Tiznow Property Company Limited
(Comer Group Ireland)

ARUP

City Park Development

At the Former Tedcastles Site

Environmental Impact Assessment Report

Part 2 of 2
Appendices

April 2022

Appendix 1.1

EIA Screening and Scoping Report 2021

EIA Screening and Scoping Report 2021

Tiznow Property Company Limited
(Comer Group Ireland)

City Park Development at the Former Tedcastles Site

EIA Screening and Scoping Report and Statement of Possible Environmental Effects

267365-ARUP-XX-XX-RP-YE-0001

P03 | 28 March 2022

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 267365-00

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1 Introduction

1.1 Environmental Impact Statement Screening and Scoping

Arup has prepared this environmental impact assessment screening and scoping report on behalf of Tiznow Property Company Limited (Comer Group Ireland) for a proposed strategic housing development (SHD) at the Tedcastles Site (4.72ha), Centre Park Road, Cork City. Refer to **Figure 1** below.

This report summarises the potential requirement for environmental impact assessment, and outlines the possible effects on the environment at this point in the design development, highlighting any aspect of the development likely to have significant effects on the environment.

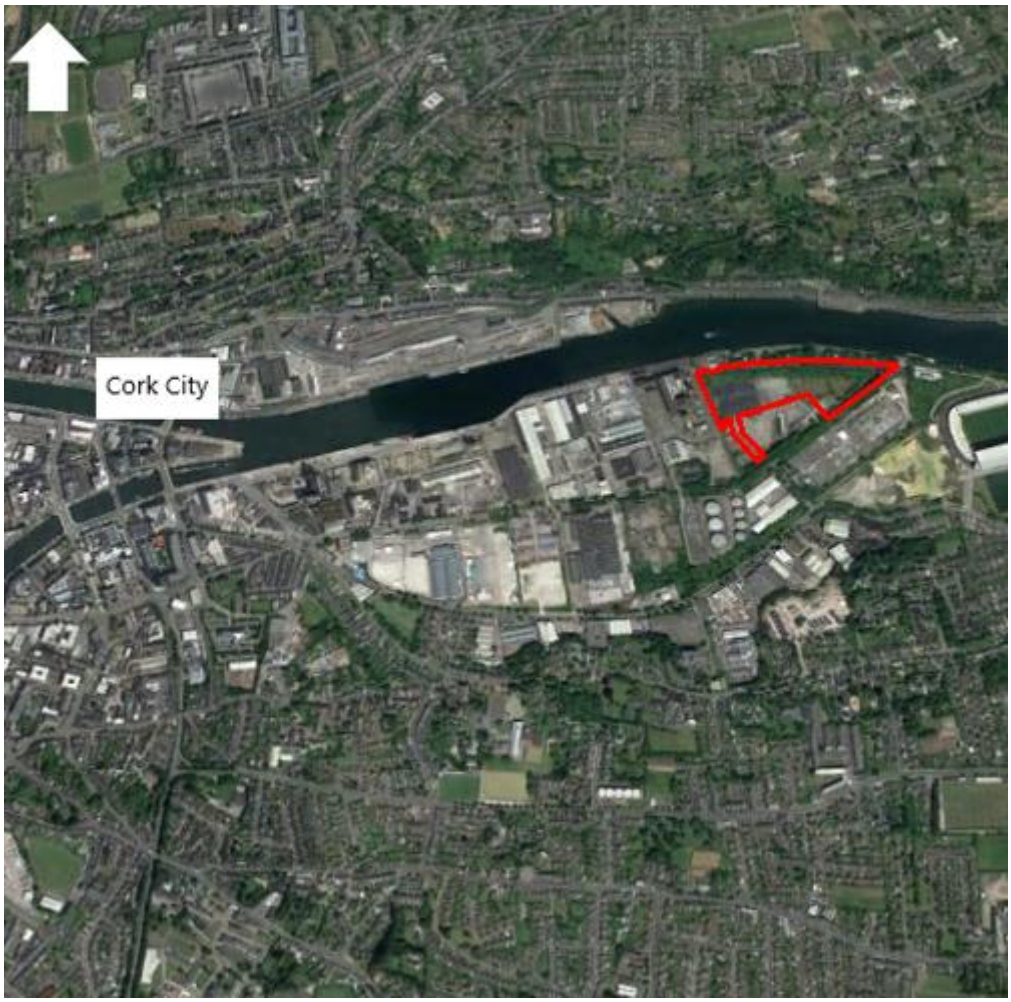

Figure 1: Site location in relation to Cork City | Source: Google Maps | not to scale

1.2 Statement of Possible Environmental Effects – Section 5(5)

This report has also been prepared to satisfy requirements under Section 5 of the Planning and Development (Housing) and Residential Tenancies Act 2016 relating to pre-application consultation with An Bord Pleanála for Strategic Housing Development (SHD) projects.

Specifically, Section 5(5)(iii) of said Act states that any request to the Board by a prospective applicant to enter into consultations on a project should include 'a brief description of the nature and purpose of the development and its possible effects on the environment'.

The statement should be read in conjunction with other submitted plans and particulars which provide an overview of the nature and purpose of the proposed development and detail a number of environmental considerations relating to national and local policy objectives. The purpose of this statement is to summarise the outputs of preliminary scoping on possible effects on the environment and signpost targeted measures being undertaken to further assess these.

2 Screening for EIA

2.1 Classes of Development

Section 172 of Part X of the Planning and Development Act, 2000, as amended in Section 17 of the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018) sets out the requirement for EIA as follows:

"172 (1) An environmental impact assessment shall be carried out by the planning authority or the Board, as the case may be, in respect of an application for consent for proposed development where either—

(a) the proposed development would be of a class specified in—
(i) Part 1 of Schedule 5 of the Planning and Development Regulations 2001, and either—
(I) such development would equal or exceed, as the case may be any relevant quantity, area or other limit specified in that Part, or
(II) no quantity, area or other limit is specified in that Part in respect of the development concerned,
or
(ii) Part 2 of Schedule 5 of the Planning and Development Regulations 2001 and either—
(I) such development would equal or exceed, as the case may be any relevant quantity, area or other limit specified in that Part, or
(II) no quantity, area or other limit is specified in that Part in respect of the development concerned,
or
(b)(i) the proposed development would be of a class specified in Part 2 of Schedule 5 of the Planning and Development Regulations 2001 but does not equal or exceed, as the case may be, the relevant quantity, area or other limit specified in that Part, and
(ii) the planning authority or the Board, as the case may be, determines that the proposed development would be likely to have significant effects on the environment."

The Fifth Schedule of the Planning and Development Regulations, as amended, lists classes of development where an EIA is mandatory under Part 1 and where an EIA may be required under Part 2. Where a project falls within a criterion for a type of development and/or exceeds a threshold as listed in Part 1 or Part 2, then it must be subjected to EIA.

2.2 Project Types and Thresholds

A description of the proposed development is provided in Section 2 of this report. It is noted that the proposed development comprises 1030 no. residential units. As such, it falls within Class 10 (b) (i) of Part 2 of the Fifth Schedule of the Regulations, namely:

"Construction of more than 500 dwelling units."

As the proposed development comprises the construction of 1030 no. dwelling units, which exceeds the threshold set out in Class 10 above, a mandatory EIA is required for the proposed development and therefore an EIAR must be prepared to accompany the SHD consent application.

3 Description of the Proposed Development

The proposed development (the subject of the proposed Strategic Housing Development application) is intended as a Phase 2 development of an overall masterplan.

The existing site is bounded by Centre Park Road to the south, by the Marina to the north and by the former ESB power station to the west. The site is a brownfield site containing several storage and ancillary buildings. There are two open drainage channels, one adjacent to the southern boundary and one adjacent to the northern boundary, which join at the eastern end of the site.

The proposed development comprises the demolition of all existing structures and the construction of a strategic housing development of 1,030 no. apartments, 2 no. creches and ancillary commercial areas at the Former Tedcastles Site, Centre Park Road, Cork. The development will comprise 6 no. buildings ranging in height from nine to 31 storeys.

4 Summary of Potential Effects | Statement of Possible Environmental Effects

4.1 Introduction

An Environmental Impact Assessment Report (EIAR) will accompany the SHD planning application to An Bord Pleanála.

The EIAR is being co-ordinated by Arup with specialist input provided by key environmental subconsultants, with the relevant expertise and experience required for the specialist topic (e.g. meeting the competent expert requirement). The table below sets out the proposed structure for the EIAR as well as identifying the authors of each section:

Table 1: EIAR Chapters and Associated Specialists

Chapter	Chapter title	Author
1	Introduction	Arup
2	Background and Need for Scheme	Arup
3	Alternatives Considered	Arup
4	The Proposed Development	Arup
5	Construction Strategy	Arup
6	Planning and Policy	Harry Walsh Planning
7	Traffic and Transportation	Arup
8	Air Quality and Climate	Arup
9	Noise and Vibration	Arup
10	Biodiversity	DixonBrosnan
11	Archaeology, Architecture and Cultural Heritage	John Cronin & Associates
12	Townscape and Visual	Park Hood Landscape Architects
13	Land and Soils	Arup
14	Water	Arup
15	Resource and Waste Management	Arup
16	Population and Human Health	Arup
17	Material Assets	Arup
18	Major Accidents and Disasters	Arup
19	Cumulative and Interactive Effects	Arup
20	Summary of Mitigation, Monitoring and Residual Effects	Arup

This report has been prepared based on the available construction and scheme design information at this stage of the design development and the predicted effects (on this preliminary basis) are described in the following sections. The

EIAR which will be submitted with the application will contain the full assessment.

4.2 Traffic and Transportation

4.2.1 Methodology

The transportation assessment will be prepared based on the principles presented in the Traffic and Transport Assessment Guidelines prepared by the National Roads Authority (now Transport Infrastructure Ireland) in May 2014.

Trip generation associated with the proposed development will be derived from the 'Trip Rate Information Computer System' (TRICS) database.

Baseline data collection has been undertaken for the local road network, comprising the commissioning of traffic surveys at a number of junctions in the site vicinity. The exact scope of the transportation assessment, including the junctions to be assessed, will be agreed with Cork City Council's Traffic & Transportation Department.

The proposed transportation assessment methodology will be as follows:

- The existing receiving environment will be described. This includes a description of the surrounding road network and sets out the existing traffic patterns. This also includes an appraisal of local and strategic improvements to the traffic and transport network that are either proposed or underway in the site vicinity.
- The proposed development will be described, in terms of trip generation, distribution and the proposed parking provision. The indicative phasing of the development is also described, along with outline construction details.
- Trip generation will then be distributed onto the local road network, taking into account the likely phasing of the scheme construction and the expected distribution patterns for the study area.
- The impact of the development on the local road network will be described, for the construction phase, the expected opening year and years of assessment 5 and 15 years after opening. This will include an assessment of the critical junctions in the site vicinity.
- The indirect effects of the proposed development on the local road network will then be described. This will include sensitivity testing of the proposed development in conjunction with proposed road improvements and allowing for potential developments at nearby sites.
- The residual impacts and proposed mitigation measures will be presented.

4.2.2 Existing Environment

The proposed development site is in the South Docklands suburban area of Cork City. The site is bounded to the north, south and east by existing roads, which are moderately trafficked. To the west is an inactive power generation station. The site is therefore very accessible at present from the existing road network.

4.2.3 Local Road Network

The site is bounded to the north by the Marina, to the south/east by Centre Park Road, to the west by brownfield lands and the Lee Rowing Club. Páirc Uí Chaoimh also lies to the east of the site.

The local area surrounding the site at present can largely be described as industrial in use, with a number of dormant sites towards the eastern end of the South Docklands. Centre Park Road and Monahan Road are connecting routes to Cork City Centre to the west, and to the Blackrock and Ballintemple suburban areas to the east. These routes are standard two-lane carriageways for the most part (with some localised flaring in certain locations). Marquee Road is a connecting road that links Centre Park Road and Monahan Road (also bounding the site to the west).

4.2.4 Walking, Cycling and Public Transport

All three routes have footpaths of varying quality. A program of footpath improvement works has been carried out in the site vicinity which has seen the replacement and upgrade of a significant portion of the existing footpaths along Centre Park Road in particular. Monahan Road has a continuous footpath along the northern side of the route, and intermittent footpath provision on the southern side. The pedestrian network in the site vicinity is extremely popular as a leisure walking route due to the onward connection to the southern bank of the River Lee (along the Marina). Marquee Road has footpaths provided on both sides of the road, of varying quality.

There are a number of dedicated cycle infrastructure improvement schemes which have been recently implemented by Cork City Council in the site vicinity. Segregated cycle infrastructure is now in place on Centre Park Road (outbound), Monahan Road (inbound), Marquee Road (connecting Centre Park Road and Monahan Road), and segregated cycle infrastructure is also now in place between Centre Park Road (at the Victoria Road Roundabout) and Grand Parade, providing a high-quality connection directly to the city centre core from the site. To the east, The Marina is also now a pedestrian and cyclist-only area, and approximately 1km from the site, the Passage Greenway line is accessible directly from the Marina.

The greenway is an extremely popular facility used for leisure and commuting, providing access via ramped connections to the Mahon Point area (via a ramped connection at St. Michael's Drive) and to Skehard Road via a ramped connection in the vicinity of the Skehard Road/Mahon Link Road junction, and ultimately linking onwards to Cork City Centre. The Passage Greenway is currently being upgraded by Cork City Council to allow for a wider facility, additional CCTV and public lighting, and new ramped connections from the adjacent road network.

The area around the site is currently serviced by existing city bus routes. The newly launched 212 service (Kent Rail Station to Mahon Point) has an outbound stop on Centre Park Road approximately 200m from the site. This service continues onto Monahan Road and east to Mahon Point, and westwards to Eglinton Street/Merchants Quay/McCurtain Street and on to Kent Rail Station.

This service currently operates at hourly frequencies and is expected to increase frequency in line with development and demand along the corridor. Ultimately the 212 bus service serves as a precursor to eventual provision of a rapid transit system along the Mahon-City Centre-Ballincollig corridor, as per CMATS. The 202/202A high-frequency service routes via Blackrock Road, approximately 1km walk south of the site.

4.2.5 Key Junctions in the site vicinity

Traffic entering and exiting the site will use a proposed new access into the site from Centre Park Road, along the southern site boundary. The principal junctions that will be impacted by the development in the immediate site vicinity are as follows:

- Site access/Centre Park Road;
- Marquee Road/Centre Park Road;
- Marquee Road/Monahan Road; and
- Maryville/Blackrock Road.

In the wider locality, traffic exiting and entering the site from the west is expected to route via either Centre Park Road or Monahan Road. Both of these routes converge to the west at the Victoria Road Roundabout. This roundabout is to be upgraded to a signalised junction as part of the Cork Docklands to City Centre Road Improvement Scheme, which is expected to be submitted for planning approval in 2021. For the purposes of analysis, it will be assumed to be a signalised junction when the proposed development is in place.

To the east, traffic is expected to route via Marquee Road/Maryville, through the junction with Blackrock Road.

4.2.6 Future Transport Proposals in site vicinity

The Cork South Docklands is envisaged to be a major regeneration hub for the city and will result in a substantial population and employment increase within the study area (including within the proposed development site). This will in turn require a commensurate improvement in both transport infrastructure and transport services.

Local and strategic transport proposals for the transport network in the site vicinity include upgrades to the local road network and additional road infrastructure in the site vicinity (including some additional river crossings), and at a strategic level the site lies along a proposed rapid transit corridor linking Mahon to Ballincollig via Cork City Centre. Therefore, regardless of the implementation of the proposed development, the local road network will see a significant increase in traffic flow arising from the redevelopment of the South Docklands and the implementation of new major transport infrastructure projects.

The Cork Metropolitan Area Transport Strategy (CMATS, published in final version in March 2020) aspires to support the future development of the South Docklands area; to this end a high-frequency bus service and a Bus Rapid Transit (BRT) system are both initially envisaged to serve the South Docklands area and

the proposed rapid transit corridor, and ultimately it is expected that this system will be upgraded to Light Rail Transit (LRT).

This transit corridor is proposed to route from Mahon to Ballincollig (via Cork City Centre) and to pass directly along the site boundary on Centre Park Road. Furthermore, Monahan Road to the south is also proposed to carry high-frequency bus services which will route through the south-east city suburbs and also over the proposed Eastern Gateway Bridge to the Tivoli area. The proposed bus network identified in CMATS is to be delivered in the coming years by the NTA and Cork City Council via the 'BusConnects Cork' funding programme. A feasibility study is underway to determine the preferred route for the LRT system, whilst separate studies are also underway to determine the corridors and extent of pus priority measures to be implemented across the Cork Metropolitan Area.

CMATS is supported at a local level by an 'Area-Based Transport Assessment' (ABTA) for the South Docklands, prepared by Cork City Council. The CMATS and ABTA assessments in turn will then inform the ongoing development of a new Local Area Plan for the South Docklands, which is expected to follow the publication of the new Cork City Development Plan in early 2022.

The CMATS and ABTA assessments both support the implementation of a comprehensive cycle network across the metropolitan area, and specifically within the South Docklands dedicated cycle infrastructure is proposed on all roads that pass the site.

To complement the above transport proposals, this development will adopt a robust approach to demand management, to include a reduced parking provision at the site and the promotion of walking, cycling and public transport. The ABTA report makes specific recommendations in relation to applicable parking standards for residential developments within the South Docklands, and these standards have been incorporated into the proposed scheme, with the proposed 323 parking spaces in full accordance with the standards emerging from the ABTA report.

As a result, the expected vehicle trip generation for the scheme will be low, and the resultant impacts on the local road network will be minor in nature. The scheme will have one distinct access points on Marquee Road.

Crucially, the site is therefore extremely well-placed to avail of the ambitious sustainable transport proposals envisaged for the South Docklands and the wider city area and indeed to support the viability of these services.

Table 2: Potential Effects – Traffic and Transport

Possible Effect	Significance of Effect	Effect on European Site
Construction - Traffic impact due to increased traffic and delays during the construction phase of the scheme	Not significant, negative, short term – the site is bounded by a number of traffic routes that experience moderate traffic flows at present.	None

Operation - Increased traffic congestion in the surrounding area and at some junctions	Slight, negative, long term – the subject site is within the south-eastern suburban area of Cork City and the existing roads are already trafficked. As the South Docklands area is regenerated, there will be a commensurate increase in traffic flow on the existing road network regardless of the implementation of the proposed development.	
Furthermore, the scheme will place an emphasis on sustainable transport methods and will adopt a robust demand management approach to vehicle trips, including an emphasis on a reduced parking quantum, providing a significant allocation of cycle parking on site, and consideration of sustainable transport proposals in the wider area as part of the development design.		

4.3 Air Quality and Climate

4.3.1 Air Quality

The proposed development is located within Zone B, Cork Conurbation, as defined in the Air Quality Standards Regulations, 2011.

Background levels from 2015-2017 provided by the EPA's annual reports *Air Quality in Ireland – Indicators of Air Quality* outlined air quality monitoring results for NO_2, $PM_{2.5}$ and PM_{10} in Zone B which demonstrated good compliance with air quality standards.

There are no sensitive receptors in the immediate vicinity of the proposed development site. The closest residential properties are located circa. 250m to the southeast of the proposed development site along Monahan Road and circa. 240m to the north of the site across the River Lee located on Myrtle Hill Terrace. The closest school to the proposed development site is Ballintemple National School which is located circa. 570m to the south of the site. The closest place of worship (St. Josephs SMA Church, Blackrock) is located circa. 570m to the southwest of the site.

There is potential for dust impacts to arise due to construction activities associated with the proposed development, such as excavations. However, mitigation measures will be put in place to minimise the generation of dust off-site, such as the provision of a dust screen around the site, such that no significant adverse effects are envisaged.

During the operational phase, potential air quality and climate impacts may arise due to the additional traffic accessing the site.

No likely significant adverse effects have been identified at this point in the EIAR preparation with respect to air quality during the construction or operational phases of the proposed development. Where impacts are identified during the impact assessment phase of the EIAR process, appropriate mitigation measures will be proposed to minimise the residual effect.

4.3.2 Climate

Carbon Emissions

Potential effects in relation to carbon emissions relate primarily to emissions from construction vehicles, construction materials such as concrete and the possible use of diesel generators during construction as well as emissions from resident's cars and the use of the buildings during the operational phase. No likely significant adverse effects have been identified at this point in the EIAR preparation with respect to carbon emissions during the construction or operational phases of the proposed development. Where impacts are identified during the impact assessment phase of the EIAR process, appropriate mitigation measures will be put in place.

4.4 Noise and Vibration

The baseline noise environment at the proposed development site is likely to consist of noise generated by vehicles on Centre Park Road and the Marina Greenway Car Park as well as operations at the nearby commercial properties such as Marina Commercial Park.

The main potential noise and vibration impacts associated with the proposed development will be:

Construction Phase

- Works associated with the development of the site; and
- Construction traffic to and from the site.

Operational Phase

- Traffic associated with the proposed development; and
- Mechanical plant items serving residential and multi-use units such as the commercial units.

Construction works have the potential to cause short-term impacts on nearby noise sensitive receivers. Typically, mitigation measures are recommended as good practice to minimise any negative impact from construction activities. Where impacts are identified during the impact assessment phase of the EIAR process, specific mitigation measures will be provided for, where necessary.

It is not expected that there will be any significant vibration impact associated with the construction phase.

With respect to operational traffic noise, it is not expected that there will be a significant adverse impact, considering the design measures that will be taken to reduce operational traffic associated with the proposed development (promotion of sustainable transportation modes, reduced parking, etc).

Mechanical plant items serving the proposed development have the potential to emit noise. Where impacts are identified during the impact assessment phase of the EIAR process, specific mitigation measures will be provided for, where necessary. Due consideration will be given to the design of the residential dwellings to protect residents from external noise. Potential effects on the proposed development from external noise sources including Marina Commercial Park and Páirc Uí Chaoimh will be assessed.

It is expected that there will be no likely significant adverse vibration impact associated with the operational phase.

No likely significant adverse effects have been identified at this point in the EIAR preparation with respect to noise and vibration during the construction or operational phases of the proposed development. Where impacts are identified during the impact assessment phase of the EIAR process, appropriate mitigation measures will be put in place.

4.5 Biodiversity

4.5.1 Habitats

Site surveys were carried out on the 9th, 23rd and 26th of September 2021. Habitat mapping was carried out in line with the methodology outlined in the Heritage Council Publication, Best Practice Guidance for Habitat Survey and Mapping (Heritage Council, 2011). The terrestrial and aquatic habitats within or adjacent to the proposed development site was classified using the classification scheme outlined in the Heritage council publication A Guide to Habitats in Ireland (Fossitt, 2000) and cross referenced with Annex I Habitats where required. The habitats recorded on site are described below in **Table 3**.

No Annex I habitats were recorded within the proposed development site. No protected species were recorded during the site visits.

Table 3: Habitats within the proposed development site

Habitat	Description

Dry Meadows and Grass Verges (GS2) / Scrub (WS1)	Where there are deeper soils, on the margins of hard surfaces and where areas have been left unmanaged for longer periods, a mixture of Dry meadows and grassy verges GS2/Scrub WS1 has become established. Patches of this habitat occurs as a mosaic with a scattered distribution throughout the site on the margins of yards and along boundaries. As such it generally does not form a distinct area of habitat within the site boundary. The exception is the eastern section of the site which was not as actively utilised by the previous owners. This area is now dominated by this habitat type, whereas elsewhere within the site it occurs in a patchwork with other habitat types. Common species noted include False Oat Grass *Arrhenatherum elatius*, Yorkshire Fog *Holcus lanatus*, Meadow grass *Poa pratensis*, Wild Carrot *Daucus carota*, Smooth Sow Thistle *Sonchus oleraceus*, Bramble *Rubus spp*., Dandelion *Taraxacum spp*, Ribwort Plantain *Plantago lanceolata*, Meadow Vetchling *Lathyrus pratensis*, Spear Thistle *Cirsium vulgare*, Ragweed *Ambrosia spp*., Willow *Salix spp*., Ivy *Hedera helix* and Red Fescue *Festuca rubra*. Scrub is also becoming established with willow and buddleia the most common species. Silver and Downey Birch *Betula spp*. are also present. GS2 has links to the Annex I habitat Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*) (6510). However, the habitat mosaic within the proposed development site is not an example of this Annex I habitat.
Treelines (WL2) / Scrub (WS1)	A drainage ditch runs along the full extent of the northern boundary of the site. Along its southern boundary there is a broad band of vegetation formed primarily by dense stands of Buddleia with climbing species such as Wild Clematis *Clematis virginiana* and Bindweed *Convolvulus spp*. forming dense thickets. Trees are limited in extent with occasional Sycamore Acer *pseudoplatanus* and Willow the dominant species. Japanese Knotweed *Fallopia japonica* has become established at a number of locations and forms dense thickets. Running along the northern and southern boundaries of the site and forming the external boundary is a mixture of poor-quality hedgerow and treeline. Species noted include Hawthorn *Crataegus monogyna*, non-native *Grisilinea* and Sycamore with Ivy, Nettle *Urtica dioica*, Bramble and Bindweed also common. Some dead elm trees *Ulmus spp*.

	are also prominent along the northern boundary. Within the site boundary, along the southern boundary, there is an existing treeline which includes Lime *Tilia spp*. and Monteray Cypress *Cupressus macrocarpa*. It is considered of low ecological value. This is not an Annex I habitat and is not a qualifying interest for Natura 2000 sites.
Drainage ditch (FW4)	There are existing drainage ditches running along the northern and southern boundary of the site. Surface water runoff from the existing site currently drains to these existing open channels. The southern channel is understood to be interconnected with existing channels to the west and south of the site which form part of the south docklands drainage network that ultimately discharges to the River Lee via the Atlantic Pond. Both open channels ultimately discharge to an estuarine section of the River Lee. Both drains have a deep substrate of mud are largely devoid of aquatic vegetation. Some signs of surface water pollution/eutrophication were noted, and water quality is generally poor with sluggish flows. Both drainage ditches are of negligible value for fish. This is not an Annex I habitat and is not a qualifying interest for Natura 2000 sites.
Buildings and Artificial Surfaces (BL3) / Recolonising Bare Ground (Ed3) / Scrub (WS1)	The existing complex of industrial buildings within the overall land ownership area are largely intact but in a poor state of repair. All of the windows within the office block are broken. Other buildings within this complex include a disused garage and open shed with corrugated roofs. These buildings are of low potential as bat roosts Large areas of the site have either a gravel of tarmac surface. Overtime disused areas of the site have been colonised by a range of early successional species which are able colonise areas with gravel or a thin layer of subsoil. There are no buildings within the site boundary of the proposed development. Species noted include Buddleia which forms dense thickets, Bindweed, Herb Robert *Geranium robertianum*, Ribbed Melliot *Melilotus officinalis*, and Red Centaury *Centaurium erythraea*. The introduced species Narrow Leaved Ragwort *Senecio inaequidens* and Canadian Fleabane *Erigeron canadensis* are also common. The invasive species Giant Knotweed *Fallopia sachalinensis* was recorded within this habitat.

	This is not an Annex I habitat and is not a qualifying interest for Natura 2000 sites.

4.5.2 Birds

A bird survey was carried out in conjunction with habitat surveys in September 2021. During the survey, all birds seen or heard within the development site were recorded. The majority of birds utilising the proposed works areas were common in the local landscape.

Bird species listed in Annex I of the Birds Directive (2009/147/EC) are considered a conservation priority. Certain bird species are listed by BirdWatch Ireland as Birds of Conservation Concern in Ireland (BOCCI). These are bird species suffering declines in population size. BirdWatch Ireland and the Royal Society for the Protection of Birds have identified and classified these species by the rate of decline into Red and Amber lists (Colhoun and Cummins 2013). Red List bird species are of high conservation concern and the Amber List species are of medium conservation. Green listed species are regularly occurring bird species whose conservation status is currently considered favourable. No Annex I bird species were recorded during the site survey. Grey Wagtail (*Motacilla cinerea*) (a red list species) was recorded within the proposed development site. A peregrine falcon (Falco peregrinus) was identified on a neighbouring site to the west, perching, which is listed as an Annex I species.

Overall, most of the proposed development site is of a low local value for terrestrial bird species that are relatively common in the Irish countryside. One Red List species i.e. Grey Wagtail, was recorded at the site. No signs of other significant nesting species were recorded. No birds listed as SCIs for the Cork Harbour SPA were recorded utilizing the proposed development site, although Black-headed Gull was recorded overflying the site.

4.5.3 Invasive Species

The third schedule species, Japanese Knotweed has become established at multiple locations within the site including dense thickets along the drain that runs along the northern boundary and along the western and southern boundary.

Buddleia and Wild Clematis have a scattered distribution within the site and in some places are the dominant species. These species are on the Amber List: Uncertain Risk" (their ecological impact remains uncertain due to lack of data showing impact or lack of impact) were also recorded within the site boundary. These species are generally considered less problematic than knotweed species.

Due to the low ecological value of the site, no significant negative effects are predicted.

A Screening for Appropriate Assessment has been prepared for the proposed development and it was concluded that a Stage 2 Appropriate Assessment would be carried out to accompany the final planning application package.

4.6 Archaeology, Architecture and Cultural Heritage

The site is situated on a historic part of the city formerly City Park which hosted national racecourse meetings. In 1916 the area was proposed for engineering works and transformed into a large industrial manufacturing site.

There are no features listed in the Record of Protected Structures for Cork City, the National Inventory of Architectural Heritage or the National Monuments Services within the proposed development site.

The site is not located within an Architectural Conservation Area.

There is the potential that previously unknown archaeological features may be present in areas of undisturbed ground and may be unearthed during construction activities such as excavations for the undercroft car park.

No predicted significant adverse impacts have been identified at this point in the EIAR preparation with respect to archaeology, architecture and cultural heritage during the construction or operational phases of the proposed development. Where impacts are identified during the impact assessment phase of the EIAR process, appropriate mitigation measures will be put in place.

4.7 Townscape and Visual

The proposed development site is located in an existing built-up area of Cork city and the site itself is not located within an area of high landscape character. However, the area immediately adjacent to the northern boundary of the site is in an area of High Landscape Value.

The proposed development will include buildings ranging from nine to 31 storeys in height. The scale of the proposed development will be such that it is likely to be openly visible from a number of areas in the city. A Townscape and Visual Impact Assessment will be carried out as part of the EIAR and effects will be classified in accordance with EPA guidelines. Photomontages will also be prepared. The design of the proposed development will be cognisant of the objectives of the Cork City Development Plan 2015-2021 and any relevant policies in relation to townscape and visual.

The quality of effects on the visual environment: positive, negative or neutral, will depend on how the development is perceived by observers. Factors influencing perception will include the quality of the architectural expression of the proposed structures, their scale and mass in relation to their surroundings, the quality of the spaces made both within and around the development, the distance from which the development is seen and the context of the view.

No predicted significant adverse effects have been identified as this point in the EIAR preparation due to the existing built environment and the design of the proposed development. Photomontages are being prepared, and due consideration will be taken in respect of the design to minimise townscape and visual effects and, where impacts are identified during the impact assessment phase of the EIAR process, appropriate mitigation measures will be put in place.

4.8 Land and Soils

The proposed development site is a brownfield site. In 1916 the area was developed as a large industrial manufacturing site. There are a number of structures on the site which will be demolished/removed. Site investigation works will be carried out and the results of which will be communicated in the EIAR.

Excavation works will be undertaken as part of the proposed development, to provide an undercroft car park and also to facilitate the construction of foundations for the proposed new structures. Should the removal of any of the made ground from across the site be necessary it would likely have a moderate, positive long-term impact on the site by removing potentially contaminated made ground.

During the operation of the site, there are no likely predicted effects on land and soils.

No likely significant adverse impact has been identified at this point in the EIAR preparation with respect to land and soils during the construction or operational phases of the proposed development. Where impacts are identified during the impact assessment phase of the EIAR process, appropriate mitigation measures will be put in place.

4.9 Water

The construction of the proposed development is likely to give rise to a short term moderate negative effect on the receiving surface watercourse and surface/ground water regime of the area. There are potential sources of pollution from drainage from the site resulting from runoff and erosion from site earthworks and temporary stockpiles. The presence of fuels, lubricants and other chemicals from construction activities also have the potential to temporarily affect the surface/ground water regime of the area if not managed properly.

4.9.1 Water Quality

The River Lee is located approximately 60m to the north of the proposed development site. According to the EPA Envision Mapping, the River Lee's Transitional Waterbody WFD (Water Framework Directive) Status is classed as 'moderate', while its Risk Status is classed as 'at risk'.

4.9.2 Flooding

The site of the proposed development is at risk of both fluvial and tidal flooding. The risk of pluvial and groundwater flooding is considered low. The site is located within Flood Zone A, as it is located within the 1 in 200-year tidal flood extent according to CFRAM mapping. However, it is protected to a very high standard by the existing polder defences along the quayside. Cork City Council intend to raise this polder defence in the future to ensure the existing standard of protection is maintained or increased. Accordingly, it will be the primary flood protection measure for the South Docklands.

The design and construction of the proposed development itself will provide a secondary line of defence. This will be achieved by placing all highly vulnerable development at higher levels (above a recommended minimum level of 3.80mOD) within the development so that such development is not reliant on the polder defences.

