 | Scale: 1:40

Elevation: mOD | End Date: 04/08/2022 | Logger: MRG | DRAFT

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
									0.20		TOPSOIL		
0.50	B1								0.80		MADE GROUND: Firm light brown sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of mixed lithologies.		
1.00	B2								1.20		MADE GROUND: Firm to stiff brown slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of mixed lithologies.		
1.50 - 1.95	SPT(C) N=28 (4,4/5,6,8,9)						Dry		1.50		Stiff greyish brown sandy gravelly CLAY (Driller's description)		
2.50 - 3.00	B3	100							1.85		Greyish brown slightly gravelly very clayey fine to coarse SAND. Gravel is subangular to angular fine to medium of various lithologies.		
3.00 - 3.12	SPT(C) N=50 (25 for 47mm/50 for 69mm)						Dry				Very stiff slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse of various lithologies. Cobbles are subangular of limestone.		
3.00		100											
4.50 - 5.00	B4						Dry						
4.50 - 4.95	SPT(C) N=50 (10,12/10,12,14,14)												
4.50		100											
6.00 - 6.00	SPT(C) N=50 (25 for 0mm/50 for 0mm)						Dry		6.00		Greyish brown slightly gravelly very clayey fine to coarse SAND. Gravel is subangular fine of various lithologies.		
6.00		100							6.35		Very stiff greyish brown slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse of various lithologies. Cobbles are subangular of limestone and sandstone. *6.35-6.55m: Bed of coarse gravel and cobbles of limestone*		
7.00 - 7.50	B5												
		TCR	SCR	RQD	FI								

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Remarks

Hand dug inspection pit excavated to 1.20m.
No groundwater encountered.

Casing Details

To (m)	Diam (mm)

Core Barrel: SK6L

Flush Type: Water

Termination Reason: Terminated at scheduled depth.

Last Updated: 07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-0403S	NASAH North Apron & South Apron GI Kilwex	RC27
	Client: Dublin Airport Authority	
	Client's Rep AECOM	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Inspection Pit	8T Excavator	0.00	1.20	
Rotary Drilling	Beretta T44	1.20	1.50	317126.20 E
Rotary Coring	Beretta T44	1.50	10.00	242415.80 N

Final Depth:	10.50 m	Start Date: 03/08/2022	Driller: GT	Sheet 2 of 2
Elevation:	mOD	End Date: 04/08/2022	Logger: MRG	Scale: 1:40
				DRAFT

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
7.50 - 7.95 7.50	SPT(C) N=48 (8,10/10,12,12,14)	100					Dry		7.50		Very stiff greyish brown slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse of various lithologies. Cobbles are subangular of limestone and sandstone.		
											Greyish brown very clayey fine to coarse SAND.		
									8.40		Grey subangular coarse GRAVEL with low cobble content. Cobbles are subangular of limestone.		
									8.75		Very stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse of various lithologies.		
9.00 - 9.17 9.00	SPT(C) N=50 (25 for 75mm/50 for 98mm)	100					Dry		9.00		Greyish brown slightly gravelly very clayey fine to coarse SAND. Gravel is subangular fine of various lithologies.		
									10.30		Grey slightly clayey subangular coarse GRAVEL of various lithologies with low cobble content. Cobbles are subrounded limestone.		
10.50									10.50		End of Borehole at 10.50m		

TCR	SCR	RQD	FI

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Remarks

Hand dug inspection pit excavated to 1.20m.
No groundwater encountered.

Casing Details

To (m)	Diam (mm)

Core Barrel

SK6L

Flush Type

Water

Termination Reason

Terminated at scheduled depth.

Last Updated

07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name: NASAH North Apron & South Apron GI Kilwex	Borehole ID
21-0403S	Client: Dublin Airport Authority	RC28
	Client's Rep AECOM	

Method	Plant Used	Top (m)	Base (m)
Inspection pit	8T Excavator	0.00	1.20
Rotary Drilling	Beretta T44	1.20	1.50
Rotary Coring	Beretta T44	1.50	10.50

Coordinates: 317176.80 E, 242412.30 N

Final Depth: 10.50 m | Start Date: 05/08/2022 | Driller: GT | Sheet 1 of 2 | Scale: 1:40

Elevation: mOD | End Date: 05/08/2022 | Logger: MRG | DRAFT

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Level mOD	Depth (m)	Legend	Description	Water	Backfill
							1.20		Brown gravelly CLAY (Driller's description)		
1.50 - 1.95	SPT(C) N=39 (4,7/8,9,10,12)						1.50		Brown gravelly very clayey fine to coarse SAND with low cobble content. Gravel is subangular fine to coarse of various lithologies. Cobbles are subrounded.		
2.10 - 2.60	B1	100					2.10		Very stiff sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse of various lithologies. Cobbles are subangular of limestone.		
3.00 - 3.45	SPT(C) N=50 (10,10/12,14,12,12)										
3.00		100									
4.00 - 4.50	B2										
4.50 - 4.63	SPT(C) N=50 (25 for 58mm/50 for 75mm)						4.50		Greyish brown gravelly clayey fine to coarse SAND. Gravel is angular fine of various lithologies.		
4.50							4.85		Very stiff brown sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse of various lithologies . Cobbles are subangular of various lithologies.		
		100									
6.00 - 6.22	SPT(C) N=50 (10,15/50 for 69mm)						6.00		Greyish brown gravelly very clayey fine to coarse SAND. Gravel is angular fine of various lithologies.		
6.00							6.25		Very stiff greyish brown slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subanguar to angular fine to coarse of various lithologies. Cobbles are subangular of limestone and sandstone.		
		100							6.25-6.45m: Bed of coarse gravel and cobbles of limestone.		
7.00 - 7.50	B3										
		TCR	SCR	RQD	FI						

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
1.50	200

Core Barrel: SK6L

Flush Type: Water

Remarks

Hand dug inspection pit excavated to 1.20m.
No groundwater encountered.

Termination Reason: Terminated at scheduled depth

Last Updated: 07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-0403S	NASAH North Apron & South Apron GI Kilwex	RC28
	Client: Dublin Airport Authority	
	Client's Rep AECOM	

Method	Plant Used	Top (m)	Base (m)
Inspection pit	8T Excavator	0.00	1.20
Rotary Drilling	Beretta T44	1.20	1.50
Rotary Coring	Beretta T44	1.50	10.50

Coordinates: 317176.80 E, 242412.30 N

Final Depth: 10.50 m | Start Date: 05/08/2022 | Driller: GT | Elevation: mOD | End Date: 05/08/2022 | Logger: MRG

Sheet 2 of 2 | Scale: 1:40 | DRAFT

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Level mOD	Depth (m)	Legend	Description	Water	Backfill
7.50 - 7.95 7.50	SPT(C) N=46 (8,10/10,10,12,14)	100					7.50		Very stiff greyish brown slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subanguar to angular fine to coarse of various lithologies. Cobbles are subangular of limestone and sandstone. Greyish brown gravelly very clayey fine to coarse SAND. Gravel is subangular fine of various lithologies.		
9.00 - 9.08 9.00	SPT(C) N=50 (25 for 5mm/50 for 75mm)	100									
10.50							10.50		End of Borehole at 10.50m		

Water Strikes			
Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Remarks
Hand dug inspection pit excavated to 1.20m.
No groundwater encountered.

Casing Details	
To (m)	Diam (mm)
1.50	200

Core Barrel: SK6L

Flush Type: Water

Termination Reason: Terminated at scheduled depth

Last Updated: 07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name: NASAH North Apron & South Apron GI Kilwex	Borehole ID
21-0403S	Client: Dublin Airport Authority	RC29
	Client's Rep AECOM	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth: 10.00 m	Start Date: 04/08/2022	Driller: GT	Sheet 1 of 2
Inspection Pit	8T Excavator	0.00	1.60					Scale: 1:40
Rotary Coring	T44 Beretta	1.60	10.00	317228.60 E	Elevation: mOD	End Date: 08/08/2022	Logger: CM +MRG	DRAFT
				242413.10 N				

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
									0.25		TOPSOIL		
0.50	B1										Firm light brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.		
1.20	B2								0.85		Firm to stiff dark brown slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.		
1.50 - 1.95	SPT(C) N=54 (8,10/12,12,14,16) Hammer SN = 0208					1.50			1.50		Very stiff brown slightly gravelly slightly sandy CLAY with frequent rootlets. Sand is fine to coarse. Gravel is angular fine to coarse.		
1.90 - 2.30	B3	100											
									2.50		Dense greyish brown slightly sandy slightly clayey subangular fine to coarse GRAVEL with high cobble content. Sand is fine to coarse.		
3.00 - 3.45	SPT(C) N=48 (7,8/10,12,12,14) Hammer SN = 0208					3.00			3.00		Firm greyish brown gravelly very sandy CLAY. Sand is fine to coarse. Gravel is subangular fine.		
3.00		100											
									3.80		Very stiff greyish brown gravelly slightly sandy CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse.		
4.50 - 4.82	SPT(C) N=50 (25 for 75mm/50 for 250mm) Hammer SN = 0208					4.50			4.50		Very stiff greyish brown gravelly very sandy CLAY. Sand is fine to coarse. Gravel is subangular fine to medium.		
4.50													
4.95 - 5.35	B4	100											
											5.70-6.00m: Bed of sandy clayey subangular fine to coarse gravel with low cobble content. Sand is fine to coarse.		
6.00 - 6.30	SPT(C) N=50 (25 for 75mm/50 for 225mm) Hammer SN = 0208					6.00							
6.00		100											
		TCR	SCR	RQD	FI								

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Remarks

Hand dug inspection pit excavated to 1.60m.
No groundwater encountered.

Casing Details

To (m)	Diam (mm)
1.50	200
10.00	150

Core Barrel

SK6L

Flush Type

Water

Termination Reason

Last Updated

07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-0403S	NASAH North Apron & South Apron GI Kilwex	RC29
	Client: Dublin Airport Authority	
	Client's Rep AECOM	

Method	Plant Used	Top (m)	Base (m)
Inspection Pit	8T Excavator	0.00	1.60
Rotary Coring	T44 Beretta	1.60	10.00

Coordinates: 317228.60 E, 242413.10 N

Final Depth: 10.00 m | Start Date: 04/08/2022 | Driller: GT | Sheet 2 of 2 | Scale: 1:40

Elevation: mOD | End Date: 08/08/2022 | Logger: CM +MRG | DRAFT

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
7.50 - 7.94 7.50	SPT(C) N=50 (4,10/50 for 290mm) Hammer SN = 0208					7.50					Very stiff greyish brown gravelly very sandy CLAY. Sand is fine to coarse. Gravel is subangular fine to medium.		
8.00 - 8.40	B5	100							8.40		Very dense greyish brown sandy clayey subangular fine to coarse GRAVEL with low cobble content. Sand is fine to coarse.		
9.00 - 9.32 9.00	SPT(C) N=50 (25 for 75mm/50 for 250mm) Hammer SN = 0208					9.00			9.00		Very stiff greyish brown gravelly very sandy CLAY. Sand is fine to coarse. Gravel is subangular fine.		
		100							9.40		Very stiff greyish brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse.		
10.00									10.00		End of Borehole at 10.00m		

TCR	SCR	RQD	FI

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Remarks

Hand dug inspection pit excavated to 1.60m.
No groundwater encountered.

Casing Details

To (m)	Diam (mm)
1.50	200
10.00	150

Core Barrel: SK6L

Flush Type: Water

Termination Reason

Last Updated: 07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name: NASAH North Apron & South Apron GI Kilwex	Borehole ID
21-0403S	Client: Dublin Airport Authority	RC30
	Client's Rep AECOM	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Inspection Pit	8T Excavator	0.00	1.50	317157.50 E
Rotary Coring	T44 Beretta	1.50	10.00	242372.10 N

Final Depth:	10.00 m	Start Date:	04/08/2022	Driller:	GT	Sheet 1 of 2
Elevation:	mOD	End Date:	09/08/2022	Logger:	MRG +DM +CM	Scale: 1:40
						DRAFT

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description
									0.15		TOPSOIL
											MADE GROUND: Firm light brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.
									0.80		Firm to stiff dark brown slightly sandy gravelly CLAY with medium cobble content. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.
1.50 - 1.95	SPT(C) N=50 (4,8/10,10,14,16)					1.50			1.50		Very stiff greyish brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to medium.
2.00 - 2.50	B1	100							2.10		Very stiff greyish brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse.
3.00 - 3.19 3.00	SPT(C) N=50 (25 for 50mm/50 for 143mm)	100				3.00			3.00		Very stiff greyish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular fine.
									4.15		Very dense greyish brown slightly sandy slightly clayey subangular fine to coarse GRAVEL. Sand is fine to coarse.
4.50 - 4.72 4.50	SPT(C) N=50 (10,15/50 for 69mm)					4.50			4.50		Very stiff greyish brown gravelly very sandy CLAY. Sand is fine to coarse. Gravel is subangular fine to medium.
5.00 - 5.50	B2	100									
6.00 - 6.20 6.00	SPT(C) N=50 (25 for 75mm/50 for 125mm)	100				6.00					
									6.75		6.70-6.95 Bed of subangular fine to coarse Gravel of various lithologies.
											Very dense greyish brown slightly sandy slightly clayey subangular fine to coarse GRAVEL. Sand is fine to coarse.
		TCR	SCR	RQD	FI						

Water: Backfill

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Remarks

Hand dug inspection pit excavated to 1.50m.
No groundwater encountered.

Casing Details

To (m)	Diam (mm)
1.50	200
10.00	150

Core Barrel

SK6L

Flush Type

Water

Termination Reason

Terminated at scheduled depth

Last Updated

07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-0403S	NASAH North Apron & South Apron GI Kilwex	RC30
	Client: Dublin Airport Authority	
	Client's Rep AECOM	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Inspection Pit	8T Excavator	0.00	1.50	
Rotary Coring	T44 Beretta	1.50	10.00	317157.50 E
				242372.10 N

Final Depth:	10.00 m	Start Date:	04/08/2022	Driller:	GT	Sheet 2 of 2
						Scale: 1:40
Elevation:	mOD	End Date:	09/08/2022	Logger:	MRG +DM +CM	DRAFT

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
7.50 - 7.94 7.50	SPT(C) N=50 (10,10/50 for 285mm)	100				7.50			7.50		Very dense greyish brown slightly sandy slightly clayey subangular fine to coarse GRAVEL. Sand is fine to coarse. Very dense greyish brown very clayey slightly gravelly fine to coarse SAND. Gravel is subangular fine.		
									8.65		Very dense greyish brown slightly sandy slightly clayey subangular fine to coarse GRAVEL. Sand is fine to coarse.		
9.00 - 9.38 9.00	SPT(C) N=50 (10,10/50 for 225mm)	100				9.00			9.00		Very dense greyish brown gravelly very clayey fine to coarse SAND with low cobble content. Gravel is subangular fine.		
10.00									10.00		End of Borehole at 10.00m		

Water Strikes			
Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Remarks

Hand dug inspection pit excavated to 1.50m.
No groundwater encountered.

Casing Details	
To (m)	Diam (mm)
1.50	200
10.00	150

Core Barrel: SK6L

Flush Type: Water

Termination Reason: Terminated at scheduled depth

Last Updated: 07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name: NASAH North Apron & South Apron GI Kilwex	Borehole ID
21-0403S	Client: Dublin Airport Authority	RC31
	Client's Rep AECOM	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Inspection Pit		0.00	1.50	
Rotary Coring	Beretta T44	1.50	10.00	E
				N

Final Depth: 10.00 m	Start Date: 16/08/2022	Driller: GT	Sheet 1 of 2
Elevation: mOD	End Date: 16/08/2022	Logger: RW +MRG	Scale: 1:40
			DRAFT

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
									0.20		CONCRETE with rebar.		
0.50	B1								0.60		MADE GROUND: Greyish brown slightly sandy gravelly CLAY with medium cobble content and fragments of red brick, timber and plastic. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of various lithologies.		
1.00	B2								1.20		MADE GROUND: Firm greyish brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of mixed lithologies.		
1.40	B3										Soft greenish grey slightly sandy silty CLAY with low cobble content. Sand is fine to medium.		
1.50 - 1.95	SPT(C) N=14 (2,2/3,3,4,4)	100				1.50	Dry		1.50		Firm dark brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to medium.		
									2.50		Very stiff dark brownish grey slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobles are subrounded of limestone.		
3.00 - 3.45	SPT(C) N=44 (7,8/10,12,12,10)					1.50	Dry		3.00		Dense dark brown slightly gravelly silty fine to coarse SAND. Gravel is subangular fine to medium.		
3.00									3.45		Very stiff dark brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subangular of limestone.		
3.80 - 4.30	B4	100											
4.50 - 5.00	B5								4.50		Brownish grey slightly gravelly silty fine to coarse SAND. Gravel is subangular fine to medium.		
4.50		100											
6.00									6.00		Very stiff dark brownish grey slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subrounded fine to coarse. Cobbles are subrounded of fine to coarse.		
7.05 - 7.50	C7	100											
		TCR	SCR	RQD	FI								

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Remarks

Hand dug inspection pit excavated to 1.20m
No groundwater encountered.

Casing Details

To (m)	Diam (mm)

Core Barrel

SK6L

Flush Type

Water

Termination Reason

Terminated at scheduled depth.

Last Updated

07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-0403S	NASAH North Apron & South Apron GI Kilwex	RC31
	Client: Dublin Airport Authority	
	Client's Rep AECOM	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Inspection Pit		0.00	1.50	
Rotary Coring	Beretta T44	1.50	10.00	E
				N

Final Depth:	10.00 m	Start Date:	16/08/2022	Driller:	GT	Sheet 2 of 2
						Scale: 1:40
Elevation:	mOD	End Date:	16/08/2022	Logger:	RW +MRG	DRAFT

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
7.50 - 8.00	B6								7.50		Very stiff dark brownish grey slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subrounded fine to coarse. Cobbles are subrounded of fine to coarse.		
7.50		100									Brownish grey slightly gravelly silty fine to coarse SAND. Gravel is subangular fine to medium.		
									8.50		Very stiff dark brownish grey slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subrounded fine to coarse.		
9.00													
50 - 10.00	C8	100											
10.00									10.00		End of Borehole at 10.00m		
		TCR	SCR	RQD	FI								

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Remarks

Hand dug inspection pit excavated to 1.20m
No groundwater encountered.