A Flood Risk Assessment will be submitted with the planning application package.

4.9.3 Surface and Foul Water Drainage

The proposed development will mainly include the construction of residential dwellings along with a mix of retail and commercial units. Surface water from these areas will be captured by a new drainage network for the site.

Surface water generated from the impervious surfaces and from existing buildings on site discharges to the two existing open channels located along the northern and southern boundaries of the site. Both open channels ultimately discharge to the River Lee via the outfall at the eastern corner of the site.

It is proposed to collect all surface water from the proposed development in dedicated surface water pipe networks. A network of primary carrier pipes will be provided, located predominantly within the development roads. Each building will discharge directly to the primary carrier sewer. Public realm areas at podium level will be collected by a blue roof directly beneath the paving in so far as is possible.

Although the carparks are covered by the podium deck, drainage will be provided for the carpark hardstanding in the form of linear drainage channels to ensure any rainfall associated with vehicles entering the carpark is conveyed off site. Runoff from the car parks will pass through a hydrocarbon interceptor prior to discharging into the primary receiving network. Non-return valves will be fitted on the downstream end of the car park drainage to prevent water backing up into the carpark areas during conditions where the receiving drainage network is surcharged.

Sustainable Urban Drainage (SUDS) features will be incorporated into scheme to provide amenity/biodiversity/water quality benefits as well as contributing to reducing the extent of grey infrastructure requirements. Examples of SUDS features that may be incorporated are rain gardens, permeable paving and under drained planters/tree pits.

Based on record drawings and information received from Cork City Council, there is an existing Irish Water wastewater sewer adjacent to the site along Centre Park Road. The pipe is 525mm in diameter and flows in an easterly direction before draining south in a 600mm diameter sewer along Marquee Road, before connecting to the existing 3.2m diameter interceptor sewer along Monahan Road. This interceptor sewer flows to the Atlantic pond pumping station to the east of the proposed site.

It is proposed to collect all foul water from the proposed development through a dedicated foul sewer network. As described above, there is an existing Irish Water sewer along Centre Park Road, east of the junction with Marquee Road. It is

proposed that one connection point to this existing sewer will be made from the new foul water drainage network. It is proposed to install a non-return valve on the proposed foul water drainage network prior to the connection to the existing infrastructure. This will ensure that in the event of the existing sewer surcharging, foul water from the Cork main drainage network will not back up into the site foul water drainage network. The foul drainage network will consist of a traditional gravity piped network.

If required grease traps will be incorporated into the development at any required locations to prevent fats, oils and greases (FOGs) from entering the main foul drainage network.

Any new drainage elements on site will include hydrocarbon interceptors and other necessary elements to ensure safe discharge into the receiving waters. Measures will be put in place to ensure that foul water will be managed appropriately. The applicant will engage with Irish Water to ensure that there will be a sufficient water supply to the proposed development site.

No likely significant adverse impact has been identified at this point in the EIAR preparation with respect to water during the construction or operational phases of the proposed development. Where impacts are identified during the impact assessment phase of the EIAR process, appropriate mitigation measures will be put in place.

4.10 Resource and Waste Management

During the demolition and construction phases, waste materials will be generated which will be source segregated on-site into appropriate skips/containers, where practical and removed from site by suitably permitted waste contractors to authorised waste facilities. Where possible, materials will be reused on-site to minimise raw material consumption. Source segregation of waste materials will improve the re-use opportunities of recyclable materials off-site. Completion of the undercroft car park and construction of new foundations and the installation of any underground services will require the excavation of a yet to be determined amount of made ground and subsoil. Site investigation works are currently being carried out to determine the potential to encounter contaminated land when undertaking these groundworks and undercroft excavations.

Should the removal of any of this material be necessary, it will require removal offsite for appropriate reuse, recovery, recycling and/or disposal.

A planned approach to waste management and adherence to the site-specific Construction and Demolition Waste Management Plan during the construction phase will ensure that the effect on the environment will be short-term, neutral and imperceptible. Circular economy principles will be implemented wherever possible.

During the operational phase, waste will be generated from the residents and the retail and commercial units. A dedicated communal waste storage area will be allocated for the residents at ground level. The waste storage area will be appropriately sized to accommodate the estimated waste arisings. These waste

storage areas will be allocated to ensure a convenient and efficient management strategy with source segregation as a priority. Waste will be collected from the designated waste collection areas by permitted waste contractors and removed off-site for re-use, recycling, recovery and/or disposal.

An Operational Waste Management Plan will be prepared which will provide a strategy for segregation (at source), storage and collection of wastes generated within the development during the operational phase including dry mixed recyclables, organic waste, mixed non-recyclable waste and glass as well as providing a strategy for management of waste batteries, WEEE, printer/toner cartridges, chemicals, textiles, waste cooking oil and furniture. The Plan will comply with all legal requirements, waste policies and best practice guidelines and will demonstrate that the required storage areas have been incorporated into the design of the development.

Provided mitigation measures are implemented and a high rate of reuse, recycling and recovery is achieved, the predicted effect of the operational phase on the environment will be long-term, neutral and imperceptible.

No likely significant adverse impact has been identified at this point in the EIAR preparation with respect to resource and waste management during the construction or operational phases of the proposed development. Where impacts are identified during the impact assessment phase of the EIAR process, appropriate mitigation measures will be put in place.

4.11 Population and Human Health

During the construction phase of the proposed development, there is potential for negative effects on population and human health resulting from construction related noise and dust. Potential effects will be managed by means of a Construction Environmental Management Plan and will be short term in nature.

The proposed development is likely to result in an operational residual significant positive effect on the population through the provision of a range of 1030 no. residential units and an increase in employment due to the construction of new retail and commercials units.

Employment will be generated during the construction and operation of the proposed development resulting in both a short and long-term positive impact.

No likely significant adverse impact has been identified at this point in the EIAR preparation with respect to population and human health during the construction or operational phases of the proposed development. Where impacts are identified during the impact assessment phase of the EIAR process, appropriate mitigation measures will be put in place.

4.12 Material Assets

It is envisaged that all local service and utility networks have sufficient capacity to support the operation of the proposed development. The potential for effects on

material assets is therefore not expected to be significant during the operational phase.

No likely significant adverse impacts have been identified at this point in the EIAR preparation with respect to material assets during the construction or operational phases of the proposed development. Where impacts are identified during the impact assessment phase of the EIAR process, appropriate mitigation measures will be put in place.

4.13 Major Accidents and Disasters

A review was undertaken to identify the closest Seveso site in relation to the proposed development site. Goulding Chemicals Limited is located circa. 570m west of the site along Centre Park Road and is classed as a Lower-Tier site. There are also a number of Upper and Lower Tier Seveso sites located to the north west of the proposed development site, across the River Lee including Calor Teoranta, Flogas Ireland Ltd and Chemical Bulk Storage Limited. Consultation with the Health and Safety Authority (HSA) will be undertaken during the preparation of the EIAR.

It is anticipated that potential risks of major accidents/disasters occurring during the operational phase of the proposed development will be mitigated by ensuring the proposed development is designed, built and operated in line with best practice.

No likely significant adverse impacts have been identified at this point in the EIAR preparation with respect to major accidents and disasters during the construction or operational phases of the proposed development.

4.14 Cumulative and Interactive Effects

4.14.1 Cumulative Projects

A review of the Cork City Council online planning records will be carried out during the preparation of the EIAR. In the event that there are any developments identified which may result in cumulative effects, appropriate mitigation measures will be put in place. Further, a Construction Environmental Management Plan (CEMP) will be implemented in order to mitigate any potential negative effects.

The proposed development is part of an overall masterplan for the site. Therefore, there is the potential for cumulative effects but these will be managed both through the design process and through the implementation of a CEMP and Construction Traffic Management Plan (if necessary).

4.14.2 Interactive Effects

The following potential impacts have been identified at this stage in the preparation of the EIAR. These interactions will be assessed in further detail as the individual environmental topic assessments are finalised.

	Traffic and Transportation		Air Quality and Climate		Noise and Vibration		Biodiversity		Archaeology, Architecture and Cultural		Townscape and Visual		Land and Soils		Water		Resource and Waste Management		Population and Human Health		Material Assets		Major Accidents and Natural Disasters	
	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O
Traffic and Transportation			✓	✓	✓	✓									✓	✓			✓	✓				
Air Quality and Climate							✓												✓	✓				
Noise and Vibration							✓												✓	✓				
Biodiversity											✓	✓								✓				
Archaeology, Architectural and Cultural Heritage																								
Townscape and Visual																			✓	✓				
Land and Soils			✓		✓						✓				✓		✓		✓					
Water							✓	✓											✓	✓				
Resource and Waste Management	✓	✓																						
Population and Human Health		✓																✓						
Material Assets			✓	✓	✓				✓				✓		✓	✓								
Major Accidents and Disasters												✓			✓	✓		✓	✓	✓				

5 Summary of Possible Environmental Effects

At this stage in the preparation of the EIAR, it is considered that the most significant possible negative effects on the environment, without appropriate mitigation measures in place, are likely to be:

- Potential for dust, noise or water run-off during construction phase;
- Potential for visual impacts due to the height of the proposed development;
- Potential for spread of invasive alien species;
- Potential for traffic disruption during the construction phase.

With appropriate mitigation in place, it is not anticipated that any of the above will have a significant negative effect on the environment. The most significant positive effects on the environment will be the provision of residential accommodation to meet strong demand and projected population growth in the metropolitan area.

A Stage One AA Screening Report has been prepared for the proposed development by Dixon Brosnan Environmental Consultants. The conclusion of which stated that although the likelihood of effects on Cork Harbour SPA is low, applying the precautionary principle, potential impact pathways have been identified and a Natural Impact Statement will be prepared for the proposed development and submitted with the final planning application.

Detailed assessments will be carried out as the design of the proposed development evolves, and these will be fully described in the EIAR.

Appendix 5.1

Construction Environmental Management Plan

Construction Environmental Management Plan

ARUP

Tiznow Property Company Limited (Comer Group Ireland)

City Park Development at the Former Tedcastles Site

Construction Environmental Management Plan – North Site

Reference: 267365-ARUP-XX-XX-RP-YE-0008

P02 | 28 March 2022

This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 267365-00

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ARUP

Document Verification

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Document title	Construction Environmental Management Plan – North Site
Job number	267365-00
Document ref	267365-ARUP-XX-XX-RP-YE-0008
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		Signature			
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		Signature	AP	SG	JH
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		Signature			

Issue Document Verification with Document ✓

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Introduction

1.1 Overview

This Construction Environmental Management Plan (CEMP) has been prepared by Arup to support Tiznow Property Company Limited (Comer Group Ireland)'s application for consent for the proposed strategic housing development (SHD) at the Former Former Tedcastles site on Centre Park Road, in Cork City.

Tiznow Property Company Limited (Comer Group Ireland), (hereafter referred to as *'the Developer'),* will have a construction management team which will supervise aspects of the construction phase of the proposed development.

The Developer's construction management team will ensure the contractor (and any subcontractors) will comply with all of the performance requirements set out in the tender documentation including the conditions attached to statutory consents which may be granted by An Bord Pleanála, Irish Water and other relevant statutory consent authorities.

The Developer's construction management team will ensure compliance with the mitigation measures set out in **Sections 6** and **7**.

This CEMP sets out the duties and responsibilities which will be imposed on the contractor in the construction contract. The Developer's construction management team will be responsible for ensuring that the contractor complies with all the requirements of this CEMP.

1.2 Purpose

The purpose of this CEMP is to provide a framework that outlines how The Developer will manage and where practicable minimise negative environmental effects during the construction of the proposed development. Construction is considered to include all site preparation, enabling works, demolition, materials delivery, materials and waste removal, construction activities and associated engineering works.

This CEMP identifies the minimum requirements with regard to the appropriate mitigation, monitoring, inspection and reporting mechanisms that need to be implemented throughout construction. Compliance with this CEMP does not absolve The Developer from compliance with all legislation and bylaws relating to their construction activities.

This CEMP has been produced as part of the application for consent to ensure compliance with legislative requirements.

1.3 Approach

This CEMP provides a framework to:

- Describe the programme for environmental management during construction;
- Implement those monitoring and mitigation measures outlined in **Section 6** and **Section 7**;
- Outline the principles and minimum standards required during the development of the CEMP (and associated Method Statements) and throughout construction;
- Identify the relevant roles and responsibilities for developing, implementing, maintaining, and monitoring environmental management; and
- Outline the procedures for communicating and reporting on environmental aspects of the proposed development throughout construction.

It is intended that this CEMP would be expanded and updated prior to the commencement of any construction activities on site. The CEMP is a dynamic document and will remain up to date for the duration of the construction period. The CEMP may need to be altered during the lifecycle of the construction period to take account of monitoring results, legislative changes, outcomes of third-party consultations etc.

Following appointment, the contractor will be required to develop more specific Method Statements that are cognisant of the proposed construction activities, equipment and plant usage and environmental monitoring plan for the proposed development. This CEMP should not be considered a detailed Construction Method Statement as it would be the responsibility of the contractor, appointed to undertake the individual works, in association with The Developer, to implement appropriate procedures and progress this documentation prior to commencement of construction.

This CEMP outlines the range of potential types of construction methods, plant and equipment which may be used by any contractor appointed to enable their effects to be assessed for the purposes of the planning authority's environmental impact assessment and appropriate assessment prior to determining whether to grant planning permission.

1.4 Structure

This CEMP is structured as follows:

- **Section 1** introduces the proposed development and outlines the purpose of the CEMP;
- **Section 2** describes in detail the proposed development;
- **Section 3** describes the construction strategy for the proposed development;
- **Section 4** sets out the framework and mechanisms through which environmental requirements would be managed;
- **Section 5** outlines the procedures to be employed during construction to manage environmental aspects;
- **Sections 6** and **7** describe in detail the measures to be implemented to minimise likely significant negative effects, as far as practicable, during the construction of the proposed development.

1.5 Updates to the Construction Environmental Management Plan

The detailed CEMP is considered a 'live document' that will be reviewed and revised regularly as construction progresses. The process for update, review and approval of the CEMP must be documented in the detailed CEMP to ensure that all revisions can be easily understood, applied and updated.

The contractor is required to update the CEMP to ensure that it:

- Is in accordance with the mitigation measures specified in the EIAR and associated ecological reports and this CEMP;
- Is in accordance with any conditions that may be prescribed as part of the consent(s) for the proposed development;
- Aligns with those design and construction details described in the EIAR and associated ecological reports and ensures there is no material change in terms of significant effects on the environment;
- Where practicable the contractor should seek to identify opportunities for further reducing significant negative environmental effects and to implement best practice in as far as reasonably practicable, i.e., take every reasonable effort to reduce and prevent negative effects, while enhancing benefits; and
- Will have regard to the guidance contained in the handbook published by Construction Industry Research and Information Association (CIRIA)[1].

Further, the following plans, and any others considered relevant, will be incorporated into the CEMP:

- Construction Compound Management Plan;
- Construction Traffic Management Plan;

[1] CIRIA (2015) Environmental Good Practice on Site Guide, 4th Edition

- Noise and Vibration Management Plan;
- Water Quality Management Plan;
- Dust Management Plan;
- Invasive Species Management Plan; and
- Emergency Incident Response Plan.

It is expected that amendments to the CEMP may be necessary to reflect inter alia changes in the project scope, contract scheduling, contractor appointments, environmental management policies, practices or regulations, and developments on the site. These reviews and updates are necessary to ensure that environmental performance is subject to continual improvement and that best practice is implemented throughout construction.

The Proposed Development

2.1 Overview

The Developer intends to apply to An Bord Pleanála (the Board) for consent for a Strategic Housing Development (SHD) with a total application area of c. 4.86ha on lands located on the Former Tedcastles site (hereafter referred to as '*the proposed development'*) at Centre Park Road, in Cork City. The area is considered to be a brownfield site with a number of pre-existing structures on the site which have been partially demolished. Refer to **Figure 1** for a site location map.

Figure 1: Indicative location of the proposed development site | Source: Google Earth © 2022 | not to scale

Figure 1: Indicative location of the proposed development site | Source: Google Earth © 2022 | not to scale indicates the approximate site boundary (red line) of the site. The subject site is bounded by Centre Park Road to the southeast, and ESB Charging Station to the west.

The existing topography of the site is slightly sloped with levels generally decreasing in elevation from approximately 5.3mOD at the northern boundary to 0.2mOD at the existing entrance to the site on the southern boundary.

2.2 Elements

The development will consist of:

- Demolition of the existing structures on site and the construction of a strategic housing development of 823 no. apartments, resident amenity and ancillary commercial areas including childcare facilities.
- The development will comprise 6 no. buildings ranging in height from part 1 no. to part 35 no. storeys over lower ground floor level.
- The proposed development also comprises hard and soft landscaping, pedestrian bridges, car parking, bicycle stores and shelters, bin stores, ESB substations, plant rooms and all ancillary site development works.
- Vehicular access to the proposed development will be provided via Centre Park Road.

Figure 2: Site Layout Plan with Blocks identified | not to scale

2.3 Key Interfaces

The site adjoins several existing public roads along its boundaries.

The site was formerly owned by Tedcastles, and consequently there are several service utilities located within the boundary of the site which previously served the site. In addition, two open drainage channels run just inside the North and South boundaries of the site, parallel to the River Lee and Centre Park Road respectively.

2.4 Existing Buildings

One structure currently remains on the North site.

The proposed development includes the demolition of this structure, which is approximately 269 m^2, as identified in Figure 3**.**

Figure 3: Existing Buildings and Structures | not to scale

2.5 Access Strategy

It is envisaged that access to the development site will be from Centre Park Road. The exact location is to be determined and agreed with CCC as construction phasing develops, but it is expected that the site access will be from Centre Park Road.

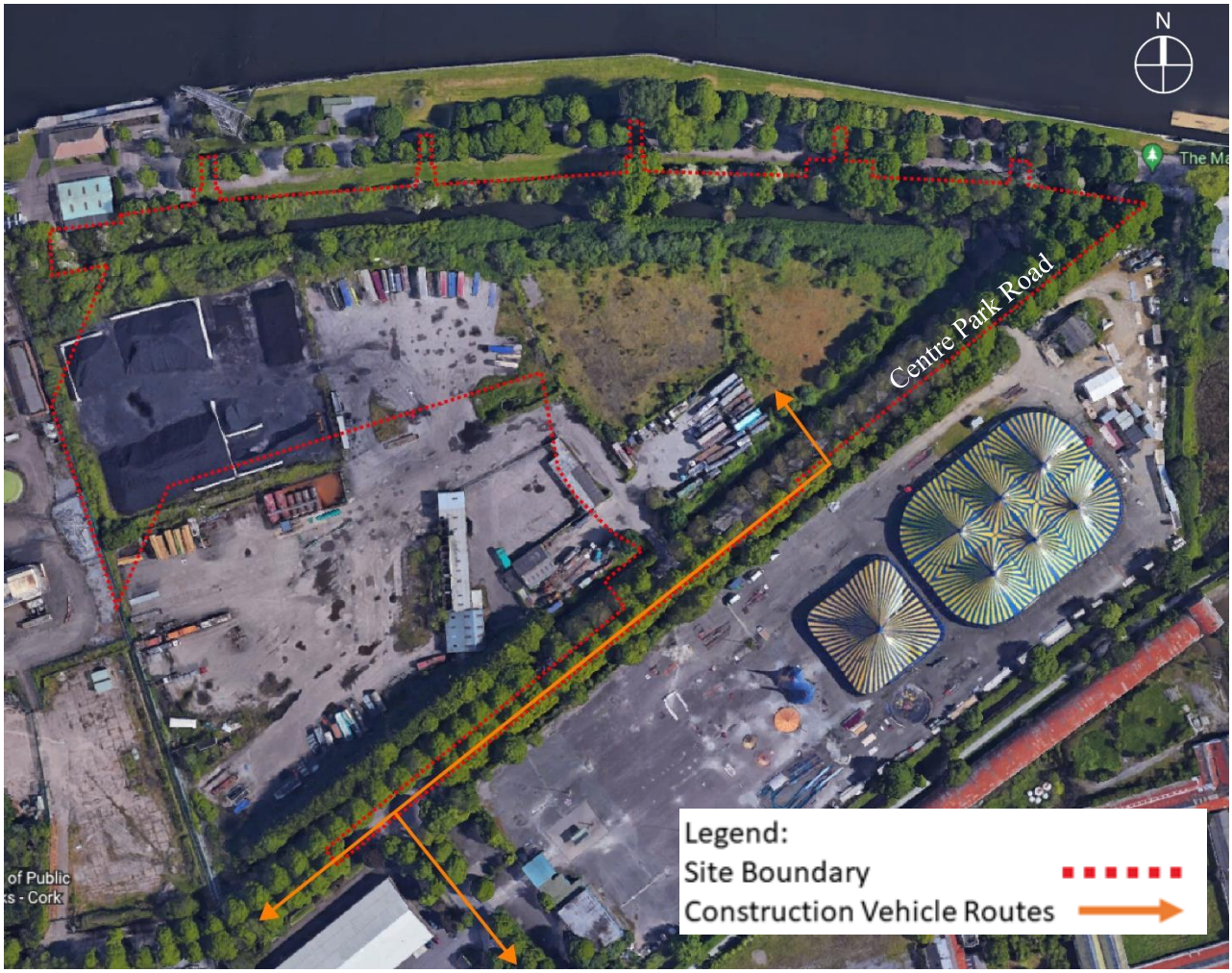

Figure 4: Construction Vehicle Access Strategy | Source: Google Earth © 2022 | not to scale

2.6 Project Participants

Table 1 List of Main Project Participants

Role	
Client	Tiznow Property Company Limited (Comer Group Ireland)
Architect	C+W O'Brien Architects
Civil and Structural Engineers	Arup
Contractor	To Be Confirmed
Mechanical and Electrical Engineers	Arup
Quantity Surveyor	Comer Group
PSDP	Arup
Fire Consultant	Arup
Landscape Architect	Parkhood Landscape Architects
Planning Consultant	Harry Walsh Planning

Construction Strategy

3.1 Construction Sequencing and Programming

This plan assumes that the building will be constructed as an in-situ reinforced concrete frame, however, pre-cast elements may also be used, depending on design development. The proposed development is anticipated to be constructed from East to West in 4 phases, with a number of sequential subphases in each, preceded by a Mobilisation and Enabling Works Phase.

The construction sequencing for each phase of the development is described in chronological order as follows:

- Phase 1: Lower Ground Floor to Podium Level (Blocks A, B, C, D, F)
  - Phase 1A: Enabling Works Phase
    - Phase 1A.1: Site Establishment (full site)
    - Phase 1A.2: Demolition and Site Clearance (full site)
    - Phase 1A.3: Utility Diversions (full site)
  - Phase 1B: Earthworks, Foundation and Podium Structure Works
- Phase 2: Blocks A, B & C (344 units)
  - Phase 2A: Superstructure Works
  - Phase 2B: Façade & Fit-Out Works & Drainage / Utilities Completions
  - Phase 2C: Landscaping Works.
- Phase 3: Blocks D & E (266 units)
  - Phase 3A: Earthworks, Foundation and Podium Structure Works (Block E)
  - Phase 3B: Superstructure Works
  - Phase 3C: Façade & Fit-Out Works & Drainage / Utilities Completions
  - Phase 3D: Landscaping Works.
- Phase 4: Block F (213 Units)
  - Phase 4A: Superstructure Works
  - Phase 4B: Façade & Fit-Out Works & Drainage / Utilities Completions
  - Phase 4C: Landscaping Works.

Figure 5: Phasing Plan | not to scale

3.2 Site Establishment

The site establishment works, to be carried out by the appointed Contractor, will include erecting perimeter hoardings around the site, construction of the site compound and storage areas, forming site access and egress points, enacting the traffic management plan, providing site security and erecting cranes. These items are discussed further below.

3.3 Demolition and Site Clearance

3.3.1 Pre-Demolition and Condition Surveys

A pre-demolition survey will be undertaken to provide sufficient information for the Main Contractor to prepare a detailed Demolition Management Plan (DMP), giving methodology and work sequences for the demolition phase.

This survey will inform the Design Team and Specialist Demolition Contractor of the structural framing, floor and wall construction of the remaining structures onsite so that measures can be put in place to ensure the safe deconstruction of these structures and to avoid uncontrolled collapse of a part of the structure.

This survey will also provide information on any non-structural elements that will form part of any initial soft strip out works. This information will also assist in the preparation of a detailed Waste Management Plan for these waste streams.

This survey will be accompanied by a detailed risk assessment to identify potential hazards, and necessary mitigation measures for safe demolition.

Dilapidation surveys will also be carried out in all adjoining properties, roads and footpaths and issued to the property owners and local authorities in advance of the demolition and excavation works.

3.3.2 Asbestos Audit

An asbestos audit will be undertaken on all structures to be demolished prior to demolition. Asbestos waste will be removed from site by specialist contractors and holders of the appropriate waste collection permit.

3.3.3 Soft Strip Building Demolition

Any loose internal fixtures and fittings such as furniture, kitchen fittings and other unattached items shall be removed by hand and segregated on site, where practical, into skips to allow for collection and transport by an approved waste carrier. The approved Waste Contractor will provide appropriate skips to facilitate on-site segregation of waste materials.

Any fixed soft stripped material such as plasterboard, wood panelling and other waste materials will be removed by hand, brought to segregation points and loaded into the skips and subsequently removed from site in skips or using haulage trucks. An exclusion zone shall be set up within the works area to provide a safe and operational area for skips and demolition waste and to prevent operatives from entering.

3.3.4 Structural Demolition

The strategy for structural demolition must ensure de-construction is undertaken in a carefully pre-planned sequence, using methodologies that ensure that buildings under demolition and any adjoining buildings are not affected in any way, weakened or de-stabilised during the works. All demolition works will be carried out with due consideration toward mitigating noise and vibration pollution to minimise disturbance to the surrounding area. Dust suppression systems, such as misters, will be used during the demolition operations, keeping air pollution to a minimum.

To comply fully with works specification, planning conditions, environmental and safety requirements and adhering to demolition best practice, the works should be undertaken by adopting a methodology that combines the following operations:

- Demolition by hand or using hand-held tools:

  This method will be adopted in all sensitive locations. These works can be undertaken from, crash decks or from mobile elevated work platforms.

- Saw cutting and lifting:

  This method will be adopted in sensitive locations. These works can be undertaken from crash decks or from mobile elevated work platforms.

- Mini excavators and breakers:

  The use of mini excavators and breakers may be adopted in constricted locations around the site where larger machinery may not be appropriate.

- Hydraulic concrete breaking equipment:

  The use of breaking equipment will be employed to break out ground floor slabs and any external areas of hard-standing, such as car parking areas. The breaker will typically be fitted to a 20T excavator but there may be some hand-held tools utilised in isolated or constricted locations.

3.3.5 Site Clearance – Asbestos Surveys

There may be unknown material on site that are presently not accessible due to overgrowth. Testing of material may be required prior to site clearance for the presence of asbestos or any other hazardous material.

3.4 Utility Diversions

Where the excavation strategy or temporary works require any diversions of local services or utilities within the site perimeter, this will be undertaken strictly with prior agreement of the relevant service providers and authorities. All diverted utility connections are to be put in place in advance of construction works

3.5 Podium Structure Works

3.5.1 General

The proposed development requires the construction of single a storey podium structure to serve each of the apartment buildings. Level 00 finished floor level is +5.40mOD. The podium structures underpin the entire footprint of the buildings, and support podium landscaped courtyards and open spaces between the buildings.

3.5.2 Earthworks

The existing topography of the site is slightly sloped with levels generally decreasing in elevation from approximately +5.3mOD at the northern boundary to +0.2mOD at the southern boundary.

An assessment of the presence of contaminated soils was carried out in accordance with the Environmental Protection Agency and international guidance. The investigation included a preliminary assessment of the site history and a site inspection to highlight potential sources of contamination. Subsequently a ground investigation was carried across the site at 50m spacing sufficient to identify any potential areas of contamination. Samples were collected every 1m from the made ground and a representative subset were sampled. The investigation considered risks to human health, groundwater, the surface water channels and the River Lee.

The ground investigation for the site has found in general that the site stratigraphy is as follows:

- Made ground (comprising of black sandy gravelly silt / silty sandy gravel with cobbles and boulders and typically 10% to 20% anthropogenic materials including brick, concrete blocks, pieces of glass and ceramics) from approximately 2.0 metres above Ordnance Datum, (mOD) up to -1.1mOD,
- Black becoming grey soft silt (reclaimed and natural) from approximately 0.4mOD up to a depth of -2.2mOD.
- Sand/Gravel from -0.2mOD and extending for several 10s of metres under the site.

During the construction of the foundations, site services and attenuation tanks the site level shall be lowered to approximately -1.30mOD. This will require the excavation of approximately 73,022m^3 of soil and hardstanding. Excavation will remove made ground and some of the silts and potentially some of the sand/gravels. This will require a dewatering strategy. Results indicate that the groundwater in the sand/gravel has an overall moderate quality, however there are elevated concentrations in some determinands which are likely linked to an off-site sources and background concentrations. The water quality in the drainage channels surrounding the site indicates brackish conditions with some elevated metals. A water sample collected from the drainage channel next to Centre Park Road detected per- and poly-fluoroalkylated substances (PFAS).

Once the foundations are constructed, fill materials will be required to build up the site to the required levels, in addition further fill will be required for under hard and soft landscaping areas.

Based on the results of the ground investigation, the soil between 0mbgl to 2mbgl is of poor quality in terms of risk to human health, with the presence of asbestos, polycyclic aromatic hydrocarbon (PAH), elevated metals, and benzene and toluene amongst others. Below 2mbgl, no significant risks were noted in relation to contaminants in the soil.

Water quality monitoring carried out at the site indicated that the water quality in the made ground could impact on the water quality in the drainage channels surrounding the site. However, there is no evidence that soil and water are impacting the water quality in the River Lee.

The soil to be excavated has been shown to contain asbestos fibres. The soil may have suitable engineering properties that could make it useful as a fill material. A detailed analysis shall be undertaken to consider the potential options for reuse of the soil. Should this highlight potential options and subject to any legal requirements such as environmental licensing, the contaminated soil will be treated and retained on site for re-use where possible. Suitable potential re-use options include between pilecaps, under hard and soft landscaping areas such as public open space. This is likely to comprise a sustainable solution but will likely require some offsite disposal for excess soils.

Any made ground soil disposed of offsite (with or without treatment) is likely to be classified as either non-hazardous waste with trace level of asbestos or hazardous waste and will be exported and disposed of outside of Ireland.

Samples from the ground investigation are to be compared to the limits defined in the EU Council Decision of 19 December 2002 establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II to Directive 1999/31/EC, referred to as the Waste Acceptance Criteria (WAC). In addition, the results are to be compared to the contents of the EPA Hazardous Waste Classification Paper Tool (version WM3 V1) using the online tool HazWaste Online to determine if the materials are considered hazardous. Any natural soil and stone which has not been impacted by contamination will be considered for reuse on or offsite in preference to disposal.

The assessment criteria used to categorise the soils are based on Irish and European standard criteria. The operators of landfills may use their own discretion to set their own limits for materials.

Refer to the Construction and Demolition Waste Management Plan for details of the management of exported soils from site.

3.5.3 Foundations

It is proposed that the buildings are founded on Continuous Flight Auger (CFA) piles under pile caps. The piles shall be installed using a method that does not compromise the integrity of the low permeability silt layer between the made ground and the gravel. Where it is necessary for pile caps to penetrate the silt layer, the foundations will be detailed so that no new flow paths are created and that an equivalent aquitard function is maintained. This may be achieved by the use of a lean-mix fill or grout injection into the gravel to replace the low permeability layer around the foundations. The final pile length will be the subject to the detailed design but are likely to be advanced a significant distance into the gravel. A piling mat will be required at formation level to support the piling rig.

3.5.4 Ground Flood Slab and Substructure

The Ground Floor comprises of reinforced concrete suspended slab, spanning onto the pile caps, subject to design development. The exact depths of excavation required for the ground floor and foundation structures varies, depending on existing ground level, however it is generally in the region of 3-3.5m from existing ground level.

As part of the podium structure works the outer walls and first rise of internal core walls and columns will be constructed in in-situ concrete.

3.5.5 Podium Level Slab

Due to differing structural grids at superstructure and Ground Floor and substructure, a transfer structure is required at Level 01 (Podium Level) under each of the buildings. It is intended that this is to consist of a reinforced concrete flat slab, the thickness of which is dependent on the height of building supported.

Structure supporting all other areas at Podium Level, including hard and soft landscaping areas will consist of flat slab construction.

3.6 Superstructure Works

It is envisaged that the proposed buildings are all to be a combination of in-situ and / or precast concrete construction.

Stability will be achieved through central RC cores in each building around stair and lift cores, extending to ground floor level, and diaphragm action of the slabs.

The concrete framing for all buildings will be constructed on a sequential basis with concrete pumping envisaged. The floor slabs will be supported using temporary props as necessary, to ensure the stability of the structure at all times during the construction process. Concrete will be delivered to site using a ‘just-in-time’ approach. This will help mitigate against traffic congestion as well as reducing the amount of space required for material storage on site.

3.7 Façade and Fit Out Works

Once the building structure has been well advanced, the completion of the facades and the installation of mechanical and electrical services and building finishes will commence.

It is proposed that fit-out, handover and occupation of the buildings is carried out on a phased basis. The proposed phasing may be subject to change as the project progresses.

Final drainage and utility connections will be completed towards the end of the construction programme for each phase. Where it is necessary for drainage or utilities to penetrate the silt layer, the drainage and utilities will be detailed so that no new flow paths are created and that an equivalent aquitard function is maintained. This may be achieved by the or use of a lean-mix fill or grout injection into the gravel to replace the low permeability layer around the drainage and utilities.

3.8 Landscaping Works

Once the building fit-out, finishes and underground utility connections are substantially complete at the end of each construction phase, the completion of hard and soft landscaping of the Level 01 Podium areas and the Level 00 ground level areas will commence, including all ties-ins to existing and surrounding roadways and paths and cycle lanes.

3.9 Adjacent Proposed Public Infrastructure Development

The following confirmed and possible future adjacent public infrastructure projects may be constructed during one or more of the construction phases of the proposed development:

- Marina Park Development: Phase 2 (Design stage)
- Proposed BRT / LRT Corridor (Route selection stage)

Marina Park Development: Phase 2 (Design stage)

In accordance with the ratified Marina Park Masterplan, Phase 2 will extend from the Atlantic Pond to Church Avenue and will include the "Nature" zone of the park, accommodating picnic areas, boating facilities, adventure play areas, preserved marshland zone and several architectural heritage sites. The development is expected to commence in Q3 of 2022 with completion by the end of 2023.

Proposed BRT / LRT Corridor (Route Selection stage)

This proposed BRT / LRT Luas scheme will provide a high-capacity, high-frequency public transport link from the eastern to the western suburbs of Cork and will serve a large number of significant destinations including Cork South Docklands along Centre Park Road. A preferred route is expected to be chosen by Transport Infrastructure Ireland by June 2022.

At present, the above projects are in planning and preliminary design stages. Should there be an overlap in construction durations with the proposed development, the appointed Contractor will liaise with Cork City Council and any contractors appointed for the above works as required, to ensure coordination of construction works in the area.

3.10 Other Developments

3.10.1 Masterplan Development

As part of an overall masterplan, Tiznow Property Company Limited (Comer Group Ireland) intend to develop a Strategic Housing Development (SHD) at the former Former Cork Warehouse Company site, Centre Park Road, Cork City which will be located immediately south of the proposed development site.

While planning permission for this project has not yet been sought, the project will be subject to various environmental assessments including an Environmental Impact Assessment (EIA) Screening Report, which will include the potential for cumulative effects with the proposed development, as at that point, it is intended that details of the proposed development will be in the public domain as an application for consent with An Bord Pleanála.

These environment assessments, along with the minimal environmental effects associated with the proposed development and the implementation of this Construction Environmental Management Plan will ensure that no significant cumulative effects on the environment will occur associated with the proposed development. Should the EIA Screening Report for the project on the Former Cork Warehouse Company site identify significant cumulative effects on the environment, An Bord Pleanála will have due regard to those significant cumulative effects in their decision to consent or refuse to give consent for that project.

3.10.2 The Former Ford Distribution Site

Marina Quarter Ltd propose to develop a Strategic Housing Development (SHD) of 1,002 no. apartments at the Former Ford Distribution Site, fronting on to Centre Park Road, Marquee Road and Monahan's Road, Cork. The development will require the demolition of existing structures, 10-year permission for the construction of the apartments, childcare facilities and associated site works.

Permission was granted on the 20th April 2021.

Due to the minimal environmental effects associated with the proposed development along with the absence of significant environmental effects associated with this permitted development, significant cumulative effects are not envisaged.

3.10.3 Lands at South Docklands, Cork

Leeside Quays Limited has submitted two planning applications for the redevelopment of the lands at the South Docklands, Cork City, which together constitute the project for the purposes of the EIAR.

The first planning application seeks planning permission over a period of ten years for a proposed mixed-use development comprising five new buildings and the change of use and extension of the former Odlum's Mill Building (Record of Protected Structures (RPS) ref. PS856) on sites bounded by Kennedy Quay to the north, Marina Walk to the south, Victoria Road to the west and Mill Road to the east, all in the South Docklands of Cork City.

The concurrent planning application seeks planning permission over a period of ten years for a proposed rehabilitation hospital located in the westernmost corner of the western Victoria Road city block, bounded by Kennedy Quay to the north and Victoria Road to the west.

A decision for this application is due on the 4th February 2022. Should the project receive planning consents, no significant cumulative environmental effects are predicted. Potential construction-phase impacts will be managed through the active implementation of the CEMP for the proposed development.

Environmental Management Framework

4.1 Overview

The contract(s) awarded for the proposed development will include a requirement for the contractor to comply with relevant documentation including the planning (and other statutory consent) conditions received and this CEMP.

As part of the environmental management framework contractors will be required to comply with all relevant environmental legislation and take account of published standards, accepted industry practice, national guidelines and codes of practice appropriate to the proposed development. Due regard should be given to the

guidance and advice given by ISO14001 standard[2] and Construction Industry Research and Information Association (CIRIA) guidance[3,4,5].

The contractor will be required to develop and implement an Environmental Management System (EMS) that follows the principles of ISO14001. Further, the contractor's EMS should include an environmental policy, operational, monitoring and auditing procedures to ensure compliance with all environmental requirements and to monitor compliance with environmental legislation and the environmental management provisions outlined in the relevant documentation.

4.2 Responsibilities

4.2.1 Employer

The Developer will be the employer responsible for ensuring that competent parties are appointed to undertake construction and that sufficient resources are made available to facilitate the appropriate management of risks to the environment.

4.2.2 Employer's Representative

The Developer and/or the Employers Representative (ER) appointed by The Developer will be responsible for monitoring compliance with the CEMP. The ER may be required to appoint temporary or permanent specialists with appropriate skills and experience as required to implement on site procedures and monitor construction on behalf of the employer, i.e. competent experts in biodiversity, noise, vibration, dust, waste, land, soils, contamination and/or water.

4.2.3 The Contractor

The contractor(s) appointed will be responsible for the organisation, direction and execution of environmental related activities during the detailed design and construction of the proposed development. The contractor is required to undertake all activities in accordance with the relevant environmental requirements including the consent documentation and other regulatory and contractual requirements.

4.2.4 Site Manager

A Site Manager will be appointed by the contractor to oversee the day-to-day management of working areas within the site and ensure that effective, safe, planned construction activities are delivered on an ongoing basis to the highest standards. The Site Manager will be a suitably qualified, competent and experienced professional that will oversee site logistics, communicate regularly with construction staff, accommodate project-specific inductions for staff on site and ensure that all work is compliant with the relevant design standards and health and safety legislation.

4.2.5 Environmental Manager

An Environmental Manager will be appointed by the contractor to ensure that the CEMP is effectively implemented. The Environmental Manager will be a suitably qualified, competent and experienced professional that would perform the necessary tasks, review environmental procedures and consult with the members of the construction team and stakeholders as requited. The Environmental Manager will be responsible for:

- Preparing, maintaining and implementing the CEMP;
- Establishing, implementing, and maintaining the EMS in line with ISO 14001;

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[2] ISO (2015) ISO 14001:2015 Environmental management systems -- Requirements with guidance for use

[3] CIRIA (2015) Environmental Good Practice on Site C692 (fourth edition) (C762)

[4] CIRIA (2015) Coastal and marine environmental site guide (second edition) (C744)

[5] CIRIA (2002) Brownfield development sites: ground-related risks for buildings (X263)

- Conducting regular environmental inspections and audits as specified in the contract and checking adherence to the CEMP;
- Ensuring that construction occurs in accordance with the relevant environmental requirements and that such compliance is adequately recorded and documented;
- Completing a site inspection and compiling an environmental compliance as agreed and specified in the CEMP;
- Attending site and stakeholder meetings as required;
- Keeping up-to-date with relevant environmental best practice and legislative changes;
- Liaising with the relevant staff to prepare Method Statements and relevant plans for all activities where there is a risk of environmental damage;
- Having a detailed level of knowledge on all aspects of environmental information associated with the proposed development;
- Ensuring all personnel have undertaken adequate environmental inductions, awareness briefings and training (including subcontractors);
- Dealing with environmental complaints; and
- Managing and responding to environmental incidents and ensuring that all incidents are recorded and reported in an appropriate manner.

4.2.6 Public Relations and Liaison Manager

The site is located near to number of residences and local businesses. The Main Contractor will be required to ensure that all Agents, Sub-contractors and Suppliers act in a manner to minimise disruption to the surrounding locality.

Keeping people informed of site operations will help create and maintain good relationships, fostering a co-operative atmosphere. A Liaison Manager will be appointed by the Main Contractor, whose responsibility would include:

- Regular briefings with local neighbour and business representatives on progress and issues.
- Liaison with Cork City Council and emergency services as appropriate.
- Liaison with An Garda Síochána, particularly in relation to traffic movements and permits.
- Preparation of reports for the site meetings on neighbourhood issues.

4.2.7 Environmental Specialists engaged by the Contractor

To fulfil its obligations under the CEMP and to support its Environmental Manager, the contractor will be responsible for engaging suitably qualified and experienced professionals including where necessary the following (i.e. depending on the scope of the contract) competent experts:

- Project archaeologist;
- Project ecologist;
- Noise and vibration specialist;
- Air quality and dust specialist;
- Land, soils and contamination specialist(s); and
- Water specialist.

4.3 Communication Procedures

4.3.1 Community and Stakeholder Engagement

The contractor will take all reasonable steps to engage with stakeholders in the local community, focusing on those who may be affected by the construction works including residents, businesses, community resources and specific vulnerable groups.

Communication with the local community, Cork City Council and other relevant stakeholders shall be undertaken at an appropriate level and frequency throughout construction. Where communications are related to environmental issues the Environmental Manager will be informed and engaged with, as appropriate.

4.3.1.1 Community Liaison

The Developer recognises the importance of effective community liaison in order to reduce nuisance to residents, to ensure public safety and welfare and to help ensure the smooth running of construction activities. Important issues in ensuring good relations are:

- Providing information for the public during the construction phase, (particularly nearby sensitive receptors);
- Providing the correct points of contact and being responsive; and
- Ensuring good housekeeping in all aspects of the operations.

A 'good neighbour' policy will be implemented, as far as possible. Key aspects of this policy include:

- Early implementation of the policy i.e. from the commencement of construction;
- Reduction of nuisance factors;
- Maintaining access to neighbouring premises and businesses;
- Clear and concise information; and
- Undertaking timely liaison with stakeholders.

4.3.2 Advance Notice of Works

The contractor will ensure that local residents, businesses, occupiers, general users of the area and stakeholders are informed in advance of construction activities that may affect them. Relevant obligations and procedures in relation to advance notice of works will be identified in the updated CEMP.

All notifications will detail the nature, estimated duration and working hours. All notifications will include a project-specific contact number to which any enquires can be directed. The contractor will be responsible for preparing and issuing the notifications subject to the relevant approval and consents.

The Developer and the contractor in consultation with Cork City Council and statutory stakeholders will decide whether to arrange any further targeted consultation with the public or relevant stakeholders in advance of specific construction activities on a local basis.

4.3.3 Emergency Contacts

An emergency contact list will be established and made available to all construction staff employed. The contact list shall be displayed prominently on site as well as at suitable locations where construction activity is being carried out around working areas. The contact list will include key environmental representatives that may need to be contacted in the event of an incident.

4.3.4 Enquiries and Complaints

The contractor will establish a process for handling all enquiries including complaints. All enquiries will be recorded and a log will be maintained to include details of the response and action taken. This will be

available upon request for inspection to Cork City Council. All enquiries, whether a query or a complaint, will be dealt with in a timely manner.

The Environmental Manager will be immediately informed of any environmental-related issues that have been raised. Where appropriate, the Environmental Manager would be responsible for informing Cork City Council, relevant stakeholders and statutory bodies.

Environmental Management Procedures

5.1 Training, Awareness and Competence

The contractor (and their subcontractors) will be selected with due consideration of relevant qualifications and experience. The contractor will be required to employ construction staff with appropriate skills, qualifications and experience appropriate to the needs of the works to be carried out during construction.

A site induction will be provided to all construction staff before they commence work on site. Where appropriate, the contractor will identify specific training needs for the construction workforce and will ensure that appropriate training requirements are fulfilled.

The contractor will establish an Environmental Training and Awareness Programme and ensure that all personnel receive adequate training prior to the commencement of construction activities. A baseline level of environmental awareness will be established through the site induction programme. Key environmental considerations and objectives will be incorporated into this induction. Specifically, site inductions will cover the following as a minimum:

- Introduction to the Environmental Manager;
- Description of the CEMP and consequences of non-compliance;
- The requirements of due diligence and duty of care;
- Overview of conditions of consents, permits and licences;
- Requirements associated with community engagement and stakeholder consultation;
- Identification of environmental constraints and notable features within the site; and
- Procedures associated with incident notification and reporting including procedures for dealing with damage to the environment.

Nobody will work on site without first receiving environmental induction. Signed records of environmental training will be established, maintained and made available to the Employers Representative.

Site briefings and talks would be carried out on a regular basis to ensure that construction staff have an adequate level of knowledge on environmental topics and community relations and can effectively follow environmental control procedures throughout construction.

5.2 Meetings

The Developer and/or the Employer's Representative will arrange regular meetings to discuss environmental matters and ensure effective coordination to be attended by:

- Tiznow Property Company Limited (Comer Group Ireland)
- The Employer's Representative;
- Contractor (including Site Manager);
- Environmental Manager; and

- Environmental Specialists – engaged by either Tiznow Property Company Limited (Comer Group Ireland) and/or the contractor.

The Environmental Manager will be responsible for arranging and holding monthly meetings and site walk overs with the Employer's Representative. The Environmental Manager would develop and distribute minutes of the monthly meetings and distribute them accordingly.

5.3 Monitoring, Inspections and Audits

For the duration of the contract(s), the environmental performance of the contractor will be monitored through site inspections and audits. The programme for monitoring, inspections and audits shall be specified in the contract and it is likely to be a combination of internal inspections and independent external audits that may be either random or routine.

Records of all inspections carried out will be recorded on standard forms and all actions should be closed out in a reasonable time. The updated CEMP will include further details of inspection procedures.

5.3.1 Monitoring

Mitigation and monitoring will be carried out in accordance with the relevant environmental requirements so that construction activities are undertaken in a manner that does not give rise to significant negative effects. Suitable monitoring programmes will need to be developed, implemented, documented, and assessed.

The results of all environmental monitoring activities would be reviewed by the Environmental Manager on an ongoing basis to enable trends or exceedance of criteria to be identified and corrective actions to be implemented as necessary. The contractor will be required to inform the Employer's Representative of any continuous exceedances of criteria.

5.3.2 Inspections

Routine inspections of construction activities will be carried out by the Environmental Manager daily to ensure all necessary environmental measures relevant to the construction activities are being effectively implemented by construction staff, ensuring legal and contractual conformity.

More detailed inspections would be undertaken by the Environmental Manager on a weekly basis.

The weekly inspections would be appropriately documented by the Environmental Manager and copies of these records and any action required to be undertaken should be made available to the Employers Representative.

Each month one of the weekly inspections will include a review of environmental documentation and records. The monthly inspection will be recorded on a standard form and reported to the Employers Representative within five days of the inspection taking place. This standard form will address the following as a minimum:

- Summary of compliance/non-compliance with the CEMP;
- Results and interpretation of the monitoring programme;
- Key issues noted in inspections and/or audits;
- Summary record of non-conformities, incidents and corrective actions;
- Summary of environmental complaints and queries received in relation to environmental matters; and
- Summary record of environmental training undertaken by staff.

5.3.3 Audits

The Developer will arrange for independent environmental audits to be carried out by a third-party during construction. External audits provide the opportunity for an independent auditor to advise on compliance with applicable environmental regulatory requirements, the efficacy of the environmental management

approaches used, and recommendations for reducing identified environmental risks (if considered appropriate).

Further, regulatory and statutory bodies may undertake site visits to monitor compliance with legislative and regulatory requirements. These site visits may occur randomly throughout the construction period. The contractor will facilitate these visits and the Environmental Manager will be available to provide information as required and deal with any issues that may arise during, or as a result of, these visits.

Planned and documented audits aimed at evaluating the conformance of the EMS would also be carried out by the Environmental Manager. The Environmental Manager will establish a schedule for internal audits and this inspection calendar will be made available to the Employer's Representative. These environmental audits will be scheduled at least once every three months.

Standard forms for reporting and audit items will be prepared and will include but not be limited to the following activities:

- Review of environmental documentation to establish if relevant requirements are being achieved and if continual improvement is occurring;
- Site inspection and interviews with onsite personnel; and
- Reporting with recommendations.

For any environmental nonconformities found, the auditor will prepare a Corrective Actions Report to describe and record the findings of the non-conformance. The verification of previous Corrective Actions Reports should be also recorded.

Upon completion of an audit, the auditor will review all Corrective Actions Reports and prepares an Audit Report to summarise:

- Corrective action requests raised;
- Previous corrective action requests closed; and
- Observations made during the audit.

The Environmental Manager will be entitled to participate in all audits. Notwithstanding this, the Employers Representative shall produce and provide the contractor with a copy of each audit report within five working days of the audit. Each audit report will detail the findings from the auditor, specify non-conformances identified and outline the proposed corrective action.

5.4 Incident Response

5.4.1 Corrective Actions

5.4.1.1 Overview

Corrective actions are measures to be implemented to rectify any non-conformances (i.e. exceedance of criteria or targets) identified during monitoring, inspections and/or audits.

In the first instance, an investigation should be undertaken by the Environmental Manager to identify the cause of any non-conformances. Appropriate remedial measures shall be identified and implemented as soon as practicable to prevent further exceedances. If necessary, the appropriate statutory authority and stakeholders will be notified.

Where new or amended measures are proposed, the relevant CEMP will be updated accordingly by the Environmental Manager and the Employer's Representative should be informed at the earliest opportunity.

5.4.1.2 Corrective Action Reports

As previously mentioned, a Corrective Actions Report is prepared on foot of any non-conformances identified during environmental monitoring, inspections and/or audits on site. The Corrective Actions Report

will describe in detail the cause and effect of a non-conformance on site and describe the recommended corrective action that is required to remedy it.

An appropriate timeline for closing out the corrective actions will be identified by the contractor as well as arrangements for the Environmental Manager verifying the Corrective Actions Report and informing appropriate authorities and stakeholders in a timely manner.

5.4.2 Emergency Incidents

5.4.2.1 Overview

Emergency incidents are those occurrences that give rise to significant negative environmental effects including but not limited to the following:

- Any malfunction of any mitigation measure and/or environmental protection system;
- Any emission that does not comply with the requirements of the contract and relevant licences;
- Any circumstance with the potential for environmental pollution; or
- Any emergency that may give rise to environmental effects (e.g. significant spillages or fire outbreak).

As discussed in **Section 4.3.3** an emergency contact list will be established and made available to all construction staff employed. The contact list shall be displayed prominently on site as well as at suitable locations where construction activity is being carried out around working areas. The contact list will include key environmental representatives that may need to be contacted in the event of an incident.

5.4.2.2 Spill Control Measures

Every effort will be made to prevent pollution incidents associated with spills during the construction of the proposed development. The risk of oil/fuel spillages will exist on the site and any such incidents will require an emergency response procedure. Given the scale and extent of the proposed development, contractors will carry spill kit materials in their cabins.

The following steps provide the procedure to be followed in the event of an oil/fuel spill occurring on site:

- Identify and stop the source of the spill and alert people working in the vicinity;
- Notify the Environmental Manager immediately giving information on the location, type and extent of the spill so that they can take appropriate action;
- If applicable, eliminate any sources of ignition in the immediate vicinity of the incident;
- Contain the spill using the spill control materials, track mats or other material as required. Do not spread or flush away the spill;
- If possible, cover or bund off any vulnerable areas where appropriate such as drains, watercourses and/or sensitive habitats;
- If possible, clean up as much as possible using the spill control materials;
- Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with the appropriate permits so that further contamination is limited;
- The Environmental Manager shall inspect the site as soon as practicable and ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring; and
- The Environmental Manager will notify the appropriate stakeholders such as Cork City Council, National Parks and Wildlife Service, Department of Environment Climate and Communications, and Department of Housing, Local Government and Heritage and/or the EPA.

Environmental incidents are not limited to just fuel spillages. Therefore, any environmental incident must be reported, recorded and investigated in accordance with the procedures described in **Section 4.4**.

5.4.2.3 Emergency Incident Response Plan

A set of standardised emergency response procedures will govern the management of emergency incidents. The contractor will be required to detail emergency incident response procedures and to develop an Emergency Incident Response Plan.

The Emergency Incident Response Plan will contain emergency phone numbers and the method of notifying local authorities, statutory authorities and stakeholders. Contact numbers for key personnel will also be included therein. Contractors will be required to adhere to and implement these procedures and ensure that all staff and personnel on site are familiar with the emergency arrangements.

In the case of work required in an emergency, or which if not completed would be unsafe or harmful to workers, the public or local environment, Cork City Council will be informed as soon as reasonably practicable of the reasons and likely duration. Examples may include where the ground needs stabilising if unexpected ground conditions are encountered, concrete pouring taking longer than anticipated due to delayed deliveries or equipment failure.

In the event of an emergency incident occurring, the contractor will be required to investigate and provide a report including the following, as a minimum:

- A description of the incident, including location, the type and quantity of contaminant and the likely receptor(s);
- Contributory causes;
- Negative effects;
- Measures implemented to mitigate adverse effects; and
- Any recommendations to reduce the risk of similar incidents occurring.

The contractor will consult with the relevant statutory authorities, stakeholders and relevant parties such as the Health and Safety Authority, the Fire Authority, the Ambulance Service, the EPA, utilities companies and Cork City Council when preparing and developing response measures. Further, if any sensitive receptor is impacted, the appropriate environmental specialists will be informed and consulted with accordingly.

Any response measures will be incorporated into an updated Emergency Incident Response Plan that should be disseminated accordingly to construction staff, The Developer and the Employer's Representative.

5.4.2.4 Emergency Access

The contractor will be required to maintain emergency access routes throughout construction and identify site access points for each working area.

This should be developed in partnership with the emergency services and documented as part of the Emergency Incident Response Plan.

5.4.2.5 Extreme Weather Events

The contractor will consider the effects of extreme weather events and related conditions during construction. The contractor will use a short to medium range weather forecasting service from Met Eireann or other approved meteorological data and weather forecast provider to inform short to medium term programme management, environmental control and mitigation measures.

All measures deemed necessary and appropriate to manage extreme weather events will be considered and will specifically cover training of personnel and prevention and monitoring arrangements for staff. As appropriate, method statements will also consider extreme weather events where risks have been identified, e.g., construction works adjacent to public roads and business premises.

5.4.3 Unexpected Discoveries

Appropriate procedures will be put in place in the event of encountering unexpected archaeological or cultural heritage assets or subsurface contamination during intrusive ground works.

Appropriate procedures will be developed as part of the CEMP and the Environmental Manager will ensure that specialists (e.g., archaeologist) are facilitated to ensure management in accordance with industry best practice and effective compliance with the relevant legislation. All unexpected discoveries will be reported to the appropriate authorities and documented in an appropriate manner.

5.5 Reporting

5.5.1 Environmental Compliance Report

The contractor will be required to submit a monthly report to the Employer's Representative for review and approval. The report shall address the following as a minimum:

- Summary of compliance with the CEMP including identification of any non-conformances;
- Interpretation of the results of ongoing monitoring;
- Detailed description of any issues and/or non-conformances identified during inspections and/or audits;
- Record of incidents and corrective actions (including Corrective Actions Reports as appropriate);
- Synopsis of environmental complaints received / queries raised by stakeholders; and
- Records of environmental training undertaken (as appropriate).

5.5.2 Incident Investigation Reports

The contractor will inform the Employer's Representative of all emergency incidents immediately and prepare an initial report within 24 hours setting out the details of the incident and cause(s) if known. The contractor will be required to complete the Environmental Incident Report and any further documentation requested by the Employer's Representative in relation to the incident within 7 days of the incident occurring. The Contractor will respond to all comments made by the ER on any incident.

The Environmental Incident Report will contain details of the incident including the location, known and suspected causes and weather conditions. It will define the scale and effects (short, medium, long term, temporary/permanent) as well as required corrective actions and mitigation/ remediation/compensation measures (as appropriate).

5.5.3 Environmental Records

Records of all environmental documentation will be maintained including monitoring, test results, method statements and plans. All records will be kept up to date and be made available for audits, inspections and periodical reporting. The Contractor will maintain the following environmental records (as a minimum) that will be made available for inspection to the Employer's Representative and the relevant authorities, if required:

- Management Plans;
- Records of environmental incidents;
- Monthly environmental reports;
- Records of environmental training;
- Register of environmental complaints;
- Corrective Action Reports;
- Environmental inspection and audit reports;
- All monitoring data;
- Waste and chemical inventories; and
- Health and Safety records.

Site Management and General Requirements

6.1 Good Housekeeping

A "good housekeeping" policy will be employed at all times. This will include, but not necessarily be limited to, the following requirements:

- General maintenance of working areas and cleanliness of welfare facilities and storage areas;
- Provision of site layout map showing key areas such as first aid posts, material storage, spill kits, material and waste storage, welfare facilities etc;
- Maintain all plant, material and equipment required to complete the construction work in good order, clean, and tidy;
- Keep construction compound, access routes and designated parking areas free and clear of excess dirt, rubbish piles, scrap wood, etc. at all times;
- Details of site managers, contact numbers (including out of hours) and public information signs (including warning signs) will be provided at the boundaries of the working areas;
- Provision of adequate welfare facilities for site personnel;
- Installation of appropriate security, lighting, fencing and hoarding at each working area;
- Effective prevention of oil, grease or other objectionable matter being discharged from any working area;
- Provision of appropriate waste management at each working area and regular collections to be arranged;
- Excavated material generated during construction will be reused on site as far as practicable and surplus materials/soil, should it be deemed a by-product, shall be recovered or if considered to be waste material, disposed of to a suitably authorised waste facility site;
- Effective prevention of infestation from pests or vermin including arrangements for regular disposal of food and material attractive to pests will be implemented. If infestation occurs the contractor will take appropriate action to eliminate and prevent further occurrence;
- Maintenance of self-contained wheel washing facilities at the construction compound and other contaminant measures as required;
- No discharge of site runoff or water without agreement of the relevant authorities and an appropriate discharge licence, if relevant;
- Open fires will be prohibited at all times;
- The use of less intrusive noise alarms which meet the safety requirements, such as broadband reversing warnings, or proximity sensors to reduce the requirement for traditional reversing alarms;
- Maintenance of public rights of way, diversions and entry/exit areas around working areas for car users, pedestrians and cyclists where practicable and to achieve inclusive access; and
- Material handling and/or stockpiling of materials, where permitted, will be appropriately located to minimise exposure to wind. Water misting or sprays shall be used as required if particularly dusty activities are necessary during dry or windy periods.

6.2 Health and Safety

The primary aim of planning for safety on this site is ensuring the safety of people involved in and affected by the development. This includes pedestrians, road users, neighbours, site staff and visitors to site.

The following are examples of some site specific issues that will have to be addressed during the construction of the proposed development:

- Managing demolition works and disposal of demolished materials
- Identifying, storing and handling of hazardous and contaminated materials
- Protecting existing roadways against damage, in particular in areas where excavations and retaining structures are proposed adjacent to roadways.
- Identifying, diverting, maintaining and connecting to existing live services.
- Managing vehicular and pedestrian traffic on the surrounding roadways for the duration of the construction works.
- Managing crane movements to limit lifting over live buildings and roadways.

All Contractors must progress their works with reasonable skill, care and diligence and, at all times, proactively manage the works in a manner most likely to ensure the safety, health and welfare of those carrying out construction works, pedestrians, road users and other interacting stakeholders.

Contractors are further required to ensure that, as a minimum, all aspects of their works and project facilities comply with legislation, good industry practice and all necessary consents.

Health and Safety requirements will be further expanded and developed within the Main Contractor's Construction Management Plan and Construction Stage Health and Safety Plan required to be prepared by the Project Supervisor at Construction Stage, prior to the commencement of works on site.

6.3 Working Hours

Hours of construction are to be between the hours of 07:00 and 19:00, Monday to Friday, and 07:00 to 16:30 on Saturdays or as stipulated on the Planning Permission in due course.

Due to the specific nature of some construction activities, or to mitigate disruption to the local environment, there may be a requirement for working outside these hours. Should this be required, it will be by agreement with Cork City Council (CCC).

6.4 Security

Adequate security will be provided to prevent unauthorised entry to or exit from any working areas. The following measures may be used to prevent unauthorised access:

- Install CCTV and alarm systems where required;
- CCTV and security systems will be sited and directed so that they do not intrude into occupied residential properties;
- Provide adequate security guards and patrols where required;
- When there is no site activity, close and lock site gates and set appropriate site security provisions in motion;
- Consult with neighbouring properties, local businesses and local crime prevention officers including Cork City Council and An Garda Síochána on site security matters as required; and
- Prevent access to restricted areas and neighbouring properties by securing equipment on site such as scaffolding and ladders.

6.5 Hoarding and Fencing

Following possession of the site, the Main Contractor will erect a suitably robust hoarding around the perimeter of the site. This will provide separation of the construction works from the adjacent roadways and buildings. The plan alignment of the hoarding may not remain constant for the entire works and is likely to change to meet the particular requirements and constraints of construction sequence.

Where existing secure site boundary has been removed, the hoarding will typically take the form of standard plywood hoarding to a height of 2.4m, as illustrated in Figure 6. IBEX and/or Harris fencing, or alternate fencing/hoarding and the existing boundary may also be used in places, given the large site and phased nature of the construction works. Controlled access points to the site, in the form of gates or doors, will be kept locked for any time that these areas are not monitored (e.g. outside working hours). The hoarding will be painted, well maintained and may contain graphics portraying project information.

Figure 6: Example of Suitable Hoarding

6.6 Site Access

Primary Construction access will be from the existing access from Centre Park Road with exact locations to be determined and agreed with Cork City Council as construction phasing develops as outlined in **Section 2.5.**

6.7 Site Security

The Main Contractor will be responsible for the security of the site for the duration of the works. All reasonable precautions will be taken to prevent unauthorised access to the site, the works and adjoining property. Adequate safeguards will be put in place to protect the site, the works, products / materials, plant and any existing buildings affected by the construction works from damage, theft and trespass. For site access refer to **Section 2.5.**

As part of their site security responsibilities, the Main Contractor will be required to:

- Install and maintain adequate site hoarding to the site boundary with adequate controlled access and egress points.
- Maintain site security at all times.

- Install access security in the form of turnstiles and gates for staff.
- Ensure restricted access is maintained to the works.
- Monitor and record all deliveries to site and materials / waste taken off site.

All staff will be made fully aware of their individual responsibilities with regard to safety and security and will undertake their work in accordance with such guidelines. All staff and operatives will be fully inducted into the security, health and safety and logistic requirements on site.

6.8 Site Compound and Material Storage

The extent of compound and storage space required by the Main Contractor will vary for the duration of the works.

For the enabling works and earthworks phases, the Main Contractor will likely require a large-scale compound for storage and segregation of hazardous and non-hazardous excavated material. For the main construction works, the Main Contractor will again require a large compound and material storage area.

Given the size and open nature of the proposed development site, it is envisaged that there is adequate space for the site compound, and adequate space to store such materials on a temporary basis, with no provisions for off-site storage proposed currently.

The Main Contractor is responsible for obtaining all necessary permissions from relevant statutory bodies, including local authorities, for the disposal of water off site. Standing water should be cleared as soon as is practicable or treated with an approved product at least once a week.

The Main Contractor is to ensure that there is no hazardous build-up of water and is to provide for temporary disposal of rainwater from the site during the course of the works. Any water that is potentially contaminated is to be treated on site by way of sediment/filtration tanks and comply with a waste disposal licence obtained by the Contractor from the Local Authority.

6.9 Craneage

The construction works will require the use of a tower cranes on site. It is envisaged that 3-4 no. 50m jib length tower cranes may be required to provide the necessary site coverage for each of the four construction phases. The cranes will be required for the moving of building materials on site such as formwork for concrete, reinforcement, precast concrete, steelwork, façade elements, plant and general building materials. Mobile cranes may also be utilised to assist in some elements of the construction works such as façade installation. The Main Contractor will develop a crane management plan to limit lifting operations over live buildings and roadways. The layout of cranes to achieve maximum coverage of the site will be determined by the Main Contractor. Given the proposed height of the buildings, crane(s) servicing the tallest buildings should be notified 30 days in advance to aviation authorities, IAA and Cork Airport, in accordance with statutory requirements.

6.10 Dust

A dust minimisation plan will be formulated for the demolition and construction phase of the project. The Main Contractor shall put in place a regime for monitoring dust levels in the vicinity of the site during works using the Bergerhoff Method (German Standard VDI 2119, 1972). The minimum criteria to be maintained shall be the limit specified by the Environmental Protection Agency (EPA) for licenced facilities in Ireland which is 350mg/m²/day as a 30-day average. The Main Contractor shall monitor dust during construction to ensure the limits are not breached throughout the project.