Casing Details		Core Barrel
To (m)	Diam (mm)	SK6L

Flush Type	Termination Reason	Last Updated
Water	Terminated at scheduled depth.	07/11/2022

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CAUSEWAY GEOTECH

Project No. 21-0403S	**Project Name:** NASAH North Apron & South Apron GI Kilwex		**Trial Pit ID** TP05
Coordinates E N	**Client:** Dublin Airport Authority		
Method: Trial Pitting	**Client's Representative:** AECOM		Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** mOD	**Date:** 22/08/2022	**Logger:** MRG	DRAFT

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						BITMAC	
0.30	ES1			0.30			
0.30		PID = 4.50ppm				MADE GROUND: Greyish brown and blackish grey slightly silty sandy subangular to angular fine to coarse GRAVEL of mixed lithologies. Sand is fine to coarse.	
0.50	ES2			0.45			
0.50		PID = 0.90ppm Heavy flow at 0.55m		0.55		MADE GROUND: Dark grey slightly sandy subangular to subrounded fine to coarse GRAVEL of limestone. Sand is fine to coarse.	▼
0.70	ES3					MADE GROUND: TERRAM	
0.70		PID = 15.40ppm		0.80		MADE GROUND: Soft to firm greenish brown slightly sandy slightly gravelly slightly silty CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded.	
1.00	ES4					Firm greyish brown slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.	
1.00		PID = 0.20ppm					
2.00	ES5						
2.00		PID = 0.00ppm					
				2.60		Stiff dark grey slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.	
2.90	ES6			2.90			
2.90		PID = 0.00ppm				End of trial pit at 2.90m	

Water Strikes			
Struck at (m)	Remarks	**Depth:** 2.90	**Remarks:**
0.55	Heavy flow at 0.55m	**Width:** 1.20	
		Length: 3.80	

Stability:	**Termination Reason**	**Last Updated**
Stable	Terminated on refusal.	07/11/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Trial Pit ID
21-0403S	NASAH North Apron & South Apron GI Kilwex	TP06
Coordinates	**Client:**	
317100.00 E 243065.00 N	Dublin Airport Authority	
Method: Trial Pitting	**Client's Representative:** AECOM	Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** 62.69 mOD	**Date:** 09/08/2022 **Logger:** MRG	DRAFT

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			62.59	0.10		TARMAC	
0.30	B1					MADE GROUND: Greyish brown silty sandy subangular fine to coarse GRAVEL. Sand is fine to coarse.	
0.30	ES2						
			62.24	0.45		MADE GROUND: TERRAM	
			62.19	0.50		MADE GROUND: Firm greyish brown slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subangular.	
1.00	B3						
1.00	ES4						
			61.24	1.45		Stiff dark grey slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subrounded fine to coarse. Cobbles are subrounded of limestone.	
1.50	ES6						
1.60	B5						
			60.84	1.85		End of trial pit at 1.85m	

Water Strikes	
Struck at (m)	Remarks

Depth: 1.85
Width: 1.20
Length: 2.80

Remarks:
4" PVC water main encountered and damaged at 0.60m. Repaired in 1 hour.
No groundwater encountered

Stability:	Termination Reason	Last Updated
Stable	Terminated on refusal.	07/11/2022

AGS

CAUSEWAY GEOTECH

Project No. 21-0403S	**Project Name:** NASAH North Apron & South Apron GI Kilwex		**Trial Pit ID** TP07
Coordinates 317125.00 E 243023.00 N	**Client:** Dublin Airport Authority		
Method: Trial Pitting	**Client's Representative:** AECOM		Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** 62.65 mOD	**Date:** 08/08/2022	**Logger:** MRG — DRAFT

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						CONCRETE	
			62.45	0.20			
0.30	ES1					MADE GROUND: Greyish brown slightly sandy clayey subangular to subrounded fine to coarse GRAVEL of mixed lithologies with fragments of concrete and red brick. Sand is fine to coarse. Cobbles are subangular to subrounded of mixed lithologies.	
			62.25	0.40			
0.50	ES					MADE GROUND: Firm greyish brown slightly sandy gravelly CLAY with medium cobble content and fragments of plastic pipes, red brick and concrete.	
0.70	ES						
0.70	ES3						
0.80	B2						
						1.00m: 4 inch sewer pipe encountered at 1.0m	
1.50	ES						
1.50	ES4						
		Hard flow at 1.80m Sewage smell	60.85	1.80		Firm greyish brown slightly sandy slightly gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.	
2.00	B5						
2.00	ES6						
			60.45	2.20		Stiff dark grey slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.	
2.50	ES						
2.50	ES7						
			60.05	2.60		End of trial pit at 2.60m	

Water Strikes	
Struck at (m)	Remarks
1.80	Hard flow at 1.80m Sewage smell

Depth: 2.60
Width: 1.13
Length: 3.80

Remarks:
Trench cut at an angle to avoid service at 1.00m.
Services at the front and back of the trench could not extend pit.

Stability: Stable

Termination Reason: Terminated on refusal.

Last Updated: 07/11/2022

AGS

CAUSEWAY GEOTECH

Project No. 21-0403S	**Project Name:** NASAH North Apron & South Apron GI Kilwex		**Trial Pit ID** TP08
Coordinates 317183.00 E 243038.00 N	**Client:** Dublin Airport Authority		
Method: Stable	**Client's Representative:** AECOM		Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** 63.10 mOD	**Date:** 15/08/2022	**Logger:** MRG	DRAFT

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			63.08	0.02		MADE GROUND: Slightly sandy very gravelly TOPSOIL with fragments of plastic. Sand is fine to coarse. Gravel is subangular to subrounded of mixed lithologies.	
0.30	ES					MADE GROUND: Dark grey slightly sandy slightly clayey subangular to angular fine to coarse GRAVEL of mixed lithologies with 5to 7% waste including building materials. Sand is fine to coarse.	
0.30	ES1						
0.50	B6						
0.50		PID = 2.80ppm					
			62.40	0.70		Firm greenish brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded.	
0.90	B7						
0.90	ES						
0.90	ES2						
1.00		PID = 1.40ppm					
			61.90	1.20		Firm light brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of mixed lithologies.	
1.50	B8						
1.50	ES						
1.50	ES3						
1.50		PID = 1.00ppm Moderate flow at 1.70m	61.40	1.70		Light brownish grey slightly sandy clayey subangular to subrounded fine to medium GRAVEL of limestone. Sand is fine to coarse.	▼
1.90	B9						
1.90	ES4						
1.90		PID = 0.00ppm					
			60.70	2.40		Stiff dark grey slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.	
2.40	B10						
2.50	ES5						
2.50		PID = 0.00ppm	60.50	2.60		End of trial pit at 2.60m	

Water Strikes	
Struck at (m)	Remarks
1.70	Moderate flow at 1.70m

Depth: 2.60
Width: 1.20
Length: 3.70

Remarks:

Stability: Stable

Termination Reason: Terminated on refusal.

Last Updated: 07/11/2022

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CAUSEWAY GEOTECH

Project No. 21-0403S	**Project Name:** NASAH North Apron & South Apron GI Kilwex		**Trial Pit ID** TP09
Coordinates 317105.00 E 242886.00 N	**Client:** Dublin Airport Authority		
Method: Trial Pitting	**Client's Representative:** AECOM		Sheet 1 of 1 Scale: 1:25
Plant: Tracked Excavator	**Elevation** 61.80 mOD	**Date:** 09/09/2022	**Logger:** BS DRAFT

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			61.70	0.10		CONCRETE	
						MADE GROUND: Grey angular to subangular fine to coarse GRAVEL.	
			61.35	0.45			
0.50	B3					MADE GROUND: Brown sandy clayey angular to subangular fine to coarse GRAVEL with low cobble content. Sand is fine to coarse. Gravel is angular to subangular fine to coarse.	
0.50	ES1						
0.50		PID = 0.00ppm					
		Fast flow at 1.30m					▼
1.50	B4		60.30	1.50		End of trial pit at 1.50m	
1.50	ES2						
1.50		PID = 0.00ppm					

Water Strikes			Remarks:
Struck at (m)	Remarks	**Depth:** 1.50	
1.30	Fast flow at 1.30m	**Width:** 1.00	
		Length: 2.50	

Stability:	Termination Reason	Last Updated
Stable	Terminated due to water ingress.	07/11/2022

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CAUSEWAY GEOTECH

Project No. 21-0403S	**Project Name:** NASAH North Apron & South Apron GI Kilwex		**Trial Pit ID** TP10
Coordinates E N	**Client:** Dublin Airport Authority		
Method: Trial Pitting	**Client's Representative:** AECOM		Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** mOD	**Date:** 13/09/2022	**Logger:** MRG	DRAFT

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						CONCRETE	
				0.20			
0.25	B5					MADE GROUND: Grey slightly silty sandy subangular to angular fine to coarse GRAVEL of limestone. Sand is fine to coarse.	
0.25	ES1			0.35			
0.25		PID = 8.20ppm				Reworked MADE GROUND: Soft to firm dark greenish greyish brown and greyish brown slightly silty slightly sandy gravelly CLAY with medium cobble content, and fragments of plastic and steel. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mixed lithologies.	
0.70	B6						
0.70	ES2						
0.70		PID = 16.40ppm					
				1.40			
1.50	ES3					Firm greyish brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded.	
1.50		PID = 0.20ppm					
1.60	B7			1.70		Stiff dark grey slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse.	
2.00	ES4			2.00		End of trial pit at 2.00m	
2.00		PID = 0.00ppm					
2.30	B8						

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes			
Struck at (m)	Remarks	**Depth:** 2.00	**Remarks:** No groundwater encountered.
		Width: 1.10	
		Length: 2.70	
		Stability: Stable	**Termination Reason** Terminated on refusal.

Last Updated 07/11/2022

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CAUSEWAY GEOTECH

Project No. 21-0403S	**Project Name:** NASAH North Apron & South Apron GI Kilwex		**Trial Pit ID** TP12
Coordinates E N	**Client:** Dublin Airport Authority		
Method: Trial Pitting	**Client's Representative:** AECOM		Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** mOD	**Date:** 16/08/2022	**Logger:** MRG	DRAFT

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
				0.10		TOPSOIL	
						MADE GROUND: Firm greyish brown sandy very gravelly CLAY with high cobble content and fragments of red brick, plastic, wires and timber. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subangular of various lithologies.	
0.50	B1						
0.50	ES2						
0.50		PID = 9.30ppm					
				0.90		MADE GROUND: Firm greyish brown slightly sandy slightly gravelly CLAY with medium cobble content and fragments of red brick and plastic. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subangular of various lithologies.	
1.00	ES4						
1.00		PID = 12.50ppm					
1.10	B3			1.20		Firm greyish brown mottled orange slightly sandy slightly gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subrounded of limestone.	
1.50	ES6						
1.50		PID = 0.20ppm					
2.00	B5						
				2.20		Stiff grey slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subrounded fine to coarse. Cobbles are subangular of limestone.	
2.40	ES8						
2.40		PID = 0.00ppm		2.45		End of trial pit at 2.45m	
2.45	B7						

Water Strikes	
Struck at (m)	Remarks

Depth: 2.45
Width: 0.90
Length: 4.05

Remarks:
No groundwater encountered.

Stability:
Stable

Termination Reason
Terminated on refusal.

Last Updated
07/11/2022

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CAUSEWAY GEOTECH

Method: Trial Pitting	**Project No.** 21-0403S	**Project Name:** NASAH North Apron & South Apron GI Kilwex	**Trial Pit ID** TP13
Plant: 8T Tracked Excavator	**Coordinates** 317226.00 E 242969.00 N	**Client:** Dublin Airport Authority	Sheet 1 of 1 Scale: 1:25
	Elevation 62.07 mOD	**Client's Representative:** AECOM	DRAFT
		Date: 12/09/2022 **Logger:** MRG	

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			61.98	0.08		BITMAC	
						MADE GROUND: Light greyish white slightly silty sandy subangular to angular fine to coarse GRAVEL. Sand is fine to coarse.	
0.30	B6		61.76	0.30			
0.30	ES1					MADE GROUND: Dark grey slightly sandy clayey subangular to angular fine to coarse GRAVEL of limestone. Sand is fine to coarse.	
0.30		PID = 7.40ppm					
0.50	B7						
0.50	ES2						
0.50		PID = 4.20ppm	61.42	0.65		MADE GROUND: Firm greyish brown sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse. Cobbles are subangular to subrounded.	
0.85	B8						
0.85	ES3						
1.00		PID = 0.10ppm	61.06	1.00		Firm greyish brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded.	
1.50		PID = 0.00ppm					
2.00	B9						
2.00	ES4						
2.00		PID = 0.00ppm					
2.50		PID = 0.00ppm					
			59.46	2.60		Stiff dark grey slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded.	
3.00	B10		59.06	3.00		End of trial pit at 3.00m	
3.00	ES5						

Water Strikes			
Struck at (m)	Remarks		
		Depth: 3.00	**Remarks:** No groundwater encountered.
		Width: 1.05	
		Length: 3.00	
		Stability: Stable	**Termination Reason** Terminated on refusal.
			Last Updated 07/11/2022

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CAUSEWAY GEOTECH

Project No. 21-0403S	**Project Name:** NASAH North Apron & South Apron GI Kilwex		**Trial Pit ID** TP15
Coordinates 317181.00 E 242852.00 N	**Client:** Dublin Airport Authority		
Method: Trial Pitting	**Client's Representative:** AECOM		Sheet 1 of 1 Scale: 1:25
Plant: Tracked Excavator	**Elevation** 61.05 mOD	**Date:** 07/09/2022	**Logger:** BS DRAFT

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						BITMAC	
			60.70	0.35		MADE GROUND: Grey angular to subangular fine to coarse GRAVEL.	
0.50	B3		60.55	0.50		MADE GROUND: Brown slightly clayey sandy subangular to angular fine to coarse GRAVEL with medium cobble content. Sand is fine to coarse. Gravel is subangular to angular fine to coarse.	
0.50	ES1						
0.50		PID = 0.00ppm					
1.20	B4		59.85	1.20		End of trial pit at 1.20m	
1.20	ES2						
1.20		PID = 0.00ppm					

Water Strikes				Remarks:
Struck at (m)	Remarks	**Depth:** 1.20		No groundwater encountered.
		Width: 1.00		
		Length: 2.70		
		Stability: Stable	**Termination Reason** Terminated due to service encountered.	**Last Updated** 07/11/2022

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CAUSEWAY GEOTECH

Project No. 21-0403S	**Project Name:** NASAH North Apron & South Apron GI Kilwex		**Trial Pit ID** TP16
Coordinates E N	**Client:** Dublin Airport Authority		
Method: Trial Pitting	**Client's Representative:** AECOM		Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** mOD	**Date:** 12/09/2022	**Logger:** MRG	DRAFT

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						CONCRETE	
				0.20			
0.30	B4					MADE GROUND: Grey slightly clayey sandy subangular to angular fine to coarse GRAVEL of limestone with medium cobble content. Sand is fine to coarse.	
0.30	ES1						
0.30		PID = 40.50ppm Moderate flow at 0.40m		0.45		MADE GROUND: Greyish brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of mixed lithologies.	
0.70	B5						
				0.90			
1.00	ES2					Stiff dark grey slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.	
1.00		PID = 15.40ppm					
1.50	B6						
1.50	ES3						
1.50		PID = 0.00ppm		1.70		End of trial pit at 1.70m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks
0.40	Moderate flow at 0.40m

Depth: 1.70
Width: 1.00
Length: 3.10

Remarks:

Stability: Stable

Termination Reason: Terminated on refusal.

Last Updated: 07/11/2022

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CAUSEWAY GEOTECH

Project No. 21-0403S	**Project Name:** NASAH North Apron & South Apron GI Kilwex		**Trial Pit ID** TP17
Coordinates E N	**Client:** Dublin Airport Authority		
Method: Trial Pitting	**Client's Representative:** AECOM		Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** mOD	**Date:** 25/08/2022	**Logger:** MRG	DRAFT

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
				0.05		TOPSOIL	
						MADE GROUND: Firm greyish brown sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subangular of various lithologies.	
0.30	ES2						
0.30 - 2.90	ES1						
0.30		PID = 0.10ppm		0.40		Firm brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular of various lithologies. Cobbles are subangular of various lithologies.	
1.00	B3						
1.00	ES3						
1.00		PID = 0.00ppm					
2.00	B4						
		Slow seepage at 2.70m		2.70		Stiff dark grey slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subrounded fine to coarse.	▼
2.90	B5			2.90		End of trial pit at 2.90m	
2.90		PID = 0.00ppm					

Water Strikes		Depth: 2.90	Remarks:		
Struck at (m)	Remarks	Width: 1.00			
2.70	Slow seepage at 2.70m	Length: 2.90			
		Stability: Stable	**Termination Reason** Terminated on refusal.	**Last Updated** 07/11/2022	AGS

CAUSEWAY GEOTECH

Project No. 21-0403S	**Project Name:** NASAH North Apron & South Apron GI Kilwex		**Trial Pit ID** TP18
Coordinates E N	**Client:** Dublin Airport Authority		
Method: Trial Pitting	**Client's Representative:** AECOM		Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** mOD	**Date:** 24/08/2022	**Logger:** MRG	DRAFT

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
				0.10		TOPSOIL with rootlets.	
0.50	ES1					MADE GROUND: Greyish brown sandy gravelly CLAY with high cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse of various lithologies. Cobbles are subrounded of mixed lithologies.	
0.50		PID = 1.20ppm		0.60		MADE GROUND: Greyish brown slightly gravelly slightly clayey fine to coarse SAND with low cobble content. Gravel is subangular fine to coarse. Cobbles are subangular of various lithologies.	
0.80	ES2						
0.80		PID = 1.10ppm		0.90		MADE GROUND: Firm greenish grey slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subrounded fine to coarse. Cobbles are subrounded of various lithologies.	
1.50	ES3						
1.50		PID = 12.20ppm					
				2.40		Stiff dark grey slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subrounded of limestone.	
2.50	ES4			2.70		End of trial pit at 2.70m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes			
Struck at (m)	Remarks		

Depth: 2.70
Width: 1.00
Length: 3.00

Remarks:
Old store drain encountered at 2.00m.
No groundwater encountered

Stability: Stable

Termination Reason: Terminated on refusal.

Last Updated: 07/11/2022

AGS

CAUSEWAY GEOTECH

Project No. 21-0403S	**Project Name:** NASAH North Apron & South Apron GI Kilwex		**Trial Pit ID** TP19
Coordinates E N	**Client:** Dublin Airport Authority		
Method: Trial Pitting	**Client's Representative:** AECOM		Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** mOD	**Date:** 24/08/2022	**Logger:** MRG — DRAFT

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
				0.06		BITMAC	
						MADE GROUND: Grey slightly sandy slightly silty subangular to angular fine to coarse GRAVEL of limestone. Sand is fine to coarse.	
0.30	B5						
0.30	ES1			0.40			▼
0.30		PID = 17.80ppm Moderate flow at 0.40m				MADE GROUND: Greyish brown slightly silty gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to medium of mixed lithologies.	
0.60	B6						
0.60		PID = 12.20ppm		0.70		Firm greyish brown slightly sandy slightly gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.	
1.00	ES2						
1.10	B7						
1.10		PID = 0.20ppm					
1.50	ES3						
1.50		PID = 0.20ppm		1.70		Stiff dark grey slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobble are subangular to subrounded of limestone.	
1.80	B8						
1.90	ES4			1.90		End of trial pit at 1.90m	
1.90		PID = 0.00ppm					

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes			
Struck at (m)	Remarks	**Depth:** 1.90	**Remarks:**
0.40	Moderate flow at 0.40m	**Width:** 1.10	
		Length: 2.70	

Stability:	**Termination Reason**	**Last Updated**
Stable	Terminated on refusal.	07/11/2022

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CAUSEWAY GEOTECH

Project No. 21-0403S	**Project Name:** NASAH North Apron & South Apron GI Kilwex		**Trial Pit ID** TP21
Coordinates E N	**Client:** Dublin Airport Authority		
Method: Trial Pitting	**Client's Representative:** AECOM		Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** mOD	**Date:** 30/08/2022	**Logger:** MRG	DRAFT

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						TARMAC	
				0.10		MADE GROUND: Grey slightly sandy slightly clayey subangular fine to coarse GRAVEL of limestone with high cobble content. Sand is fine to coarse. Cobbles are subrounded of limestone.	
0.30	B1						
0.30	ES2						
0.30		PID = 2.90ppm Medium flow at 0.50m		0.50		MADE GROUND: Soft to firm dark greyish brown slightly sandy gravelly CLAY with medium cobble content and fragments of plastic, rubber, rebar and construction waste. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subangular of various lithologies.	▼
0.80	ES4						
0.80		PID = 29.10ppm					
0.90	B3						
				1.00		MADE GROUND: Firm brownish grey slightly sandy gravelly SILT with medium cobble content. Sand is fine to coarse. Gravel is subrounded fine to coarse. Cobbles are subrounded of various lithologies.	
1.30	ES6						
1.30		PID = 12.40ppm		1.40		Firm greenish brown mottled orange and black slightly sandy slightly gravelly SILT with rotted rootlets. Sand is fine to coarse. Gravel is subrounded fine to coarse. Cobbles are subrounded of various lithologies.	
1.40	B5						
1.50	B7			1.65		Firm greyish brown slightly sandy slightly gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subrounded fine to coarse. Cobbles are subrounded of various lithologies.	
2.00	ES8						
2.00		PID = 19.00ppm					
2.10	B9						
2.50	ES10						
2.50		PID = 0.00ppm					
				3.00		Stiff dark grey slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subrounded of various lithologies.	
3.10	ES11			3.10		End of trial pit at 3.10m	
3.10		PID = 0.00ppm					

Water Strikes			
Struck at (m)	Remarks		
0.50	Medium flow at 0.50m		

Depth: 3.10
Width: 1.10
Length: 3.30

Remarks:

Stability: Stable

Termination Reason: Terminated on refusal.

Last Updated: 07/11/2022

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CAUSEWAY GEOTECH

Project No. 21-0403S	**Project Name:** NASAH North Apron & South Apron GI Kilwex		**Trial Pit ID** TP23
Coordinates E N	**Client:** Dublin Airport Authority		
Method: Stable	**Client's Representative:** AECOM		Sheet 1 of 1 Scale: 1:25
Plant: ST Tracked Excavator	**Elevation** mOD	**Date:** 06/09/2022	**Logger:** BS	DRAFT

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
				0.15		BITMAC	
				0.30		MADE GROUND: Grey slightly sandy angular to subangular fine to coarse GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are angular.	
0.50	B4					Brown sandy clayey angular to subangular fine to coarse GRAVEL with high cobble content. Sand is fine to coarse. Cobbles are subrounded to rounded.	
0.50	ES1						
1.50	B5						
1.50	ES2						
1.50		PID = 1.00ppm					
				2.00		Firm to stiff dark brownish sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is angular to subangular fine to coarse. Cobbles are subangular.	
2.50	B6						
2.50	ES3						
2.50		PID = 0.00ppm		2.60		End of trial pit at 2.60m	

Water Strikes			
Struck at (m)	Remarks		
		Depth: 2.60	**Remarks:** No groundwater encountered.
		Width: 1.00	
		Length: 3.00	
		Stability: Stable	**Termination Reason** Terminated due to services encountered.

Last Updated 07/11/2022

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CAUSEWAY GEOTECH

Project No. 21-0403S	**Project Name:** NASAH North Apron & South Apron GI Kilwex		**Trial Pit ID** TP24
Coordinates E N	**Client:** Dublin Airport Authority		
Method: Stable	**Client's Representative:** AECOM		Sheet 1 of 1 Scale: 1:25
Plant: 5T Tracked Excavator	**Elevation** mOD	**Date:** 06/09/2022	**Logger:** BS	DRAFT

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						BITMAC	
				0.23		MADE GROUND: Grey angular to subangular fine to coarse GRAVEL	
0.50	B3			0.45		Brown sandy clayey angular to subangular fine to coarse GRAVEL with high cobble content. Sand is fine to coarse. Grave is angular to subangular fine to coarse. Cobbles are subrounded to rounded.	
0.50	ES1						
1.50	B4						
2.00	B5						
				2.70		Stiff greyish brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to angular fine to coarse.	
3.00	B6			3.00		End of trial pit at 3.00m	▼
3.00	ES2						
3.00		PID = 0.00ppm Groundwater encountered at 3.00m					

Water Strikes	
Struck at (m)	Remarks
3.00	Groundwater encountered at 3.00m

Depth: 3.00
Width: 1.00
Length: 3.00

Remarks:

Stability: Stable

Termination Reason: Terminated on refusal.

Last Updated: 07/11/2022

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CAUSEWAY GEOTECH

Project No. 21-0403S	**Project Name:** NASAH North Apron & South Apron GI Kilwex		**Trial Pit ID** TP25
Coordinates E N	**Client:** Dublin Airport Authority		
Method: Trial Pitting	**Client's Representative:** AECOM		Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** mOD	**Date:** 19/08/2022	**Logger:** MRG	DRAFT

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						TARMAC	
				0.30		CONCRETE	
				0.75		MADE GROUND: Dark greyish brown gravelly clayey fine to coarse SAND. Gravel is subangular fine to coarse of various lithologies. Cobbles are subrounded of various lithologies.	
1.00	B3						
1.00	ES1						
1.00		PID = 1.00ppm					
2.00	B4						
				3.00		Firm greenish grey slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subrounded fine to coarse. Cobbles are subrounded.	
3.20	B5						
3.20	ES2						
3.20		PID = 0.00ppm		3.40		End of trial pit at 3.40m	

Water Strikes			
Struck at (m)	Remarks		
		Depth: 3.40	**Remarks:** No groundwater encountered.
		Width: 1.20	
		Length: 4.00	
		Stability: Stable	**Termination Reason** Terminated on refusal.

Last Updated 07/11/2022

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CAUSEWAY GEOTECH

Project No. 21-0403S	**Project Name:** NASAH North Apron & South Apron GI Kilwex		**Trial Pit ID** TP39
Coordinates E N	**Client:** Dublin Airport Authority		
Method: Trial Pitting	**Client's Representative:** AECOM		Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** mOD	**Date:** 27/07/2022	**Logger:** MRG	DRAFT

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
0.10	B5					Light grey slightly clayey sandy subangular to subrounded fine to coarse GRAVEL of predominantly limestone with fragments of concrete. Sand is fine to coarse.	
0.10		PID = 0.20ppm		0.20			
0.30	ES					Light brown slightly silty gravelly fine to coarse SAND with low cobble content. Gravel is subangular to subrounded fine to coarse of mixed lithologies. Cobbles are subrounded of mixed lithologies.	
0.30	ES1						
0.50	ES2						
0.50		PID = 0.10ppm		0.60			
0.60	B6					Light brown silty very sandy subangular fine to coarse GRAVEL. Sand is fine to coarse.	
				1.00		Firm to stiff brown slightly sandy slightly gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mixed lithologies. Cobbles are subangular to subrounded of mixed lithologies.	
1.50	ES3						
2.00	B7						
2.00		PID = 0.80ppm					
2.50	ES4						
				2.80		Stiff dark grey slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse.	
3.20	B8			3.20		End of trial pit at 3.20m	
3.20		PID = 0.10ppm					

Water Strikes				Remarks:
Struck at (m)	Remarks	**Depth:** 3.20		No groundwater encountered.
		Width: 1.10		
		Length: 3.90		
		Stability: Stable	**Termination Reason** Terminated on refusal.	**Last Updated** 07/11/2022

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CAUSEWAY GEOTECH

Project No. 21-0403S	**Project Name:** NASAH North Apron & South Apron GI Kilwex		**Trial Pit ID** TP40
Coordinates E N	**Client:** Dublin Airport Authority		
Method: Trial Pitting	**Client's Representative:** AECOM		Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** mOD	**Date:** 28/07/2022	**Logger:** MRG	DRAFT

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						TOPSOIL with rootlets	
				0.15		MADE GROUND: Light greyish brown sandy very gravelly CLAY with high cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of mixed lithologies.	
0.30	ES						
0.30	ES1						
0.40	B6						
0.50	ES						
0.50	ES2						
				0.80		MADE GROUND: Stiff dark grey and brown sandy very gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of mixed lithologies.	
1.40	B7						
1.50	ES3						
				1.80		Firm greenish grey slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of mixed lithologies.	
1.90	B8			2.00		Firm light brown slightly gravelly sandy CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subronded fine to coarse. Cobbles are subangular to subrounded of mixed lithologies.	
2.10	B9			2.20		Firm to stiff greyish brown with orange mottling slightly sandy slightly gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.	
2.50	ES4						
3.00	ES5						
3.20	B10						
				3.40		End of trial pit at 3.40m	

Water Strikes			
Struck at (m)	Remarks		
		Depth: 3.40	**Remarks:** No groundwater encountered.
		Width: 4.00	
		Length: 1.10	
		Stability: Stable	**Termination Reason** Terminated on refusal.
			Last Updated 07/11/2022

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CAUSEWAY GEOTECH

Project No.	Project Name:	Trial Pit ID
21-0403S	NASAH North Apron & South Apron GI Kilwex	TP41
Coordinates	**Client:** Dublin Airport Authority	
E	**Client's Representative:**	Sheet 1 of 1
N	AECOM	Scale: 1:25
Method: Trial Pitting		
Plant: 8T Tracked Excavator	**Elevation** mOD / **Date:** 02/08/2022 / **Logger:** MRG	DRAFT

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
				0.10		TOPSOIL	
0.30	ES					MADE GROUND: Firm greyish brown slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of mixed lithologies.	
0.30	ES2						
0.50	B1						
0.50	ES						
0.50	ES3						
0.50		PID = 1.70ppm		0.70		MADE GROUND: Firm brown slightly sandy gravelly CLAY with low cobble content and fragments of plastic, red brick and concrete. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of mixed lithologies.	
1.00	B4						
1.00		PID = 0.60ppm					
				1.40		MADE GROUND: Soft dark greenish brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of mixed lithologies.	
1.50	ES						
1.50	ES6						
1.50		PID = 2.40ppm					
1.90	B5						
				2.10		Firm greyish brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of mixed lithologies.	
2.50	ES						
2.50	ES8						
3.00	B7						
3.00		PID = 0.70ppm					
				3.20		Stiff dark grey slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.	
3.50	B9			3.50		End of trial pit at 3.50m	
3.50		PID = 0.00ppm					

Water Strikes	
Struck at (m)	Remarks

Depth: 3.50
Width: 1.10
Length: 4.60

Remarks: No groundwater encountered

Stability: Stable

Termination Reason: Terminated on refusal.

Last Updated: 07/11/2022

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CAUSEWAY GEOTECH

Project No. 21-0403S	**Project Name:** NASAH North Apron & South Apron GI Kilwex		**Trial Pit ID** TP42
Coordinates E N	**Client:** Dublin Airport Authority		
Method: Trial Pitting	**Client's Representative:** AECOM		Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** mOD	**Date:** 29/07/2022	**Logger:** MRG — DRAFT

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
				0.10		TOPSOIL with rootlets	
0.30	B5					MADE GROUND: Firm to stiff light greyish brown slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of mixed lithologies.	
0.30	ES						
0.30	ES1						
0.30		PID = 1.70ppm		0.50		MADE GROUND: Firm dark brown slightly sandy gravelly silty CLAY with medium cobble content and fragments of glass, ceramic and concrete. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of mixed lithologies.	
0.50	ES						
0.50	ES2						
0.70	B6						
0.70		PID = 0.70ppm					
				1.00		MADE GROUND: Firm greenish grey slightly sandy gravelly silty CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of mixed lithologies.	
1.30	B7			1.30		Soft to firm light brown with black mottling sandy slightly gravelly SILT with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of mixed lithologies.	
1.30		PID = 0.90ppm					
1.50	ES						
1.50	ES3						
1.70	B8						
1.70		PID = 0.00ppm		1.80		Dark grey slightly gravelly slightly silty fine to coarse SAND with medium cobble content and one bolder. Gravel is subangular to subrounded of limestone. Cobbles are subangular to subrounded of limestone.	
2.20	B9			2.20		Dark grey sandy gravelly SILT. Sand is fine to coarse. Gravel is subangular fine to coarse of limestone.	
2.20		PID = 0.10ppm					
2.50	ES4			2.60		Stiff dark grey slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrouded of limestone.	
3.40	B10			3.40		End of trial pit at 3.40m	
3.40		PID = 0.00ppm					

Water Strikes				Remarks:
Struck at (m)	Remarks	**Depth:** 3.40		No groundwater encountered.
		Width: 1.10		
		Length: 6.10		
		Stability: Stable	**Termination Reason** Terminated on refusal.	**Last Updated** 07/11/2022

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CAUSEWAY GEOTECH

Project No. 21-0403S	**Project Name:** NASAH North Apron & South Apron GI Kilwex		**Trial Pit ID** TP43
Coordinates E N	**Client:** Dublin Airport Authority		
Method: Trial Pitting	**Client's Representative:** AECOM		Sheet 1 of 1 Scale: 1:25
Plant: 5T Tracked Excavator	**Elevation** mOD	**Date:** 08/09/2022	**Logger:** BS	DRAFT

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
				0.12		TOPSOIL	
						MADE GROUND: Brown sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse.	
0.50	B5						
0.50	ES1						
0.50		PID = 0.20ppm		0.60		Firm brown sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is angular to subangular fine to coarse. Cobbles are subangular.	
1.20	B6			1.20		Stiff sandy gravelly CLAY with low cobble and boulder content. Sand is fine to coarse. Cobbles and boulders are subangular.	
1.20	ES2						
1.20		PID = 0.20ppm					
2.00	B7						
2.00	ES3						
2.00		PID = 0.20ppm		2.30		Very stiff grey slightly silty slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to angular fine to coarse.	
2.50	B8			2.50		End of trial pit at 2.50m	
2.50	ES4						
2.50		PID = 0.00ppm					

Water Strikes	
Struck at (m)	Remarks

Depth: 2.50
Width: 1.00
Length: 3.00

Remarks: No groundwater encountered.

Stability: Stable

Termination Reason: Terminated on refusal.

Last Updated: 07/11/2022

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CAUSEWAY GEOTECH

Project No. 21-0403S	**Project Name:** NASAH North Apron & South Apron GI Kilwex		**Trial Pit ID** TP44
Coordinates E N	**Client:** Dublin Airport Authority		
Method: Trial Pitting	**Client's Representative:** AECOM		Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** mOD	**Date:** 31/08/2022	**Logger:** MRG	DRAFT

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						TOPSOIL	
				0.15		MADE GROUND: Grey slightly sandy slightly silty subangular to angular fine to coarse GRAVEL of limestone. Sand is fine to coarse.	
0.40	B5						
0.50	ES1						
0.50		PID = 7.20ppm		0.60 0.62		MADE GROUND: TERRAM	
						MADE GROUND: Firm dark brown slightly silty slightly sandy gravelly CLAY with medium cobble content and fragments of red brick, concrete, tarmac, plastic and timber. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mixed lithologies.	
1.00	B6						
1.00	ES2						
1.00		PID = 52.40ppm		1.20		MADE GROUND: Soft to firm greenish brown slightly sandy slightly gravelly CLAY with low cobble content and fragments of ceramics, lead, rope, plastic, fabric and timber. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of mixed lithologies.	
1.50	ES3						
1.50		PID = 75.30ppm					
1.70	B7						
				2.60		Soft to firm greenish grey slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mixed lithologies.	▼
		Moderate flow at 2.70m					
3.10	B8						
3.50	ES4						
3.50		PID = 12.40ppm		3.60		End of trial pit at 3.60m	

Water Strikes			Remarks:
Struck at (m)	Remarks	**Depth:** 3.60	
2.70	Moderate flow at 2.70m	**Width:** 3.45	
		Length: 1.65	
		Stability: Stable	**Termination Reason** Terminated on refusal.

Last Updated 07/11/2022

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CAUSEWAY GEOTECH

Project No. 21-0403S	**Project Name:** NASAH North Apron & South Apron GI Kilwex		**Trial Pit ID** TP45
Coordinates E N	**Client:** Dublin Airport Authority		
Method: Trial Pitting	**Client's Representative:** AECOM		Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** mOD	**Date:** 14/09/2022	**Logger:** MRG	DRAFT

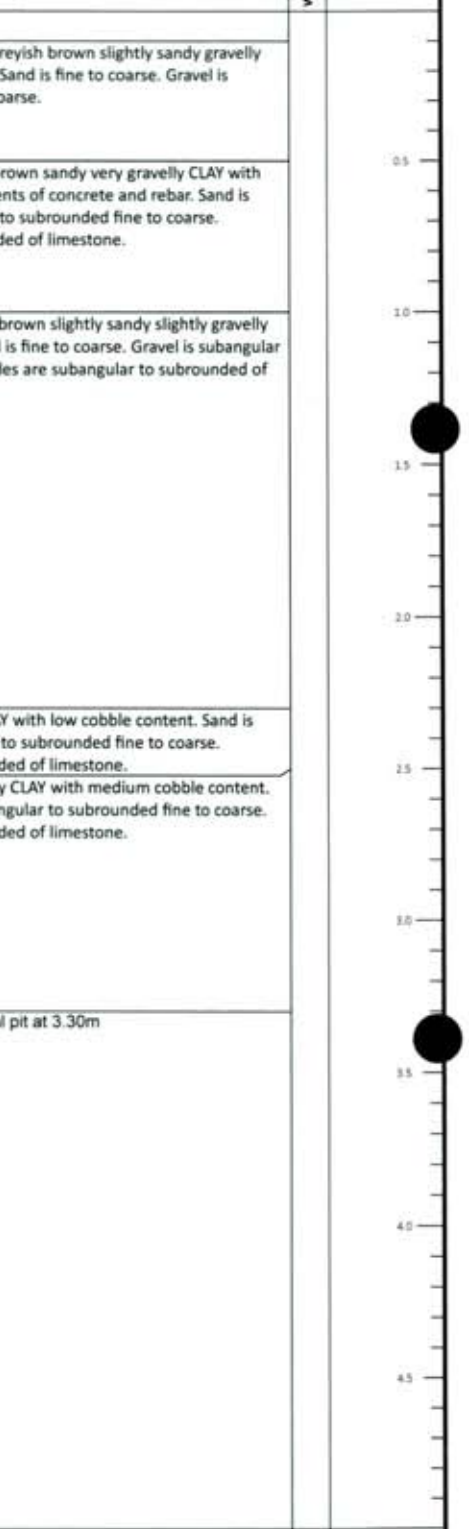
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
				0.15		TOPSOIL and rootlets	
0.30	B4					MADE GROUND: Firm greyish brown slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of mixed lithologies.	
0.30	ES1						
0.30		PID = 1.40ppm		0.45		MADE GROUND: Firm dark brown slightly sandy slightly gravelly CLAY with low cobble content and rootlets. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subanguar to subrounded of mixed lithologies.	
1.00	B5						
1.00	ES2						
1.00		PID = 3.20ppm		1.10		MADE GROUND: Firm light greyish brown slightly sandy gravelly CLAY with low cobble content an d fragments of brick, concrete, plastic and timber. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse.	
1.60	B6						
1.60	ES3						
1.60		PID = 1.80ppm					
				2.10		End of trial pit at 2.10m	

Water Strikes		Depth: 2.10	Remarks: No groundwater encountered.		
Struck at (m)	Remarks	Width: 1.05			
		Length: 3.40			
		Stability: Stable	**Termination Reason** Terminated due to services encountered.	**Last Updated** 07/11/2022	AGS

CAUSEWAY GEOTECH

Project No. 21-0403S	**Project Name:** NASAH North Apron & South Apron GI Kilwex		**Trial Pit ID** TP46
Coordinates E N	**Client:** Dublin Airport Authority		
Method: Stable	**Client's Representative:** AECOM		Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** mOD	**Date:** 29/07/2022	**Logger:** MRG — DRAFT

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
				0.10		TOPSOIL with rootlets.	
0.30	B5					MADE GROUND: Firm to stiff light greyish brown slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse.	
0.30	ES						
0.30	ES1						
0.30		PID = 1.50ppm		0.50		MADE GROUND: Firm to stiff dark brown sandy very gravelly CLAY with medium cobble content and fragments of concrete and rebar. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.	
0.50	ES						
0.50	ES2						
0.80	B6						
0.80		PID = 0.80ppm					
				1.00		Soft to firm greenish grey and light brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.	
1.50	ES						
1.50	ES3						
2.00	B7						
2.00		PID = 0.00ppm					
				2.30		Soft grey sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.	
2.40	B8						
2.40		PID = 0.00ppm		2.50		Stiff dark grey slightly sandy gravelly CLAY with medium cobble content. Sand is fine t coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.	
2.50	ES4						
3.20	B9						
3.20		PID = 0.00ppm		3.30		End of trial pit at 3.30m	



Water Strikes			
Struck at (m)	Remarks	**Depth:** 3.30 **Width:** 1.15 **Length:** 4.70	**Remarks:** No groundwater encountered.
		Stability: Stable	**Termination Reason** Terminated on refusal.
			Last Updated 07/11/2022

AGS

CAUSEWAY GEOTECH

Project No. 21-0403S	**Project Name:** NASAH North Apron & South Apron GI Kilwex		**Trial Pit ID** TP47
Coordinates E N	**Client:** Dublin Airport Authority		
Method: Trial Pitting	**Client's Representative:** AECOM		Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** mOD	**Date:** 05/08/2022	**Logger:** MRG	DRAFT

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						TOPSOIL	
				0.15		MADE GROUND: Firm grey slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of mixed lithologies predominantly limestone.	
0.50	B1						
0.50	ES						
0.50	ES5						
0.50		PID = 1.80ppm					
				0.80		Firm to stiff light brown mottled orange and black slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.	
1.00	B2						
1.00	ES						
1.00	ES6			1.10		Firm dark greyish brown slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.	
1.00		PID = 1.20ppm					
1.50	B3						
2.00	ES7						
2.00		PID = 0.00ppm					
				2.20		Stiff dark grey slightly sandy slightly gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.	
2.50	ES8						
2.50		PID = 0.00ppm					
2.80	B4			2.80		End of trial pit at 2.80m	

Water Strikes	
Struck at (m)	Remarks

Depth: 2.80
Width: 1.10
Length: 4.70

Remarks: No groundwater encountered.