The level of monitoring and adoptions of mitigation measures will vary throughout the construction works depending on the type of activities being undertaken and the prevailing weather conditions at the time. For instance, additional monitoring and mitigation such as damping down of earth mounds on site would be undertaken if the prevailing weather conditions are dry and windy.

The key aspects of controlling dust are listed below. In summary the measures which will be implemented will include:

- Prior to demolition buildings will be soft striped internally initially (walls and windows in the rest of the building to remain where possible, to provide a screen against dust).
- During the demolition process, water suppression will be used, preferably with a hand-held spray. Only the use of cutting, grinding or sawing equipment fitted or used in conjunction with a suitable dust suppression technique such as water sprays/local extraction will be used.
- Drop heights from conveyors, loading shovels, hoppers and other loading equipment will be minimised, if necessary fine water sprays will be employed.
- Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic.
- Any road that has the potential to give rise to fugitive dust will be regularly watered, as appropriate, during dry and/or windy conditions.
- Vehicles exiting the site shall make use of a wheel wash facility where appropriate, prior to entering onto public roads.
- Vehicles using site roads will have their speed restricted, and this speed restriction will be enforced rigidly. On any un-surfaced site road, this will be 20 kph, and on hard surfaced roads as site management dictates.
- Public roads outside the site will be regularly inspected for cleanliness and cleaned as necessary.
- Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.
- During movement of materials both on and off-site, trucks will be stringently covered with tarpaulin at all times. Before entrance onto public roads, trucks will be adequately inspected to ensure no potential for dust emissions.

At all times, these procedures will be strictly monitored and assessed. In the event of dust nuisance occurring outside the site boundary, movements of materials likely to raise dust would be curtailed and satisfactory procedures implemented to rectify the problem before the resumption of construction operations.

6.11 Dirt

Given the volumes of traffic generated by aspects of the construction works, particularly during the earthworks, the Main Contractor shall ensure, where appropriate:

- A sufficient number of wheel wash facilities are provided at each egress point from the site.
- The wheel wash must be kept in place and used throughout the critical dirt generating activities of the construction works.
- Water supplies servicing the wheel wash will be from recycled sources, where possible. All waters shall be drained through appropriate filter material prior to discharge.
- The Main Contractor will endeavour to mitigate the risk of blockage of local gullies and drains due to construction materials and will carry out drain clearing as required.

6.12 Road and Footpath Maintenance

In addition to the dirt control measures listed above, the following measures will be taken to ensure that the site and surroundings are kept clear, tidy and well maintained:

- A regular programme of site tidying will be established to ensure a safe and orderly site.
- Food waste will be strictly controlled on all parts of the site.

- Scaffolding will have debris netting attached to prevent materials and equipment being scattered by the wind.
- In the event of any fugitive solid waste escaping the site, it will be collected immediately and removed to storage on site, and subsequently disposed of in the appropriate manner.
- If the existing roads or footpaths around the site are damaged as a consequence of the construction, the Contractor will carry out repairs to same.

6.13 Services and Lighting

6.13.1 Services and utilities

Site services will be installed as part of the enabling works in parallel with the rearrangement and diversion of existing utilities. Working areas will be powered by mains supplies or diesel generators where an electrical supply is not available.

6.13.2 Lighting

Site lighting will typically be provided by tower mounted 1000W metal halide floodlights. The floodlights will be cowled and angled downwards to minimise spillage to surrounding properties. The following measures will be applied in relation to site lighting:

- Lighting will be provided with the minimum luminosity sufficient for safety and security purposes. Where practicable, precautions will be taken to avoid shadows cast by the site hoarding on surrounding footpaths, roads and amenity areas;
- Motion sensor lighting and low energy consumption fittings will be installed to reduce usage and energy consumption; and
- Lighting will be positioned and directed as not to unnecessarily intrude on adjacent buildings and businesses, ecological receptors and structures used by protected species, nor to cause distraction or confusion to passing motorists.

6.14 Welfare Facilities

Welfare facilities will be provided, as appropriate, for construction staff and site personnel such as locker rooms, toilets, showers, kitchen etc. The construction compound will be used as the location for worker welfare facilities.

Potable water will be made available by installing a temporary construction water connection.

6.15 Reinstatement of Working Areas on Completion

All working areas and access routes will be reinstated as work proceeds during construction. All plant, equipment, materials, temporary infrastructure and vehicles will be removed at the earliest opportunity.

Environmental Management

This section describes the specific environmental requirements identified as part of the specimen design and associated ecological reports that will need to be adhered to.

It should be noted that the measures in this CEMP provide a summary of minimum requirements that will be developed as the project progresses. It is intended that the measures set out herein will be discussed in more detail with relevant stakeholders as required to support the identification of any additional measures to be taken account of during construction.

7.1 Construction Traffic Management

7.1.1 Site Access

Refer to **Section 2.6**

7.1.2 Construction Traffic Mitigation

7.1.2.1 General Construction Strategy

Construction traffic will be limited to certain routes and times of day, with the aim of keeping disruption to existing traffic and residents to a minimum. To minimise disruption to the local areas, construction traffic volumes will be managed through the following measures:

- During peak hours, ancillary, maintenance and other site vehicular movements will be discouraged.
- Daily construction programmes will be planned to minimise the number of disruptions to surrounding streets by staggering HGV movements to avoid site queues.
- HGV routes to and from the site will be developed in agreement with Cork City Council and with the objective of minimising the impact in the local area for residents and businesses. HGV trips to and from the site for construction will only be via Centre Park Road from the Victoria Road Roundabout.
- Parking restrictions and management measures on adjacent streets/residential areas will be reviewed and implemented as necessary in agreement with the local residents and CCC to avoid any site parking overspill issues.
- It is likely that the unused portions of the site will be available as a compound/parking area, but the amount of construction personnel parking available here will be limited. The contractor will be required to promote travel by sustainable modes of transport, see Section 7.1.2.4.

7.1.2.2 Hours of Working

Construction operations on site are proposed to be between the hours of 07:00 and 19:00, Monday to Friday, and 07:00 to 16:30 on Saturdays. Similarly, deliveries of materials to site will generally be between the hours of 07:00 and 19:00, Monday to Friday, and 08:00 to 16:00 on Saturdays.

The construction shift times will ensure construction traffic will have limited impact on the peak periods of 07:30-08:30 in the morning and 17:15-18:15 in the evening as it is envisaged most construction staff will arrive to work before 07:00 in the morning and leave after 19:00 in the evening.

Due to the specific nature of some construction activities, or to mitigate disruption to the local environment, there may be a requirement for working outside these hours. Should this be required, it will be by agreement with Cork City Council (CCC).

7.1.2.3 Construction Traffic Management Plan

A Construction Traffic Management Plan (CTMP) will be developed by the Contractor and presented to CCC for approval prior to commencement of the construction works. The CTMP will contain detailed

temporary traffic management drawings for each construction stage and will include the mitigation measures described in this section.

7.1.2.4 Mobility Management

The contractor will be required as part of the contract to introduce a Construction Stage Mobility Management Plan for its workforce to encourage access to the site by means other than by private car. The following section identifies some of the measures the contractor will provide as part of the Mobility Management Plan.

The Construction Stage Mobility Management Plan will form part of the overall Construction Traffic Management Plan and will be agreed with Cork City Council prior to works beginning on site.

Walking: The pedestrian environment surrounding the site is considered to be good with footpaths provided along all roads. Good pedestrian routes exist between the site and nearby bus stops on the Monahan Road and on the Blackrock Road.

Cycling: Cycle parking spaces and associated showers and lockers will be provided on the site for construction staff.

Car Sharing: Car sharing among construction staff should be encouraged, especially from areas where construction staff may be clustered. The Contractor shall aim to organise shifts in accordance to staff origins, hence enabling higher levels of car sharing. Such a measure offers a significant opportunity to reduce the proportion of construction staff driving to the site car parking facility and will minimise the potential traffic impact on the road network surrounding this facility.

Public Transport: The Contractor will issue an information leaflet to all staff as part of their induction on site highlighting the location of the various public transport services in the vicinity of the construction site, including bus routes that operate in the vicinity of the site. The Contractor will also offer the "Travel to Work Scheme" to employees.

7.2 Air Quality and Climate

Emissions to air during construction will occur, although the prevailing weather, the extent of the works and the distance from sensitive receptors will determine the extent of the effects. The focus of the control procedures will therefore be to reduce the generation of airborne material.

'Standard mitigation' measures will be implemented, as per guidance presented in the TII document *Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes* (TII, 2011). These will include the following:

- Spraying of exposed earthwork activities, temporary stockpiles and site haul roads during dry weather;
- Provision of wheel washes facilities at the site entrance;
- Covering of temporary stockpiles;
- Control of vehicle speeds, speed restrictions and vehicle access; and
- Sweeping of hard surface roads.

In addition, the following measures will be implemented. These measures are based on best practice as outlined in the British Research Establishment (BRE) document *Controlling particles, vapour and noise pollution from construction sites* (BRE, 2003) and the Institute of Air Quality Management (IAQM) document *Guidance on the assessment of dust from demolition and construction* (IAQM, 2016).

- Exhaust emissions from vehicles operating within the working areas, including trucks, excavators, diesel generators or other plant equipment, will be controlled by the contractor through regular servicing of machinery;
- During dry periods when dust generation is likely or during windy periods, working areas and vehicles delivering material with dust forming potential will also be sprayed with water, as appropriate;

- Areas where materials will be handled and stockpiled will be designed to minimise their exposure to wind – all temporary stockpiles shall be kept to the minimum practicable height with gentle slopes;
- There shall be no long-term stockpiling within the working areas and storage time will be minimised;
- Material drop heights from plant to plant or from plant to stockpile will be minimised;
- Dust screens will be implemented at locations where there is the potential for air quality effects during the construction phase e.g. mesh netting to be erected around the scaffolding to minimise dust emissions from the site; and
- Truck loads will be covered when carrying material likely to generate dust.

Employee awareness is also an important way that dust may be controlled on any site. Staff training and the management of operations will ensure that all dust suppression methods are implemented and continuously inspected. Further details on employee training is provided in **Section 5.1** above.

The following mitigation measures will be implemented during the construction phase of the development to minimise CO_2 emissions:

- A Construction Traffic Management Plan to be prepared by the contractor in advance of the commencement of the construction will be implemented in full. This will minimise congestion and encourage car sharing and the use of public transport, where practicable;
- Materials will be handled efficiently on site to minimise the waiting time for loading and unloading, thereby reducing potential emissions;
- Engines will be turned off when machinery is not in use; and
- The regular maintenance of plant and equipment will be carried out.

7.3 Noise and Vibration

7.3.1 Noise

A Noise and Vibration Management Plan (NVMP) will be formulated for the demolition and construction phase of the project. The main contractor is required to follow and implement where required, the procedures set out in the NVMP. The main contractor will have responsibility for managing construction noise and vibration in accordance with the procedures outlined in the NVMP. Where required, appropriate mitigation measures shall be implemented to minimise significant impacts at receptor locations.

A noise monitoring programme will be implemented on site for the duration of the construction works. Noise monitors shall be maintained and operated as per the methods set out in the NVMP.

Construction noise should not exceed the threshold values outlined in **Table 2** at residential dwellings, or further limits if imposed by the planning authority or specified in the NVMP.

Table 2 Construction noise threshold for significant effect at dwellings

Period over which criterion applies		Noise impact criterion (LAeq, 1hr)
Monday to Friday	Day: 7.00am to 7.00pm	70 dB
	Evening: 7.00pm to 10.00pm	60 dB*
Saturday: Day: 7.00am to 4.30pm (work outside these hours will generally not be permitted)		65 dB

Note: **Construction activity at these times, other than that required for emergency works, will require the permission of the relevant Local Authority.*

7.3.2 Vibration

Table 3 sets out the vibration threshold levels applicable at nearby soundly constructed buildings to avoid any cosmetic damage to the building.

Table 3 Construction vibration maximum allowable levels

Allowable vibration (in terms of peak particle velocity) at the closest part of sensitive building to the source of vibration, at a frequency of		
Less than 10Hz	**10 to 50Hz**	**50Hz and above**
8 mm/s	12.5 mm/s	20 mm/s

The main Contractor shall be required to assess and monitor vibration levels during critical work activities to identify any risks of vibration impacts at nearby receptors in accordance with the procedures outlined in the NVMP.

7.3.3 General

Specific noise abatement measures will be taken to comply with the recommendations of BS 5228-1 and 2:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites: Noise and vibration* (BSI, 2014) and the *European Communities (Noise Emission by Equipment for Use Outdoors) Regulations, 2001* (EC, 2001).

The following specific measures will be implemented during the construction phase to ensure noise and vibration effects are minimised:

- Site representatives shall be appointed to be responsible for matters relating to noise and vibration;
- Equipment will be switched off when not required;
- Internal haul routes will be well maintained;
- Rubber linings shall be used in chutes and dumpers etc. to reduce impact noise;
- Plant and vehicles will be started sequentially rather than all together;
- Construction plant and activities to be employed on site will be reviewed to ensure that they are the quietest available for the required purpose;
- Generators will be located away from sensitive receivers and will be enclosed;
- Where required, improved sound reduction methods e.g. enclosures shall be used;
- For all construction works likely to generate off-site vibration, the contractor will be required to meet the vibration limits set out in BS 5228.
- Acoustic barriers will be provided around construction works to minimise the effects of noise and vibration generating activities in the vicinity of sensitive locations;
- Typically, site activities will be limited to 7:00am – 7pm, Monday to Friday; and 7am – 4:30pm on Saturdays. It may also be necessary in exceptional circumstances to undertake some other types of activities outside of normal construction core working hours. Any such working hours outside the normal construction core working hours will be agreed with Cork City Council. The planning of such works will have regard to nearby sensitive receptors;
- A Community Liaison Plan shall be prepared to provide for effective community liaison to help ensure the smooth running of construction activities and to address any issues that may arise.
- Avoid unnecessary revving of engines and switch off equipment when not required;
- Keep internal haul routes well maintained and avoid steep gradients;

- Use rubber linings in, for example, chutes and dumpers to reduce impact noise;
- Minimise drop height of materials; and

The following more specific measures will also be implemented where practicable:

- In accordance with Best Practicable Means, plant and activities to be employed on site will be reviewed to ensure that they are the quietest available for the required purpose;
- Where required, improved sound reduction methods, e.g. enclosures should be used;
- Site equipment should be located away from noise sensitive areas, as much as is feasible;
- Regular and effective maintenance by trained personnel should be carried out to reduce noise and/or vibration from plant and machinery;
- A 2.4 metre high hoarding will be provided around the construction site;
- Limiting the hours during which site activities likely to create high levels of noise or vibration are carried out;
- Establish channels of communication between the contractor/developer, Local Authority and residents;
- Appointing of a site representative responsible for matters relating to noise and vibration.

7.4 Biodiversity

7.4.1 General

The mitigation measures have been drawn up in line with current best practice and include an avoidance of sensitive habitats at the design stage and mitigation measures will function effectively in preventing significant ecological impacts. The following mitigation measures will be implemented:

Mitigation measures (of relevance in respect of any potential ecological effects) will be implemented throughout the project, including the preparation and implementation of detailed method statements. The works will incorporate the relevant elements of the guidelines outlined below:

- The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads. National Roads Authority, Dublin (2010).
- Control of water pollution from construction sites. Guidance for consultants and contractors (C532). CIRIA. H. Masters-Williams et al (2001)
- Control of water pollution from linear construction projects. Technical guidance (C648). CIRIA. E. Murnane, A. Heap and A. Swain. (2006)

All personnel involved with the proposed development will receive an on-site induction relating to construction and operations, and the environmentally sensitive nature of the River Lee and to re-emphasise the precautions that are required as well as the control measures to be implemented. Site managers, foremen and workforce, including all subcontractors, will be suitably trained in risks and preventative measures.

All staff and subcontractors have the responsibility to:

- Work to agreed plans, methods and procedures to eliminate and minimise environmental impacts,
- Understand the importance of avoiding on-site impacts, including noise and dust, and how to respond in the event of an incident to avoid or limit environmental impact;
- Respond in the event of an incident to avoid or limit environmental impact;
- Report all incidents immediately to the site manager;
- Monitor the workplace for potential environmental risks and alert the site manager if any are observed; and

- Co-operate as required, with site inspections.

7.4.2 Water Quality

The employment of good construction management practices will minimise the risk of impacts to soil, stormwater run-off, seawater or groundwater. A summary of the measures relevant to hydrology are provided as follows and are in accordance with Construction Industry Research and Information Association (CIRIA) guidance – *Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors* (Masters-Williams et al, 2001).

Mitigation measures in relation to water quality are outlined in **Section 7.8** *Water*.

7.4.3 Noise

Specific noise abatement measures will be taken to comply with the recommendations of BS 5228-1 and 2:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites: Noise and vibration* (BSI, 2014) and the *European Communities (Noise Emission by Equipment for Use Outdoors) Regulations, 2001* (EC, 2001).

Mitigation measures in relation to noise and vibration are outlined in **Section 7.3** *Noise and Vibration*.

7.4.4 Lighting

Site lighting during construction will be directed away from adjoining areas, to minimise light spill outside the proposed development site boundary.

During operation, lighting design will ensure that light spillage outside the site is minimal and there will be no light spillage onto sensitive habitats outside the site boundary i.e., River Lee.

7.4.5 Invasive Species

Management programmes will need to be deployed as soon as practically possible in light of the potential for further dispersal of Japanese knotweed vector material, within overall masterplan boundary, which could impact on the success of the selected management programme.

It is recommended that any growth of other invasive species are treated, where required, with chemical herbicide during the optimum treatment period to avoid any future encroachment by these species and to minimise long-term landscape maintenance requirements.

Sie specific measures have been outlined in the Invasive Species Management Plan which is included as **Appendix A**.

7.4.6 Protection of Habitats

The Wildlife Act 1976, as amended, provides that it is an offence to cut, grub, burn or destroy any vegetation on uncultivated land or such growing in any hedge or ditch from the 1 March to the 31 August. Exemptions include the clearance of vegetation in the course of road or other construction works or in the development or preparation of sites on which any building or other structure is intended to be provided. If works are carried out during the breeding season, a pre-construction survey will be carried out by the project ecologist and if birds are detected appropriate mitigation measures will be implemented.

The Landscape Design Plan for the proposed development site includes the following:

- Tree planting
- Small multi-stem trees
- Tree planting in wetland area
- Native woodland planting

- Shrub planting
- Swale planting
- Wildlife buffer planting
- Meadow and bulb planting
- Riparian woodland planting
- Ecological Park also includes the following:
    - Five log piles using native logs for hedgehogs
    - Five insect hotels
    - Six bat boxes.

7.4.7 Bats

During the site works, general mitigation measures for bats will follow the National Road Authority's 'Guidelines for the Treatment of Bats during the Construction of National Road Schemes' NRA (2005c) and 'Bat Mitigation Guidelines for Ireland: Irish Wildlife Manuals, No. 25' (Kelleher, C. & Marnell, F. (2006)). These documents outline the requirements that will be met in the pre-construction (site clearance) stage to minimise negative effects on roosting bats or prevent avoidable effects resulting from significant alterations to the immediate landscape.

Buildings within the site will be demolished. No signs of bats were recorded within the existing structures, and they have a low potential as roosting habitat. However, as a precautionary measure, the following measures will be implemented prior to and/or during demolition.

Mitigation measures will be agreed with the NPWS prior to any demolition works.

- Ideally work on buildings will take place outside the summer season between and October March inclusive when bats will be hibernating as the buildings to be removed have negligible potential as winter hibernation sites.
- In all cases immediately in advance of demolition a bat specialist will undertake an examination of the building. Emergence surveys will be carried out if buildings are affected during the April to September period. If bats are present at the time of examination it is essential to determine the nature of the roost (i.e. number, species, whether it is a breeding population) as well as its exact location.
- If bats are recorded in buildings earmarked for demolition, special mitigation measures to protect bats will be put in place and a license to derogate from the conservation legislation will be sought from the NPWS.
- The contractor will take all required measures to ensure works do not harm individuals by altering working methods or timing to avoid bats, if necessary.
- If roosting habitat for bats is removed, replacement habitat will be provided.

No significant mature trees will be removed during site clearance. Although mature trees with the potential of be of significant value as bat roosts are absent from the site, the following precautionary measures will be implemented.

- Tree-felling will ideally be undertaken in the period September to late October/early November. During this period bats are capable of flight and may avoid the risks of tree-felling if proper measures are undertaken.
- Felled trees will not be mulched immediately. Such trees will be left lying several hours and preferably overnight before any further sawing or mulching. This will allow any bats within the tree to emerge and avoid accidental death. The bat specialist will be on-hand during felling operations to inspect felled trees for bats. If bats are seen or heard in a tree that has been felled, work will cease and the local NPWS Conservation Ranger will be contacted.

- No ‘tidying up’ of dead wood and spilt limbs on tree specimens will be undertaken unless necessary for health and safety.
- Treelines outside the proposed development area but adjacent to it and thus at risk, will be clearly marked by a bat specialist to avoid any inadvertent damage.
- During construction directional lighting will be employed to minimise light spill onto adjacent areas. Where practicable during night-time works, there will be no directional lighting focused towards the River Lee or boundary habitats and focusing lights downwards will be utilised to minimise light spillage.
- It is proposed that six bat boxes will be located within the proposed development site (https://www.wildcare.co.uk/vincent-pro-bat-box-10651.html for box proposed or similar). The boxes will be erected a suitably qualified ecologist taking into account landscape plans, vehicle movements and lighting.

As noted above, lighting mitigation measures will follow Bats & Lighting Guidance Notes for: Planners, engineers, architects and developers (Bat Conservation Ireland, 2010).

All mitigation measures including detailed method statements will be agreed with the NPWS prior to commencement of works, which could affect any bat populations on site.

7.4.8 Birds

As noted above where possible, vegetation will be removed outside of the breeding season and in particular, removal during the peak-breeding season (April-June inclusive) will be avoided. This will also minimise the potential disturbance of breeding birds outside of the study area boundary.

It is noted that provision of woodland planting and the use of more diverse grassland planting will provide additional nesting and feeding sites for birds, particularly as these habitats mature.

7.5 Archaeology, Architecture and Cultural Heritage

Archaeological monitoring of ground excavation works during the construction phase will be carried out by a suitably qualified archaeologist licensed by the National Monument Service. This is in accordance with Section 4.7.2.3 (Archaeological Monitoring) of the *South Docks Local Area Plan* (2008). In the event that any archaeological remains are identified during the course of monitoring, they will be recorded and left to remain securely *in situ* while the National Monuments Service and Cork City Council are consulted to determine further appropriate mitigation measures, which may entail preservation *in situ* by avoidance or preservation in record by archaeological excavation. A report comprising a written and photographic record of the results of the archaeological monitoring will be compiled and submitted to the National Monuments Service and Cork City Council.

7.6 Townscape and Visual

The proposed measures relate to implementation of appropriate site management procedures – such as the control of site lighting, storage of materials, placement of compounds, delivery of materials, car parking, etc.

- Visual impact during the construction phase will be mitigated somewhat through appropriate site management measures and work practices to ensure the site is kept tidy, dust is kept to a minimum, and that public areas are kept free from building material and site rubbish.

- Site hoarding will be appropriately scaled, finished and maintained for the period of construction of each section of the works as appropriate.

- To reduce the potential negative impacts during the construction phase, good site management and housekeeping practices will be adhered to. The visual impact of the site compound and scaffolding visible during the construction phase are of a temporary nature only and therefore require no remedial action other than as stated above.

7.7 Land and Soils

The following measures will be implemented in relation to land and soils during construction:

- Potential pollutants shall be adequately secured against vandalism and will be provided with proper containment according to the relevant codes of practice. Any spillages will be immediately contained, and contaminated soil shall be removed from the proposed development and properly disposed of in an appropriately licensed facility.
- Dust generation shall be kept to a minimum through the wetting down of haul roads as required and other dust suppression measures.
- Any stockpiles of earthworks and site clearance material shall be stored on impermeable surfaces and covered with appropriate materials where necessary.
- Silt traps shall be placed in gullies to capture any excess silt in the run-off from working areas.
- Soil and water pollution will be minimised by the implementation of good housekeeping (daily site clean-ups, use of disposal bins, etc.) and the proper use, storage and disposal of these substances and their containers as well as good construction practices as described the CIRIA guidance.
- A contingency plan for pollution emergencies will also be developed by the appointed contractor prior to the commencement of works and regularly updated. The contingency plan will identify the actions to be taken in the event of a pollution incident in accordance with the CIRIA guidance which requires the following to be addressed:
  - Containment measures;
  - Emergency discharge routes;
  - List of appropriate equipment and clean-up materials;
  - Maintenance schedule for equipment;
  - Details of trained staff, location and provision for 24-hour cover;
  - Details of staff responsibilities;
  - Notification procedures to inform the relevant environmental protection authority or Cork City Council
  - Audit and review schedule;
  - Telephone numbers of statutory water undertakers and local water company; and
  - List of specialist pollution clean-up companies and their telephone numbers.

Loss of crushed rock aggregate and granular aggregate potential area

Excavated material will be removed during the construction phase. Where possible, excavated material will be reused as construction fill. The appointed contractor will ensure acceptability of the material for reuse for the proposed development with appropriate handling, processing and segregation of the material. This material would have to be shown to be suitable for such use and subject to appropriate control and testing according to the Earthworks Specification(s). These excavated soil materials will be stockpiled located within the working area where possible, using an appropriate method to minimise the impacts of weathering. Care will be taken in reworking this material to minimise dust generation, groundwater infiltration and generation of runoff. Any surplus suitable material excavated that is not required elsewhere for the proposed development shall be used for other projects where possible, subject to appropriate approvals/notifications.

Ground movements

Ground movement, horizontal movement and vibration monitoring will be implemented during construction activities to ensure that the construction does not exceed the design limitations.

Ground movements will be controlled through the selection of a foundation type and method of construction which are suitable for the particular ground conditions.

Pollution from construction activities

The employment of good construction management practices will minimise the risk of pollution of soil, storm water run-off, adjacent watercourses and groundwater. The construction management of the site will take account of the recommendations of the CIRIA guidance Control of Water Pollution from Construction Sites – Guidance for consultants and contractors (Masters-Williams et al., 2001) to minimise as far as possible the risk of soil, groundwater and surface water contamination.

Measures, as recommended in the guidance above, that will be implemented to minimise the risk of spills and contamination of soils and waters, include:

- Training of site managers, foremen and workforce, including all subcontractors, in pollution risks and preventative measures;
- Careful consideration will be given to the location of any fuel storage facilities. These will be designed in accordance with guidelines produced by CIRIA, and will be fully bunded;
- All vehicles and plant will be regularly inspected for fuel, oil and hydraulic fluid leaks. Suitable equipment to deal with spills will be maintained on site;
- Ensure that all areas where liquids are stored or cleaning is carried out are in designated impermeable areas that are isolated from the surrounding area e.g. by a roll-over bund, raised kerb, ramps or stepped access;
- Minimise the use of cleaning chemicals; and
- Use trigger-operated spray guns, with automatic water-supply cut-off.

Earthworks haulage

Earthworks haulage will be along agreed predetermined routes along existing national, regional and local routes. Where compaction occurs due to truck movements and other construction activities on unfinished surfaces, remediation works will be undertaken to reinstate the ground to its original condition. Where practicable, compaction of any soil or subsoil which is to remain in situ along the sites will be avoided.

Earthworks operations shall be carried out such that surfaces shall be designed with adequate falls, profiling and drainage to promote safe runoff and prevent ponding and flooding. Runoff will be controlled through erosion and sediment control structures appropriate to minimise the water impacts in outfall areas. Care will be taken to ensure that the bank surfaces are stable to minimise erosion.

7.7.1 Contaminated Soil Exposure Mitigation

Several likely adverse effects which without mitigation could have potentially significant impacts. These include:

- contamination, such as asbestos, becoming airborne and affecting the human health of people in the vicinity of the excavation;
- site workers being exposed to contamination in soil; and
- site workers being exposed to ground gas.

Proposed mitigation measures include the following:

- During construction, the potential risk to site users and member of the public from contaminated dust will be managed using standard health and safety measures as outlined in the Health and Safety Authority guidance document on working with asbestos (HSA 2013). This states that:

  "*Removal of asbestos from contaminated soil will require a specialist asbestos contractor for any friable asbestos to be removed*."

And

"*A risk assessment by an independent competent person should determine the most appropriate control measures and remediation strategies*."

- Control measures for the construction stage will be devised based on a risk assessment carried out by the contractor prior to the development and will be specific to the construction methods.

7.8 Water

The following best practice water management measures will be implemented during the construction phase:

- Specific measures to prevent the release of sediment over baseline conditions to Atlantic Pond and Lee Estuary Lower during the construction work, which will be implemented as the need arises. These measures include, but are not limited to, the use of silt fences, silt curtains, settlement lagoons and filter materials. This is particularly important when undertaking any works/upgrading to the surface and foul water drainage networks at the proposed development site.
- Provision of exclusion zones and barriers (e.g. silt fences) between earthworks, stockpiles and temporary surfaces to prevent sediment washing into the existing drainage systems and hence the downstream receiving water environment.
- Provision of temporary construction surface drainage and sediment control measures to be in place before earthworks commence.
- Weather conditions will be taken into account when planning construction activities to minimise risk of run-off from the site. Topsoil and subsoil will not be mixed together.
- Any fuels or chemicals (including hydrocarbons or any polluting chemicals) will be stored in a bunded area to prevent any seepage of into the local surface water network or groundwater. These will be designed in accordance with guidelines produced by CIRIA.
- All mobile fuel bowsers shall carry a spill kit and operatives will have spill response training. All fuel containing equipment such as portable generators shall be placed on drip trays. All fuels and chemicals required to be stored on-site will be clearly marked.
- Implementation of response measures to potential pollution incidents.
- Emergency procedures and spillage kits will be available and construction staff will be familiar with emergency procedures in the event of accidental fuel spillages.
- All trucks will have a built-on tarpaulin that will cover excavated material as it is being hauled off-site and wheel wash facilities will be provided at all site egress points.
- Any seepage/infiltration and surface ponding from rainfall events will be gathered locally to facilitate pumping with subsequent discharge, under licence, to the local sewerage drainage network. For example, prior to any discharge, the water will be passed through silt traps and hydrocarbon/oil interceptors within the construction site confines. This will result in the separation of sediment from the water prior to its discharge and will ensure that the water is of adequate quality before it enters the local authority drainage system. The use of silt traps and interceptors will be supplemented by proper housekeeping and control measures such as regular testing and monitoring of water quality to ensure compliance.
- Temporary oil interceptor facilities shall be installed and maintained where site works involve the discharge of drainage water to the receiving Atlantic Pond and Lee Estuary Lower and implementation of good housekeeping (site clean-ups, use of disposal bins, etc.) at working areas.
- When cast-in-place concrete is required, all work must be done in the dry and effectively isolated from flowing water or water that may enter the watercourses bounding the site for a period sufficient to ensure no leachate from the concrete.
- All hazardous materials will be stored within secondary containment designed to retain at least 110% of the storage contents.

- Mobile plant will be refueled in a designated area, on an impermeable base away from drains or watercourses.
- Safe materials handling of all potentially hazardous materials will be implemented by all construction personnel employed.
- The pumping of groundwater may be required during excavation for foundation and attenuation tank construction, with the proposed locations of pump wells selected so as to minimise the volume of pumping.
- Water supplies shall be recycled for use in the wheel wash. All waters shall be drained through appropriate filter material prior to discharge from the construction sites.
- A discovery procedure for contaminated material will be prepared and adopted by the appointed contractor prior to excavation works commencing on site. These documents will detail how potentially contaminated material will be dealt with during the excavation phase to ensure no contaminated material enters the watercourse.
- Implementation of measures to minimise waste and ensure correct handling, storage and disposal of waste (most notably wet concrete, pile arisings and asphalt).
- Groundwater level and quality monitoring during construction

7.8.1 Flood Risk Mitigation

The following site-specific flooding mitigation measures will be implemented:

- The main contractor will manage surface water during the replacement the open drainage. Where pipe culvert construction is proposed a temporary by-pass channels or other appropriate measures (i.e. pumping to downstream drainage) will be put in place to avoid obstruction of flow.
- Any surface ponding from rainfall events will be gathered locally to facilitate pumping with subsequent discharge, under licence, to the local sewerage drainage network. The CEMP will cover all potentially polluting activities from this process and include an emergency response procedure.
- Earthworks operations shall be carried out such that surfaces shall be designed with adequate falls, profiling and drainage to promote safe run-off and prevent ponding and flooding.