Stability: Stable

Termination Reason: Terminated on refusal.

Last Updated: 07/11/2022

AGS

CAUSEWAY GEOTECH

Project No. 21-0403S	**Project Name:** NASAH North Apron & South Apron GI Kilwex		**Trial Pit ID** TP48
Coordinates 317123.60 E 242447.30 N	**Client:** Dublin Airport Authority		
Method: Trial Pitting	**Client's Representative:** AECOM		Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** mOD	**Date:** 04/08/2022	**Logger:** MRG — DRAFT

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						TOPSOIL	
				0.20		MADE GROUND: Firm light brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.	
0.50	B1						
0.50	ES						
0.50	ES2						
0.50		PID = 1.10ppm					
				0.80		Firm to stiff dark brown slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.	
1.20	ES						
1.20	ES4						
1.50	B3						
1.50		PID = 0.00ppm					
				1.70		Stiff dark grey slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.	
2.00	ES6						
2.00		PID = 0.00ppm					
2.40	B5			2.40		End of trial pit at 2.40m	

Water Strikes		Depth: 2.40	Remarks: No groundwater encountered.		
Struck at (m)	Remarks	Width: 1.20			
		Length: 4.20			
		Stability: Stable	**Termination Reason** Terminated on refusal.	**Last Updated** 07/11/2022	AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Trial Pit ID
21-0403S	NASAH North Apron & South Apron GI Kilwex	TP49
Coordinates	**Client:**	
317170.60 E	Dublin Airport Authority	
242446.70 N	**Client's Representative:** AECOM	Sheet 1 of 1 Scale: 1:25
Elevation mOD	**Date:** 04/08/2022	**Logger:** MRG — DRAFT

Method: Trial Pitting

Plant: 8T Tracked Excavator

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						TOPSOIL	
				0.15		MADE GROUND: Firm light brown slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.	
0.50	B3						
0.50	ES						
0.50	ES1						
0.50		PID = 0.80ppm					
1.00	ES						
1.00	ES2						
1.00		PID = 0.00ppm		1.10		Firm to stiff dark brown slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.	
1.60	B5						
2.00	ES						
2.00	ES4						
2.00		PID = 0.00ppm		2.20		Stiff dark grey slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.	
2.70	B6			2.70		End of trial pit at 2.70m	

Water Strikes

Struck at (m)	Remarks

Depth: 2.70
Width: 1.20
Length: 4.10

Remarks: No groundwater encountered.

Stability: Stable

Termination Reason: Terminated on refusal.

Last Updated: 07/11/2022

AGS

CAUSEWAY GEOTECH

Project No. 21-0403S	**Project Name:** NASAH North Apron & South Apron GI Kilwex		**Trial Pit ID** TP50
Coordinates 317225.10 E 242446.80 N	**Client:** Dublin Airport Authority		
Method: Trial Pitting	**Client's Representative:** AECOM		Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** mOD	**Date:** 05/08/2022	**Logger:** MRG — DRAFT

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						TOPSOIL	
				0.15		MADE GROUND: Firm light brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of mixed lithologies.	
0.50	B1						
0.50	ES			0.60			
0.50	ES2					Firm to stiff dark brown slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.	
0.50		PID = 1.20ppm					
1.00	B3						
1.00	ES						
1.00	ES4						
1.00		PID = 0.10ppm					
				1.60		Stiff dark grey slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.	
2.00	ES6						
2.00		PID = 0.00ppm					
2.40	B5			2.40		End of trial pit at 2.40m	

Water Strikes			Remarks:
Struck at (m)	Remarks	Depth: 2.40 Width: 1.10 Length: 4.50	No groundwater encountered.

Stability:	Termination Reason	Last Updated
Stable	Terminated on refusal.	07/11/2022

AGS

CAUSEWAY GEOTECH

Project No. 21-0403S	**Project Name:** NASAH North Apron & South Apron GI Kilwex		**Trial Pit ID** TP53
Coordinates E N	**Client:** Dublin Airport Authority		
Method: Trial Pitting	**Client's Representative:** AECOM		Sheet 1 of 1 Scale: 1:25
Plant: Tracked Excavator	**Elevation** mOD	**Date:** 09/09/2022	**Logger:** BS	DRAFT

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						TOPSOIL	
				0.25		MADE GROUND: Soft brown sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is angular to subangular fine to coarse. Cobbles are subrounded to rounded.	
0.50	B4						
0.50	ES1						
0.50		PID = 0.20ppm					
				0.70		Stiff brown sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is angular to subangular fine to coarse. Cobble are subangular to angular.	
1.50	B5						
1.50	ES2						
1.50		PID = 0.00ppm					
				1.90		Stiff to very stiff dark brownish grey sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse. Cobbles are subangular to subrounded.	
2.50	B6			2.50		End of trial pit at 2.50m	
2.50	ES3						
2.50		PID = 0.00ppm					

Water Strikes				Remarks:		
Struck at (m)	Remarks	Depth: 2.50		No groundwater encountered.		
		Width: 1.00				
		Length: 2.40				
		Stability:	Termination Reason		Last Updated	
		Stable	Terminated on refusal.		07/11/2022	AGS

CAUSEWAY GEOTECH

Project No. 21-0403S	**Project Name:** NASAH North Apron & South Apron GI Kilwex		**Trial Pit ID** TP54
Coordinates E N	**Client:** Dublin Airport Authority		
Method: Trial Pitting	**Client's Representative:** AECOM		Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** mOD	**Date:** 31/08/2022	**Logger:** MRG	DRAFT

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
				0.06		BITMAC	
0.15	B5					MADE GROUND: Greyish black slightly silty sandy subangular to angular fine to coarse GRAVEL of limestone. Sand is fine to coarse.	
0.15		PID = 22.50ppm		0.20			
0.30	B6					MADE GROUND: Greyish brown slightly silty sandy subangular to angular fine to coarse GRAVEL with medium cobble content of various lithologies. Sand is fine to coarse. Cobbles are subangular to subrounded of mixed lithologies.	
0.40	ES1						
0.40		PID = 4.50ppm Slow seepage at 0.45m		0.45			▼
0.60	B7					MADE GROUND: Firm light brown and greyish brown slightly sandy gravelly CLAY with medium cobble content and fragments of red brick. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobble are subangular to subrounded of various lithologies.	
0.60	ES2						
0.60		PID = 36.20ppm		0.70			
						MADE GROUND: Firm brown and dark greyish brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of mixed lithologies.	
1.00	ES3						
1.00		PID = 3.60ppm					
1.20	B8						
				1.35		MADE GROUND: Firm dark greyish brown slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of mixed lithologies.	
1.90	B9			1.90		End of trial pit at 1.90m	
1.90	ES4						
1.90		PID = 0.20ppm					

Water Strikes	
Struck at (m)	Remarks
0.45	Slow seepage at 0.45m

Depth: 1.90
Width: 1.05
Length: 3.20

Remarks:

Stability: Stable

Termination Reason: Terminated due to services encountered.

Last Updated: 07/11/2022

AGS

CAUSEWAY GEOTECH

Project No. 21-0403S	**Project Name:** NASAH North Apron & South Apron GI Kilwex		**Trial Pit ID** TP56
Coordinates E N	**Client:** Dublin Airport Authority		
Method: Trial Pitting	**Client's Representative:** AECOM		Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** mOD	**Date:** 02/08/2022	**Logger:** MRG	DRAFT

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
				0.10		TOPSOIL	
0.30	B1					MADE GROUND: Firm greyish brown slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of mixed lithologies.	
0.30	ES						
0.30	ES2						
0.50	B4						
0.50	ES						
0.50	ES3			0.65			
0.50		PID = 8.20ppm				MADE GROUND: Firm brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of various lithologies.	
				1.00		MADE GROUND: Firm greenish grey slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded.	
1.10	B6						
1.10		PID = 0.20ppm		1.20		Firm light brown slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.	
1.50	B7						
1.50	ES						
1.50	ES5						
1.50		PID = 2.40ppm					
2.50	ES8						
2.50		PID = 0.00ppm					
				2.70		Stiff dark grey slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.	
3.00	B9						
3.00		PID = 0.00ppm					
				3.50		End of trial pit at 3.50m	

Water Strikes	
Struck at (m)	Remarks

Depth: 3.50
Width: 1.20
Length: 4.10

Remarks: No groundwater encountered.

Stability: Stable

Termination Reason: Terminated on refusal.

Last Updated: 07/11/2022

AGS

CAUSEWAY GEOTECH

Project No. 21-0403S	**Project Name:** NASAH North Apron & South Apron GI Kilwex		**Trial Pit ID** TP57
Coordinates E N	**Client:** Dublin Airport Authority		
Method: Trial Pitting	**Client's Representative:** AECOM		Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** mOD	**Date:** 02/08/2022	**Logger:** MRG	DRAFT

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
				0.06		BITMAC	
0.15	B6					MADE GROUND: Black greyish brown sandy clayey subngular to angular fine to coarse GRAVEL of mixed lithologies with fragments of brick. Sand is fine to coarse.	
0.15	ES1						
0.15		PID = 5.40ppm		0.30		MADE GROUND: Firm dark brown slightly sandy gravelly CLAY with medium cobble content and fragments of plastic, red brick and tile. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded.	
0.50	ES2						
0.50		PID = 22.40ppm					
0.60	B7						
				0.75		Firm greenish brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of various lithologies.	
0.90	B8						
0.90	ES3						
0.90		PID = 12.40ppm		1.00		Firm greyish brown slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.	▼
		Slow seepage at 1.30					
1.50	B9						
1.50	ES4						
1.50		PID = 0.30ppm					
				2.10		Stiff dark grey slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.	
2.50	B10			2.50		End of trial pit at 2.50m	
2.50	ES5						
2.50		PID = 0.00ppm					

Water Strikes	
Struck at (m)	Remarks
1.30	Slow seepage at 1.30

Depth: 2.50
Width: 1.20
Length: 3.00

Remarks:

Stability: Stable

Termination Reason: Terminated on refusal.

Last Updated: 07/11/2022

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CAUSEWAY GEOTECH

Project No. 21-0403S	**Project Name:** NASAH North Apron & South Apron GI Kilwex		**Trial Pit ID** TP58
Coordinates E N	**Client:** Dublin Airport Authority		
Method: Trial Pitting	**Client's Representative:** AECOM		Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** mOD	**Date:** 01/09/2022	**Logger:** MRG	DRAFT

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
				0.07		BITMAC	
						MADE GROUND: Blackish grey slightly silty slightly sandy subangular to angular fine to coarse GRAVEL of limestone. Sand is fine to coarse.	
0.50	B5						
0.50	ES1						
0.50		PID = 10.20ppm					
				0.80		MADE GROUND: Soft dark greenish brown slightly silty gravelly CLAY with medium cobble content, fragments of timber and plastic. Gravel is subangular to subrounded fine to coarse.	
1.00	B6						
1.00	ES2						
1.00		PID = 41.30ppm					
				1.35		Firm greyish brown and brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of mixed lithologies.	
1.50	ES3						
1.50		PID = 12.40ppm					
				2.00		Soft to firm dark blackish grey slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse.	▼
		Slow seepage at 2.10m					
2.50	ES4						
2.90	B7			2.90		End of trial pit at 2.90m	
2.90		PID = 0.00ppm					

Water Strikes

Struck at (m)	Remarks
2.10	Slow seepage at 2.10m

Depth: 2.90
Width: 1.05
Length: 3.00

Remarks:

Stability: Unstable

Termination Reason: Terminated on refusal.

Last Updated: 07/11/2022

AGS

CAUSEWAY GEOTECH

Project No. 21-0403S	**Project Name:** NASAH North Apron & South Apron GI Kilwex		**Trial Pit ID** TP59
Coordinates E N	**Client:** Dublin Airport Authority		
Method: Trial Pitting	**Client's Representative:** AECOM		Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** mOD	**Date:** 02/09/2022	**Logger:** MRG — DRAFT

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
				0.12		BITMAC	
						MADE GROUND: Blackish grey slightly sandy subangular to angular fine to coarse GRAVEL. Sand is fine to coarse.	
0.50	B5						
0.50	ES1						
				0.95		MADE GROUND: TERRAM	
				0.97		Soft greenish brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of mixed lithologies.	
1.20	B6						
1.20	ES2						
				1.35		Firm greyish brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.	
		Slow seepage at 1.55m					▼
2.00	B7						
2.00	ES3						
				2.70		Stiff dark grey slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.	
2.80	B8			2.80		End of trial pit at 2.80m	
2.80	ES4						

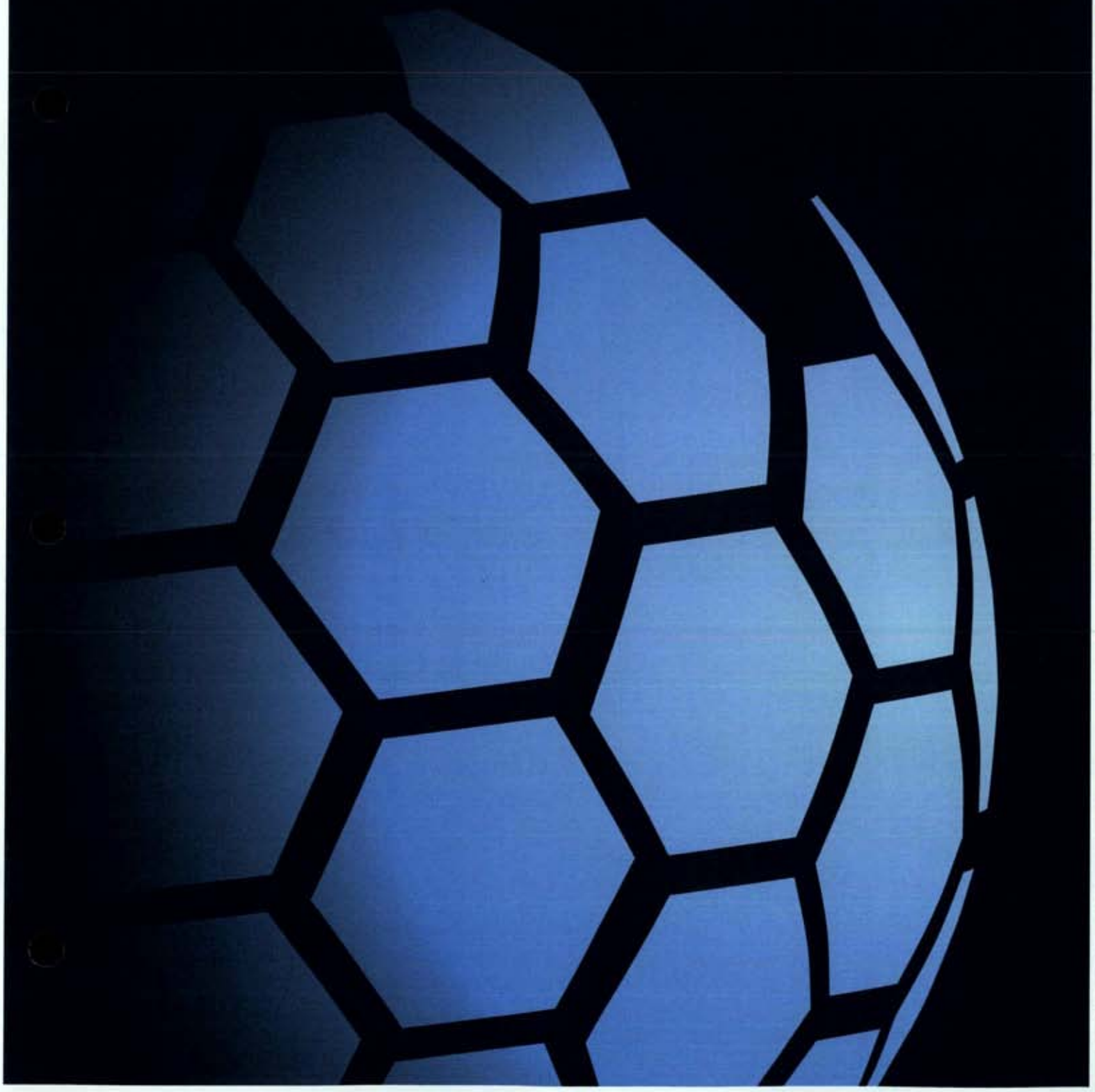
Water Strikes				
Struck at (m)	Remarks	**Depth:** 2.80	**Remarks:**	
1.55	Slow seepage at 1.55m	**Width:** 1.25		
		Length: 3.15		
		Stability: Unstable	**Termination Reason** Terminated on refusal.	**Last Updated** 07/11/2022

AGS

CAUSEWAY GEOTECH

APPENDIX C

Environmental and Geotechnical Laboratory Results



eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	22-22671-1
Initial Date of Issue:	28-Jun-2022
Client	Causeway Geotech Ltd
Client Address:	8 Drumahiskey Road Balnamore Ballymoney County Antrim BT53 7QL
Contact(s):	Carin Cornwall Colm Hurley Darren O'Mahony Gabriella Horan Joe Gervin John Cameron Lucy Newland Martin Gardiner Matthew Gilbert Neil Haggan Paul Dunlop Sean Ross Stephen Franey Stephen Watson Stuart Abraham Thomas McAllister
Project	21-0403S DAA South Apron
Quotation No.:	Q21-23509
Date Received:	17-Jun-2022
Order No.:	
Date Instructed:	20-Jun-2022
No. of Samples:	3
Turnaround (Wkdays):	7
Results Due:	28-Jun-2022
Date Approved:	28-Jun-2022
Approved By:	

Details:	Stuart Henderson, Technical Manager

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Results - Leachate

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd				Chemtest Job No.:		22-22671
Quotation No.: Q21-23509				Chemtest Sample ID.:		1450588
				Sample Location:		BH03
				Sample Type:		SOIL
				Top Depth (m):		0.50
				Date Sampled:		15-Jun-2022
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	2:1		N/A	8.1
Ammonia (Free)	N	1220	2:1	mg/l	0.050	< 0.050
Ammoniacal Nitrogen	U	1220	2:1	mg/l	0.050	0.078
Nitrite	U	1220	2:1	mg/l	0.020	0.047
Nitrate	U	1220	2:1	mg/l	0.50	5.8
Sulphate	U	1220	2:1	mg/l	1.0	4.8
Cyanide (Total)	U	1300	2:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	2:1	mg/l	0.050	< 0.050
Hardness	U	1415	2:1	mg/l	15	120
Arsenic (Dissolved)	U	1455	2:1	µg/l	0.20	< 0.20
Boron (Dissolved)	U	1455	2:1	µg/l	10.0	13
Copper (Dissolved)	U	1455	2:1	µg/l	0.50	1.9
Mercury (Dissolved)	U	1455	2:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	2:1	µg/l	0.50	< 0.50
Lead (Dissolved)	U	1455	2:1	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	2:1	µg/l	0.50	1.0
Zinc (Dissolved)	U	1455	2:1	µg/l	2.5	< 2.5
Cadmium (Total)	N	1455	2:1	µg/l	0.11	< 0.11
Iron (Dissolved)	N	1455	2:1	µg/l	5.0	< 5.0
Chromium (Trivalent)	N	1490	2:1	µg/l	20	< 20
Chromium (Hexavalent)	U	1490	2:1	µg/l	20	< 20
Total Organic Carbon	U	1610	2:1	mg/l	2.0	5.5
Naphthalene	N	1800	2:1	µg/l	0.010	< 0.010
Acenaphthylene	N	1800	2:1	µg/l	0.010	< 0.010
Acenaphthene	N	1800	2:1	µg/l	0.010	< 0.010
Fluorene	N	1800	2:1	µg/l	0.010	< 0.010
Phenanthrene	N	1800	2:1	µg/l	0.010	< 0.010
Anthracene	N	1800	2:1	µg/l	0.010	< 0.010
Fluoranthene	N	1800	2:1	µg/l	0.010	< 0.010
Pyrene	N	1800	2:1	µg/l	0.010	< 0.010
Benzo[a]anthracene	N	1800	2:1	µg/l	0.010	< 0.010
Chrysene	N	1800	2:1	µg/l	0.010	< 0.010
Benzo[b]fluoranthene	N	1800	2:1	µg/l	0.010	< 0.010
Benzo[k]fluoranthene	N	1800	2:1	µg/l	0.010	< 0.010
Benzo[a]pyrene	N	1800	2:1	µg/l	0.010	< 0.010
Indeno(1,2,3-c,d)Pyrene	N	1800	2:1	µg/l	0.010	< 0.010
Dibenz(a,h)Anthracene	N	1800	2:1	µg/l	0.010	< 0.010
Benzo[g,h,i]perylene	N	1800	2:1	µg/l	0.010	< 0.010
Total Of 16 PAH's	N	1800	2:1	µg/l	0.20	< 0.20

Results - Soil

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd			Chemtest Job No.:		22-22671	22-22671
Quotation No.: Q21-23509			Chemtest Sample ID.:		1450588	1450591
			Sample Location:		BH03	BH04
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.50	0.30
			Date Sampled:		15-Jun-2022	15-Jun-2022
			Asbestos Lab:		NEW-ASB	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
ACM Type	U	2192		N/A	-	
Asbestos Identification	U	2192		N/A	No Asbestos Detected	
Moisture	N	2030	%	0.020	15	6.0
pH	U	2010		4.0	8.4	9.7
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.70	< 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.028	0.23
Total Sulphur	U	2175	%	0.010	0.068	0.35
Sulphur (Elemental)	U	2180	mg/kg	1.0	2.7	< 1.0
Nitrate (Water Soluble)	N	2220	g/l	0.010	< 0.010	< 0.010
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	0.58	4.1
Sulphate (Total)	U	2430	%	0.010	0.086	0.64
Arsenic	U	2455	mg/kg	0.5	7.8	4.2
Cadmium	U	2455	mg/kg	0.10	1.2	0.44
Chromium	U	2455	mg/kg	0.5	11	7.4
Copper	U	2455	mg/kg	0.50	20	12
Mercury	U	2455	mg/kg	0.05	0.09	< 0.05
Nickel	U	2455	mg/kg	0.50	22	21
Lead	U	2455	mg/kg	0.50	36	7.4
Selenium	U	2455	mg/kg	0.25	0.33	0.59
Zinc	U	2455	mg/kg	0.50	71	43
Chromium (Trivalent)	N	2490	mg/kg	1.0	11	7.4
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	6.2	2.9
Total TPH >C6-C40	U	2670	mg/kg	10	77	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	
Aromatic T C8-C10	U	2680	mg/kg	1.0	< 1.0	

Results - Soil

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd			Chemtest Job No.:		22-22671	22-22671
Quotation No.: Q21-23509			Chemtest Sample ID.:		1450588	1450591
			Sample Location:		BH03	BH04
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.50	0.30
			Date Sampled:		15-Jun-2022	15-Jun-2022
			Asbestos Lab:		NEW-ASB	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	
Dichlorodifluoromethane	N	2760	µg/kg	0.20	< 0.20	
Chloromethane	N	2760	µg/kg	0.20	< 0.20	
Vinyl Chloride	N	2760	µg/kg	0.20	< 0.20	
Bromomethane	N	2760	µg/kg	0.20	< 0.20	
Chloroethane	N	2760	µg/kg	0.20	< 0.20	
Trichlorofluoromethane	N	2760	µg/kg	0.20	< 0.20	
1,1-Dichloroethene	N	2760	µg/kg	0.20	< 0.20	
Trans 1,2-Dichloroethene	N	2760	µg/kg	0.20	< 0.20	
1,1-Dichloroethane	N	2760	µg/kg	0.20	< 0.20	
cis 1,2-Dichloroethene	N	2760	µg/kg	0.20	< 0.20	
Bromochloromethane	N	2760	µg/kg	0.50	< 0.50	
Trichloromethane	N	2760	µg/kg	0.20	< 0.20	
1,1,1-Trichloroethane	N	2760	µg/kg	0.20	< 0.20	
Tetrachloromethane	N	2760	µg/kg	0.20	< 0.20	
1,1-Dichloropropene	N	2760	µg/kg	0.20	< 0.20	
Benzene	N	2760	µg/kg	0.20	< 0.20	
Benzene	U	2760	µg/kg	1.0	< 1.0	
1,2-Dichloroethane	N	2760	µg/kg	0.20	< 0.20	
Trichloroethene	N	2760	µg/kg	0.20	< 0.20	
1,2-Dichloropropane	N	2760	µg/kg	0.20	< 0.20	
Dibromomethane	N	2760	µg/kg	0.20	< 0.20	
Bromodichloromethane	N	2760	µg/kg	0.20	< 0.20	
cis-1,3-Dichloropropene	N	2760	µg/kg	0.20	< 0.20	
Toluene	N	2760	µg/kg	0.20	< 0.20	
Toluene	U	2760	µg/kg	1.0	< 1.0	
Trans-1,3-Dichloropropene	N	2760	µg/kg	0.20	< 0.20	
1,1,2-Trichloroethane	N	2760	µg/kg	0.20	< 0.20	
Tetrachloroethene	N	2760	µg/kg	0.20	< 0.20	
1,3-Dichloropropane	N	2760	µg/kg	0.20	< 0.20	
Dibromochloromethane	N	2760	µg/kg	0.20	< 0.20	
1,2-Dibromoethane	N	2760	µg/kg	0.20	< 0.20	
Chlorobenzene	N	2760	µg/kg	0.20	< 0.20	

Results - Soil

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd			Chemtest Job No.:		22-22671	22-22671
Quotation No.: Q21-23509			Chemtest Sample ID.:		1450588	1450591
			Sample Location:		BH03	BH04
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.50	0.30
			Date Sampled:		15-Jun-2022	15-Jun-2022
			Asbestos Lab:		NEW-ASB	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
1,1,1,2-Tetrachloroethane	N	2760	µg/kg	0.20	< 0.20	
Ethylbenzene	N	2760	µg/kg	0.20	< 0.20	
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	
m & p-Xylene	N	2760	µg/kg	0.20	< 0.20	
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	
o-Xylene	N	2760	µg/kg	0.20	< 0.20	
o-Xylene	U	2760	µg/kg	1.0	< 1.0	
Styrene	N	2760	µg/kg	0.20	< 0.20	
Tribromomethane	N	2760	µg/kg	0.20	< 0.20	
Isopropylbenzene	N	2760	µg/kg	0.20	< 0.20	
Bromobenzene	N	2760	µg/kg	0.20	< 0.20	
1,2,3-Trichloropropane	N	2760	µg/kg	0.20	< 0.20	
N-Propylbenzene	N	2760	µg/kg	0.20	< 0.20	
2-Chlorotoluene	N	2760	µg/kg	0.20	< 0.20	
1,3,5-Trimethylbenzene	N	2760	µg/kg	0.20	< 0.20	
4-Chlorotoluene	N	2760	µg/kg	0.20	< 0.20	
Tert-Butylbenzene	N	2760	µg/kg	0.20	< 0.20	
1,2,4-Trimethylbenzene	N	2760	µg/kg	0.20	< 0.20	
Sec-Butylbenzene	N	2760	µg/kg	0.20	< 0.20	
1,3-Dichlorobenzene	N	2760	µg/kg	0.20	< 0.20	
4-Isopropyltoluene	N	2760	µg/kg	0.20	< 0.20	
1,4-Dichlorobenzene	N	2760	µg/kg	0.20	< 0.20	
N-Butylbenzene	N	2760	µg/kg	0.20	< 0.20	
1,2-Dichlorobenzene	N	2760	µg/kg	0.20	< 0.20	
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	0.20	< 0.20	
1,2,4-Trichlorobenzene	N	2760	µg/kg	0.20	< 0.20	
Hexachlorobutadiene	N	2760	µg/kg	0.20	< 0.20	
1,2,3-Trichlorobenzene	N	2760	µg/kg	0.20	< 0.20	
Methyl Tert-Butyl Ether	N	2760	µg/kg	0.20	< 0.20	
N-Nitrosodimethylamine	N	2790	mg/kg	0.050	< 0.050	
Phenol	N	2790	mg/kg	0.050	< 0.050	
2-Chlorophenol	N	2790	mg/kg	0.050	< 0.050	
Bis-(2-Chloroethyl)Ether	N	2790	mg/kg	0.050	< 0.050	
1,3-Dichlorobenzene	N	2790	mg/kg	0.050	< 0.050	
1,4-Dichlorobenzene	N	2790	mg/kg	0.050	< 0.050	
1,2-Dichlorobenzene	N	2790	mg/kg	0.050	< 0.050	
2-Methylphenol	N	2790	mg/kg	0.050	< 0.050	
Bis(2-Chloroisopropyl)Ether	N	2790	mg/kg	0.050	< 0.050	
Hexachlor[illegible]ne	N	2790	mg/kg	0.050	< 0.050	

Results - Soil

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd			Chemtest Job No.:		22-22671	22-22671
Quotation No.: Q21-23509			Chemtest Sample ID.:		1450588	1450591
			Sample Location:		BH03	BH04
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.50	0.30
			Date Sampled:		15-Jun-2022	15-Jun-2022
			Asbestos Lab:		NEW-ASB	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
N-Nitrosodi-n-propylamine	N	2790	mg/kg	0.050	< 0.050	
4-Methylphenol	N	2790	mg/kg	0.050	< 0.050	
Nitrobenzene	N	2790	mg/kg	0.050	< 0.050	
Isophorone	N	2790	mg/kg	0.050	< 0.050	
2-Nitrophenol	N	2790	mg/kg	0.050	< 0.050	
2,4-Dimethylphenol	N	2790	mg/kg	0.050	< 0.050	
Bis(2-Chloroethoxy)Methane	N	2790	mg/kg	0.050	< 0.050	
2,4-Dichlorophenol	N	2790	mg/kg	0.050	< 0.050	
1,2,4-Trichlorobenzene	N	2790	mg/kg	0.050	< 0.050	
Naphthalene	N	2790	mg/kg	0.050	< 0.050	
4-Chloroaniline	N	2790	mg/kg	0.050	< 0.050	
Hexachlorobutadiene	N	2790	mg/kg	0.050	< 0.050	
4-Chloro-3-Methylphenol	N	2790	mg/kg	0.050	< 0.050	
2-Methylnaphthalene	N	2790	mg/kg	0.050	< 0.050	
Hexachlorocyclopentadiene	N	2790	mg/kg	0.050	< 0.050	
2,4,6-Trichlorophenol	N	2790	mg/kg	0.050	< 0.050	
2,4,5-Trichlorophenol	N	2790	mg/kg	0.050	< 0.050	
2-Chloronaphthalene	N	2790	mg/kg	0.050	< 0.050	
2-Nitroaniline	N	2790	mg/kg	0.050	< 0.050	
Acenaphthylene	N	2790	mg/kg	0.050	0.19	
Dimethylphthalate	N	2790	mg/kg	0.050	< 0.050	
2,6-Dinitrotoluene	N	2790	mg/kg	0.050	< 0.050	
Acenaphthene	N	2790	mg/kg	0.050	< 0.050	
3-Nitroaniline	N	2790	mg/kg	0.050	< 0.050	
Dibenzofuran	N	2790	mg/kg	0.050	< 0.050	
4-Chlorophenylphenylether	N	2790	mg/kg	0.050	< 0.050	
2,4-Dinitrotoluene	N	2790	mg/kg	0.050	< 0.050	
Fluorene	N	2790	mg/kg	0.050	< 0.050	
Diethyl Phthalate	N	2790	mg/kg	0.050	< 0.050	
4-Nitroaniline	N	2790	mg/kg	0.050	< 0.050	
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.050	< 0.050	
Azobenzene	N	2790	mg/kg	0.050	< 0.050	
4-Bromophenylphenyl Ether	N	2790	mg/kg	0.050	< 0.050	
Hexachlorobenzene	N	2790	mg/kg	0.050	< 0.050	
Pentachlorophenol	N	2790	mg/kg	0.050	< 0.050	
Phenanthrene	N	2790	mg/kg	0.050	0.18	
Anthracene	N	2790	mg/kg	0.050	0.083	
Carbazole	N	2790	mg/kg	0.050	< 0.050	
Di-N-Butyl Phthalate	N	2790	mg/kg	0.050	0.071	

Results - Soil

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd			Chemtest Job No.:		22-22671	22-22671
Quotation No.: Q21-23509			Chemtest Sample ID.:		1450588	1450591
			Sample Location:		BH03	BH04
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.50	0.30
			Date Sampled:		15-Jun-2022	15-Jun-2022
			Asbestos Lab:		NEW-ASB	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Fluoranthene	N	2790	mg/kg	0.050	0.39	
Pyrene	N	2790	mg/kg	0.050	0.34	
Butylbenzyl Phthalate	N	2790	mg/kg	0.050	< 0.050	
Benzo[a]anthracene	N	2790	mg/kg	0.050	0.25	
Chrysene	N	2790	mg/kg	0.050	0.25	
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.050	< 0.050	
Di-N-Octyl Phthalate	N	2790	mg/kg	0.050	< 0.050	
Benzo[b]fluoranthene	N	2790	mg/kg	0.050	0.37	
Benzo[k]fluoranthene	N	2790	mg/kg	0.050	0.13	
Benzo[a]pyrene	N	2790	mg/kg	0.050	0.22	
Indeno(1,2,3-c,d)Pyrene	N	2790	mg/kg	0.050	< 0.050	
Dibenz(a,h)Anthracene	N	2790	mg/kg	0.050	< 0.050	
Benzo[g,h,i]perylene	N	2790	mg/kg	0.050	0.21	
4-Nitrophenol	N	2790	mg/kg	0.050	< 0.050	
Naphthalene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	0.51	< 0.10
Pyrene	U	2800	mg/kg	0.10	0.47	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0
Demeton-O	N	2820	mg/kg	0.20	< 0.20	
Phorate	N	2820	mg/kg	0.20	< 0.20	
Demeton-S	N	2820	mg/kg	0.20	< 0.20	
Disulfoton	N	2820	mg/kg	0.20	< 0.20	
Fenthion	N	2820	mg/kg	0.20	< 0.20	
Trichloronate	N	2820	mg/kg	0.20	< 0.20	
Prothiofos	N	2820	mg/kg	0.20	< 0.20	
Fensulphot	N	2820	mg/kg	0.20	< 0.20	

Results - Soil

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd			**Chemtest Job No.:**		22-22671	22-22671
Quotation No.: Q21-23509			**Chemtest Sample ID.:**		1450588	1450591
			Sample Location:		BH03	BH04
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.50	0.30
			Date Sampled:		15-Jun-2022	15-Jun-2022
			Asbestos Lab:		NEW-ASB	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Sulprofos	N	2820	mg/kg	0.20	< 0.20	
Azinphos-Methyl	N	2820	mg/kg	0.20	< 0.20	
Coumaphos	N	2820	mg/kg	0.20	< 0.20	
Alpha-HCH	N	2840	mg/kg	0.20	< 0.20	
Gamma-HCH (Lindane)	N	2840	mg/kg	0.20	< 0.20	
Beta-HCH	N	2840	mg/kg	0.20	< 0.20	
Delta-HCH	N	2840	mg/kg	0.20	< 0.20	
Heptachlor	N	2840	mg/kg	0.20	< 0.20	
Aldrin	N	2840	mg/kg	0.20	< 0.20	
Heptachlor Epoxide	N	2840	mg/kg	0.20	< 0.20	
Gamma-Chlordane	N	2840	mg/kg	0.20	< 0.20	
Alpha-Chlordane	N	2840	mg/kg	0.20	< 0.20	
Endosulfan I	N	2840	mg/kg	0.20	< 0.20	
4,4-DDE	N	2840	mg/kg	0.20	< 0.20	
Dieldrin	N	2840	mg/kg	0.20	< 0.20	
Endrin	N	2840	mg/kg	0.20	< 0.20	
4,4-DDD	N	2840	mg/kg	0.20	< 0.20	
Endosulfan II	N	2840	mg/kg	0.20	< 0.20	
Endrin Aldehyde	N	2840	mg/kg	0.20	< 0.20	
4,4-DDT	N	2840	mg/kg	0.20	< 0.20	
Endosulfan Sulphate	N	2840	mg/kg	0.20	< 0.20	
Methoxychlor	N	2840	mg/kg	0.20	< 0.20	
Endrin Ketone	N	2840	mg/kg	0.20	< 0.20	
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10

Results - Water

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd			Chemtest Job No.:		22-22671
Quotation No.: Q21-23509			Chemtest Sample ID.:		1450593
			Sample Location:		BH04
			Sample Type:		WATER
			Top Depth (m):		0.55
			Date Sampled:		15-Jun-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
pH	U	1010		N/A	7.6
Ammonia (Free)	N	1220	mg/l	0.050	0.18
Ammoniacal Nitrogen	U	1220	mg/l	0.050	9.4
Nitrite	U	1220	mg/l	0.020	0.71
Nitrate	U	1220	mg/l	0.50	24
Sulphate	U	1220	mg/l	1.0	36
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Total Hardness as CaCO3	U	1270	mg/l	15	250
Arsenic (Dissolved)	U	1455	µg/l	0.20	1.4
Boron (Dissolved)	U	1455	µg/l	10.0	34
Cadmium (Dissolved)	U	1455	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	µg/l	0.50	< 0.50
Copper (Dissolved)	U	1455	µg/l	0.50	1.1
Iron (Dissolved)	N	1455	µg/l	5.0	< 5.0
Mercury (Dissolved)	U	1455	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	µg/l	0.50	< 0.50
Lead (Dissolved)	U	1455	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	µg/l	0.50	2.8
Zinc (Dissolved)	U	1455	µg/l	2.5	18
Chromium (Trivalent)	N	1490	µg/l	20	[B] < 20
Chromium (Hexavalent)	U	1490	µg/l	20	[B] < 20
Total Organic Carbon	U	1610	mg/l	2.0	2.4
Total TPH >C6-C40	U	1670	µg/l	10	< 10
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10
Aromatic T[redacted]C21-C35	N	1675	µg/l	0.10	[redacted]75

Results - Water

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd			Chemtest Job No.:		22-22671
Quotation No.: Q21-23509			Chemtest Sample ID.:		1450593
			Sample Location:		BH04
			Sample Type:		WATER
			Top Depth (m):		0.55
			Date Sampled:		15-Jun-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	75
Total Petroleum Hydrocarbons	N	1675	µg/l	10	75
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0
Bromomethane	U	1760	µg/l	5	< 5
Chloroethane	U	1760	µg/l	2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5	< 5
Trichloromethane	U	1760	µg/l	1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10
Bromodichloromethane	U	1760	µg/l	5	< 5
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10
1,2-Dibromoethane	U	1760	µg/l	5	< 5
Chlorobenzene	N	1760	µg/l	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0

Results - Water

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd			Chemtest Job No.:		22-22671
Quotation No.: Q21-23509			Chemtest Sample ID.:		1450593
			Sample Location:		BH04
			Sample Type:		WATER
			Top Depth (m):		0.55
			Date Sampled:		15-Jun-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Bromobenzene	U	1760	µg/l	1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroan	N	1790	µg/l	0.50	0.50

Results - Water

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd			Chemtest Job No.:		22-22671
Quotation No.: Q21-23509			Chemtest Sample ID.:		1450593
			Sample Location:		BH04
			Sample Type:		WATER
			Top Depth (m):		0.55
			Date Sampled:		15-Jun-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50