7.9 Resource and Waste Management

Construction – General

In addition to the inherent design measures which will be implemented during the construction phase, the following mitigation measures will be implemented:

- Waste disposal will be minimised so far as is reasonably practicable;
- Possibilities for re-use of clean non-hazardous excavation material as fill on the site or in landscaping works will be considered following appropriate testing to ensure material is suitable for its proposed end use. Where excavated material may not be re-used within the proposed works the Contractor will endeavour to send material for recovery or recycling so far as is reasonably practicable;
- Waste from the proposed development will be transported by authorised waste collectors in accordance with the relevant Irish waste legislation (Waste Management (Collection Permit) Regulations, 2007 as amended;
- Waste from the proposed development will be delivered to authorised waste facilities in accordance with the relevant Irish waste legislation (Waste Management Acts 1996-2016) as amended;
- Source segregation: Where possible, metal, timber, glass and other recyclable material will be segregated on site in a designated area within the construction compound during construction works and will be removed off site to a permitted/licensed facility for recycling. Where required waste stream colour coding,

and photographs of wastes will be used to facilitate segregation. Where waste generation cannot be avoided this will maximise the quantity and quality of waste delivered for recycling and facilitate its movement up the waste hierarchy away from landfill disposal and reduce its environmental effect;

- Material management: 'Just-in-time' delivery will be used so far as is reasonably practicable to minimise material wastage;
- Supply chain partners: The contractor will engage with the supply chain to supply products and materials that use minimal packaging, and segregate packaging for reuse;
- Waste Auditing: The contractor will record the quantity in tonnes and types of waste and materials leaving site during the construction phase;
- Waste fuels/oils may be generated from equipment used on-site during construction and may be classified as hazardous waste. Such wastes will be stored in a secure, bunded area on-site prior to collection by a Contractor who holds the appropriate waste collection permit;
- Possibilities for re-use of excess uncontaminated soil and stone only as fill or in landscaping works within the site will be considered following appropriate testing to ensure material is suitable for its proposed end use. Where excess excavation material may not be re-used within the proposed works the Contractor will endeavour to send material for recovery or recycling so far as is reasonably practicable;
- The name, address and authorisation details of all facilities and locations to which waste and materials are delivered will be recorded along with the quantity of waste in tonnes delivered to each facility. Records will show material, which is recovered, and which is disposed of; and
- The contractor will ensure that any off-site interim storage or waste management facilities for excavated material have the appropriate waste licences or waste facility permits in place.
- A risk assessment will be carried out to determine the suitability for re-use of asbestos/contaminated material encountered during construction. If re-use within the site is not possible, contaminated material will be removed offsite to an appropriately licenced facility.

7.10 Population and Human Health

Measures which will be implemented to minimise effects on the general amenity of residents will include:

- The erection of directional and information signage for members of the public to indicate alternative routes and paths to be taken and convey "Business As Usual" for adjoining businesses;
- The provision of information to local residents and businesses during the construction phase;
- The provision of community liaison and nomination of personnel to manage community relations; and
- The preparation of an emergency response plan to cover foreseeable risks.

Industry-standard traffic management measures will be put in place to alleviate construction-related traffic disruptions. Refer to **Section 7.1** for further details.

Dust emissions will be controlled throughout the construction phase. Refer to **Section 7.2** for details of dust mitigation measures.

Noise and vibration disturbance will also be minimised. Best practice measures for noise control on construction sites will be adhered to during construction. Refer to **Section 7.3** for further details of noise and vibration mitigation measures.

As required by regulation and legislation, a Health and Safety Plan will be prepared to address health and safety issues during the construction phase. This plan will be reviewed and updated as required, as the development progresses. The Project Supervisor Construction Stage will assemble the Safety File as the project progresses.

7.11 Material Assets

The following measures in relation to material assets during construction will be implemented:

- The contractor will undertake their own surveys to establish full extent of underground services prior to the commencement of construction to support any surveys already undertaken as part of early design work and statutory consent applications
- Put measures in place to ensure that there are no interruptions to existing utilities and services unless this has been agreed in advance with the relevant service provider
- All utilities and services diversions will be agreed and undertaken as part of the enabling works and in advance of the commencement of construction activities
- All works near utilities apparatus will be carried out in ongoing consultation with the relevant utility company and/or local authority and will be in compliance with any requirements or guidelines they may have.
- Where new services are required, the Contractor will apply to the relevant utility company for a connection permit where appropriate and will adhere to their requirements;
- All construction activities in the vicinity of existing services and utilities will be carried out with ongoing consultation with the relevant service provider and undertaken in compliance with any requirements or guidelines they may have.
- If asbestos is uncovered on site, the Asbestos Containing Material will be double-bagged, stored, collected and removed from site by a competent contractor and disposed of in accordance with the relevant procedures and legislation.

7.12 Major Accidents and Disasters including COMAH

The proposed development will be designed and built in line with best international current practice and, as such, mitigation against the risk of major accidents and/or disasters will be embedded throughout the design.

The contractor will be required to ensure that all fire safety requirements are provided for in co-ordination with Cork City Council. Appropriate site personnel will be trained as first aiders and fire marshals. The contractor will also be required to maintain an emergency response plan which will cover all foreseeable risks i.e. fire. In preparing this plan the contractor will be required to liaise with the emergency response services.

The mitigation measures, which will limit the likelihood and consequence of a vehicle collision, include a Construction Traffic Management Plan (CTMP). This will be a live document which will be updated/added to as construction progresses and will be implemented for the duration of the proposed works.

See **Section 7.8** for details on pollutant control.

A review was undertaken to identify the closest Seveso site in relation to the proposed development site. Goulding Chemicals Limited is located circa. 550m west of the site along Centre Park Road and is classed as a Lower-Tier site, under The Chemical Act (Control of major Accident Hazards Involving Dangerous Substances Regulations, 2015 (which transpose the Seveso III Directive (2012/18/EU) into Iris law). The proposed development is not located in the consultation zone of this Seveso site and therefore, no consultation with the Health and Safety Authority was necessary with regard to the proposed development.

The nearest Seveso site in proximity to the proposed development is Goulding Chemicals Ltd. In accordance with the Regulations operators of a 'Lower Tier Establishment' are required to develop a site-specific Major-Accident Prevention Policy (MAPP) which is implemented by site specific procedures and systems. Due to the nature of the proposed development, and the distance between the Goulding facility and the proposed development, it is not predicted that the risk of major accidents relating to the facility will constrain the proposed development, and the provisions of the Directive have been appropriately considered with regard to the proposed development.

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Appendix A Invasive Species Management Plan

COMER GROUP IRELAND

OVERALL MASTERPLAN FOR RESIDENTIAL DEVELOPMENT, AT CENTRE PARK ROAD,CORK CITY

INVASIVE SPECIES MANAGEMENT PLAN

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APPENDIX I: DEFINITION, CLASSIFICATION, BEST PRACTICE & LEGISLATION
APPENDIX II: INVASIVE SPECIES

1.0 INTRODUCTION

1.1 Background

O' Donovan Agri-Environmental Services have been appointed by Comer Group (Ireland) Ltd. to provide specialist Invasive Alien Plant Species (IAPS) advisory services with respect to the presence of Japanese knotweed (*Fallopia japonica*) in the footprint of the "overall masterplan" for proposed residential development, within the former Tedcastles Site on the Centre Park Road in the docklands area of Cork City (see Figures 1.1-1.4).

The overall masterplan for the former Tedcastles Site consists of two separate parcels of land which for the purposes of the invasive species management plan are referred to as Site A - 7.27ha approx. and Site B - 1.31ha approx. in area (see Figures 1.1-.2).

Planning is currently being sought in respect of a 4.7ha subsite within Site A (see Figure 1.3-1.4). The proposed residential development within the 4.7ha subsite includes the "*demolition of the existing structures on site and the construction of a strategic housing development of 823 no. apartments, resident amenity and ancillary commercial areas including childcare facilities. The development will comprise 6 no. buildings. The proposed development also comprises hard and soft landscaping, pedestrian bridges, car parking, bicycle stores and shelters, bin stores, ESB substations, plant rooms and all ancillary site development works. Vehicular access to the proposed development will be provided via Centre Park Road"* (ARUP, 2022).

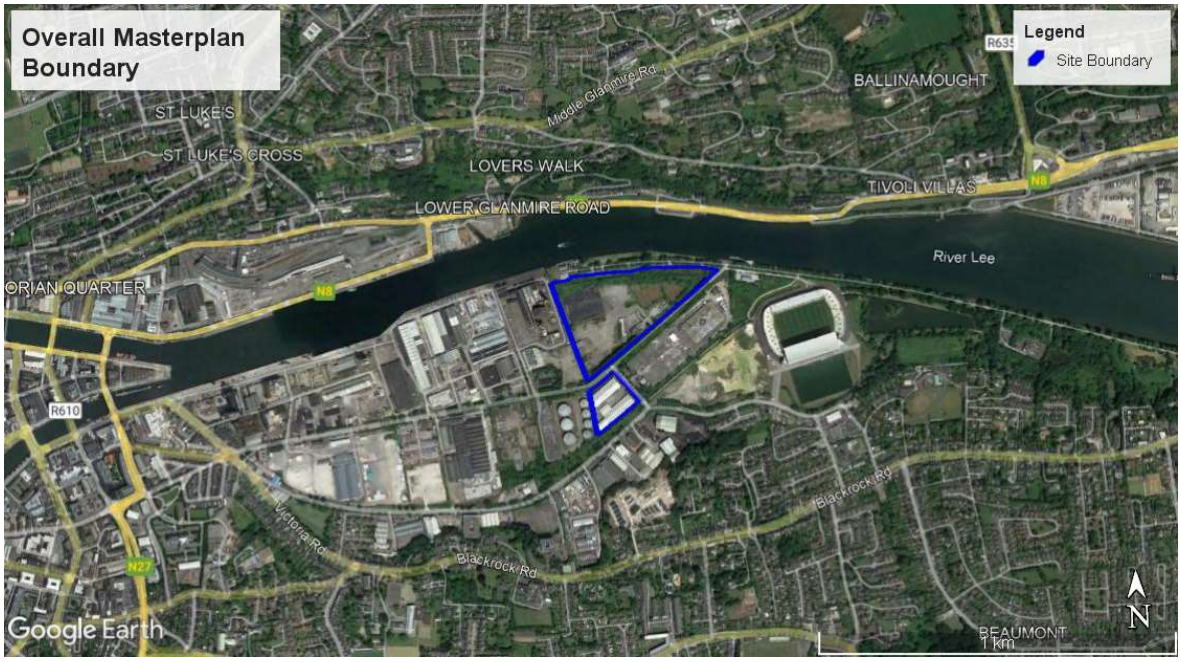
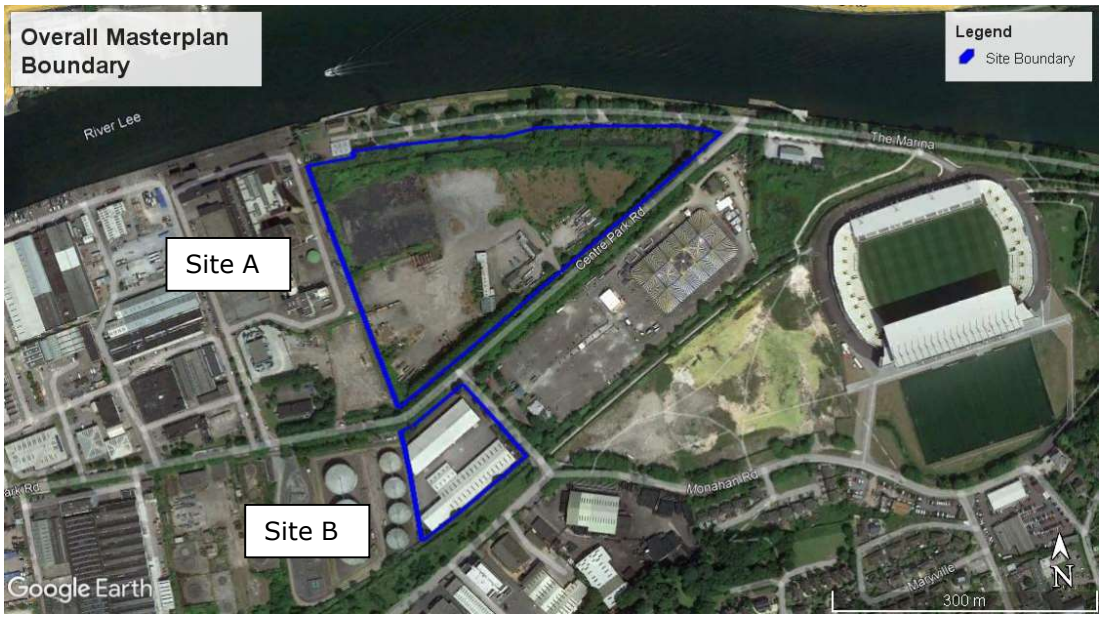
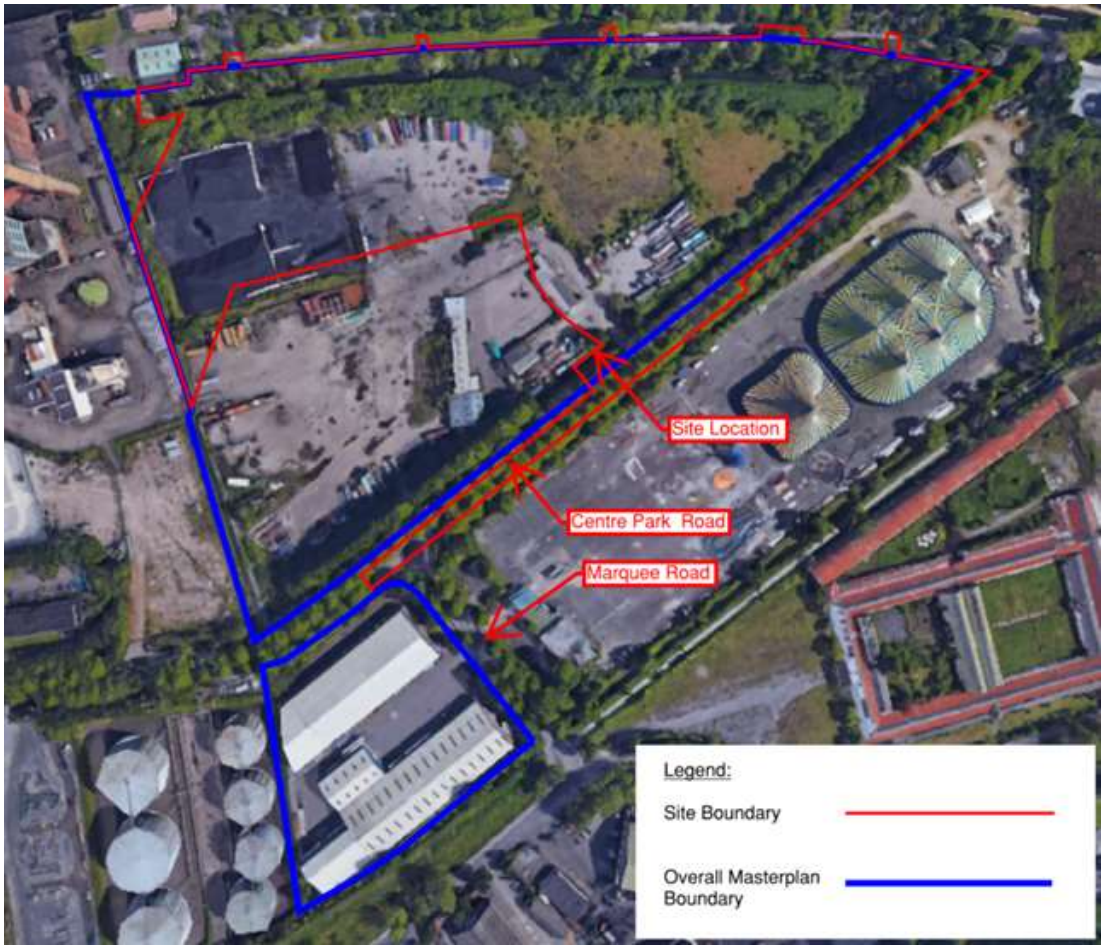


Figure 1.1 Location of lands within the Overall Masterplan Boundary for Proposed Residential Development at Centre Park Road (Source: Google Earth Pro)





Figures 1.2 & 1.3 Location of Site A and B within the Overall Masterplan Boundary at Centre Park Road (Source: Google Earth Pro; ARUP, 2022)

Figure 1.4 Layout of the Proposed 4.7ha Residential Development within Site A at Centre Park Road (Source: ARUP, 2022)

In light of the presence of IAPS, O' Donovan Agri-Environmental Services have been engaged by Comer Group (Ireland) Ltd. to prepare an Invasive Species Management Plan (ISMP) to facilitate the eradication of Japanese knotweed, and any other relevant invasive species, from within the lands of the overall masterplan boundary.

In this regard, a specialist walkover survey was undertaken at Centre Park Road on the 14th December 2021 to inform the preparation of the management plan.

The specialist IAPS services in respect of the lands within the overall masterplan boundary are being led by the following project team:

John O' Donovan is a Specialist Weed Control Consultant with over 20 years' industry experience in the design of specialist chemical herbicide treatment programmes aimed at the successful and timely eradication of Japanese knotweed, and in the research, development, and patenting of innovative specialist equipment for the application of herbicides and species-specific biosecurity equipment.

Lisa M. J. Dolan is an IAPS Specialist Ecological Consultant with over 20 years' industry experience in the preparation of IAPS Management Plans and the onsite management and successful eradication of invasive species, in particular Japanese knotweed. Lisa is experienced in specialist targeted surveys and reporting, environmental impact assessments, design and deployment of specialist biosecurity protocols and equipment, and as a Clients

Representative (for local authorities, state, and semi-state bodies) the preparation of tender documents for the procurement of IAPS Specialist Contractors, site supervision and the management of IAPS Contracts for successful invasive species eradication programmes.

2.0 MANAGEMENT OF INVASIVE ALIEN PLANT SPECIES

2.1 Necessity for a Management Plan

The preparation of an Invasive Species Management Plan is required to meet with legal obligations in terms of avoiding the accidental dispersal of invasive species including vector material during the vegetation removal, site clearance, demolition, construction and landscaping stage of a Project.

A management plan is also necessary to ensure that appropriate measures are taken to avoid the dispersal of invasive species, during the deployment of control and eradication programmes for invasive species within a site.

A management plan should ensure that best practice is deployed to control or eradicate Japanese knotweed in the most cost effective, environmentally sustainable, and timely manner.

A management plan is one of a number of documents required by National Parks and Wildlife Service (NPWS) as part of a license application for the transportation of Japanese knotweed vector material off site for disposal at a licensed receiving facility (see Section 2.3).

Where present on a site the costs of eradicating invasive species generally increase overtime, with the maturity of an infestation, which may be exacerbated by delayed treatment, inappropriate treatment, disturbance regimes and accidental dispersal. In addition to these impacts, delays to the control or eradication of certain invasive species may also pose a risk to adjacent lands and semi-natural habitats, including downstream habitats, depending on the invasive qualities of the IAPS in question (see Appendix II).

In this regard, the management of invasive species within the lands of the overall masterplan boundary is necessary to address or to meet with:

- Environmental legislation
- Future planning conditions
- Risk of further accidental dispersal

And the potential for invasive species to:

- Encroach on downstream native habitats with connectivity to Centre Park Road via the stormwater network *e.g.* River Lee, Cork Harbour SPA, Douglas River Estuary pNHA, Dunkettle Shore pNHA and non-designated SWDTEs and GWDTEs
- Encroach on adjacent land-uses, public footpaths, dwellings, and infrastructure
- Encroach on new structures, footpaths, services, internal access roads and green open spaces within the site of the proposed residential development
- Diminish the ability to use and enjoy the green open spaces within the site of the proposed residential development due to impediments to access
- Encroach on sight lines and signage along the internal access paths
- Result in long-term maintenance requirements

Please be advised that a management plan is a 'live' document and will be updated where required as the project progresses to include the findings of further monitoring surveys and additional eradication or control programmes, where required.

2.2 Preparation of a Management Plan

The first step in the preparation of an Invasive Species Management Plan for the lands within the overall masterplan boundary, is to select the most appropriate management programme (s).

The selection of the most appropriate management programme requires an in-depth assessment of a number of site-specific factors including characteristics of the Japanese knotweed infestation, identification of site-specific constraints and hazards, knowledge of the study area together with best practice guidance, expert opinion, and experience of the authors.

Project constraints will play a significant role in the selection of a programme. Any planning conditions laid down by the local authority; time available to achieve eradication; availability of suitable lands for burial on site; and the budget for the eradication of the Japanese knotweed, will all influence the decision-making process. Site constraints may also feature, for example, where bedrock or the water table is at or near surface level which could rule out burial of the vector material onsite, or indeed, where there is limited access to a site for trucks to facilitate the recovery and transportation of vector material offsite (see Section 3.4.1).

In addition, any hazards (see Tables 3.2 & 3.3) which could impact on the deployment of a management programme need to be identified such as the presence of receptors which are sensitive to the use of chemical herbicides. Restricted areas & receptors as per the Sustainable Use of Pesticides Directive (SUD Directive) and ecological receptors, require careful consideration, as these may pose limitations with regards to use of chemical herbicide (see Sections 3.4.2 & 3.4.3).

Environmental, occupational health & safety hazards should also be noted and tabulated as these may impact on the selection, practical implementation, and successful outcome of any recommended management programmes (see Section 3.4.4).

Table 2.1 Factors which may influence the approach to management

FACTORS
▪ Characteristics of the infestation *e.g.,* maturity, density, extent of rhizomes ▪ Project constraints ▪ Site constraints ▪ Presence of SUD restrictions and receptors ▪ Presence of ecological receptors ▪ Presence of environmental, occupational health & safety hazards ▪ Source of introduced vector material and pathways for dispersal ▪ Presence of disturbance regimes ▪ Potential for additional outliers due to ongoing disturbance regimes ▪ Best practice guidance notes and manuals

The presence of any such hazards and constraints should be identified via a desktop study and a walkover survey of the site of the proposed residential development. The hazards and constraints should be addressed in the preparation of the Risk Assessment and Method Statement for the management of Japanese knotweed, via the inclusion of relevant control measures. The deployment of the control measures will ensure a successful outcome from the selected management programme, in terms of eradication.

The control measures are also necessary to ensure that the management programme is deployed in accordance with best practice, relevant standards and environmental, waste, occupational health & safety legislation (see Section 8.0).

2.3 Types of Management Programmes

Once the most appropriate Management Programme for the eradication of invasive species within the site has been identified, the plan should then elaborate on the best practice methodology to complete the programme.

For example, there are typically 5 no. different management programmes which may be deployed to eradicate Japanese knotweed within a site. Please note a combination of one or more options may be required for some sites.

- Option 1: Deployment of a Chemical Herbicide Treatment Programme (*in situ*)
- Option 2: Recovery of Vector Material & Burial Onsite
- Option 3: Recovery of Vector Material & Disposal Offsite
- Option 4: Installation of Japanese Knotweed Rhizome Barrier
- Option 5: Recovery of Vector Material & Construction of a Bund Facility

Irish and UK best practice guidance notes and manuals are utilised to inform the selection of the most appropriate management programme for a site, and include the following:

- CIRIA (2008) CIRIA C679 Invasive species management for infrastructure managers and the construction industry.
- Environmental Agency (EA, 2013) Managing Japanese Knotweed on Development Sites: The Knotweed Code of Practice (**withdrawn 11th July 2016 by the EA**).
- EA (2016a) Guidance Note: Prevent Japanese knotweed from Spreading. Environment Agency, Natural England, and DEFRA.
- EA (2016b) Treatment & Disposal of Invasive Non-Native Plants: RPS 178.
- NetRegs Environmental guidance for your business in Northern Ireland & Scotland http://www.netregs.org.uk/environmental-topics/land/japanese-knotweed-giant-hogweed-and-other-invasive-weeds/.
- PCA (2014) Code of Practice for the Management of Japanese knotweed. Version 2.7.
- SEPA (2016) Biosecurity and management of invasive non-native species for construction sites and Controlled Activities.
- Welsh Government (2011) The Control of Japanese Knotweed (*Fallopia japonica*) in Construction and Landscape Contracts.

- NRA (2010) NRA Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Road Schemes.
- http://nonnativespecies.ie/risk-assessments/

3.0 METHODS

3.1 Study Site

The overall masterplan boundary encompasses 2 no. parcels of land Site A - 7.27ha approx. (to the north) and Site - B 1.31ha approx. (to the south) in area. Site A and Site B are located on Centre Park Road within the docklands area of Cork City at GPS coordinates 51.900226°, -8.442560° approximately 2km east of Cork City centre (see Figures 1.1-1.4).

3.2 Study Area

Site A and Site B are surrounded by urban industrial buildings, civil infrastructure, a sports stadium, a riverside walkway and marina and city streets categorised as Buildings and artificial surfaces (BL3). Namely, Centre Park Road, by Shandon Rowing Club and the Marina to the north, former ESB power station to the west and Páirc Uí Chaoimh stadium to the east.

In terms of habitats, Recolonising bare ground (ED3), Scrub/transitional woodland (WS1), Drainage ditches (FW4), Scattered trees and parkland (WD5), Ornamental/non-native shrubs (WS3) were recorded within the study area along with the River Lee located to the north which is a Tidal River (CW2) (see Photographs 3.1-3.6).

Site A is described as a "*brownfield site containing several storage containers and external storage areas. Ground levels vary across the site, with a high point along the northern boundary, varying between 5.3m at the western end and 3.6m at the eastern end. There are two open channels, one adjacent to the southern boundary and one adjacent to the northern boundary, which join at the eastern end of the site. The centre of the site generally falls from a high point of 2.67m to the open channels along the northern and southern boundaries"* (ARUP, 2022).

Site B is also a brownfield site containing a standing warehouse and a second partially demolished warehouse.

Bedrock

Both Site A and Site B are underlain by the Lee Valley Gravels Groundwater Body (GWB) IE_SW_G_094. There is no available initial characterisation for the Lee Valley Gravels GWB to describe its main aquifer lithology and other features.

According to the GSI Mapviewer, the bedrock beneath Site A of the proposed residential development, consists of Carboniferous "Flaser-bedded sandstone & mudstone" of the Cuskinny Member (Kinsale Formation) from the Dinantian series (https://dcenr.maps.arcgis.com). It is described as a "Flaser-bedded sandstones and lenticular-bedded mudstones; sand dominant". There is a fault zone located to the north of the site (GSI Mapviewer). Bedrock outcrops were not recorded within the site during the walkover survey.

Beneath Site B, the bedrock consists of a Carboniferous limestone "Dark muddy limestone, shale" of the Ballysteen Formation from the Dinantian series (https://dcenr.maps.arc

gis.com). Again, bedrock outcrops were not recorded within the site during the walkover survey.

Aquifer Classification

The Lee Valley Gravels GWB underlying Site A and majority of Site B, is considered to have bedrock which is Moderately Productive only in Local Zones and is categorised as a Locally Important Aquifer (Ll). The southern parcel is in part underlain by a Regionally Important Aquifer (Rkd) - Karstified (diffuse).

Quaternary Deposits

In terms of the subsoil overburden, both Site A and B are dominated by 'Urban' deposits (GSI Mapviewer).

Soils

According to the Teagasc Soil Maps (GSI Mapviewer) both Site A and Site B are also dominated by 'Made ground' (GSI Mapviewer).

Photographs 3.1 & 3.2 Habitats within Site A
(Source: O' Donovan Agri-Environmental Services)

Photographs 3.4 & 3.5 Habitats within Site A
(Source: O' Donovan Agri-Environmental Services)

Photographs 3.5 & 3.5 Habitats within Site B
(Source: O' Donovan Agri-Environmental Services)

Photographs 3.6 Habitats within Site B
(Source: O' Donovan Agri-Environmental Services)

3.3 Ground & Surface Water Features

3.3.1 Groundwater

Vulnerability

According to the EPA Mapviewer Site B is underlain by an aquifer with 'Moderate vulnerability" while Site A by a "Moderate" to "High vulnerability" aquifer.

Karstified features or landforms were not recorded during the walkover survey. There are no mapped springs, karst features or fault zones within the site (GSI Mapviewer). However, Site B is partially underlain by a karstified aquifer which is of "High vulnerability".

There is a fault zone located to the north of Site A (GSI Mapviewer).

According to the GSI Mapviewer, the closest known karst feature on contemporary mapping is Ballinlough Cave [1707SWK010] which is located 1.0km to the southeast.

Groundwater Flow

Based on the topography and contour data (OSi Webmapper), the overall groundwater flow direction in the bedrock aquifer is inferred as being from south to north towards the River Lee.

3.3.2 Surface water

Site A and Site B are located within the Water Framework Directive (WFD) Catchment Lee, Cork Harbour & Youghal Bay (Catch_ID:19).

There is a surface water feature in the form of a drainage stich on the northern, eastern, and southern boundaries of Site A.

There is also a drainage ditch on the northern boundary of Site B.

The drainage ditches and the storm water gullies within the sites and on the adjacent streets (which are connected to the stormwater network) outflow to the River Lee and Cork Harbour.

3.4 Detailed Desktop Study

In order to inform the selection of the most appropriate management programme for the overall masterplan, it is first necessary to identify any existing and potential site-specific hazards and constraints which could impact on its implementation *e.g.,* project and site constraints; SUD restrictions & receptors, ecological receptors and environmental, health & safety hazards (see Sections 4.4.1-4.4.4).

3.4.1 Project & Site Constraints

Project Constraints

The following project constraints will need to be reviewed with respect to identifying the most appropriate management programme, amongst others:

- Time available to achieve eradication *e.g.* the start and end date of the construction programme
- Volumes of vector material which require burial onsite/disposal offsite
- Budget available for eradication

- Responsibility for a monitoring programme
- Requirement for a Waste License under the Waste Management (Licensing) Regulations 2004 from the EPA to bury onsite
- Stewardship of an onsite burial cell
- Possibility that an onsite burial cell may impinge on future land uses and property values

Site Constraints

In addition to project constraints there are also a number of site constraints which may influence the selection of the management programme including:

- Type and location of existing and proposed infrastructure (above and below ground) within a site relative to the location of the Japanese knotweed infestation
- Distance between the Japanese knotweed infestation and the site boundary
- Risk of flooding events *e.g.,* pluvial, fluvial, or coastal flooding
- Potential for finds of archaeological interest
- Potential for contaminated soils *e.g.,* hydrocarbons, asbestos
- Extent of suitable lands available for burial onsite
- Accessibility to the site for trucks to facilitate the recovery and transportation of vector material offsite
- Requirement for traffic management at the site entrance to facilitate access onto the site by plant machinery and trucks
- Distance from a receiving waste facility for offsite disposal (impact of haulage costs of budgetary constraints)

A number of the project and site constraints will have a specific or greater influence on the practical implementation of certain management programmes as follows:

Option 1: Chemical Herbicide Treatment (*in situ)*

- Time available to achieve eradication (treatment *in situ* requires a number of years to achieve eradication)
- Proximity to an adjacent property
- Presence of receptors which are sensitive to the use of chemical herbicides
- Possibility that the ongoing presence of the infestation may impinge on access and use of a site, imminent construction works, future land uses and property values

Option 2: Recovery & Burial Onsite

- Requires a Waste License under the Waste Management (Licensing) Regulations 2004 from the EPA
- Volumes of vector material which require disposal: will influence size of burial cell; extent of rhizome barrier; and other costs associated with burial onsite
- Extent of suitable lands available for burial onsite *e.g.* depth to bedrock and water table, presence of services, distance from site boundary, infrastructure, watercourses, and designated conservation areas *etc*.
- Presence of overhead and underground power cables and other services
- Monitoring of the onsite burial cell

- Risk of regrowth (whether perceived or actual) from the burial cell
- Possibility that the permanent burial cell may impinge on future land uses and property values

Option 3: Recovery & Disposal Offsite

- Requires a license under Regulation 49(2) of the European Communities (Birds and Natural Habitats) Regulations 2011 to 2015 from NPWS
- Accessibility of the site for articulated or rigid trucks
- Budgetary constraints depending on volumes of vector material which require disposal
- Distance from a receiving waste facility for offsite disposal

3.4.2 SUD Restrictions & Receptors

Directive 2009/128/EC of the European Parliament and of the Council of 21 October 2009 more commonly referred to as the 'Sustainable Use Directive' or 'SUD', aims to establish a framework for Community action to achieve the sustainable use of pesticides (including chemical herbicides). It was transposed into Irish law by Statutory Instrument No. 155 of 2012, European Communities (Sustainable Use of Pesticides) Regulations 2012. The European Communities (Sustainable Use of Pesticides) Regulations 2012 places additional restrictions and, in some cases, prohibitions, on the use of pesticides in certain restricted and sensitive areas (referred to herein as SUD restrictions & receptors).

These SUD restrictions & receptors include transport routes (such as railway lines); areas used by the general public or defined vulnerable groups (*e.g.* public parks, hospitals, public schools and public playgrounds); groundwater vulnerable landscape features; and Natura 2000 sites (see Table 4.3).

There are also safeguard zones or exclusion zones (see Table 4.1) where no plant protection products can be applied in order to protect surface water abstraction sources (*e.g.* areas for the abstraction of drinking water such as surface waters, springs, wells or boreholes) and groundwater vulnerable landscape features (*e.g.* karst areas, sinkholes or collapse features).