Results - Water

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd			Chemtest Job No.:		22-22671
Quotation No.: Q21-23509			Chemtest Sample ID.:		1450593
			Sample Location:		BH04
			Sample Type:		WATER
			Top Depth (m):		0.55
			Date Sampled:		15-Jun-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1800	µg/l	0.010	< 0.010
Acenaphthylene	N	1800	µg/l	0.010	< 0.010
Acenaphthene	N	1800	µg/l	0.010	< 0.010
Fluorene	N	1800	µg/l	0.010	< 0.010
Phenanthrene	N	1800	µg/l	0.010	< 0.010
Anthracene	N	1800	µg/l	0.010	< 0.010
Fluoranthene	N	1800	µg/l	0.010	< 0.010
Pyrene	N	1800	µg/l	0.010	< 0.010
Benzo[a]anthracene	N	1800	µg/l	0.010	< 0.010
Chrysene	N	1800	µg/l	0.010	< 0.010
Benzo[b]fluoranthene	N	1800	µg/l	0.010	< 0.010
Benzo[k]fluoranthene	N	1800	µg/l	0.010	< 0.010
Benzo[a]pyrene	N	1800	µg/l	0.010	< 0.010
Indeno(1,2,3-c,d)Pyrene	N	1800	µg/l	0.010	< 0.010
Dibenz(a,h)Anthracene	N	1800	µg/l	0.010	< 0.010
Benzo[g,h,i]perylene	N	1800	µg/l	0.010	< 0.010
Total Of 16 PAH's	N	1800	µg/l	0.20	< 0.20
Total Phenols	U	1920	mg/l	0.030	< 0.030

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1450593			BH04	15-Jun-2022	B	Coloured Winchester 1000ml
1450593			BH04	15-Jun-2022	B	EPA Vial 40ml
1450593			BH04	15-Jun-2022	B	Plastic Bottle 1000ml

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1270	Total Hardness of Waters	Total hardness	Calculation applied to calcium and magnesium results, expressed as mg l-1 CaCO3 equivalent.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1415	Cations in Waters by ICP-MS	Sodium; Potassium; Calcium; Magnesium	Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS).
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1670	Total Petroleum Hydrocarbons (TPH) in Waters by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO	Pentane extraction / GC FID detection
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-MS	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2180	Sulphur (Elemental) in Soils by HPLC	Sulphur	Dichloromethane extraction / HPLC with UV detection

Test Methods

SOP	Title	Parameters included	Method summary
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measuremernt by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2820	Organophosphorus (O-P) Pesticides in Soils by GC-MS	Organophosphorus pesticide representative suite including Parathion, Malathion etc, plus client specific determinands	Dichloromethane extraction / GC-MS
2840	Organochlorine (O-Cl) Pesticides in Soils by GC-MS	Organochlorine pesticide representative suite including DDT and its metabolites, 'drins' and HCH etc, plus client specific determinands	Dichloromethane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	22-29102-1
Initial Date of Issue:	26-Aug-2022
Client	Causeway Geotech Ltd
Client Address:	8 Drumahiskey Road Balnamore Ballymoney County Antrim BT53 7QL
Contact(s):	Colm Hurley Darren O'Mahony Gabriella Horan Joe Gervin John Cameron Lucy Newland Martin Gardiner Matthew Gilbert Neil Haggan Paul Dunlop Sean Ross Stephen Franey Stephen Watson Stuart Abraham Thomas McAllister Rachel White
Project	21-0403S DAA South Apron
Quotation No.:	Q21-23509
Order No.:	
No. of Samples:	2
Turnaround (Wkdays):	7
Date Approved:	26-Aug-2022
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	01-Aug-2022
Date Instructed:	18-Aug-2022
Results Due:	26-Aug-2022

eurofins | Chemtest
Eurofins Chemtest Ltd
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Email: info@chemtest.com

Results - Leachate

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd				Chemtest Job No.:		22-29102	22-29102
Quotation No.: Q21-23509				Chemtest Sample ID.:		1479232	1479233
				Sample Location:		TP40	TP40
				Sample Type:		SOIL	SOIL
				Top Depth (m):		0.3	0.5
				Date Sampled:		27-Jul-2022	27-Jul-2022
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**		
pH	U	1010	2:1		N/A	8.5	8.5
Ammonia (Free)	N	1220	2:1	mg/l	0.050	0.096	< 0.050
Ammoniacal Nitrogen	U	1220	2:1	mg/l	0.050	0.68	0.12
Nitrite	U	1220	2:1	mg/l	0.020	2.3	1.0
Nitrate	U	1220	2:1	mg/l	0.50	6.2	2.7
Sulphate	U	1220	2:1	mg/l	1.0	140	110
Cyanide (Total)	U	1300	2:1	mg/l	0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	2:1	mg/l	0.050	< 0.050	< 0.050
Hardness	U	1415	2:1	mg/l	15	230	190
Arsenic (Dissolved)	U	1455	2:1	µg/l	0.20	1.9	1.6
Boron (Dissolved)	U	1455	2:1	µg/l	10.0	21	15
Copper (Dissolved)	U	1455	2:1	µg/l	0.50	9.7	6.1
Mercury (Dissolved)	U	1455	2:1	µg/l	0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	2:1	µg/l	0.50	2.0	1.3
Lead (Dissolved)	U	1455	2:1	µg/l	0.50	< 0.50	< 0.50
Selenium (Dissolved)	U	1455	2:1	µg/l	0.50	5.3	4.4
Zinc (Dissolved)	U	1455	2:1	µg/l	2.5	2.6	< 2.5
Cadmium (Total)	N	1455	2:1	µg/l	0.11	< 0.11	< 0.11
Iron (Dissolved)	N	1455	2:1	µg/l	5.0	13	21
Chromium (Trivalent)	N	1490	2:1	µg/l	20	< 20	< 20
Chromium (Hexavalent)	U	1490	2:1	µg/l	20	< 20	< 20
Total Organic Carbon	U	1610	2:1	mg/l	2.0	25	23
Naphthalene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010
Acenaphthylene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010
Acenaphthene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010
Fluorene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010
Phenanthrene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010
Anthracene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010
Fluoranthene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010
Pyrene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010
Benzo[a]anthracene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010
Chrysene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010
Benzo[b]fluoranthene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010
Benzo[k]fluoranthene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010
Benzo[a]pyrene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010
Indeno(1,2,3-c,d)Pyrene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010
Dibenz(a,h)Anthracene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010
Benzo[g,h,i]perylene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010
Total Of 16 PAH's	N	1800	2:1	µg/l	0.20	< 0.20	< 0.20

Results - Soil

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd			Chemtest Job No.:		22-29102	22-29102
Quotation No.: Q21-23509			Chemtest Sample ID.:		1479232	1479233
			Sample Location:		TP40	TP40
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.3	0.5
			Date Sampled:		27-Jul-2022	27-Jul-2022
			Asbestos Lab:		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
ACM Type	U	2192		N/A	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	5.3	5.0
pH	U	2010		4.0	8.0	8.2
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.74	0.71
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.26	0.20
Total Sulphur	U	2175	%	0.010	0.063	0.10
Sulphur (Elemental)	U	2180	mg/kg	1.0	9.5	9.7
Nitrate (Water Soluble)	N	2220	g/l	0.010	< 0.010	< 0.010
Cyanide (Free)	U	2300	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	< 0.50	0.72
Sulphate (Total)	U	2430	%	0.010	0.22	0.21
Arsenic	U	2455	mg/kg	0.5	10	8.3
Cadmium	U	2455	mg/kg	0.10	0.87	0.74
Chromium	U	2455	mg/kg	0.5	13	9.9
Copper	U	2455	mg/kg	0.50	26	22
Mercury	U	2455	mg/kg	0.05	0.17	0.15
Nickel	U	2455	mg/kg	0.50	26	20
Lead	U	2455	mg/kg	0.50	49	34
Selenium	U	2455	mg/kg	0.25	1.4	1.2
Zinc	U	2455	mg/kg	0.50	71	57
Chromium (Trivalent)	N	2490	mg/kg	1.0	13	9.9
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	5.1	3.2
Total TPH >C6-C40	U	2670	mg/kg	10	[B] < 10	[B] < 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[B] < 5.0	[B] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aromatic T C8-C10	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0

Results - Soil

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd			**Chemtest Job No.:**		22-29102	22-29102
Quotation No.: Q21-23509			**Chemtest Sample ID.:**		1479232	1479233
			Sample Location:		TP40	TP40
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.3	0.5
			Date Sampled:		27-Jul-2022	27-Jul-2022
			Asbestos Lab:		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[B] < 5.0	[B] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[B] < 10	[B] < 10
Benzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Toluene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Ethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	2.4	< 0.10
Anthracene	U	2800	mg/kg	0.10	0.51	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	3.0	1.1
Pyrene	U	2800	mg/kg	0.10	2.5	1.3
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	8.4	2.4
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1479232			TP40	27-Jul-2022	B	Amber Glass 250ml
1479232			TP40	27-Jul-2022	B	Amber Glass 60ml
1479232			TP40	27-Jul-2022	B	Plastic Tub 500g
1479233			TP40	27-Jul-2022	B	Amber Glass 250ml
1479233			TP40	27-Jul-2022	B	Amber Gl 60ml
1479233			TP40	27-Jul-2022	B	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1415	Cations in Waters by ICP-MS	Sodium; Potassium; Calcium; Magnesium	Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS).
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-MS	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GCMS detection
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2180	Sulphur (Elemental) in Soils by HPLC	Sulphur	Dichloromethane extraction / HPLC with UV detection
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measurememt by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

Test Methods

SOP	Title	Parameters included	Method summary
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

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Tel: 01638 606070
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Final Report

Report No.:	22-29677-1
Initial Date of Issue:	24-Aug-2022
Client	Causeway Geotech Ltd
Client Address:	8 Drumahiskey Road Balnamore Ballymoney County Antrim BT53 7QL
Contact(s):	Colm Hurley Darren O'Mahony Gabriella Horan Joe Gervin John Cameron Lucy Newland Martin Gardiner Matthew Gilbert Neil Haggan Paul Dunlop Sean Ross Stephen Franey Stephen Watson Stuart Abraham Thomas McAllister Rachel White
Project	21-0403S DAA South Apron
Quotation No.:	Q21-23509
Date Received:	04-Aug-2022
Order No.:	
Date Instructed:	16-Aug-2022
No. of Samples:	1
Turnaround (Wkdays):	7
Results Due:	24-Aug-2022
Date Approved:	24-Aug-2022
Approved By:	

Details:	Stuart Henderson, Technical Manager

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Email: info@chemtest.com

Results - Leachate

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd				Chemtest Job No.:		22-29677
Quotation No.: Q21-23509				Chemtest Sample ID.:		1481667
				Sample Location:		TP39
				Sample Type:		SOIL
				Top Depth (m):		0.3
				Date Sampled:		27-Jul-2022
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	2:1		N/A	8.3
Ammonia (Free)	N	1220	2:1	mg/l	0.050	< 0.050
Ammoniacal Nitrogen	U	1220	2:1	mg/l	0.050	0.16
Nitrite	U	1220	2:1	mg/l	0.020	0.70
Nitrate	U	1220	2:1	mg/l	0.50	0.56
Sulphate	U	1220	2:1	mg/l	1.0	12
Cyanide (Total)	U	1300	2:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	2:1	mg/l	0.050	< 0.050
Hardness	U	1415	2:1	mg/l	15	26
Arsenic (Dissolved)	U	1455	2:1	µg/l	0.20	110
Boron (Dissolved)	U	1455	2:1	µg/l	10.0	11
Copper (Dissolved)	U	1455	2:1	µg/l	0.50	3.8
Mercury (Dissolved)	U	1455	2:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	2:1	µg/l	0.50	1.3
Lead (Dissolved)	U	1455	2:1	µg/l	0.50	1.0
Selenium (Dissolved)	U	1455	2:1	µg/l	0.50	0.97
Zinc (Dissolved)	U	1455	2:1	µg/l	2.5	4.3
Cadmium (Total)	N	1455	2:1	µg/l	0.11	< 0.11
Iron (Dissolved)	N	1455	2:1	µg/l	5.0	270
Chromium (Trivalent)	N	1490	2:1	µg/l	20	< 20
Chromium (Hexavalent)	U	1490	2:1	µg/l	20	< 20
Total Organic Carbon	U	1610	2:1	mg/l	2.0	5.1
Naphthalene	N	1800	2:1	µg/l	0.010	< 0.010
Acenaphthylene	N	1800	2:1	µg/l	0.010	< 0.010
Acenaphthene	N	1800	2:1	µg/l	0.010	< 0.010
Fluorene	N	1800	2:1	µg/l	0.010	< 0.010
Phenanthrene	N	1800	2:1	µg/l	0.010	< 0.010
Anthracene	N	1800	2:1	µg/l	0.010	< 0.010
Fluoranthene	N	1800	2:1	µg/l	0.010	< 0.010
Pyrene	N	1800	2:1	µg/l	0.010	< 0.010
Benzo[a]anthracene	N	1800	2:1	µg/l	0.010	< 0.010
Chrysene	N	1800	2:1	µg/l	0.010	< 0.010
Benzo[b]fluoranthene	N	1800	2:1	µg/l	0.010	< 0.010
Benzo[k]fluoranthene	N	1800	2:1	µg/l	0.010	< 0.010
Benzo[a]pyrene	N	1800	2:1	µg/l	0.010	< 0.010
Indeno(1,2,3-c,d)Pyrene	N	1800	2:1	µg/l	0.010	< 0.010
Dibenz(a,h)Anthracene	N	1800	2:1	µg/l	0.010	< 0.010
Benzo[g,h,i]perylene	N	1800	2:1	µg/l	0.010	< 0.010
Total Of 16 PAH's	N	1800	2:1	µg/l	0.20	< 0.20

Results - Soil

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd			**Chemtest Job No.:**		22-29677
Quotation No.: Q21-23509			**Chemtest Sample ID.:**		1481667
			Sample Location:		TP39
			Sample Type:		SOIL
			Top Depth (m):		0.3
			Date Sampled:		27-Jul-2022
			Asbestos Lab:		DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected
Moisture	N	2030	%	0.020	5.3
pH	U	2010		4.0	9.4
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010
Total Sulphur	U	2175	%	0.010	0.039
Sulphur (Elemental)	U	2180	mg/kg	1.0	3.0
Nitrate (Water Soluble)	N	2220	g/l	0.010	< 0.010
Cyanide (Free)	U	2300	mg/kg	0.50	[B] < 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	[B] < 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	< 0.50
Sulphate (Total)	U	2430	%	0.010	0.040
Arsenic	U	2455	mg/kg	0.5	59
Cadmium	U	2455	mg/kg	0.10	0.12
Chromium	U	2455	mg/kg	0.5	6.0
Copper	U	2455	mg/kg	0.50	8.3
Mercury	U	2455	mg/kg	0.05	< 0.05
Nickel	U	2455	mg/kg	0.50	5.8
Lead	U	2455	mg/kg	0.50	21
Selenium	U	2455	mg/kg	0.25	< 0.25
Zinc	U	2455	mg/kg	0.50	33
Chromium (Trivalent)	N	2490	mg/kg	1.0	6.0
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Organic Matter	U	2625	%	0.40	< 0.40
Total TPH >C6-C40	U	2670	mg/kg	10	[B] 60
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[B] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[B] < 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	[B] < 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	[B] < 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	[B] < 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	[B] < 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	[B] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[B] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[B] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[B] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[B] < 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	[B] < 1.0

Results - Soil

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd			**Chemtest Job No.:**		22-29677
Quotation No.: Q21-23509			**Chemtest Sample ID.:**		1481667
			Sample Location:		TP39
			Sample Type:		SOIL
			Top Depth (m):		0.3
			Date Sampled:		27-Jul-2022
			Asbestos Lab:		DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	[B] < 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	[B] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[B] < 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	[B] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[B] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[B] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[B] < 10
Benzene	U	2760	µg/kg	1.0	[B] < 1.0
Toluene	U	2760	µg/kg	1.0	[B] < 1.0
Ethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[B] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[B] < 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1481667			TP39	27-Jul-2022	B	Amber Glass 250ml
1481667			TP39	27-Jul-2022	B	Amber Glass 60ml
1481667			TP39	27-Jul-2022	B	Plastic Tub 1000g

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1415	Cations in Waters by ICP-MS	Sodium; Potassium; Calcium; Magnesium	Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS).
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-MS	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GCMS detection
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2180	Sulphur (Elemental) in Soils by HPLC	Sulphur	Dichloromethane extraction / HPLC with UV detection
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measurememt by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

Test Methods

SOP	Title	Parameters included	Method summary
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	22-29871-1
Initial Date of Issue:	24-Aug-2022
Client	Causeway Geotech Ltd
Client Address:	8 Drumahiskey Road Balnamore Ballymoney County Antrim BT53 7QL
Contact(s):	Colm Hurley Darren O'Mahony Gabriella Horan Joe Gervin John Cameron Lucy Newland Martin Gardiner Matthew Gilbert Neil Haggan Paul Dunlop Sean Ross Stephen Franey Stephen Watson Stuart Abraham Thomas McAllister Rachel White
Project	21-0403S DAA South Apron
Quotation No.:	Q21-23509
Order No.:	
No. of Samples:	6
Turnaround (Wkdays):	7
Date Approved:	24-Aug-2022
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	05-Aug-2022
Date Instructed:	16-Aug-2022
Results Due:	24-Aug-2022

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Results - Leachate

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd						Chemtest Job No.:	22-29871	22-29871	22-29871	22-29871	22-29871	22-29871
Quotation No.: Q21-23509						Chemtest Sample ID.:	1482515	1482516	1482517	1482519	1482520	1482521
						Sample Location:	TP42	TP42	TP42	TP46	TP46	TP46
						Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
						Top Depth (m):	0.30	0.5	1.50	0.30	0.50	1.50
						Date Sampled:	29-Jul-2022	29-Jul-2022	29-Jul-2022	29-Jul-2022	29-Jul-2022	29-Jul-2022
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**							
pH	U	1010	2:1		N/A		7.4	7.4	7.5	7.5	7.6	7.5
Ammonia (Free)	N	1220	2:1	mg/l	0.050		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Ammoniacal Nitrogen	U	1220	2:1	mg/l	0.050		0.076	0.52	0.11	0.078	0.093	0.30
Nitrite	U	1220	2:1	mg/l	0.020		0.089	1.3	0.092	0.40	0.37	0.10
Nitrate	U	1220	2:1	mg/l	0.50		2.0	5.1	3.9	1.6	1.4	3.9
Sulphate	U	1220	2:1	mg/l	1.0		52	120	59	23	21	25
Cyanide (Total)	U	1300	2:1	mg/l	0.050		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	2:1	mg/l	0.050		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Hardness	U	1415	2:1	mg/l	15		110	210	130	110	120	110
Arsenic (Dissolved)	U	1455	2:1	µg/l	0.20		2.0	4.4	1.6	0.67	0.57	1.1
Boron (Dissolved)	U	1455	2:1	µg/l	10.0		14	110	46	26	24	33
Copper (Dissolved)	U	1455	2:1	µg/l	0.50		3.9	6.7	1.1	2.1	1.2	2.7
Mercury (Dissolved)	U	1455	2:1	µg/l	0.05		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	2:1	µg/l	0.50		1.8	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Lead (Dissolved)	U	1455	2:1	µg/l	0.50		< 0.50	1.7	< 0.50	< 0.50	< 0.50	< 0.50
Selenium (Dissolved)	U	1455	2:1	µg/l	0.50		5.2	1.8	3.1	2.1	1.9	3.9
Zinc (Dissolved)	U	1455	2:1	µg/l	2.5		2.8	2.9	< 2.5	5.6	< 2.5	< 2.5
Cadmium (Total)	N	1455	2:1	µg/l	0.11		< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11
Iron (Dissolved)	N	1455	2:1	µg/l	5.0		27	< 5.0	20	< 5.0	< 5.0	58
Chromium (Trivalent)	N	1490	2:1	µg/l	20		< 20	< 20	< 20	< 20	< 20	< 20
Chromium (Hexavalent)	U	1490	2:1	µg/l	20		< 20	< 20	< 20	< 20	< 20	< 20
Total Organic Carbon	U	1610	2:1	mg/l	2.0		6.5	15	10	6.1	5.9	11
Naphthalene	N	1800	2:1	µg/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Acenaphthylene	N	1800	2:1	µg/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Acenaphthene	N	1800	2:1	µg/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Fluorene	N	1800	2:1	µg/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Phenanthrene	N	1800	2:1	µg/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Anthracene	N	1800	2:1	µg/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Fluoranthene	N	1800	2:1	µg/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Pyrene	N	1800	2:1	µg/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo[a]anthracene	N	1800	2:1	µg/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Chrysene	N	1800	2:1	µg/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo[b]fluoranthene	N	1800	2:1	µg/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo[k]fluoranthene	N	1800	2:1	µg/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo[a]pyrene	N	1800	2:1	µg/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Indeno(1,2,3-c,d)Pyrene	N	1800	2:1	µg/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Dibenz(a,h)Anthracene	N	1800	2:1	µg/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo[g,h,i]perylene	N	1800	2:1	µg/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total Of 16 PAH's	N	1800	2:1	µg/l	0.20		< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20