Table 3.1 Safeguard Zones for Open Wells, Boreholes and Water Abstraction Points

Water Source	Distance
Abstraction point of any surface waters, borehole, spring or well used for the abstraction of water for human consumption in a water scheme supplying 100 m^3 or more of water per day or serving 500 or more persons	200 m
Abstraction point of any surface waters, borehole, spring or well used for the abstraction of water for human consumption in a water scheme supplying 10 m^3 or more of water per day or serving 50 – 500 persons	100 m
Abstraction point of any surface waters, borehole, spring or well used for the abstraction of water for human consumption in a water scheme supplying 1-10 m^3 of water per day or serving 10-50 persons	25 m
Abstraction point of any surface waters, borehole, spring or well used for the abstraction of water for human consumption in a water scheme supplying 1m^3 or less of water per day or serving 10 or less persons	5 m

It should be noted that the gathering of data on SUD restrictions & receptors is essential to the preparation of a management plan, as the presence of any such constraints will underpin the ability to deploy chemical herbicides, including the type of chemical herbicide, timing of application and application methods. In this regard, chemical herbicides selected for use on any site should be fit for the purpose for which they are intended.

Details of permitted pesticides authorised for use by the Irish competent authority, the Pesticide Registration and Controls Divisions and the Pesticide Control Laboratory of the Department of Agriculture Food and the Marine (DAFM) can be found at http://www.pcs.agriculture.gov.ie/ (see Appendix I for further details). Consultation should be undertaken with a Registered Pesticide Advisor and/or the Pesticides Control Service where there is any doubt in relation to the safe use of herbicides.

Groundwater Vulnerable Landscape Features & Surface Water Abstraction Sources

In relation to the identification of Groundwater Vulnerable Landscape Features and surface water abstraction sources in the study area, the following Geological Survey of Ireland (GSI) and Environmental Protection Agency (EPA) databases were accessed on the OSI Geohive Mapviewer (http://map.geohive.ie/mapviewer.html), EPA (https://gis.epa.ie/EPAMaps/) and GSI (https: //dcenr.maps.arcgis.com/apps/webappviewer/):

- Groundwater Bodies WFD, EPA Water Maps
- Groundwater Vulnerability, GSI
- Groundwater Drinking Water Protection Areas, GSI
- Groundwater Karst Features, GSI
- Groundwater Wells & Springs, GSI
- Borehole Locations, GSI
- Public Water Supply Protection Areas, GSI
- WFD Register of protected areas (rivers, lakes & groundwater for drinking water), EPA
- Groundwater Bodies, Rivers and Lakes utilised for Drinking Water Abstraction, EPA

Further details on the initial characterisation of the relevant groundwater bodies in the study area was sought from the GSI and WFD websites including the Initial Characterisation of the groundwater body (GSI website) and Water Management Unit Action Plans (WFD website) and https://www.catchments.ie/data/#/waterbody/.

Natura 2000 Sites

A desktop review of the relevant technical literature and databases was undertaken for the site of the proposed residential development in order to identify the presence of any Natura 2000 sites [Special Areas of Conservation (SACs), Special Protection Areas (SPAs)] within the study area which could be impacted upon by the use of chemical herbicide (http://webgis.npws.ie/ npws viewer/).

3.4.3 Ecological Receptors

Aside from the sensitive ecological receptors identified under the SUD Directive, there are other ecological receptors which could be at risk from the use of chemical herbicide.

In this regard, the presence of other designated conservation areas *i.e.* Natural Heritage Areas (NHAs), proposed Natural Heritage Areas (pNHAs) or non-designated sites of ecological/ botanical interest within the site along with notable, rare, or protected flora or fauna were also identified.

There are also local ecological receptors such as trees, hedgerows, woodlands, small mammals, birds, pollinators, and aquatic species which could be impacted by the use of chemical herbicide.

3.4.4 Environmental, Occupational Health & Safety Hazards

In terms of the deployment of a management programme, there are various environmental, occupational health & safety hazards which need to be considered in order to avoid or minimise risks to persons who utilise, work or live within or adjacent to a site as follows:

- As above SUD restrictions and receptors
- Areas of high pedestrian traffic
- Vehicular and pedestrian traffic requiring traffic management
- Areas subject to flooding events *e.g.,* where instream or riverbank works are required
- Presence of overhead and underground power cables and other services
- Presence of other sensitive receptors *e.g.,* livestock, domestic pets, vegetables/crop
- Presence of non-target areas *e.g.,* adjacent dwelling houses, amenity grassland, gardens *etc.*

3.5 Walkover Survey

A detailed walkover survey of the proposed residential development was undertaken on the 14th December 2021. During the walkover survey the characteristics of the invasive species recorded was noted (see Section 4.5.1).

Information was also gathered on the events which may have led to the introduction of the vector material to the site; and, to identify any further risk of dispersal or indeed reintroduction of vector material to the site via a Source – Pathway – Receptor (S-P-R) Analyses.

The walkover survey also afforded an opportunity to identify any additional project and site constraints; and further SUD restrictions & receptors and ecological receptors which may be at risk, again via a Source – Pathway – Receptor (S-P-R) Analyses.

Any environmental, occupational health & safety hazards over and above those identified during the desktop study were also noted (see Sections 4.4.1 – 4.4.4).

3.5.1 Characteristics of the Infestation

During the walkover survey undertaken on the 14th December 2021, I.D. numbers were allocated to each of the infestations for the purposes of reporting on any changes to the baseline going forward. The locations were recorded utilising a GPS (Garmin Oregon 650t). Details of the following baseline information was captured during the walkover survey:

- Accurate records including GPS coordinates and mapping of the extent of above ground plant material and location of outliers during the optimum survey period (where possible) using a trundle wheel and tape measures
- Photographic record of the infestations as a baseline for treatment and monitoring
- Confirmation that a hybrid knotweed species is not present on site
- Nature (maturity, growth patterns, extent of radial or lateral growth) and extent of the infestation including outliers on the site and adjacent lands
- Presence or absence of shade (Japanese knotweed plants under shade often do not flower/seed prior to senescence)
- Seasonal constraints *e.g.* timing, flowering, senescence
- Variations in seasonal plant cycle due to local temperatures (day and night)
- Presence of flowering and seeds *e.g.* inflorescences, seed pods, *etc*.
- Details of plant growth stage *i.e.* shoots, immature plants, mature plants, bonsais, or other sub-lethal growth
- Above and below ground soil conditions (*e.g.* soil type, soil horizon layers, rocky outcrops, parent bedrock type and depth to water table)

Please refer to Section 4.0 for findings of the walkover survey.

3.5.2 Suboptimum Survey Period

The timing of the specialist survey in December 2021 is outside of the optimum survey period for those perennial invasive plant species which die back for the winter months, at the end of each growing season.

During walkovers in the suboptimum period, surveyors make every effort to minimise any seasonal survey constraints using their considerable previous field experience and expertise in carrying out surveys very late or early in the growing season. Typically, a second detailed specialist survey of a site would be undertaken during the optimum survey period; such that the preliminary survey findings can be validated in the absence of any seasonal constraints.

Japanese Knotweed

While Japanese knotweed dies back (goes into senescence) for the winter months and typically does not produce new growth until suitable temperatures are present in spring, the "woody" crowns and dead stems from the previous year's growing period may persist and can still be recorded during surveys carried out in winter and early the following spring.

Whilst such surveys are technically seasonally constrained and do not provide accurate information as to the full extent of an infestation, in the absence of recent disturbance, the presence of crowns and dead woody stems can provide a good proxy for the overall area of an infestation.

There does, however, remain a possibility that surveys undertaken outside of the optimum period could fail to detect the presence of immature plants or indeed an immature infestation which has not yet developed any woody stems (*i.e.* plants which are <2yrs old). Thus, a survey undertaken outside of the optimum survey period can fail to accurately confirm or detect (1) the presence/absence of an immature knotweed infestation (<2 years old) or (2)

the full extent of an infestation where there are immature outlier plants (<2 years old) scattered around a mature infestation.

Spanish Bluebell & Three-cornered Garlic

With respect to Three-cornered garlic (*Allium triquetrum*), new growth may start to appear within a site as early as September while Spanish bluebell (*Hyacinthoides hispanica*) clumps only start to appear in December each year.

Where possible, targeted surveys should be undertaken at the time of year when such species are in leaf *i.e.* Three-cornered garlic is in leaf from September to July, while Spanish Bluebell is typically in leaf from December through to July each year.

There is potential for small clumps of Spanish bluebell to have gone undetected given the extent of cover present, while the survey is outside of the growing period for Three-cornered garlic.

3.5.3 Disturbance & Plant Defence Mechanisms

In addition to seasonal constraints, invasive species may go undetected on a site, if there has been recent disturbance, burial, or soil importation.

It should also be noted that Japanese knotweed can survive for a number of years at considerable buried depths.

Japanese knotweed also exhibits a number of plant defence mechanisms including a response to inappropriate chemical herbicide treatment, known as chemically dormancy, where the plant can remain dormant beneath the ground for a number of years with no above ground leafy green growth (see Appendix II).

It also has the ability to produce a 'bonsai' growth form in response to inappropriate chemical herbicide treatment or cutting. This defence mechanism enables the plants to develop into a cryptic miniature growth form. As a result, it is possible, in the absence of a thorough systematic survey, for outliers to go undetected even if surveys are undertaken during the optimum survey period (see Appendix II).

During walkover surveys, surveyors make every effort to detect the presence Japanese knotweed, using their considerable previous field experience and expertise in carrying out such surveys.

3.5.4 Classification & Legislation

All non-native and potentially invasive species recorded within the site were subsequently checked for a 'listing' under the following risk assessments, classifications, guidance documents and websites (please refer to Appendix I for further details):

- Invasive Species Ireland - risk assessment and classification
- National Biodiversity Data Centre - risk assessment and classification
- NRA (2010 revised) Guidelines on the Management of Noxious Weeds and Non-native Species on National Roads
- Department of Agriculture, Food, and the Marine (DAFM) - Plant Health Trade webpage

All non-native and potentially invasive species recorded were also checked for a listing under the following relevant legislation:

- EU Regulation 1143/2014 on Invasive Alien Species
- Third Schedule: Part 1 of European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011) to 2015, as amended.

Please refer to Section 4.3 for findings in relation to the classification of the species recorded within the site and relevant legislation.

3.6 Source-Pathway-Receptor Analyses

A Source-Pathway-Receptor (S-P-R) model is typically applied to assist in determining the potential for indirect or secondary impacts. A number of factors need to coexist in order for an indirect or secondary impact to occur. Firstly, there must be a risk enabled by the presence of a "*source*" of impact, followed by the existence of a "*receptor*" in the wider environment and a "*pathway*" connecting the source to the receptor. This is referred to as a complete Source-Pathway-Receptor chain.

The source refers to the confined or discrete point from which the impact is released into the environment, the pathway is the route by which the particular impact then travels through the environment and the receptor is the location where the impact occurs.

With respect to the management of Japanese knotweed S-P-R Analyses is a useful tool which can be utilised to assess potential risk of the following indirect impacts:

- Risk of Dispersal (see Section 3.6.1)
- Risk of Water Pollution (see Section 3.6.2)
- Risk of Exposure to Spray Drift (see Section 3.6.2)

Table 3.2 Risk of Dispersal

Source – Pathway – Receptor (S-P-R) Chains
Sources or Origins ▪ Imported soil, gravel, other stone material ▪ Stem fragments from cutting or strimming ▪ Lateral growth from an adjacent property Pathways for Dispersal ▪ **Land** *e.g.* disturbed soils ▪ **Air** *e.g.* strimming, seeds ▪ **Water** *e.g.* drainage ditches, streams, rivers, canals, culverted drainage ditches or stream and gullies leading to a waste or storm water network outfalling to a watercourse or other water features Disturbance Regimes ▪ **Physical** *e.g.* soil disturbance, cutting, grazing ▪ **Chemical** *e.g.* inappropriate spraying ▪ **Natural** *e.g.* rain, flooding, storms

Dispersal mechanisms

- **Biotic** dispersal mechanisms *e.g.* zoochory, hydrochory, anemochory *etc*.
- **Abiotic** dispersal mechanisms *e.g.* agochory, hemerochory, anthropochory *etc.*
- **Vectors** *e.g.* insects, animals, people (footwear), wind, water, tyres of vehicles *etc*.

3.6.1 Risk of Dispersal

With respect to the risk of dispersal of Japanese knotweed vector material within the site of the proposed residential development, an S-P-R Analyses was carried out in order to gather information on the events which led to the introduction of the vector material to the site and to identify any ongoing disturbance regimes which could lead to further dispersal of Japanese knotweed within the site.

The S-P-R Analyses was also utilised to assess the potential risk of vector material being reintroduced to the site at a future date and to identify any control measures which need to be deployed to avoid the repetition of such an event (see Table 4.2).

The following information was collated to inform the S-P-R Analyses:

Dispersal

- Presence of disturbance regimes including disturbed land
- Presence of 'bonsai's', outliers, or evidence of lateral growth
- Presence of sub-lethal bonsai regrowth or chemically dormant Japanese knotweed
- Type and location of existing and proposed infrastructure (above and below ground) within a site relative to the location of the Japanese knotweed infestation
- Distance of the Japanese knotweed infestation from the site boundary
- Socio-demographics of persons with access to the site

Reintroduction

- Planned construction or landscaping works
- Importation of soil, stone to the site
- Presence of Japanese knotweed in adjacent lands

3.6.2 Risk of Water Pollution & Exposure to Spray Drift

An S-P-R Analyses was also completed in respect of the potential for indirect impacts on water quality arising from the use of chemical herbicide or the accidental spillage or release of hydrocarbons from machinery and equipment utilised in the deployment of chemical herbicide. There is also the potential risk of exposure of vulnerable groups, sensitive ecological receptors, and non-target areas to 'spray drift' during the deployment of chemical herbicide. Examples of potential sources, pathways and receptors are detailed in Tables 4.3 and 4.4.

During the walkover survey particular focus was paid to the presence of receptors which may be at risk from the use of chemical herbicide and hydrocarbons. A number of web browsers and geobrowsers Google Streetview, Google Earth Pro and Ordinance Survey Irelands Geohive Mapviewer (http://map.geohive.ie/map viewer.html) were utilised in advance of the walkover to assist in a more targeted survey of these features.

Table 3.3 Risk of Water Pollution & Exposure to Spray Drift

Water Pollution & Exposure to Spray Drift
Sources ▪ Leakage/spillage during pouring/mixing/spraying of chemical herbicide ▪ Spray drift of chemical herbicide due to wind or inappropriate/defective equipment ▪ Leakage/spillage during pouring of hydrocarbons when refuelling, or oils and greases (lubricants) and hydraulic fluids utilised in the maintenance of vehicles or equipment or from poorly maintained or malfunctioning vehicles or equipment Pathways ▪ Stormwater gullies and stormwater drainage networks ▪ Watercourses ▪ Overland surface water flows ▪ Percolation to groundwater ▪ Karstic systems Receptors *Chemical Herbicide* ▪ SUD Restrictions & Receptors ▪ Ecological receptors ▪ NPWS Circular Letter 2/08 *i.e.* Natura 2000 sites, Annex IV species, wild birds, and their habitats ▪ Non-target areas *e.g.* dwelling houses, amenity grassland, gardens *etc*. ▪ Any other site-specific sensitive receptors *Hydrocarbons* ▪ As above ▪ Presence of karstified features or landforms, shallow bedrock, fault zones ▪ Any other site-specific sensitive receptors

Table 3.4 Details of SUD Restrictions & Ecological Receptors

SUD Restrictions & Ecological Receptors

SUD Restrictions & Receptors

- Areas of general public use *e.g.,* playgrounds, parks, footpaths
- Presence of defined vulnerable groups *e.g.,* elderly, pregnant mothers, young children
- Transportation routes *e.g.,* railway corridors
- Sealed surfaces
- Groundwater vulnerable landscape features *e.g.* springs, karst features
- Drinking water abstraction sources *e.g.,* well, borehole, spring, surface water
- European Sites *i.e.* Natura 2000 sites
- Any other SUD restrictions and receptors

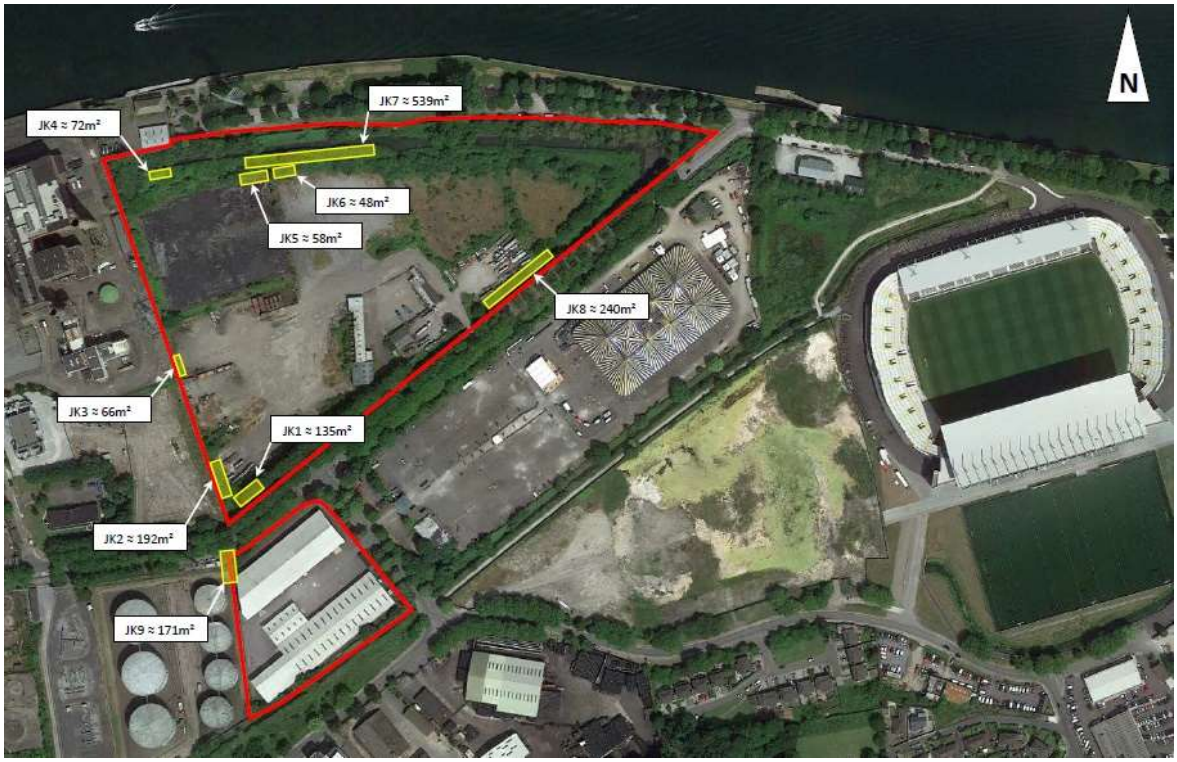
Ecological Receptors

- Other designated conservation areas *i.e.* NHAs and pNHAs
- Habitats and species as per NPWS Circular Letter 2/08 *i.e.* Natura 2000 sites, Annex IV species, wild birds, and their habitats
- Notable, rare, or protected flora and fauna
- Surface waterbodies *e.g.* Drainage ditch (FW4), Depositing lowland river (FW2), Eroding upland river (FW1), ponds, lake, and other aquatic habitats
- Groundwater dependant terrestrial ecosystems (GWDTEs) located down gradient
- Surface water dependant terrestrial ecosystems (SWDTEs) located downstream
- Adjacent ecological receptors *e.g.* trees, hedgerows and woodlands, pollinators, birds, and small mammals
- Any other site-specific ecological constraints

4.0 EXTENT OF INVASIVE SPECIES

4.1 Extent of Japanese Knotweed

During the walkover survey on the 14th December 2021, Japanese knotweed was identified at *n = 8* locations within the overall masterplan boundary (see Figures 4.1-4.2 and Table 4.1).



Photograph 4.1 Extent of Japanese Knotweed within the Overall Masterplan (Source: ARUP)

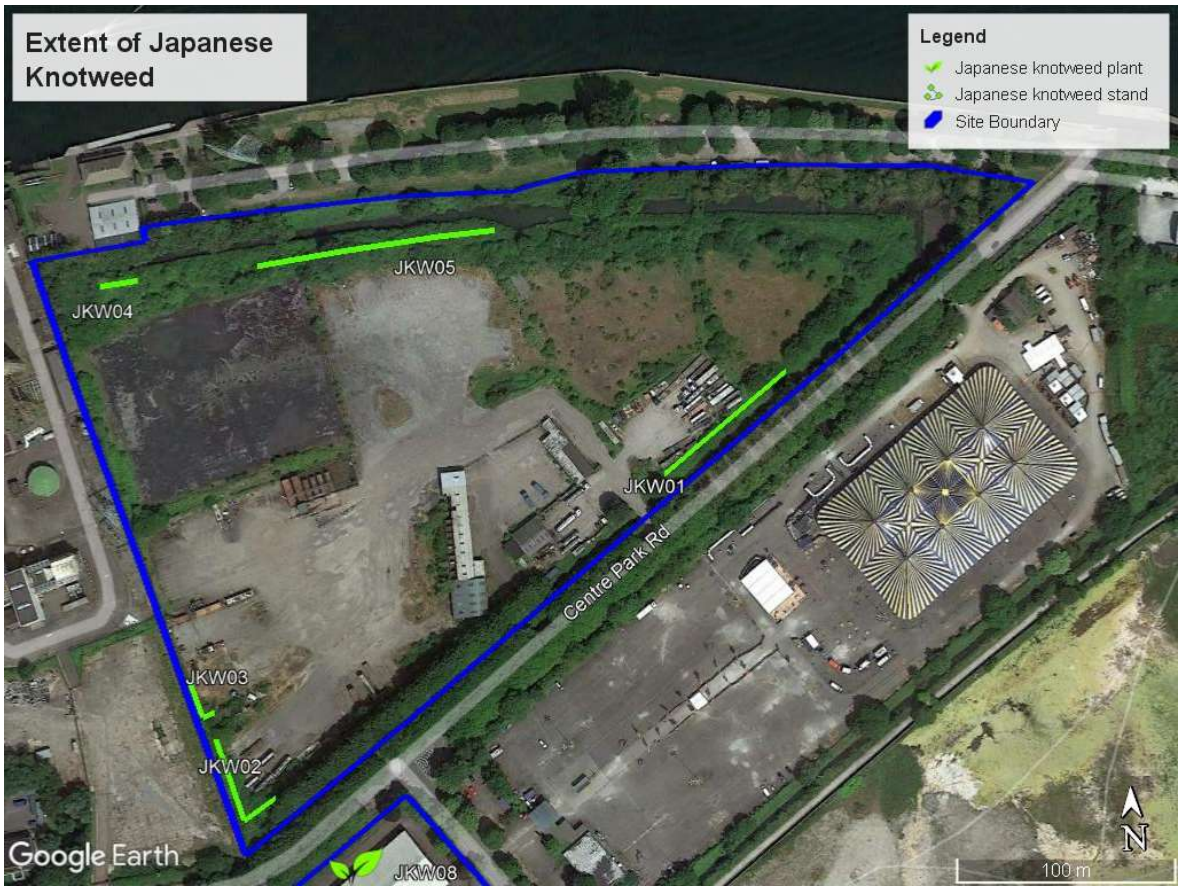
Within Site A, Japanese knotweed was recorded at JKW01–JKW05. The presence and diameter of the "crown" structures, within the stands, would indicate the plants are at least 10 years old. The largest and most mature stands were located at JKW01, JKW04 and JKW05 in the 4.7ha subsite. JKW04 and JKW05 are located along the bank of a large open drainage ditch on the northern boundary of the site (see Figure 4.2).

The specialist survey did not identify Japanese knotweed at JK3 in Site A as per Figure 4.1, however, a knotweed stand (JKW03) was recorded further south along the same boundary (see Figure 4.2). This is likely due to a drafting error.

Japanese knotweed was also recorded within Site B at JKW06-JKW08 (see Figure 4.3).

Additional Japanese knotweed plants over and above those identified in Site B, as per Figure 4.1, were recorded to the rear of the warehouse *i.e.,* JKW07 and JKW08 (see Figures 4.2-4.3). Of note is that JKW07 and JKW08 appear to be growing out from beneath the foundation of the remaining warehouse structure in Site B. JKW06 is located in close proximity to an open drainage ditch on the northern boundary of Site B (see Figure 4.3).

More specific details on the extent of Japanese knotweed in m.sq. at JKW01-JKW08, will be gathered during the targeted specialist site investigation works, to determine volumes of vector material, as the works will make the stands more accessible for surveying (see Section 7.1).



Photograph 4.2 Extent of Japanese Knotweed within Site A
(Source: O' Donovan Agri-Environmental Services)

4.2 Extent of Other Invasive Species

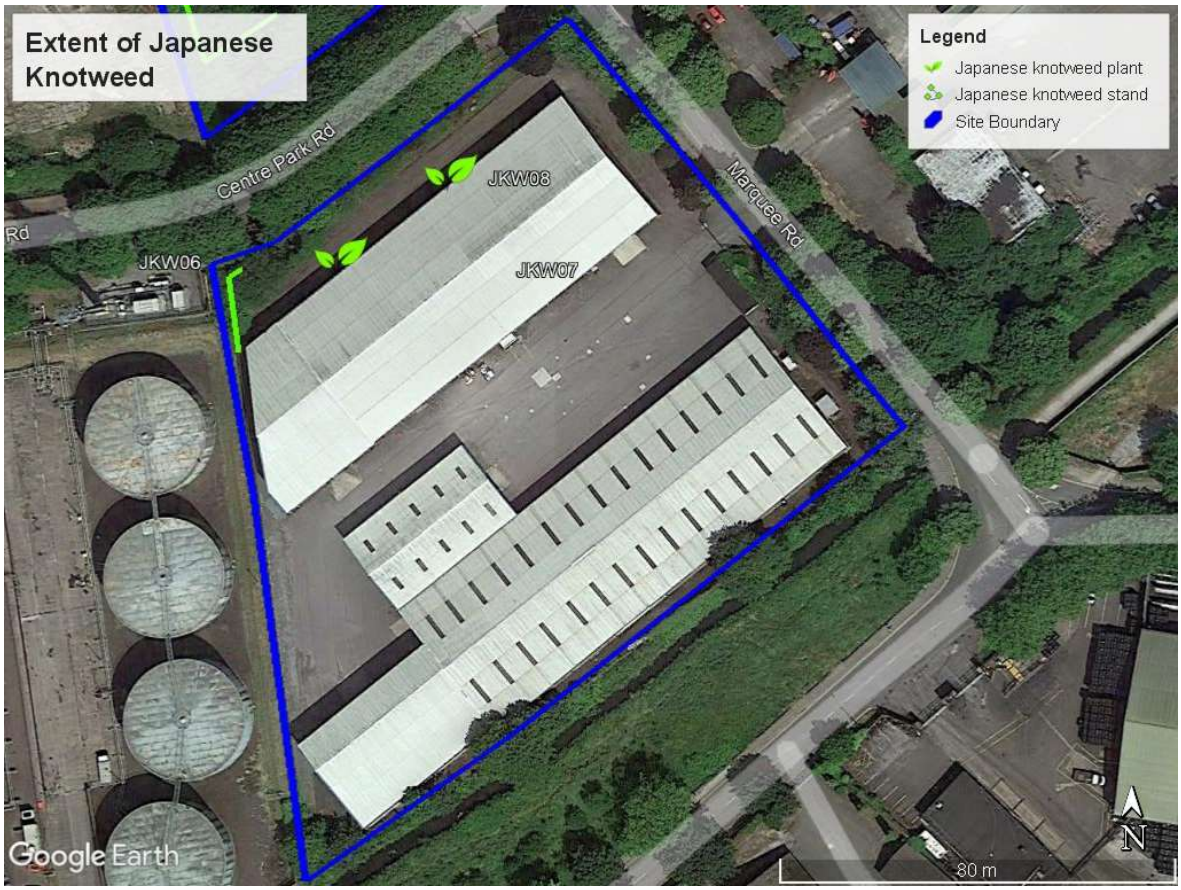
In addition to Japanese knotweed, Buddleia (*Buddleia davidii*), Traveller's joy (*Clematis vitalba*), 2 no. *Cotoneaster* spp., Montbretia (*Crocosmia* x *crocosmiiflora*), Winter heliotrope (*Petasites fragrans*) and Pampas grass (*Cortaderia selloana*) were also recorded at various locations within Site A and Site B (see Table 4.2). Of these species Buddleia was found to be the most dominant invasive species across the entire survey area.

4.3 Classification & Legal Obligations

A total of *n = 8* potentially invasive alien plant species were recorded within the overall masterplan boundary during the walkover survey on the 14th December 2022 (see Table 4.3).

None of the invasives recorded are a regulated species on the "Union list" of 49 No. species under EU Regulation on Invasive Alien Species 1143/2014 ((see http://ec.europa.eu/environment/nature/invasivealien/index_en.htm).

Some of the core provisions of EU Regulation 1143/2014 deal with, among other things, bringing into the territory of the Union, keeping, breeding, transporting, and placing on the market, species included on the list of invasive alien species of Union Concern (*i.e.,* the 'Union list').



Photograph 4.3 Extent of Japanese Knotweed within Site B
(Source: O' Donovan Agri-Environmental Services)

Japanese knotweed is listed under Irish legislation *i.e.* the Third Schedule: Part 1 of the European Union (Birds and Natural Habitats) Regulations 2011 to 2015.

Japanese knotweed is also listed on the Third Schedule: Part 3 which governs the movement of soil or spoil taken from places infested with Japanese knotweed (http://www.irishstatutebook.ie/eli/ 2011 si/477/made/en/print).

Plants listed under the Third Schedule: Part 1: Plants and Part 3: Vector Materials are subject to restrictions under Regulations 49 & 50. Part 3: Vector Materials refers to soil or spoil taken from places infested with Japanese knotweed (*Fallopia japonica*). Regulation 49 deals with the 'Prohibition on introduction and dispersal' while Regulation 50 deals with the 'Prohibition on dealing with and keeping certain species'.

Regulation 50 has yet to be enacted into Irish law. A licence is required from NPWS under Regulation 49(2) to transport vector material off a site.

A Waste License is required under the Waste Management (Licensing) Regulations 2004 from the EPA to bury soil contaminated with vector material within a site.

Table 4.1 Japanese Knotweed at JKW01 – JKW08

Photographs	Details
JKW01	
	Specialist survey on the 14th December 2021
JKW02A	
	Specialist survey on the 14th December 2021

JKW02B	
	Specialist survey on the 14th December 2021

JKW03	
	Specialist survey on the 14th December 2021

JKW04	
	Specialist survey on the 14th December 2021

JKW05A	
	Specialist survey on the 14th December 2021

JKW05B	
	Specialist survey on the 14th December 2021

JKW06A	
	Specialist survey on the 14th December 2021

JKW06B	
	Specialist survey on the 14th December 2021

JKW07	
	Specialist survey on the 14th December 2021

JKW08	
	Specialist survey on the 14th December 2021

Japanese knotweed is classified by the National Biodiversity Data Centre (NBDC) as an invasive species with a "High Impact", while Traveller's joy, Buddleia and Pampas grass are deemed "Medium Impact' species by the NBDC.

Japanese knotweed, Travellers joy, Montbretia, Winter heliotrope and Buddleia are included in the NRA Guidelines on the Management of Noxious Weeds and Non-native Species on National Roads (NRA, 2010) as these species have been shown to have an adverse impact on landscape quality, native biodiversity or infrastructure (https://www.tii.ie/technical-services/environment/planning/).

Japanese knotweed, Traveller's joy and Montbretia are also listed by the Department of Agriculture, Food and Marine (DAFM) on their Plant Health Trade webpage (https://www.agriculture.gov.ie/dontriskit/alieninvasivespecies/).

While Traveller's joy, Montbretia, Winter heliotrope and the 2 no. *Cotoneaster* spp., have not been classified as 'high' and or 'medium' impact species, or have yet to be risk assessed, they are recognised as having invasive qualities and under certain environmental conditions are known to spread locally.

For the purposes of clarity, the 2 no. *Cotoneaster* spp. recorded were not identified as Wall Cotoneaster (*Cotoneaster horizontalis*) a "Medium impact" species.

Table 4.2 Other Invasive Species Recorded Within Site A & B

Photographs	Details
Buddleia	
	Specialist survey on the 14th December 2021
Travellers Joy	
	Specialist survey on the 14th December 2021

Winter Heliotrope	
	Specialist survey on the 14th December 2021

***Cotoneaster* sp.**	
	Specialist survey on the 14th December 2021

***Cotoneaster* sp.**	
	Specialist survey on the 14th December 2021

Pampas Grass	
	Specialist survey on the 14th December 2021

Montbretia	
	Specialist survey on the 14th December 2021

Table 4.3 Invasive Alien Plant Species (IAPS) Recorded

No.	Species Name	EU Regulation 1143/2014	Habitats Regulations 2011 to 2015	NBDC Impact Level	NRA (2010)	DAFM
1	Japanese knotweed		*✓	High Impact	✓	✓
2	Traveller's joy			Medium Impact	✓	✓
3	Buddleia			Medium Impact	✓	
4	Pampas grass			Medium Impact		
5	Montbretia				✓	✓
6	Winter heliotrope				✓	
7/8	*Cotoneaster* spp.					

*Part 1: Plants and Part 3: Vector Materials

5.0 SOURCE-PATHWAY-RECEPTOR ANALYSES

This section of the management plan describes the findings of the Source-Pathway-Receptor Analyses in relation to the risk of dispersing Japanese knotweed within the lands of the overall masterplan boundary and the potential for indirect impacts on water quality arising from the use and/or accidental spillage or release of chemical herbicide or hydrocarbons, from machinery and equipment utilised in the deployment of chemical herbicide.

There is also the potential risk of exposure to 'spray drift' by vulnerable groups, areas of general public use, sensitive ecological receptors and non-target areas during the deployment of chemical herbicide. Examples of potential sources, pathways and receptors are detailed in Tables 5.1 and 5.2.

5.1 Risk of Dispersal

Sources

The walkover survey to identify the potential source of Japanese knotweed vector material and the presence of site-specific disturbance regimes which could result in the dispersal of Japanese knotweed, was undertaken on the 14th December 2021 (see Table 5.1).

It should be noted that there are several potential sources of vector material which could result in the reintroduction and further spread of Japanese knotweed within the overall masterplan boundary in the future (see Table 5.1). These include the importation of vector material within soil, stone, and other material and on machinery or equipment required for site investigation, vegetation removal, demolition, construction, and landscaping works and as a result of the fly-tipping of waste. In the absence of control measures, there is a risk that vector material could be reintroduced to the Site A and Site B via these sources.

Pathways for Dispersal

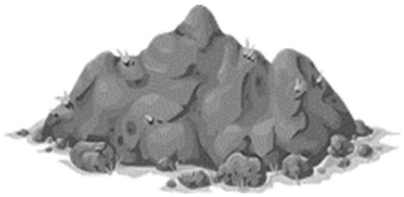
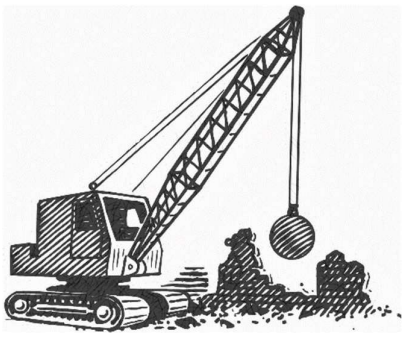
In the event that the Japanese knotweed is not managed in a timely manner there is a high risk that Japanese knotweed will be dispersed within the overall masterplan boundary given the requirement for Geotechnical Site Investigation, vegetation removal, demolition, construction and landscaping works.

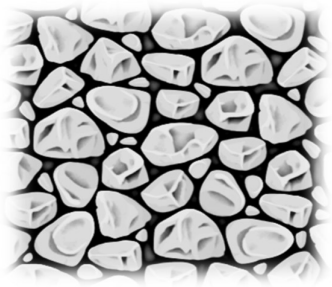
The risk of dispersing Japanese knotweed within the overall masterplan boundary will arise where vector material becomes adhered to (1) the footwear of site personnel/staff, surveyors, and visitors to the site, (2) the tyres of construction related and domestic vehicles in the car park, (3) buckets, tyres, and tracks of plant machinery and on construction/landscaping equipment, or (4) is carried within soil loads.

Vector material could also be transferred to other sites within soil loads, waste arising from demolition and landscaping works, on domestic vehicles, plant machinery and on geotechnical site investigation/vegetation removal/demolition/construction and landscaping equipment.

There is also a risk to land-uses and habitats downstream of the overall masterplan boundary, if viable rhizome or stem fragments were to gain entry into the drainage ditches or washed into stormwater gullies within Site A or Site B, which are connected to the stormwater drainage network which outflow to the River Lee and Cork Harbour.

Table 5.1 Disturbance Regimes at the Proposed Residential Development, Centre Park Road

Disturbance Regime	Description	Control Measures
	**Soil movement** Risk of dispersing vector material in soil loads and on associated plant machinery, site personnel within the site.	Soil movement within the overall masterplan boundary at Centre Park Road should not be undertaken unless authorised by the IAPS Specialist Ecologist.
	**Geotechnical Site Investigation & Demolition works**	Biosecurity measures to be deployed under the supervision of the IAPS Specialist.
	Mowing, Strimming & Vegetation Removal	Mowing & strimming, or other vegetation removal is not permitted within the overall masterplan boundary unless authorised by the IAPS Specialist Ecologist.
	Site Clearance & Main Construction Stage Risk of dispersing vector material in the form of plant fragments by site personnel, site vehicles, plant machinery and visitors to the site.	Biosecurity measures to be deployed under the supervision of the IAPS Specialist.

Disturbance Regime	Description	Control Measures
	Chemical Herbicide Treatment	Chemical herbicide should only be deployed by an IAPS Specialist Contractor.
	Wind There is a risk of the dispersal of plant fragments by wind.	Monitoring and walkover surveys should be undertaken to identify any new outliers for incorporation into the management programme.
	**Importation of Topsoil, Subsoil, Stone, or Fill** There is a risk of introducing invasive species to the Residential development, No. 31-33 Centre Park Road.	Imported topsoil, subsoil and stone into the site should be certified to BS 3882:2015 and BS 8601:2013 to ensure that it is free from IAPS vector material.

During the chemical herbicide treatment process and the recovery of Japanese knotweed vector material there is also a risk pertaining to the accidental dispersal of fragments on the footwear of the Registered Professional User's (RPUs) in the absence of appropriate biosecurity measures.

In the event that the Japanese knotweed was left untreated within the site over a prolonged period of time, there is also a risk that it may spread by lateral growth of rhizomes beneath the ground.

Receptors

Where Japanese knotweed is not adequately managed within the overall masterplan boundary, the adjacent land-uses in the vicinity of the site may be at risk from Japanese knotweed (see Section 3.1 for details).

5.2 Risk of Water Pollution & Exposure to Spray Drift

Sources

While a considerable volume of chemical herbicide will need to be deployed to treat the extensive Japanese knotweed within the overall masterplan boundary, in particular Site A, there is a low risk of contaminants entering groundwater flow paths in Site A and in the northern half of Site B given the nature of the overburden and underlying aquifer.

While there is a higher risk of contaminants gaining entry to the karstified aquifer in the southern half of Site B, there are no invasive species present as the Japanese knotweed is confined to the north-eastern boundary of Site B.

There is also a risk of contaminants entering surface waters via the drainage ditches on the boundaries of Site A and Site B. In particular, during the application of chemical herbicide to JKW04 and JKW05 on the banks of the drainage ditch in Site A, and to JKW06 on the banks of the drainage ditch in Site B.

The accidental spillage or release of larger volumes of chemical herbicide or undiluted herbicide during pouring/mixing/spraying could result in the release of a higher concentration or volume of contaminants.

Given the maturity *i.e.* height of the infestation there is a potential requirement for the use of a Mobile Elevated Work Platforms (MEWPs) and/or compact tractor, in the deployment of herbicide within Site A. In this regard, there is also potential for the accidental spillage or release of hydrocarbons in terms of fuels, oils, greases, and hydraulic fluids.

Pathways for Contaminants

It should be noted that contaminants such as chemical herbicides and hydrocarbons, not only cause localised direct impacts at the spill zone but can also gain access to groundwater, enter surface waters via overland flows and stormwater drainage networks (where present), and finally, can enter surface waters and adjacent lands or habitats via seepages.

Given the absence of bedrock at or near the surface, there is limited hydrogeological connectivity via the direct entry of contaminants to the underlying aquifer or percolation through the overburden in Site A and in the northern half of Site B.

Based on the topography, the overall groundwater flow direction in the bedrock aquifer is inferred as being from south to north. Given the overall direction of the groundwater flow paths, any contaminants which manage to gain entry to groundwater could impact on receptors located downgradient, to the north of the overall masterplan boundary, including the drainage ditches on the northern boundaries, the River Lee and Cork Harbour.

There is also hydrological connectivity between the overall lands and the River Lee and Cork Harbour via the drainage ditches and stormwater gullies within and adjacent to the site. The drainage ditches and stormwater gullies are connected to the stormwater drainage network which discharges to the River Lee and Cork Harbour.

The third and final pathway is the risk of spray drift during the foliar application of chemical herbicide in circumstances where chemical herbicide is deployed during windy conditions or

as a result of the use of inappropriate/defective equipment. Spray drift may travel on the wind, from the use of chemical herbicide within the overall masterplan boundary, and into adjacent properties or land uses.

5.3 SUD Restrictions & Receptors

The following sections identify the various SUD restrictions & receptors which are at risk from the use of chemical herbicide via the pathways identified in Section 5.2.

5.3.1 Areas of General Public Use & Defined Vulnerable Groups

Given that the Japanese knotweed is to be treated within an urban environment there is a risk that a defined vulnerable group could be exposed to chemical herbicide *e.g.* pregnant mothers, elderly persons and children utilising the adjacent public footpath on Centre Park Road, the car parking area and riverside walk along the River Lee, and Shandon Boat Club, and any employees working in adjacent civil or industrial infrastructure.

In summary, there is a potential risk of impacts to the following groups, from the deployment of chemical herbicide to Japanese knotweed within the overall masterplan boundary:

- Members of the general public utilising the adjacent footpath on Centre Park Road, the carparking and walkway along the River Lee, and Shandon Boat Club
- Members of vulnerable groups including children, elderly and pregnant mothers utilising the adjacent footpath on Centre Park Road, the car parking and riverside walkway along the River Lee
- Members of the general public working within adjacent civil infrastructure, industrial units and Shandon Boat Club

Control measures should be deployed to ensure that members of these vulnerable groups and the general public, in particular children, the elderly and pregnant mothers do not come into contact with chemical herbicide. The control measures will focus on minimising spray drift and the avoidance of interactions with these groups when deploying chemical herbicide. These measures will include timing of spraying, preventing access to the areas requiring chemical herbicide treatment and strict adherence to best practice guidance and instructions on the Product Label in order to minimise spray drift (see Section 8.0 for further details).

5.3.2 Groundwater Vulnerable Landscape Features

The results of the desktop study confirmed that while there are no mapped groundwater vulnerable landscape features such as springs or fault zones within the site (GSI Mapviewer) which could be at risk from the use of chemical herbicide, a karstified aquifer is present within the southern half of Site B.

Bedrock outcrops, karstified features or landforms were not recorded within the site during the walkover survey. According to the GSI Mapviewer, there is also a fault zone located to the north. The closest known mapped karst feature is Ballinlough Cave 1707SWK010 which is located 1.0km to the southeast (GSI Mapviewer).

As the use of chemical herbicide is not proposed in the southern half of Site B, there is minimal risk to the karstified aquifer.

5.3.3 Surface Water Abstraction Zones/Drinking Water

The potential for Public Water Supply Schemes, Group Water Schemes, and private supplies within 5km of overall masterplan boundary was examined to assess any potential risk to drinking water supplies from the use of chemical herbicide.

Public Water Supply Schemes (PWSSs)

The public water supply for Cork City and environs is the Lee Road Water Treatment Plant (LRWTP) located immediately upstream of the Salmon Weir on the River Lee. While there is hydrological connectivity between the lands within the overall masterplan boundary and the River Lee, the drainage ditches and the stormwater network within Site A and Site B outfall to the River Lee downstream of the Salmon Weir. Therefore, no constraint exists in relation to this drinking water abstraction zone.

There is no known well on site.

National Federation of Group Water Schemes (NFGWS)

There are no NFGWS drinking water abstractions within 5km of the site (Ireland's Group Water Schemes (nfgws.ie).

Table 5.2 Potential Groundwater Abstraction Sources

Abstraction Type	Yield (m^3)	Data Source	Distance	Connectivity
		Groundwater Abstractions		
Borehole 1407SEW065	1527.75 (Excellent)	GSI	1.875m to SW	1955
Borehole 1407SEW061	Unknown	GSI	1010m to W	1964
Conglomerate of boreholes Glover SI Ltd.	Unknown	GSI	935m	2002. Described as window sampler. No connectivity
Ballyphilip WS1707SWW085	27.3 (poor)	GSI	1275 to SE	1899
Conglomerate of boreholes	Unknown	GSI	460m to S	1998

Groundwater Source Protection Area

The closest Groundwater Source Protection Area is located greater than 10km to the north and south of the overall masterplan boundary at Minane Bridge and Carrignavar.

Boreholes, Wells & Springs

The results of the desktop study for vulnerable landscape features identified a number of historic groundwater fed supplies *i.e.* wells and boreholes within the study area in the vicinity of the overall masterplan boundary (see Table 5.2). A conglomerate of recent boreholes

(2002) was identified; however, these were described as being for window sample purposes (GSI Mapviewer).

Consultation is required with Cork City Council to confirm that these wells are no longer in use/there is no risk to water supplies (see Table 5.2).

While there is potential for additional private wells which may not be indicated on the GSI Mapviewer, the city is generally served by the local authority main drinking water supply rather than directly from groundwater wells, therefore, active domestic private wells are not likely to be located within the study area. It is therefore not envisaged that local domestic water supplies will be impacted by the use of chemical herbicides.

In light of the above, it is unlikely that drinking water supplies will be impacted by the use of chemical herbicide within the lands of the overall masterplan boundary.

5.3.4 Natura 2000 Sites

As per Section 5.2, there are hydrological pathways between the overall masterplan boundary and the River Lee/Cork Harbour via the presence of 1st order drainage ditch tributaries and the stormwater drainage network which also outfalls to the River Lee and Cork Harbour.

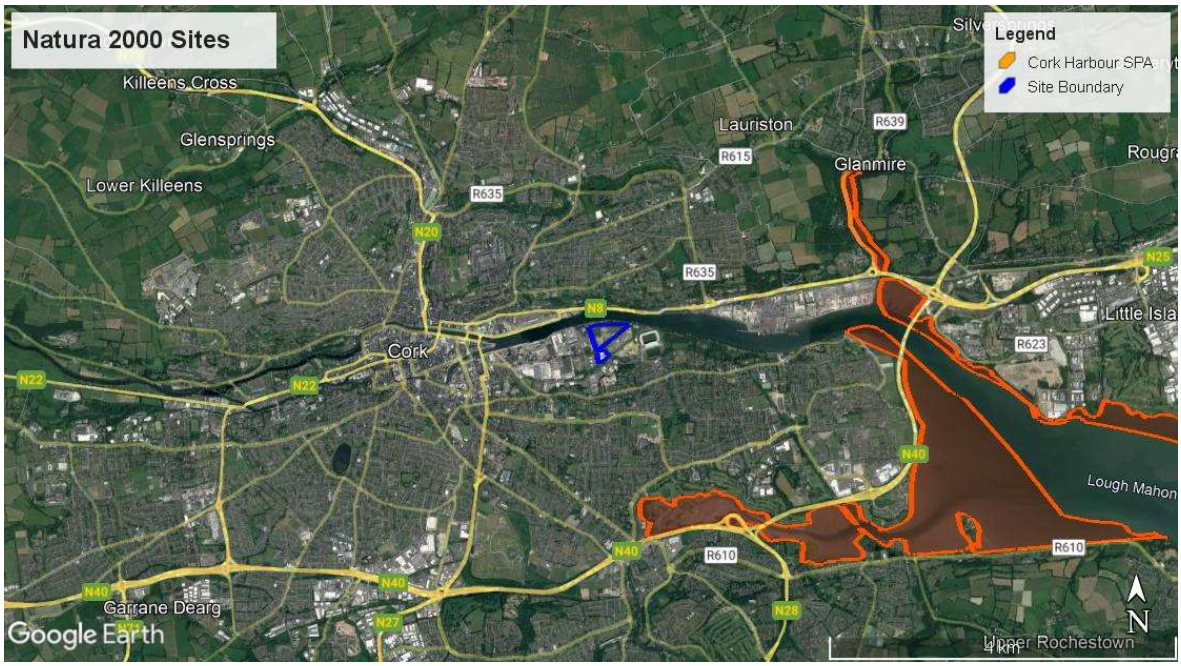


Figure 5.1 Distance from Natura 2000 Sites
(Source: Google Earth Pro and NPWS Map Data)

While a karstified aquifer, underlies the southern half of Site B, there is no requirement to utilise chemical herbicide at this location, given that the Japanese knotweed in Site B is confined to the north-eastern boundary. In this regard there is limited potential hydrogeological pathways between the lands within the overall masterplan boundary and any ecological receptors located downgradient or to the north of the proposed residential development *i.e.* the River Lee and Cork Harbour.

In the event that chemical herbicide was to percolate into the karstified aquifer or gain entry to the drainage ditches or stormwater network (via storm water gullies within the site) there is a low risk of impacts to the lower reaches or the brackish intertidal zone of the River Lee and the marine habitats of Cork Harbour which are designated as Cork Harbour SPA (Site Code: 004030), located at least 2.4km (at its closest point) to the east of proposed residential development, given the distance and dilution effects.

5.4 Ecological Receptors

In addition to the Natura 2000 sites identified in Section 5.3.4, the lower reaches of the River Lee and the marine habitats of Cork Harbour are also designated as Douglas River Estuary proposed National Heritage Area [1]pNHA (Site Code: 001046) and Dunkettle shore pNHA (Site Code: 001082).

In the event that chemical herbicide was to percolate into the karstified aquifer or gain entry to the drainage ditches or stormwater network (via storm water gullies within the site) there is a low risk of impacts to Douglas River Estuary pNHA and Dunkettle Shore pNHA located at least 1.9km (at the closest point) to the east of the overall masterplan site, given the distance and dilution effects.

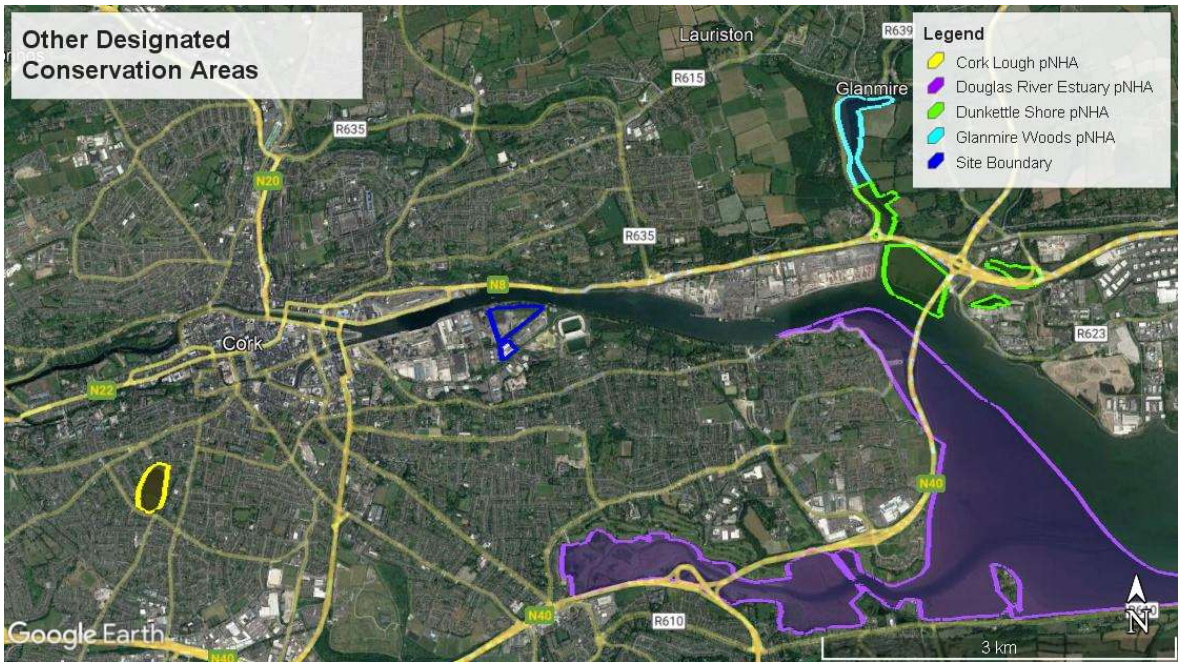


Figure 5.2 Distance from Other Designated Conservation Areas
(Source: Google Earth Pro and NPWS Map Data)

[1] The Irish Wildlife (Amendment) Act 2000 provides for the designation and conservation of Natural Heritage Areas (NHAs); which are sites that support features of importance at a national level. A list of approximately 630 No. proposed NHAs (or pNHAs) was published on a non-statutory basis in 1995, however, these pNHAs have not been statutorily proposed or designated since that time. The pNHAs cover approximately 65,000ha and designation is to proceed on a phased basis over the coming years. Prior to statutory designation, pNHAs are subject to limited protection (see https://www.npws.ie/protected-sites/nha for details).

While the lands within the overall masterplan boundary are located at least 2.9km northeast of Cork Lough pNHA (Site Code: 001081) there is limited hydrological or hydrogeological connectivity given the overall direction of groundwater flow and the fact that the stormwater network outfalls to the River Lee.

Outside of the designated conservation areas within Cork Harbour, there are non-designated groundwater (GWDTEs), surface water dependant terrestrial ecosystems (SWDTEs) and aquatic species within the River Lee which could be impacted upon by the spillage of chemical herbicide given the presence of drainage ditches and the stormwater drainage network which discharge directly to the River Lee. There are limited terrestrial ecosystems adjacent to the overall masterplan boundary which could be impacted, given the contextual framework of the surrounding urban environment.

Aside from designated and non-designated habitats in the wider landscape, there are also local ecological receptors within or adjacent to the site which could be impacted by spray drift including:

- Woody scrub/shrub/trees supporting pollinators, birds, and small mammals
- Pollinators, birds, and small mammals

Pollinators, birds, and small mammals may utilise vegetation including Japanese knotweed and other invasive species for cover, nesting, or foraging. Therefore, pollinators, birds and small mammals are at risk from the use of chemical herbicide, where it is directly applied to Japanese knotweed, or from the effects of spray drift on adjacent woody scrub/shrub/tree vegetation and non-target areas.

Control measures should be deployed to protect ecological receptors from indirect impacts arising from the use of chemical herbicides.

5.5 Environmental, Occupational Health & Safety Hazards

Aside from the SUD restrictions and receptors outlined in Section 5.4, there is a potential risk of impacts to other groups of people from the deployment of chemical herbicide including:

- RPUs deploying the chemical herbicide to Japanese knotweed
- Site personnel/staff completing site investigation, vegetation removal, demolition and construction works
- Surveyors gathering data for ecological assessments, engineering purposes *etc*
- Caretakers for the site

Control measures should be deployed to ensure that caretakers, surveyor and site staff at the site investigation, vegetation removal, demolition, construction and landscaping stage do not come into contact with chemical herbicide.

Registered Professional User's (RPUs) involved in the handling of chemical herbicide, and the operation of sprayers, may also interact with chemical herbicide via direct contact with skin, inhalation, and ingestion, where appropriate Personal Protective Equipment (PPE) such as gloves and breathing apparatus are not worn.

In addition, there is a risk to non-target areas including the adjacent industrial unit, civil infrastructure and the riverside walk from spray drift or accidental spraying. Control measures should also be deployed to minimise spray drift and accidental spraying.

The IAPS Specialist Contractor should acquire information pertaining to the presence of overhead and underground cables and other services at the site in order to inform the Method Statement and Risk Assessment for any management programme where equipment or plant machinery could come into contact with services present within the works area.

Traffic management may also be necessary to facilitate access by plant machinery to the lands within the overall masterplan boundary during the management of Japanese knotweed, given the site is located off an urban street Centre Park Road.

6.0 PROJECT & SITE CONSTRAINTS

Of the 8 no. invasive species recorded, Japanese knotweed is the only species which is listed in environmental legislation, and which could interfere with future infrastructure within the overall masterplan boundary, in terms of accessing existing weaknesses or joints in bitumen, concrete work, stone masonry and hard standing areas; thus, causing impacts to hard landscaping or services (see Section A. of Appendix II).

There are extensive mature stands of Japanese knotweed within the lands of the overall masterplan boundary. In particular, stands JKW01, JKW04 and JKW05 are well established and are at least 10 years old. These stands are located in the 4.7ha subplot of Site A, for which planning is currently being sought. As such the eradication of Japanese knotweed from these locations is time sensitive, given the intention to develop these lands, if and, when planning is granted.

Japanese knotweed plants can exhibit a tolerance for chemical herbicide and can deploy plant defense mechanisms where a sub-lethal dose is applied, leading to the production of sub-lethal bonsai regrowth and/or chemical dormancy (see Section A. Japanese knotweed of Appendix II).

Available information would suggest that the Japanese knotweed within Site A and Site B has not been treated previously with chemical herbicide or at least in recent times. Therefore, the possibility that mature rhizome networks may be lying dormant below ground outside of the recorded stands at JKW01-JKW08, as a result of past chemical herbicide use within the site, is deemed unlikely. Similarly, the presence of cryptic sub-lethal regrowth is not anticipated (see Table A.3 in Appendix II).

There is, however, a possibility that Japanese knotweed may have been missed given: (1) the timing of the survey was outside of the optimum survey period, (2) the presence of disturbance regimes, (3) difficulties gaining access due to dense vegetation, and (4) due to the steep vegetated banks of the drainage ditches in Site A.

The lands within the overall masterplan have been the subject of a number of disturbance regimes including past demolition works, and possibly fly-tipping, which could have disturbed and/or buried knotweed. JKW06 is growing from a spoil heap of construction and demolition waste in Site B.

Of note is that the Japanese knotweed stands at JKW04, JKW05 and JKW06 are located in close vicinity to drainage ditches. The application of chemical herbicide in these areas needs to take into account the presence of hydrological connectivity with the River Lee and Cork Harbour.

The Japanese knotweed at JKW07 and JKW08 appears to be growing out from underneath the foundations of the warehouse in Site B. The plants growing out from underneath the foundations of the structure need to be treated *in situ* with chemical herbicide via foliar application of herbicide and stem filling to accelerate the eradication process prior to the completion of demolition works to facilitate future proposed residential development.

The deployment of a 3 yr (up to 5yr) chemical herbicide treatment programme *in situ* is not considered a feasible option in respect of the overall masterplan boundary, as the eradication of Japanese knotweed from JKW01-JKW08 is time sensitive, given the intention to develop these lands.

The Japanese knotweed at JKW01-JKW08 was treated by foliar application of chemical herbicide in October 2021 and is due to undergo stem harvesting followed by stem filling with chemical herbicide in the coming weeks (see Section 7.1.5).

Given the extent of lands present within the overall masterplan boundary, the option of burial onsite should be considered. The feasibility of burying vector material onsite will depend on the layout of the future planned residential development within the overall masterplan boundary, and on a number of other factors which need to be taken into account in the selection of a suitable onsite burial location (see Section 7.1). A number of these factors may limit the dimensions of a burial cell, and hence the volumes of vector material which can be buried onsite *e.g.,* depth to bedrock. It should be noted that the permanent presence of an onsite burial cell will impinge on future land uses in the footprint of the cell and will require monitoring.

The potential presence of contaminants within the sites, such as hydrocarbons, could also influence the ability to bury Japanese knotweed vector material onsite, where hydrocarbons are detected within the vector material.

Aside from potential difficulties of soils contaminated with hydrocarbons, the onsite burial of vector material requires a Waste License under the Waste Management (Licensing) Regulations 2004. A Waste Licence application could result in delays to the construction programme and as well as the costs associated with providing the necessary documentation and environmental assessments to inform the process.

An alternative option is to transport the vector material offsite to a licensed waste facility for deep burial or for thermal treatment.

A cost-benefit analysis of disposal offsite versus burial onsite is required, given the potential presence of contaminated soils and the pending construction programme. It should be noted that the presence of other contaminants within the vector material may also have a cost implication, as the cost per tonne for disposal offsite is likely to be higher.

In circumstances, where there aren't immediate plans to develop all lands within the overall masterplan boundary, an alternative option would be to recover the vector material from JKW01, JKW04 and JKW05 within the 4.7ha subplot and consolidate it at a location such as JKW02 and JKW03 within Site A, where it can be stored in a temporary holding facility for further treatment to reduce the volumes of viable vector material. The location of JKW02 and JKW03 would be ideal, given the existing presence of Japanese knotweed which would avoid the setting up of such a facility on lands which do not already contain Japanese knotweed.

In order, for this option to be feasible a minimum of 3 years would be required to facilitate treatment at JKW02/JKW03 which would impede the development of these lands within the overall masterplan boundary for this extended period of time. Any remaining viable vector

material, in Year 3, could be transported offsite under licence from NPWS. The feasibility of this approach would depend on future plans and timing of the construction programme for this land.

7.0 BEST PRACTICE METHODOLOGY

There are a number of best practice management programmes which can be deployed to control or eradicate Japanese knotweed from the lands within the overall masterplan boundary as follows:

- Option 1: Chemical Herbicide Programme (treatment *in situ*)
- Option 2: Recovery of Vector Material & Burial Onsite
- Option 3: Recovery of Vector Material & Disposal Offsite
- Option 4: Installation of Japanese Knotweed Rhizome Barrier
- Option 5: Recovery of Vector Material & Construction of a Bund Facility

In light of the project constraints discussed in Section 6.0, the most practical management programmes for Japanese knotweed within the lands of the overall masterplan boundary are **Option 2 - Recovery & Burial Onsite** or **Option 3 - Disposal Offsite** of the vector material (see Section 7.1 and 7.2 for details). Table 7.1 and 7.2 details the optimum periods for the deployment of these management programmes.

Table 7.1 Optimum Periods for the Management of Japanese Knotweed

Management Programmes	J	F	M	A	M	J	J	A	S	O	N	D
1. Chemical Herbicide Programme												
*Spraying												
#Stem Filling												
#Stem Injecting												
2. Recovery & Burial Onsite												
Site Investigation												
#Pre-treatment (see Table 7.2)												
Recovery and burial onsite												
3. Recovery & Disposal Offsite												
Site Investigation												
#Pre-treatment (see Table 7.2)												
Recovery and Disposal Offsite												
4. Installation of a Rhizome Barrier												
Installation of a Rhizome Barrier												

Table 7.2 Optimum Periods for Pre-Treatment prior to Recovery

Pre-treatment	J	F	M	A	M	J	J	A	S	O	N	D
*Spraying only												
#Spraying and Stem Filling Combination												
#Spraying and Stem Filling Combination												

*Timing is dependent on seasonal factors *i.e.* onset of flowering/seeding and before senescence

#Ideally stem filling and stem injecting should also be undertaken during the optimum treatment period to achieve a maximum effective reduction in the viability of the underground rhizome network

7.1 Option 2 - Recovery & Burial Onsite

This management programme involves the recovery of the vector material followed by encapsulation within a burial cell onsite.

There are a number of site constraints which will determine the feasibility of burying vector material onsite (see Section 6.0). In particular, burial onsite requires the availability of suitable lands for the construction of cell. The dimensions of the burial cell will depend on the volumes of vector material and extent of suitable lands available for burial, including the presence of underground services, depth to bedrock and the water table.

The site-specific tasks which need to be completed in respect of this management programme are outlined in Table 7.3.

Most notably a Waste License is required under the Waste Management (Licensing) Regulations 2004 from the EPA to bury soil contaminated with vector material within a site.

Table 7.3 Site-Specific Tasks

Tasks	Description	Status
Task 1	IAPS Specialist Ecologist to undertake a specialist walkover survey of the lands within the overall masterplan boundary at Centre Park Road	Completed on the 14th December 2021
Task 2	Comer Group (Ireland) Ltd. to implement Biosecurity Protocols and Control Measures in conjunction with the IAPS Specialist Ecologist to avoid further spread: ▪ Set up of Exclusion Zones Avoid disturbance regimes highlighted in Table 5.1	Completed
Task 3	IAPS Specialist Ecologist to prepare an Invasive Species Management Plan	Completed (subject of this document)

Tasks	Description	Status
Task 4	IAPS Specialist Ecologist to prepare a Risk Assessment & Method Statement for the recovery of vector material	To be completed
Task 5	Soil testing to be undertaken to ensure that the vector material is acceptable for burial onsite *i.e.,* Waste Acceptance Criteria (WAC) Analysis	To be completed
Task 6	IAPS Specialist Ecologist to supervise specialist site investigation works to inform volumes for disposal	To be completed
Task 7	Comer Group (Ireland) Ltd. to undertake targeted geotechnical site investigations at the location of the proposed onsite burial cell to determine suitability of lands	To be completed
Task 8	Comer Group (Ireland) Ltd. to apply to the EPA for a Waste Licence	To be completed
Task 9	Comer Group (Ireland) Ltd. to excavate the burial cell to accommodate the vector material	To be completed
Task 10	IAPS Specialist Ecologist to supervise the lining of the burial cell, and the recovery and encapsulation of the vector material	To be completed
Task 11	O' Donovan Agri-Environmental Services to undertake a 2-yr Monitoring Programme for Japanese knotweed regrowth. Spot treatment with chemical herbicide will be undertaken where required	To be completed

7.1.1 Assessment of Land Suitability

Burial onsite requires the availability of suitable lands for the construction of a burial cell.