Results - Soil

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd		Chemtest Job No.:			22-29871	22-29871	22-29871	22-29871	22-29871	22-29871
Quotation No.: Q21-23509		Chemtest Sample ID.:			1482515	1482516	1482517	1482519	1482520	1482521
		Sample Location:			TP42	TP42	TP42	TP46	TP46	TP46
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.30	0.5	1.50	0.30	0.50	1.50
		Date Sampled:			29-Jul-2022	29-Jul-2022	29-Jul-2022	29-Jul-2022	29-Jul-2022	29-Jul-2022
		Asbestos Lab:			NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
ACM Type	U	2192		N/A	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	4.5	11	18	6.3	5.5	14
pH	U	2010		4.0	8.7	8.6	8.4	8.7	8.6	8.9
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	1.3	0.53	< 0.40	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	0.046	0.068	< 0.010	< 0.010	< 0.010
Total Sulphur	U	2175	%	0.010	0.23	0.11	0.13	0.27	0.11	0.13
Sulphur (Elemental)	U	2180	mg/kg	1.0	4.8	10	2.2	3.5	3.3	5.5
Nitrate (Water Soluble)	N	2220	g/l	0.010	< 0.010	< 0.010	0.013	< 0.010	< 0.010	< 0.010
Cyanide (Free)	U	2300	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Sulphate (Total)	U	2430	%	0.010	0.34	0.11	0.13	0.24	0.11	0.070
Arsenic	U	2455	mg/kg	0.5	7.5	6.2	6.8	9.3	8.1	9.0
Cadmium	U	2455	mg/kg	0.10	0.85	0.94	1.0	1.1	0.94	1.7
Chromium	U	2455	mg/kg	0.5	14	5.0	14	12	9.9	12
Copper	U	2455	mg/kg	0.50	16	11	16	23	20	20
Mercury	U	2455	mg/kg	0.05	0.09	0.11	0.14	0.16	0.13	0.08
Nickel	U	2455	mg/kg	0.50	19	11	21	26	23	30
Lead	U	2455	mg/kg	0.50	25	26	32	37	34	22
Selenium	U	2455	mg/kg	0.25	1.1	0.34	0.73	1.4	1.1	1.1
Zinc	U	2455	mg/kg	0.50	48	75	58	68	57	60
Chromium (Trivalent)	N	2490	mg/kg	1.0	14	5.0	14	12	9.9	12
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	1.8	7.9	2.1	2.9	2.3	0.83
Total TPH >C6-C40	U	2670	mg/kg	10	[B] 100	[B] 220	[B] < 10	[B] < 10	[B] < 10	[B] < 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aromatic T C8-C10	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0

Results - Soil

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd			Chemtest Job No.:		22-29871	22-29871	22-29871	22-29871	22-29871	22-29871
Quotation No.: Q21-23509			Chemtest Sample ID.:		1482515	1482516	1482517	1482519	1482520	1482521
			Sample Location:		TP42	TP42	TP42	TP46	TP46	TP46
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.30	0.5	1.50	0.30	0.50	1.50
			Date Sampled:		29-Jul-2022	29-Jul-2022	29-Jul-2022	29-Jul-2022	29-Jul-2022	29-Jul-2022
			Asbestos Lab:		NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[B] < 10	[B] < 10	[B] < 10	[B] < 10	[B] < 10	[B] < 10
Benzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Toluene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Ethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	0.66	0.52	< 0.10	0.37	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10	0.20	0.12	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	0.67	2.2	0.73	0.86	0.55	< 0.10
Pyrene	U	2800	mg/kg	0.10	0.55	1.9	0.62	0.73	0.49	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	0.36	1.3	< 0.10	0.47	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	0.34	1.1	< 0.10	0.45	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	2.0	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	0.69	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	1.6	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	12	< 2.0	2.5	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1482515			TP42	29-Jul-2022	B	Amber Glass 250ml
1482515			TP42	29-Jul-2022	B	Amber Glass 60ml
1482515			TP42	29-Jul-2022	B	Plastic Tub 1000g
1482516			TP42	29-Jul-2022	B	Amber Glass 250ml
1482516			TP42	29-Jul-2022	B	Amber Glass 60ml
1482516			TP42	29-Jul-2022	B	Plastic Tub 1000g
1482517			TP42	29-Jul-2022	B	Amber Glass 250ml
1482517			TP42	29-Jul-2022	B	Amber Glass 60ml
1482517			TP42	29-Jul-2022	B	Plastic Tub 1000g
1482519			TP46	29-Jul-2022	B	Amber Glass 250ml
1482519			TP46	29-Jul-2022	B	Amber Glass 60ml
1482519			TP46	29-Jul-2022	B	Plastic Tub 500g
1482520			TP46	29-Jul-2022	B	Amber Glass 250ml
1482520			TP46	29-Jul-2022	B	Amber Glass 60ml
1482520			TP46	29-Jul-2022	B	Plastic Tub 500g
1482521			TP46	29-Jul-2022	B	Amber Glass 250ml
1482521			TP46	29-Jul-2022	B	Amber Glass 60ml
1482521			TP46	29-Jul-2022	B	Plastic Tub 500g

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	22-30015-1
Initial Date of Issue:	24-Aug-2022
Client	Causeway Geotech Ltd
Client Address:	8 Drumahiskey Road Balnamore Ballymoney County Antrim BT53 7QL
Contact(s):	Colm Hurley Darren O'Mahony Gabriella Horan Joe Gervin John Cameron Lucy Newland Martin Gardiner Matthew Gilbert Neil Haggan Paul Dunlop Sean Ross Stephen Franey Stephen Watson Stuart Abraham Thomas McAllister Rachel White
Project	21-0403S DAA South Apron
Quotation No.:	Q21-23509
Date Received:	08-Aug-2022
Order No.:	
Date Instructed:	16-Aug-2022
No. of Samples:	4
Turnaround (Wkdays):	7
Results Due:	24-Aug-2022
Date Approved:	24-Aug-2022
Approved By:	

Details:	Stuart Henderson, Technical Manager

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Results - Leachate

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd					Chemtest Job No.:	22-30015	22-30015	22-30015	22-30015
Quotation No.: Q21-23509					Chemtest Sample ID.:	1483182	1483183	1483184	1483185
					Sample Location:	TP41	TP41	TP41	TP41
					Sample Type:	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.30	0.50	1.50	2.50
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**				
pH	U	1010	2:1		N/A	7.5	7.6	7.5	7.6
Ammonia (Free)	N	1220	2:1	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050
Ammoniacal Nitrogen	U	1220	2:1	mg/l	0.050	0.086	0.086	0.074	0.086
Nitrite	U	1220	2:1	mg/l	0.020	0.064	0.078	0.025	< 0.020
Nitrate	U	1220	2:1	mg/l	0.50	1.9	2.5	2.1	< 0.50
Sulphate	U	1220	2:1	mg/l	1.0	20	16	21	16
Cyanide (Total)	U	1300	2:1	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	2:1	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050
Hardness	U	1415	2:1	mg/l	15	99	110	100	74
Arsenic (Dissolved)	U	1455	2:1	µg/l	0.20	0.58	0.45	0.40	0.23
Boron (Dissolved)	U	1455	2:1	µg/l	10.0	22	20	21	15
Copper (Dissolved)	U	1455	2:1	µg/l	0.50	1.7	1.3	< 0.50	< 0.50
Mercury (Dissolved)	U	1455	2:1	µg/l	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	2:1	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Lead (Dissolved)	U	1455	2:1	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Selenium (Dissolved)	U	1455	2:1	µg/l	0.50	3.3	3.3	2.6	2.9
Zinc (Dissolved)	U	1455	2:1	µg/l	2.5	< 2.5	< 2.5	< 2.5	< 2.5
Cadmium (Total)	N	1455	2:1	µg/l	0.11	< 0.11	< 0.11	< 0.11	< 0.11
Iron (Dissolved)	N	1455	2:1	µg/l	5.0	< 5.0	13	< 5.0	< 5.0
Chromium (Trivalent)	N	1490	2:1	µg/l	20	[A] < 20	[A] < 20	[A] < 20	[A] < 20
Chromium (Hexavalent)	U	1490	2:1	µg/l	20	[A] < 20	[A] < 20	[A] < 20	[A] < 20
Total Organic Carbon	U	1610	2:1	mg/l	2.0	5.9	7.5	6.9	4.5
Naphthalene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Acenaphthylene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Acenaphthene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Fluorene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Phenanthrene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Anthracene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Fluoranthene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Pyrene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo[a]anthracene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Chrysene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo[b]fluoranthene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo[k]fluoranthene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo[a]pyrene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Indeno(1,2,3-c,d)Pyrene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Dibenz(a,h)Anthracene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo[g,h,i]perylene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total Of 16 PAH's	N	1800	2:1	µg/l	0.20	< 0.20	< 0.20	< 0.20	< 0.20

Results - Soil

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd			**Chemtest Job No.:**		22-30015	22-30015	22-30015	22-30015
Quotation No.: Q21-23509			**Chemtest Sample ID.:**		1483182	1483183	1483184	1483185
			Sample Location:		TP41	TP41	TP41	TP41
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.30	0.50	1.50	2.50
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
ACM Type	U	2192		N/A	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	7.9	8.5	11	7.4
pH	U	2010		4.0	[A] 8.8	[A] 9.0	[A] 8.7	[A] 9.1
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	[A] 0.41	[A] < 0.40	[A] 0.56	[A] 0.84
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Total Sulphur	U	2175	%	0.010	[A] 0.10	[A] 0.36	[A] 0.068	[A] 0.056
Sulphur (Elemental)	U	2180	mg/kg	1.0	[A] 5.8	[A] 4.6	[A] 3.7	[A] 1.7
Nitrate (Water Soluble)	N	2220	g/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Cyanide (Free)	U	2300	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	[A] 2.6	[A] 4.8	[A] 4.9	[A] 5.0
Sulphate (Total)	U	2430	%	0.010	[A] 0.31	[A] 0.11	[A] 0.13	[A] 0.064
Arsenic	U	2455	mg/kg	0.5	4.1	9.7	9.5	2.6
Cadmium	U	2455	mg/kg	0.10	0.44	1.5	1.1	0.34
Chromium	U	2455	mg/kg	0.5	6.0	12	10	3.3
Copper	U	2455	mg/kg	0.50	10	23	24	5.8
Mercury	U	2455	mg/kg	0.05	0.05	0.16	0.09	< 0.05
Nickel	U	2455	mg/kg	0.50	13	29	29	10
Lead	U	2455	mg/kg	0.50	12	40	27	4.5
Selenium	U	2455	mg/kg	0.25	0.39	0.82	0.79	0.72
Zinc	U	2455	mg/kg	0.50	25	61	55	18
Chromium (Trivalent)	N	2490	mg/kg	1.0	6.0	12	10	3.3
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	[A] 2.1	[A] 4.3	[A] 2.3	[A] 1.2
Total TPH >C6-C40	U	2670	mg/kg	10	[A] 63	[A] 68	[A] 140	[A] 63
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0

Results - Soil

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd		Chemtest Job No.:			22-30015	22-30015	22-30015	22-30015
Quotation No.: Q21-23509		Chemtest Sample ID.:			1483182	1483183	1483184	1483185
			Sample Location:		TP41	TP41	TP41	TP41
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.30	0.50	1.50	2.50
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[A] < 10	[A] < 10	[A] < 10	[A] < 10
Benzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Toluene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Ethylbenzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	0.41	0.72	0.43	< 0.10
Pyrene	U	2800	mg/kg	0.10	0.37	0.58	0.40	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1483182			TP41		A	Amber Glass 250ml
1483182			TP41		A	Amber Glass 60ml
1483182			TP41		A	Plastic Tub 500g
1483183			TP41		A	Amber Glass 250ml
1483183			TP41		A	Amber Glass 60ml
1483183			TP41		A	Plastic Tub 500g
1483184			TP41		A	Amber Glass 250ml
1483184			TP41		A	Amber Glass 60ml
1483184			TP41		A	Plastic Tub 500g
1483185			TP41		A	Amber Glass 250ml
1483185			TP41		A	Amber Glass 60ml
1483185			TP41		A	Plastic Tub 500g

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	22-30049-1
Initial Date of Issue:	24-Aug-2022
Client	Causeway Geotech Ltd
Client Address:	8 Drumahiskey Road Balnamore Ballymoney County Antrim BT53 7QL
Contact(s):	Colm Hurley Darren O'Mahony Gabriella Horan Joe Gervin John Cameron Lucy Newland Martin Gardiner Matthew Gilbert Neil Haggan Paul Dunlop Sean Ross Stephen Franey Stephen Watson Stuart Abraham Thomas McAllister Rachel White
Project	21-0403S DAA South Apron
Quotation No.:	Q21-23509
Order No.:	
No. of Samples:	3
Turnaround (Wkdays):	7
Date Approved:	24-Aug-2022
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	08-Aug-2022
Date Instructed:	16-Aug-2022
Results Due:	24-Aug-2022

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Results - Leachate

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd				Chemtest Job No.:		22-30049	22-30049	22-30049
Quotation No.: Q21-23509				Chemtest Sample ID.:		1483316	1483317	1483318
				Sample Location:		TP49	TP49	TP49
				Sample Type:		SOIL	SOIL	SOIL
				Top Depth (m):		2.00	0.50	1.00
				Date Sampled:		08-Apr-2022	08-Apr-2022	08-Apr-2022
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**			
pH	U	1010	2:1		N/A	7.8	7.7	7.7
Ammonia (Free)	N	1220	2:1	mg/l	0.050	< 0.050	< 0.050	< 0.050
Ammoniacal Nitrogen	U	1220	2:1	mg/l	0.050	0.078	0.054	0.072
Nitrite	U	1220	2:1	mg/l	0.020	< 0.020	< 0.020	< 0.020
Nitrate	U	1220	2:1	mg/l	0.50	< 0.50	< 0.50	< 0.50
Sulphate	U	1220	2:1	mg/l	1.0	1.6	< 1.0	1.6
Cyanide (Total)	U	1300	2:1	mg/l	0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	2:1	mg/l	0.050	< 0.050	< 0.050	< 0.050
Hardness	U	1415	2:1	mg/l	15	55	49	55
Arsenic (Dissolved)	U	1455	2:1	µg/l	0.20	0.22	< 0.20	0.23
Boron (Dissolved)	U	1455	2:1	µg/l	10.0	18	13	16
Copper (Dissolved)	U	1455	2:1	µg/l	0.50	< 0.50	< 0.50	< 0.50
Mercury (Dissolved)	U	1455	2:1	µg/l	0.05	< 0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	2:1	µg/l	0.50	< 0.50	< 0.50	< 0.50
Lead (Dissolved)	U	1455	2:1	µg/l	0.50	< 0.50	< 0.50	< 0.50
Selenium (Dissolved)	U	1455	2:1	µg/l	0.50	< 0.50	< 0.50	< 0.50
Zinc (Dissolved)	U	1455	2:1	µg/l	2.5	< 2.5	< 2.5	< 2.5
Cadmium (Total)	N	1455	2:1	µg/l	0.11	< 0.11	< 0.11	< 0.11
Iron (Dissolved)	N	1455	2:1	µg/l	5.0	< 5.0	< 5.0	< 5.0
Chromium (Trivalent)	N	1490	2:1	µg/l	20	[B] < 20	[B] < 20	[B] < 20
Chromium (Hexavalent)	U	1490	2:1	µg/l	20	[B] < 20	[B] < 20	[B] < 20
Total Organic Carbon	U	1610	2:1	mg/l	2.0	5.7	5.2	5.1
Naphthalene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010
Acenaphthylene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010
Acenaphthene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010
Fluorene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010
Phenanthrene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010
Anthracene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010
Fluoranthene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010
Pyrene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010
Benzo[a]anthracene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010
Chrysene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010
Benzo[b]fluoranthene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010
Benzo[k]fluoranthene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010
Benzo[a]pyrene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010
Indeno(1,2,3-c,d)Pyrene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010
Dibenz(a,h)Anthracene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010
Benzo[g,h,i]perylene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010
Total Of 16 PAH's	N	1800	2:1	µg/l	0.20	< 0.20	< 0.20	< 0.20

Results - Soil

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd			Chemtest Job No.:		22-30049	22-30049	22-30049
Quotation No.: Q21-23509			Chemtest Sample ID.:		1483316	1483317	1483318
			Sample Location:		TP49	TP49	TP49
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		2.00	0.50	1.00
			Date Sampled:		08-Apr-2022	08-Apr-2022	08-Apr-2022
			Asbestos Lab:		DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	5.6	7.8	7.2
pH	U	2010		4.0	[B] 9.1	[B] 9.2	[B] 9.1
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	[B] 0.95	[B] 2.8	[B] 0.66
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	[B] < 0.010	[B] 1.8	[B] < 0.010
Total Sulphur	U	2175	%	0.010	[B] 0.074	[B] 0.042	[B] 0.056
Sulphur (Elemental)	U	2180	mg/kg	1.0	[B] 2.3	[B] 2.1	[B] 1.9
Nitrate (Water Soluble)	N	2220	g/l	0.010	< 0.010	< 0.010	< 0.010
Cyanide (Free)	U	2300	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	[B] 8.8	[B] 7.5	[B] 9.3
Sulphate (Total)	U	2430	%	0.010	[B] 0.16	[B] 0.050	[B] 0.081
Arsenic	U	2455	mg/kg	0.5	4.2	7.9	10
Cadmium	U	2455	mg/kg	0.10	0.96	1.5	1.9
Chromium	U	2455	mg/kg	0.5	7.4	9.3	11
Copper	U	2455	mg/kg	0.50	13	19	24
Mercury	U	2455	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Nickel	U	2455	mg/kg	0.50	18	38	37
Lead	U	2455	mg/kg	0.50	8.0	13	18
Selenium	U	2455	mg/kg	0.25	0.83	0.68	1.3
Zinc	U	2455	mg/kg	0.50	27	54	65
Chromium (Trivalent)	N	2490	mg/kg	1.0	7.4	9.3	11
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	[B] 0.91	[B] 0.71	[B] 0.72
Total TPH >C6-C40	U	2670	mg/kg	10	[B] 11000	[B] 58	[B] 55
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aromatic T[redacted]C8-C10	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0

Results - Soil

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd			Chemtest Job No.:		22-30049	22-30049	22-30049
Quotation No.: Q21-23509			Chemtest Sample ID.:		1483316	1483317	1483318
			Sample Location:		TP49	TP49	TP49
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		2.00	0.50	1.00
			Date Sampled:		08-Apr-2022	08-Apr-2022	08-Apr-2022
			Asbestos Lab:		DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[B] < 10	[B] < 10	[B] < 10
Benzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Toluene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Ethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1483316			TP49	08-Apr-2022	B	Amber Glass 250ml
1483316			TP49	08-Apr-2022	B	Amber Glass 60ml
1483316			TP49	08-Apr-2022	B	Plastic Tub 500g
1483317			TP49	08-Apr-2022	B	Amber Glass 250ml
1483317			TP49	08-Apr-2022	B	Amber Glass 60ml
1483317			TP49	08-Apr-2022	B	Plastic Tub 500g
1483318			TP49	08-Apr-2022	B	Amber Glass 250ml
1483318			TP49	08-Apr-2022	B	Amber Glass 60ml
1483318			TP49	08-Apr-2022	B	Plastic Tub 500g

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	22-30192-1
Initial Date of Issue:	23-Aug-2022
Client	Causeway Geotech Ltd
Client Address:	8 Drumahiskey Road Balnamore Ballymoney County Antrim BT53 7QL
Contact(s):	Colm Hurley Darren O'Mahony Gabriella Horan Joe Gervin John Cameron Lucy Newland Martin Gardiner Matthew Gilbert Neil Haggan Paul Dunlop Sean Ross Stephen Franey Stephen Watson Stuart Abraham Thomas McAllister
Project	21-0403S DAA South Apron
Quotation No.:	Q21-23509
Order No.:	
No. of Samples:	3
Turnaround (Wkdays):	7
Date Approved:	23-Aug-2022
Approved By:	

Date Received:	09-Aug-2022
Date Instructed:	16-Aug-2022
Results Due:	24-Aug-2022

Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd				Chemtest Job No.:		22-30192	22-30192	22-30192
Quotation No.: Q21-23509				Chemtest Sample ID.:		1484008	1484009	1484010
				Sample Location:		TP56	TP56	TP56
				Sample Type:		SOIL	SOIL	SOIL
				Top Depth (m):		0.3	0.5	1.5
				Date Sampled:		08-Aug-2022	08-Aug-2022	08-Aug-2022
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**			
pH	U	1010	2:1		N/A	7.6	7.6	7.6
Ammonia (Free)	N	1220	2:1	mg/l	0.050	< 0.050	< 0.050	< 0.050
Ammoniacal Nitrogen	U	1220	2:1	mg/l	0.050	0.078	0.086	0.066
Nitrite	U	1220	2:1	mg/l	0.020	0.41	0.30	< 0.020
Nitrate	U	1220	2:1	mg/l	0.50	5.8	7.8	2.3
Sulphate	U	1220	2:1	mg/l	1.0	32	38	25
Cyanide (Total)	U	1300	2:1	mg/l	0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	2:1	mg/l	0.050	< 0.050	< 0.050	< 0.050
Hardness	U	1415	2:1	mg/l	15	120	120	89
Arsenic (Dissolved)	U	1455	2:1	µg/l	0.20	0.74	0.42	< 0.20
Boron (Dissolved)	U	1455	2:1	µg/l	10.0	12	12	15
Copper (Dissolved)	U	1455	2:1	µg/l	0.50	2.9	3.2	< 0.50
Mercury (Dissolved)	U	1455	2:1	µg/l	0.05	< 0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	2:1	µg/l	0.50	< 0.50	0.68	< 0.50
Lead (Dissolved)	U	1455	2:1	µg/l	0.50	< 0.50	< 0.50	< 0.50
Selenium (Dissolved)	U	1455	2:1	µg/l	0.50	4.0	5.1	2.5
Zinc (Dissolved)	U	1455	2:1	µg/l	2.5	< 2.5	32	< 2.5
Cadmium (Total)	N	1455	2:1	µg/l	0.11	< 0.11	< 0.11	< 0.11
Iron (Dissolved)	N	1455	2:1	µg/l	5.0	59	62	110
Chromium (Trivalent)	N	1490	2:1	µg/l	20	< 20	< 20	< 20
Chromium (Hexavalent)	U	1490	2:1	µg/l	20	< 20	< 20	< 20
Total Organic Carbon	U	1610	2:1	mg/l	2.0	5.9	5.9	4.1
Naphthalene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010
Acenaphthylene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010
Acenaphthene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010
Fluorene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010
Phenanthrene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010
Anthracene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010
Fluoranthene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010
Pyrene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010
Benzo[a]anthracene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010
Chrysene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010
Benzo[b]fluoranthene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010
Benzo[k]fluoranthene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010
Benzo[a]pyrene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010
Indeno(1,2,3-c,d)Pyrene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010
Dibenz(a,h)Anthracene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010
Benzo[g,h,i]perylene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010
Total Of 16 PAH's	N	1800	2:1	µg/l	0.20	< 0.20	< 0.20	< 0.20

Results - Soil

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd			Chemtest Job No.:		22-30192	22-30192	22-30192
Quotation No.: Q21-23509			Chemtest Sample ID.:		1484008	1484009	1484010
			Sample Location:		TP56	TP56	TP56
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.3	0.5	1.5
			Date Sampled:		08-Aug-2022	08-Aug-2022	08-Aug-2022
			Asbestos Lab:		DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	5.8	6.0	17
pH	U	2010		4.0	8.3	9.7	8.4
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.56	1.9	0.49
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.017	< 0.010	0.020
Total Sulphur	U	2175	%	0.010	0.12	0.14	0.084
Sulphur (Elemental)	U	2180	mg/kg	1.0	33	3.8	< 1.0
Nitrate (Water Soluble)	N	2220	g/l	0.010	0.010	< 0.010	< 0.010
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Sulphate (Total)	U	2430	%	0.010	0.17	0.14	0.054
Arsenic	U	2455	mg/kg	0.5	9.8	8.7	8.1
Cadmium	U	2455	mg/kg	0.10	1.2	1.1	0.77
Chromium	U	2455	mg/kg	0.5	12	11	16
Copper	U	2455	mg/kg	0.50	25	23	14
Mercury	U	2455	mg/kg	0.05	0.13	0.14	0.05
Nickel	U	2455	mg/kg	0.50	31	27	28
Lead	U	2455	mg/kg	0.50	42	40	16
Selenium	U	2455	mg/kg	0.25	1.0	0.94	0.60
Zinc	U	2455	mg/kg	0.50	70	62	49
Chromium (Trivalent)	N	2490	mg/kg	1.0	12	11	16
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	7.5	3.5	1.8
Total TPH >C6-C40	U	2670	mg/kg	10	260	86	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic T[redacted]C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0

Results - Soil

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd			Chemtest Job No.:		22-30192	22-30192	22-30192
Quotation No.: Q21-23509			Chemtest Sample ID.:		1484008	1484009	1484010
			Sample Location:		TP56	TP56	TP56
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.3	0.5	1.5
			Date Sampled:		08-Aug-2022	08-Aug-2022	08-Aug-2022
			Asbestos Lab:		DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	5.2	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	130	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	140	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	140	< 10	< 10
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	0.78	< 0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10	0.27	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	2.7	0.79	< 0.10
Pyrene	U	2800	mg/kg	0.10	2.2	0.73	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	1.3	0.50	< 0.10
Chrysene	U	2800	mg/kg	0.10	1.0	0.35	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	1.8	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	0.63	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	1.5	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	12	2.4	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
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S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
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T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	22-30641-1
Initial Date of Issue:	24-Aug-2022
Client	Causeway Geotech Ltd
Client Address:	8 Drumahiskey Road Balnamore Ballymoney County Antrim BT53 7QL
Contact(s):	Colm Hurley Darren O'Mahony Gabriella Horan Joe Gervin John Cameron Lucy Newland Martin Gardiner Matthew Gilbert Neil Haggan Paul Dunlop Sean Ross Stephen Franey Stephen Watson Stuart Abraham Thomas McAllister
Project	21-0403S DAA South Apron
Quotation No.:	Q21-23509
Order No.:	
No. of Samples:	6
Turnaround (Wkdays):	7
Date Approved:	24-Aug-2022
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	11-Aug-2022
Date Instructed:	16-Aug-2022
Results Due:	24-Aug-2022

Results - Leachate

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd						Chemtest Job No.:	22-30641	22-30641	22-30641	22-30641	22-30641	22-30641
Quotation No.: Q21-23509						Chemtest Sample ID.:	1485987	1485988	1485991	1485992	1485994	1485995
						Sample Location:	TP47	TP47	TP50	TP50	TP48	TP48
						Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
						Top Depth (m):	0.5	1.0	0.5	1.0	0.5	1.2
						Date Sampled:	05-Aug-2022	05-Aug-2022	05-Aug-2022	05-Aug-2022	05-Aug-2022	05-Aug-2022
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**							
pH	U	1010	2:1		N/A		7.7	7.8	7.7	7.8	7.7	7.8
Ammonia (Free)	N	1220	2:1	mg/l	0.050		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Ammoniacal Nitrogen	U	1220	2:1	mg/l	0.050		0.093	0.078	0.067	0.086	0.060	0.071
Nitrite	U	1220	2:1	mg/l	0.020		< 0.020	< 0.020	0.022	< 0.020	< 0.020	< 0.020
Nitrate	U	1220	2:1	mg/l	0.50		0.55	0.81	1.2	0.83	9.6	0.87
Sulphate	U	1220	2:1	mg/l	1.0		22	32	< 1.0	1.3	1.5	2.2
Cyanide (Total)	U	1300	2:1	mg/l	0.050		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	2:1	mg/l	0.050		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Hardness	U	1415	2:1	mg/l	15		75	80	63	56	73	58
Arsenic (Dissolved)	U	1455	2:1	µg/l	0.20		< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Boron (Dissolved)	U	1455	2:1	µg/l	10.0		12	13	< 10	< 10	15	11
Copper (Dissolved)	U	1455	2:1	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Mercury (Dissolved)	U	1455	2:1	µg/l	0.05		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	2:1	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Lead (Dissolved)	U	1455	2:1	µg/l	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Selenium (Dissolved)	U	1455	2:1	µg/l	0.50		< 0.50	0.58	< 0.50	< 0.50	< 0.50	0.81
Zinc (Dissolved)	U	1455	2:1	µg/l	2.5		< 2.5	< 2.5	2.8	5.1	< 2.5	< 2.5
Cadmium (Total)	N	1455	2:1	µg/l	0.11		< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11
Iron (Dissolved)	N	1455	2:1	µg/l	5.0		55	11	35	21	100	14
Chromium (Trivalent)	N	1490	2:1	µg/l	20		< 20	< 20	< 20	< 20	< 20	< 20
Chromium (Hexavalent)	U	1490	2:1	µg/l	20		< 20	< 20	< 20	< 20	< 20	< 20
Total Organic Carbon	U	1610	2:1	mg/l	2.0		3.3	3.0	4.2	3.3	4.8	3.1
Naphthalene	N	1800	2:1	µg/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Acenaphthylene	N	1800	2:1	µg/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Acenaphthene	N	1800	2:1	µg/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Fluorene	N	1800	2:1	µg/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Phenanthrene	N	1800	2:1	µg/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Anthracene	N	1800	2:1	µg/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Fluoranthene	N	1800	2:1	µg/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Pyrene	N	1800	2:1	µg/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo[a]anthracene	N	1800	2:1	µg/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Chrysene	N	1800	2:1	µg/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo[b]fluoranthene	N	1800	2:1	µg/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo[k]fluoranthene	N	1800	2:1	µg/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo[a]pyrene	N	1800	2:1	µg/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Indeno(1,2,3-c,d)Pyrene	N	1800	2:1	µg/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Dibenz(a,h)Anthracene	N	1800	2:1	µg/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo[g,h,i]perylene	N	1800	2:1	µg/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total Of 16 PAH's	N	1800	2:1	µg/l	0.20		< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20

Results - Soil

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd				Chemtest Job No.:	22-30641	22-30641	22-30641	22-30641	22-30641	22-30641
Quotation No.: Q21-23509				Chemtest Sample ID.:	1485987	1485988	1485991	1485992	1485994	1485995
				Sample Location:	TP47	TP47	TP50	TP50	TP48	TP48
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.5	1.0	0.5	1.0	0.5	1.2
				Date Sampled:	05-Aug-2022	05-Aug-2022	05-Aug-2022	05-Aug-2022	05-Aug-2022	05-Aug-2022
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
ACM Type	U	2192		N/A	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	7.0	6.8	6.7	6.5	6.4	4.5
pH	U	2010		4.0	9.1	8.6	9.2	8.8	9.2	9.0
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	1.4	< 0.40	1.3	< 0.40	2.0	< 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	0.011	< 0.010	< 0.010	< 0.010	< 0.010
Total Sulphur	U	2175	%	0.010	0.11	0.11	0.095	0.074	0.070	0.094
Sulphur (Elemental)	U	2180	mg/kg	1.0	2.7	< 1.0	< 1.0	< 1.0	3.3	< 1.0
Nitrate (Water Soluble)	N	2220	g/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	< 0.50	< 0.50	3.0	< 0.50	< 0.50	< 0.50
Sulphate (Total)	U	2430	%	0.010	0.095	0.069	0.062	0.062	0.052	0.068
Arsenic	U	2455	mg/kg	0.5	11	9.8	7.2	7.9	8.6	8.0
Cadmium	U	2455	mg/kg	0.10	1.8	1.7	1.7	1.8	1.2	1.5
Chromium	U	2455	mg/kg	0.5	12	11	10	10	12	9.5
Copper	U	2455	mg/kg	0.50	27	24	20	20	18	20
Mercury	U	2455	mg/kg	0.05	< 0.05	< 0.05	0.05	< 0.05	0.08	< 0.05
Nickel	U	2455	mg/kg	0.50	42	39	31	36	26	35
Lead	U	2455	mg/kg	0.50	22	18	17	15	23	14
Selenium	U	2455	mg/kg	0.25	1.5	0.78	0.78	0.78	0.53	1.1
Zinc	U	2455	mg/kg	0.50	77	56	65	59	59	56
Chromium (Trivalent)	N	2490	mg/kg	1.0	12	11	10	10	12	9.5
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	0.98	< 0.40	1.2	0.41	1.2	1.5
Total TPH >C6-C40	U	2670	mg/kg	10	< 10	< 10	< 10	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Results - Soil

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd			Chemtest Job No.:		22-30641	22-30641	22-30641	22-30641	22-30641	22-30641
Quotation No.: Q21-23509			Chemtest Sample ID.:		1485987	1485988	1485991	1485992	1485994	1485995
			Sample Location:		TP47	TP47	TP50	TP50	TP48	TP48
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.5	1.0	0.5	1.0	0.5	1.2
			Date Sampled:		05-Aug-2022	05-Aug-2022	05-Aug-2022	05-Aug-2022	05-Aug-2022	05-Aug-2022
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	22-30645-1
Initial Date of Issue:	24-Aug-2022
Client	Causeway Geotech Ltd
Client Address:	8 Drumahiskey Road Balnamore Ballymoney County Antrim BT53 7QL
Contact(s):	Colm Hurley Darren O'Mahony Gabriella Horan Joe Gervin John Cameron Lucy Newland Martin Gardiner Matthew Gilbert Neil Haggan Paul Dunlop Sean Ross Stephen Franey Stephen Watson Stuart Abraham Thomas McAllister
Project	21-0403S DAA South Apron
Quotation No.:	Q21-23509
Date Received:	11-Aug-2022
Order No.:	
Date Instructed:	16-Aug-2022
No. of Samples:	4
Turnaround (Wkdays):	7
Results Due:	24-Aug-2022
Date Approved:	24-Aug-2022
Approved By:	
Details:	Stuart Henderson, Technical Manager

Results - Leachate

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd				Chemtest Job No.:		22-30645	22-30645	22-30645	22-30645
Quotation No.: Q21-23509				Chemtest Sample ID.:		1486009	1486010	1486011	1486012
				Sample Location:		TP07	TP07	TP07	TP07
				Sample Type:		SOIL	SOIL	SOIL	SOIL
				Top Depth (m):		0.5	0.7	1.5	2.5
				Date Sampled:		05-Aug-2022	05-Aug-2022	05-Aug-2022	05-Aug-2022
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**				
pH	U	1010	2:1		N/A	7.6	7.7	7.6	7.5
Ammonia (Free)	N	1220	2:1	mg/l	0.050	< 0.050	0.089	< 0.050	< 0.050
Ammoniacal Nitrogen	U	1220	2:1	mg/l	0.050	0.41	3.7	0.11	0.078
Nitrite	U	1220	2:1	mg/l	0.020	0.53	1.0	< 0.020	< 0.020
Nitrate	U	1220	2:1	mg/l	0.50	4.9	2.2	< 0.50	< 0.50
Sulphate	U	1220	2:1	mg/l	1.0	21	25	26	120
Cyanide (Total)	U	1300	2:1	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	2:1	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050
Hardness	U	1415	2:1	mg/l	15	140	160	78	190
Arsenic (Dissolved)	U	1455	2:1	µg/l	0.20	0.58	1.2	< 0.20	< 0.20
Boron (Dissolved)	U	1455	2:1	µg/l	10.0	26	52	< 10	< 10
Copper (Dissolved)	U	1455	2:1	µg/l	0.50	0.75	4.2	< 0.50	< 0.50
Mercury (Dissolved)	U	1455	2:1	µg/l	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	2:1	µg/l	0.50	6.0	7.6	< 0.50	< 0.50
Lead (Dissolved)	U	1455	2:1	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Selenium (Dissolved)	U	1455	2:1	µg/l	0.50	0.69	1.1	11	77
Zinc (Dissolved)	U	1455	2:1	µg/l	2.5	< 2.5	< 2.5	< 2.5	< 2.5
Cadmium (Total)	N	1455	2:1	µg/l	0.11	< 0.11	0.12	< 0.11	< 0.11
Iron (Dissolved)	N	1455	2:1	µg/l	5.0	13	42	7.4	< 5.0
Chromium (Trivalent)	N	1490	2:1	µg/l	20	< 20	< 20	< 20	< 20
Chromium (Hexavalent)	U	1490	2:1	µg/l	20	< 20	< 20	< 20	< 20
Total Organic Carbon	U	1610	2:1	mg/l	2.0	7.1	13	3.3	3.6
Naphthalene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Acenaphthylene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Acenaphthene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Fluorene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Phenanthrene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Anthracene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Fluoranthene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Pyrene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo[a]anthracene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Chrysene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo[b]fluoranthene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo[k]fluoranthene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo[a]pyrene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Indeno(1,2,3-c,d)Pyrene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Dibenz(a,h)Anthracene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo[g,h,i]perylene	N	1800	2:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total Of 16 PAH's	N	1800	2:1	µg/l	0.20	< 0.20	< 0.20	< 0.20	< 0.20

Results - Soil

Project: 21-0403S DAA South Apron

Client: Causeway Geotech Ltd		Chemtest Job No.:			22-30645	22-30645	22-30645	22-30645
Quotation No.: Q21-23509		Chemtest Sample ID.:			1486009	1486010	1486011	1486012
		Sample Location:			TP07	TP07	TP07	TP07
		Sample Type:			SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.5	0.7	1.5	2.5
		Date Sampled:			05-Aug-2022	05-Aug-2022	05-Aug-2022	05-Aug-2022
		Asbestos Lab:			COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
ACM Type	U	2192		N/A	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	11	16	10	9.7
pH	U	2010		4.0	9.1	8.6	9.2	8.4
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	2.1	0.68	1.4	< 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	< 0.010	< 0.010	0.11
Total Sulphur	U	2175	%	0.010	0.11	0.13	0.14	0.87
Sulphur (Elemental)	U	2180	mg/kg	1.0	3.6	12	2.4	3.8
Nitrate (Water Soluble)	N	2220	g/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Sulphate (Total)	U	2430	%	0.010	0.065	0.086	0.17	1.6
Arsenic	U	2455	mg/kg	0.5	9.3	7.8	8.9	5.9
Cadmium	U	2455	mg/kg	0.10	1.8	1.3	2.0	1.2
Chromium	U	2455	mg/kg	0.5	12	8.9	13	9.0
Copper	U	2455	mg/kg	0.50	24	18	22	18
Mercury	U	2455	mg/kg	0.05	0.06	< 0.05	0.10	< 0.05
Nickel	U	2455	mg/kg	0.50	38	31	35	29
Lead	U	2455	mg/kg	0.50	21	12	27	13
Selenium	U	2455	mg/kg	0.25	0.65	2.1	0.89	2.7
Zinc	U	2455	mg/kg	0.50	64	53	71	44
Chromium (Trivalent)	N	2490	mg/kg	1.0	12	8.9	13	9.0
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	1.2	1.4	1.4	1.3
Total TPH >C6-C40	U	2670	mg/kg	10	71	200	59	67
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic T C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0