A. When undertaking a suitability assessment for the establishment of a burial cell on site, the following should be considered:
   - A 10m setback from a site boundary
   - An appropriate setback from a watercourse, wetland or other sensitive receptor
   - An appropriate setback from a designated conservation area
   - Depth to water table
   - Depth to bedrock
   - Depth to/or absence of services
   - An appropriate setback from existing and proposed infrastructure
   - Preference for green open space or car park area (*i.e.* little or no infrastructure constructed above or in the vicinity of the cell)

B. Depth of the burial cell (depends on volumes and extent of lands available). There are two options available:
   i. **2m buried depth** if fully lined/encapsulated with a rhizome barrier. All seams should be overlapped and sealed with lap tape before backfilling to 2m deep with suitable material such as inert fill or topsoil

   ii. **>5m buried depth** if unlined. A horizontal layer of rhizome barrier should be placed over the vector material. All seams should be overlapped and sealed with lap tape before backfilling to 5m deep with inert fill or topsoil

C. Nature, type, location and extent of infrastructure, land-use and future works proposed on the site relative to the proposed location for a burial cell

7.1.2 Typical Sequence of Works

The typical sequence of works for burial onsite is as follows:

1. Complete a specialist walkover survey
2. Pre-treatment of the Japanese knotweed with a non-persistent chemical herbicide to achieve tissue viability reduction prior to recovery
3. Complete targeted site investigation to determine an estimate of volumes of vector material for disposal
4. Excavate and prepare the burial cell and line with rhizome barrier
5. Recover *i.e.,* excavate the vector material from within the 7m buffer (depending on results of site investigation) and place within the burial cell or a temporary holding facility until such time as the burial cell is ready to receive the vector material, under strict biosecurity protocols
6. Seal the rhizome barrier within the burial cell once all vector material has been added
7. Backfill the excavation to a depth of 2m
8. Take GPS coordinates of the burial cell location
9. Undertake monitoring

A rhizome barrier is required to facilitate the encapsulation of knotweed in a lined onsite burial cell 2m deep (or as a horizontal layer over vector material buried to a depth of 5m).

Hy-tex C3 root barrier is an example of a triple coated linear barrier, which is UV stabilised and highly resistant to natural acids, alkalis, bacteria, and fungi. The barrier is predicted to be durable for over 50 years in natural soils with a pH of between 4 and 9 and soil temperature lower than 25°C. All joints should be overlapped and sealed with HDPE backed bitumen Root Barrier Lap tape which is supplied in 300mm x 20m reels (https://www.hy-tex.co.uk/docs/geotextiles/Root_Barrier_C3/r_rbc3_03.pdf). Hy-tex C3 membrane can be supplied in rolls up to 4.00m x 100.00m long, as a special order, to reduce laps and the membrane can be site welded to form larger sheets with improved joint integrity.

7.1.3 Geotechnical Site Investigation

Geotechnical site investigation of the proposed location for the burial cell and details of existing services, which may be present within the proposed burial site, is required to confirm suitability/extent of available lands.

Geotechnical site investigation should include the opening up of a trial pit in the selected burial location in advance of the commencement of recovery works to determine suitability of the lands in terms of depth to bedrock, water table and presence/absence of services *etc*.

7.1.4 Targeted Specialist Site Investigation

Specialist Japanese Knotweed site investigation works are required to determine the volumes of vector material for burial on site.

While the standard conservative radial buffer zone proposed for the potential lateral growth of rhizomes is 7m with a below ground vertical buffer zone of 4m deep (NRA, 2010), based on the experience of the authors and recent published scientific literature, rhizomes do not typically extent beyond 3m laterally and 2.5m deep (see Section 8.2). In this regard, it is recommended that targeted site investigation is undertaken to determine the actual extent of rhizomes and to determine more accurate volumes of vector material which may require recovery and burial onsite. Typically, site investigation will reduce the volume of vector material for burial onsite or transportation offsite in comparison with the standard conservative 7m radial buffer zone proposed by NRA (2010).

It is recommended that site investigation works are undertaken by an IAPS Specialist Contractor to determine the actual extent of rhizomes and vector material. The works should be carried out under strict biosecurity & site hygiene protocols and should be supervised by the IAPS Specialist Ecologist.

Care should be taken to minimise the disturbance and fragmentation of rhizomes during this process, where possible.

Once the volumes for recovery are known, this information can be utilised to inform the size of the burial cell. Where the volumes identified from the site investigation process can be accommodated via burial onsite, the Japanese knotweed should be pre-treated prior to recovery to reduce the viability of the rhizomatous material to be excavated and buried.

7.1.5 Pre-treatment

Prior to recovery, it is first necessary to pre-treat the Japanese knotweed *in situ* with an appropriate chemical herbicide to reduce the viability of any above ground or below ground material, and to minimise dispersal of viable material during recovery process.

Based on the extensive experience of the specialist project team in the successful eradication of IAPS from sites, it is deemed **extremely effective**, beneficial, and advisable to pre-treat invasive rhizomatous material, with a suitable non-persistent chemical herbicide, to minimise the risk of accidentally dispersing highly viable rhizomes during the recovery of vector material, and indeed, the transportation of highly viable vector material on the public road network and for deep burial at the receiving facility. Pre-treatment will reduce the risk of regrowth within the lands of the overall landscape masterplan and at the receiving waste facility.

Pre-treatment is therefore a pre-requisite when dealing with problematic invasive species which can regrow from fragments of rhizomes or stems.

Ideally pre-treatment should take place during the optimum treatment period where feasible (see Tables 7.1 and 7.2) subject to the plant's growth stage and local day and night temperatures. Pre-treatment can involve the foliar application of chemical herbicide only and stem harvesting followed by stem fillings where time constraints allow (see Table 7.2)

In this regard, the timing of the recovery works needs to strike a balance between deploying herbicide during the optimum treatment period for Japanese knotweed, allowing a sufficient period of time for the maximum effective dose of herbicide to accomplish a reduction in tissue viability, and the need to meet with contractual commitments *i.e.* the construction programme.

As discussed in Section 6.0 the Japanese knotweed plants within the overall masterplan boundary were treated with chemical herbicide by O' Donovan Agri-Environmental Services in October 2021.

It is important that a non-persistent herbicide is utilised in the pre-treatment of Japanese knotweed, which is proposed for burial onsite, in order to avoid classification of the soil containing the vector material as hazardous; which would deem the vector material unsuitable for burial onsite and result in the material needing to be disposed of offsite at a licenced receiving facility.

7.1.6 Recovery Process

The excavation of the IAPS vector material should be supervised by an IAPS Specialist Ecologist to ensure (1) compliance with biosecurity & site hygiene protocols, and (2) that all visible rhizomatous material is recovered.

Utilising the presence of surface vegetation and findings of the site investigation process, in relation to the extent of rhizomes as a guide, care should be taken to recover all rhizomatous material within the footprint of the stands to minimise the risk of regrowth.

The excavator should dig and extract the vector material and set it into the pre-lined burial cell, if burying 2m deep, or into an unlined cell if 5m deep, or load in onto a dumper for

transportation to a temporary holding facility within the site, for burial at a later date; until such time as the cell is ready (see Section 7.1.6).

During the recovery process, the excavator should be operated so as to facilitate the monitoring of the excavation by the IAPS Specialist Ecologist, by gently pulling back the soil layers to expose the rhizomes such that they can be tracked until the growing tip (white where new growth is present) is located.

Depending on the depth of rhizomes uncovered, the Topsoil and Subsoil *i.e.* Horizon A and B soil layers may need to be removed until the Horizon C layer, consisting of loose weathered parent bedrock, is exposed. The loose parent bedrock material within the Horizon C layer should be carefully scraped with the bucket of the machine to track and remove any rhizomes which have penetrated crevices, crack, or fissures in the bedrock. Where required a rock breaker should be utilised to open up any friable bedrock layers to remove rhizomes which may have penetrated crevices, crack or fissures in the bedrock. The use of hand tools such as hammers and chisels, in localised areas, should also be considered. All contaminated rock material should be recovered.

There may also be a requirement for waste separation, for example, where Japanese knotweed is growing through construction and demolition waste or large pieces of woody debris. Such works should be supervised by the IAPS Specialist Ecologist, in order to identify waste which can be declared free of vector material, and which can enter normal waste disposal streams.

7.1.7 Temporary Holding Facilities

Temporary storage and doubling handling of the vector material should be avoided where possible. However, where required excavated materials can be stockpiled within an existing area already contaminated with vector material or on 1200-gauge polythene (or similar heavy-duty plastic) via side casting with the excavator and covered, where required, until such time as it is ready to be transported off site (or to a burial cell).

7.1.8 Monitoring Programme

The location of the burial cell should be surveyed, to record accurate GPS Coordinates, to inform any future maintenance or construction works at the location of, or in the vicinity of the burial cell.

Monitoring involves an assessment of the presence/absence of above ground regrowth or new growth of IAPS at both the donor site (former location of the Japanese knotweed stands) and at the recipient site (location of the burial cell) based on a detailed walkover, to be undertaken at the beginning, in the middle of and on completion of the growing season by an IAPS Specialist Ecologist for a minimum of 2 yrs post-completion of burial onsite. Spot treatment of growth from any remaining Japanese knotweed vector material is be undertaken as required.

7.2 Option 3 - Recovery & Disposal Offsite

All other options need to be thoroughly explored prior to arriving at the decision to select offsite disposal as a solution for Japanese knotweed control/eradication.

Offsite disposal is typically the last resort when dealing with Japanese knotweed, because of the risk of dispersal associated with recovering and transporting knotweed, and the possible prohibitive costs.

The positives of disposal offsite relate to the fact that there will be no permanent burial cell beneath the site, which could pose a risk of regrowth (whether perceived or actual), and which could impinge on future land uses and possibly even property values.

Offsite disposal options include deep burial at EPA licensed landfill facilities in Ireland, or any other sites where approval/licenses can be acquired from the EPA and NPWS. As there is a limited number of waste facilities in Ireland which can accommodate Japanese knotweed, export to mainland Europe for thermal treatment is also a viable disposal route.

Prior to recovery, it is first necessary to pre-treat the Japanese knotweed *in situ* with an appropriate chemical herbicide to reduce the viability of any above ground or below ground material and to the minimise dispersal of viable material during recovery and transportation. Pre-treatment will also reduce the risk of regrowth at the site and at the receiving waste facility (if going for deep burial). Once completed the vector material can be recovered and transported off site in order to permit construction works to proceed.

A license is required from NPWS in order to facilitate the offsite disposal of Japanese knotweed vector material at a receiving facility. The following information is required by NPWS to process a license application:

- Letter of acceptance from the receiving facility
- Waste Collection Permit Number from the National Waste Collection Permit Office (NWCPO) for the haulage company
- Japanese Knotweed Management Plan
- Method Statement and Risk Assessment

The site-specific tasks which need to be completed in respect of this management programme are outlined in Table 7.4.

Table 7.4 Site-Specific Tasks

Tasks	Description	Status
Task 1	IAPS Specialist Ecologist to undertake a specialist walkover survey at the site of the proposed residential development at No. Centre Park Road	Completed on the 14th December 2021
Task 2	IAPS Specialist Ecologist to supervise specialist site investigation works to inform volumes for disposal	To be completed

Tasks	Description	Status
Task 3	IAPS Specialist Ecologist to prepare an Invasive Species Management Plan	Completed (subject of this document)
Task 4	IAPS Specialist Ecologist to prepare a Risk Assessment & Method Statement for the recovery of vector material	To be completed
Task 5	Comer Group (Ireland) Ltd. to implement Biosecurity Protocols and Control Measures in conjunction with the IAPS Specialist Ecologist to avoid further spread: ▪ Set up of Exclusion Zones ▪ Avoid disturbance regimes highlighted in Table 5.1	Completed
Task 6	Soil testing to be undertaken to ensure that the vector material is acceptable to the receiving facility *i.e.,* [2]Waste Acceptance Criteria (WAC) Analysis	To be completed
Task 7	Identify a suitable receiving facility *e.g.,* a licensed EPA landfill facility or other waste receiving facility for thermal treatment	To be completed
Task 8	Comer Group (Ireland) Ltd. to apply for a Letter of Acceptance from the receiving facility	To be completed
Task 9	Acquire details of the waste permit number from the haulage company who will be transporting the vector material to the receiving facility	To be completed
Task 10	Comer Group (Ireland) Ltd. to provide a letter confirming responsibility for and duration of the monitoring programme	To be completed
Task 11	IAPS Specialist Ecologist to apply to NPWS for a licence for the transportation of vector material offsite	To be completed
Task 12	IAPS Specialist Ecologist to supervise the recovery works and loading of trucks	To be completed
Task 13	O' Donovan Agri-Environmental Services to undertake a 2-yr Monitoring Programme for Japanese knotweed regrowth. Spot treatment with chemical herbicide will be undertaken where required	To be completed

[2] WAC stands for Waste Acceptance Criteria and is used to determine whether the soil will be accepted at a particular type of landfill. WAC testing is used to determine how a waste will behave once it's buried in a landfill. This is carried out primarily through analysis of leachate derived from that waste during laboratory analysis.

7.2.1 Typical Sequence of Works

The typical sequence of works for the recovery of vector material and offsite disposal is as follows:

1. Complete a specialist walkover survey
2. Pre-treatment of the Japanese knotweed with a non-persistent chemical herbicide to achieve tissue viability reduction prior to recovery
3. Complete targeted site investigation to determine an estimate of volumes of vector material for disposal
4. Recover *i.e.,* excavate the vector material from within the 7m buffer (depending on results of site investigation)
5. Load the vector material directly onto waiting trucks, or place the recovered vector material in a temporary holding facility in preparation for removal off site, under strict biosecurity protocols
6. Remove vector material offsite in a sealed truck with a tipper body and a roll over cover under licence from NPWS to the approved receiving facility
7. Install a rhizome barrier to protect infrastructure, where deemed necessary

7.2.2 Pre-treatment

Based on the extensive experience of the specialist project team in the successful eradication of IAPS from sites, it is deemed **extremely effective**, beneficial, and advisable to pre-treat invasive species, with a suitable non-persistent chemical herbicide, to minimise the risk of accidentally dispersing highly viable rhizomatous material during the recovery process, and indeed, the transportation of highly viable vector material on the public road network for deep burial at the receiving facility. Pre-treatment will reduce the risk of regrowth within the lands of the overall landscape masterplan and at the receiving waste facility.

It is important that a non-persistent herbicide is utilised in the pre-treatment of Japanese knotweed, which is to be transported offsite for disposal at a licensed waste facility, in order to avoid the potential classification of the vector material as a hazardous material. This could have an implication, in that the cost per tonne for disposal offsite is likely to be higher.

See Section 7.1.5 for further details on pre-treatment.

7.2.3 Recovery Process

The excavator should dig and extract the vector material and load it directly onto waiting trucks, or a dumper for transportation to a temporary holding facility within the site, for loading at a later date (see Sections 7.1.6-7.1.7 for details).

7.2.4 Temporary Holding Facility

See Section 7.1.7.

7.2.5 Monitoring Programme

Monitoring involves as assessment of the presence/absence of above ground regrowth or new growth of IAPS based on a detailed walkover, to be undertaken at the beginning, in the middle of and on completion of the growing season for a set period time post-completion of recovery and transportation of the vector material offsite. Spot treatment of growth from any remaining Japanese knotweed vector material is be undertaken as required.

8.0 SITE-SPECIFIC CONTROL MEASURES

In light of the risk of dispersal, it is recommended that the recovery & disposal offsite of Japanese knotweed is deployed in order to eradicate the Japanese knotweed in a timely manner.

The selected management programmes will need to be deployed as soon as practically possible in light of the potential for further dispersal of Japanese knotweed vector material, within overall masterplan boundary, which could impact on the success of the selected management programme.

Where a 'do nothing' approached is taken, further dispersal of Japanese knotweed may occur within the lands of the overall masterplan boundary. Without any intervention there is a risk that Japanese knotweed may in the long-term have the potential to:

- Encroach on downstream native habitats with connectivity to Site A and Site B via the drainage ditches and the stormwater network *e.g.* River Lee, Cork Harbour SPA, Douglas River Estuary pNHA, Dunkettle shore pNHA and non-designated SWDTEs and GWDTEs
- Encroach on adjacent land-uses, public footpaths, dwellings, and infrastructure
- Encroach on new structures, footpaths, services, internal access roads and green open spaces within the site of the proposed residential development
- Diminish the ability to use and enjoy the green open spaces within the site of the proposed residential development due to impediments to access
- Encroach on sight lines and signage along the internal access paths
- Result in long-term maintenance requirements

The risk of dispersing Japanese knotweed within the lands of the overall masterplan boundary will arise where vector material becomes adhered to (1) the footwear of surveyors, site personnel/staff, and visitors to the site, (2) on the tyres of construction related and domestic vehicles in the car park; and (3) on tyres and tracks of plant machinery and on geotechnical site investigation/vegetation removal/demolition/construction/landscaping equipment.

There is also a low risk that surveyors, site personnel/staff and visitors to the site could transport viable vector material offsite on footwear and tyres of domestic vehicles. Vector material could also be transferred to other sites within in soil loads, on plant machinery and on construction/landscaping equipment. In addition, if viable Japanese knotweed stem or rhizome fragments were to gain entry to the drainage ditches and the stormwater network via the gullies within and adjacent to Site A and Site B, this could result in the spread of Japanese knotweed to the River Lee and Cork Harbour (see Section 5.2, 5.3.4 and 5.4 for further details).

Site-specific control measures are required to address the dispersal of Japanese knotweed vector material. These control measures are detailed below in Sections 8.1–8.5.

8.1 Preparation of a Site-Specific RAMS

A site-specific Risk Assessment and Method Statement (RAMS) should be prepared by the IAPS Specialist Ecologist prior to the deployment of the management programmes and should include details of the following site related background information, site related activities and

control measures required to avoid or reduce the risks associated with the implementation of the management programmes including the dispersal of Japanese knotweed.

The RAMS should be distributed to all site personnel in advance of the commencement of works to control or eradicate IAPS. The RAMS should contain the following information at a minimum:

- Site description for the proposed residential development
- Details of locations of IAPS infested areas
- Step by step details for the implementation of the management programmes
- Details of site hygiene and biosecurity protocols
- Details of site-specific hazards/constraints
- Details of hazard/environmental control measures (identified in the risk assessment)
- Details of ecological control measures (identified in the risk assessment)
- Details of site specific and seasonal constraints
- Specific details of duration and timing of site supervision
- Details and timing of monitoring requirements

The preparation of the site-specific Risk Assessment and Method Statement is a concurrent process.

The site-specific Risk Assessment will identify low, medium, and high-risk factors associated with the hazards and constraints identified during the preparation of the management plan and the Method Statement for the recovery of the Japanese knotweed vector material.

Where appropriate, the control measures will need to be deployed by the Contractor under the supervision of the IAPS Specialist Ecologist, during the recovery of the vector material within Site A and Site B; and by any other subcontractors which need access to the site of the proposed residential development to undertake works.

Specific control measures will be required in the Risk Assessment and Method Statement to address or minimise risk to the following:

- Dispersal of Vector Material (see Section 8.2)
- Accidental spillage, Spraying or Spray Drift of Chemical Herbicide (see Section 8.3)
- SUD Restrictions & Receptors (see Section 8.3)
- Environmental, Occupational Health & Safety Receptors (see Section 8.3)
- Ecological Receptors & Non-target Areas (see Section 8.4)
- Monitoring Programme (see Section 8.5)

8.2 Control Measures to Reduce Dispersal

It is recommended that the following biosecurity, site supervision and & site hygiene control measures are supervised by, or deployed by the IAPS Specialist Ecologist, within Site A and Site B in order to avoid dispersal/introduction of Japanese knotweed during the recovery and disposal offsite of the vector material:

- Provision of toolbox talks to ground operatives by the IAPS Specialist Ecologist.
- Installation of an Exclusion Zone in the form of temporary fencing around the infestation(s)

- Supervision of the installation of a dedicated biosecurity wash facility for footwear and tools within the site to treat equipment and personal footwear on entry and exiting the infested areas.
- Checks on biosecurity protocols *e.g.* use of appropriate biosecurity signage and temporary fencing, minimising site access and footfall, use of the footwear wash facility by ground operatives and adherence to dedicated entry and exit points.
- Checks for the provision of temporary fencing to minimise site access and foot fall by pedestrians where required.
- Checks for the creation of a delineated access track (to be maintained free of IAPS through the site) to minimise the spread of IAPS by permitted plant machinery and equipment accessing the site.
- Checks on the control and minimisation of movement of all plant and equipment, site personnel and visitors in and out of the site during the excavation of vector material.
- Supervision of the treatment of vehicles wheels/tyres, undercarriage of machines and chassis of trucks and tractors, tracks, back actors, buckets, hand tools (shovels, trowels) to eradicate/reduce the viability of any vector material present.
- Checks on footwear and equipment for any vector material. Any fragments should be treated with suitable chemical herbicide and disposed of within the temporary holding facility.
- Plant machinery, site vehicles and equipment may only be removed from the site after being checked and cleared to do so by the IAPS Specialist Ecologist.
- Checks for IAPS on imported soil and stone required for construction works at source and at arrival on site.

In accordance with legal obligations and/or best practice, the various risk assessments, and method statements to be prepared by other Contractors who may require access to the site will also need to include biosecurity and site hygiene control measures to avoid the disturbance and further dispersal of Japanese knotweed within the site of the proposed residential development. This is to ensure that viable plant material is not accidentally or otherwise dispersed by surveyors, site personnel/staff or visitors to the site either on their footwear, equipment, or tyres/tracks of vehicles. These control measures, required to avoid or limit dispersal, are necessary to ensure compliance with the European Union (Birds and Natural Habitats) Regulations 2011 to 2015.

Setting up of Exclusion Zones

The standard 7m rule or buffer zone described in Irish and UK government guideline documents, suggests that mature Japanese knotweed rhizomes may extend seven metres laterally from a parent plant (*e.g.* NRA, 2010; Environment Agency, 2013) and 4m deep (NRA, 2010). However, based on the authors experience of recovering Japanese knotweed vector material from a broad range of sites across Ireland, rhizomes of Japanese knotweed have rarely been found to extend beyond 3m laterally and 2.5m deep.

Fennell *et al*. (2018) demonstrated that even large stands of Japanese knotweed do not usually produce rhizomes that extend further than 4m. The study found that Japanese knotweed rhizomes rarely extend more than 4m from above ground plants and are typically found within 2m for small stands and 2.5m for large stands. Similarly, the mean vertical extent recorded averaged between 1.02m for the small stands and 1.64m for the large stands, (with a maximum of 3.2m recorded). The study concluded that the 7m rule is not a statistically robust tool for estimating likely rhizome extension (Fennel *et al*., 2018).

In this regard, the IAPS Specialist Ecologist shall provide site specific advice onsite pertaining to the required Exclusion Zone for the Japanese knotweed at JKW01-08 within Site A and Site B, based on the maturity and other characteristics of the infestation.

Recovery Works & Use of Plant Machinery

Prior to the commencement of the recovery works, a CAT scanner should be deployed to check for existing services.

A small toothless digging (or grading) bucket on a rubber tracked excavator are generally recommended for use. A grading bucket will permit a clean cut through the soil layers such that the rhizomes can be more easily tracked. Typically, a rubber tracked excavator is selected for such works to minimise the extent of soils which may be caught between the tracks and the fragmentation of rhizomes on or just below the surface. The rubber tracks should be kept out of the known locations of vector material, where possible.

These works should be carried out under strict biosecurity & site hygiene protocols and supervised by the IAPS Specialist Ecologist.

The excavator should be operated in such a manner so as to prevent further dispersal and contamination of the site during works, as follows:

- Avoid spillage of vector material from the bucket
- Laying down and changing bucket – ensure that it remains within the contaminated area and is not temporarily stored outside of the contaminated area
- Ensure that the tracks of the machine remain outside the contaminated area where possible. Where tracks have to enter the contaminated area, the driver should ensure that they do not contaminate additional lands by straying outside of the contaminated area. The contaminated area should be covered with heavy duty plastic and plywood to prevent the disturbance of rhizomes at or near the surface (the plastic and plywood should be appropriately cleaned or disposed of)
- The method of work of work should ensure that the machine does not have to track over an area which has already been stripped of vector material resulting in the recontamination of an area
- The machine driver should not step off the machine in the contaminated area, and contaminate additional lands by straying (on foot) outside of the contaminated area or into the area which has already been stripped of vector material resulting in the recontamination of the excavation

- The machine should not be brought outside of the contaminated area until biosecurity protocols have been deployed to decontaminate machine

Temporary Storage

The doubling handling and temporary storage of vector material should be avoided where possible. However, where required excavated vector material can be stockpiled within a temporary holding facility under strict biosecurity protocols and under the supervision of an IAPS Specialist Ecologist until such time as it is ready to be removed off site.

The location of the temporary holding facility should be agreed in advance as it needs to be positioned to allow for the use of a decontamination area and for the loading of the vector material via side casting onto the trucks. The holding facility should ideally be located on an existing contaminated area, or on a hard surface lined with 1200-gauge polythene or similar heavy-duty plastic/material or stored in one-tonne bags (lined with heavy duty plastic). The material should be stockpiled to facilitate efficient loading of the trucks.

Where considered appropriate the material within the temporary holding facility should be covered, until such time as it is to be transported offsite to the approved receiving facility, in a sealed truck with a tipper body and a roll over cover, under license from NPWS.

8.3 Control Measures for Chemical Herbicide Use

Areas of General Public Use & Defined Vulnerable Groups

There is potential for interaction with the following groups during the deployment of chemical herbicides under the management programme:

- Members of the general public utilising the adjacent footpath on Centre Park Road, the carparking and walkway along the River Lee, and Shandon Boat Club
- Members of vulnerable groups including children, elderly and pregnant mothers utilising the adjacent footpath on Centre Park Road, the car parking and riverside walkway along the River Lee
- Members of the general public working within adjacent civil infrastructure, industrial units and Shandon Boat Club

Environmental, Occupational Health & Safety Receptors

There is also potential for interactions with the following receptors:

- RPUs deploying the chemical herbicide to Japanese knotweed
- Site personnel/staff completing site investigation, vegetation removal, demolition and construction works
- Surveyors gathering data for ecological assessments, engineering purposes *etc*
- Caretakers for the site

A number of control measures should be deployed to ensure that these groups and receptors do not come into contact with chemical herbicide including:

- Erection of an Exclusion Zone *i.e.* temporary fencing around the treatment area
- Warning signage in advance of spraying operations
- Consultation in advance of spraying operations

- Timing of treatment to avoid peak pedestrian traffic times on Cotters Street
- Minimisation of spray drift and accidental spraying of adjacent areas
- Cessation of treatment where members of the public, children or domestic pets gain access to the treatment area
- Adherence to the SUD Directive and Plant Protection Products Regulations
- Adherence to Regulation 12 of SUD Directive in terms of the requirement to complete specific site records as part of pre- and post-treatment reporting
- Adherence to the Product Label and MSDS sheet
- Use of appropriate PPE
- Avoidance of spillage of chemical herbicide (see Section 8.4)
- Consultation with a Registered Pesticide Advisor and/or the Pesticides Control Service where there is any doubt in relation to the safe use of herbicides
- Site supervision by the IAPS Specialist Ecologist

Natura 2000 Sites

There is 1 No. Natura 2000 site at risk from the accidental spillage or release of chemical herbicide (during pouring/mixing/spraying) as follows:

- Cork Harbour SPA (Site Code: 004030)

A hydrological pathway has been identified between the site and this Natura 2000 sites *i.e.* chemical herbicide or hydrocarbons may gain entry to the drainage ditches or the stormwater network via storm water gullies within Site A and Site B (and in the adjacent streets) which discharge to the River Lee and Cork Harbour; located 2.4km to the east. There is limited hydrogeological connectivity (see Section 5.3.4).

Specific control measures will be required in the Risk Assessment and Method Statement to reduce the risks of accidental spillage or release of chemical herbicide. It is anticipated that the risk of spillage and entry to surface water pathways and the stormwater network will significantly be reduced by the implementation of the control measures.

Given the control measures which are to be deployed, distance from the site and dilution effects, significant impacts on this Natura 2000 site is considered unlikely.

8.4 Ecological Control Measures & Non-target Areas

The Risk Assessment will also identify control measures to minimise impacts on ecological receptors and non-target areas within the zone of influence of the proposed residential development.

Ecological receptors and non-target areas within or adjacent to the site, which could be impacted by spray drift or accidental spraying include:

Ecological Receptors

- Natura 2000 sites (see Section 8.3)
- Douglas River Estuary pNHA and Dunkettle Shore pNHA
- Woody scrub/shrub vegetation supporting pollinators, birds, and small mammals
- Pollinators, birds, and small mammals

Non-target Areas

- Adjacent terraced houses/apartment blocks
- Adjacent offices
- Adjacent commercial units

The following control measures should be included in the Risk Assessment and Method Statement to protect ecological receptors and non-target areas from chemical herbicides:

Herbicides

- Undertake regular checks on spraying equipment for defects
- Use bunded equipment and twin-lined or double hoses
- Provide trays for mixing of herbicide
- Ensure chemical herbicide spill kits are available at all times
- Provide a source of water for mixing of herbicide (other than a local water body)
- Avoid the creation of spray drift
- Avoid spraying during poor weather conditions *i.e.* in the rain and wind and when rain is forecasted in accordance with the Product Label
- Disturb vegetation to ensure that pollinators, birds, and small mammals take evasive action and move out of vegetation which is to be sprayed with chemical herbicide
- Comply with Circular Letter NPWS 2/08

Hydrocarbons

- Adhere to defined setback distance from drainage ditches storm water gullies for refuelling, use of lubricants and vehicle maintenance
- Ensure hydrocarbon spill kits are available at all times
- Undertake regular maintenance and checks on plant machinery and equipment

While some literature recommends the use of herbicides in the evening, to avoid impacts to pollinators, the use of herbicides may be impacted by high moisture levels associated with heavy dew fall and the closure of stomata which could reduce the efficacy of the herbicide treatment. In this regard, the IAPS Specialist Ecologist will disturb Japanese Knotweed and adjacent vegetation prior to commencement of spraying to ensure that pollinators, birds, and any small mammals have moved out of the zone of influence.

In order to ensure that the use of chemical herbicides does not contravene environmental legislation, the IAPS Specialist Contractor must comply with Circular Letter NPWS 2/08 which deals with the application of chemical herbicides to non-target areas as well as the SUD Regulations.

8.5 Monitoring Programme

Monitoring involves as assessment of the presence/absence of regrowth or new growth of Japanese knotweed based on a detailed walkover, to be undertaken at the beginning, in the middle of and on completion of the growing season for a set period time post-completion of the recovery works. Spot treatment of growth from any remaining Japanese knotweed vector material is undertaken as required.

A minimum 3-year monitoring programme is recommended for the lands within the overall masterplan boundary which will commence from the date of the recovery works and will continue to the end of the growing season in Year 3 (at least).

The importance of a monitoring programme cannot be underestimated in the context of the lands within the overall masterplan boundary, given recent disturbance activities. In an undisturbed site, if vector material is recovered from all known locations of above ground plant material, this would minimise the risk of future growth. However, given that the survey was undertaken outside of the optimum survey period and the identification of recent disturbance regimes, there is a risk that plants are located elsewhere within Site A and Site B which have yet to be identified.

There is an ongoing risk of the reintroduction of vector material to the lands within the overall masterplan boundary via the same sources and pathways which resulted in the introduction of viable plant fragments on previous occasions including fly-tipping of waste.

It is of paramount importance, that control measures are deployed to ensure that all contractors involved in the proposed residential development are made aware of best practice guidance to minimise the risk of importing vector material, onto the site as a result of geotechnical site investigation, vegetation removal, demolition, construction and in particular, via landscaping works (see Section 5.3.1 for details).

9.0 CONCLUSION

It is recommended that the Japanese knotweed vector material at JKW01-08 is pre-treated with chemical herbicide prior to the recovery and disposal of the vector material offsite or burial onsite.

Pre-treatment of the knotweed should ideally be completed during the optimum treatment period in late summer/autumn 2022, subject to the plant's growth stage and local day and night temperatures. In this regard, JKW01-JKW08 were treated with chemical herbicide by O' Donovan Agri-Environmental Services in October 2021 and will undergo stem filling in the coming weeks.

Given that a residential development is proposed within the 4.7ha subsite of Site A, it would be prudent to commence with the recovery & offsite disposal or burial onsite works as soon as practically feasible to allow sufficient time to complete the recovery process and to facilitate a monitoring where practically feasible.

Other Invasive Species

It is recommended that any growth of Buddleia, Traveller's joy, 2 no. *Cotoneaster* spp., Montbretia, Winter heliotrope and Pampas grass within Site A and Site B are treated, where required, with chemical herbicide during the optimum treatment period to avoid any future encroachment by these IAPS and to minimise long-term landscape maintenance requirements.

In relation to the existing seed bank the rapid growth of new outliers of Buddleia within the site is likely during the main construction stage, due to the fecundity of this species. These plants should be dealt with, as they emerge, as part of the chemical herbicide treatment to be deployed in preparation for the hard and soft landscaping works to be undertaken within the site.

The remaining invasive species identified within the overall masterplan boundary will also regrow from the existing seed bank, but at a slower rate than the aforementioned. These species should be dealt with as they emerge as part of the chemical herbicide treatment to be deployed in preparation for the hard and soft landscaping works which are to be undertaken within the site (see Appendix II for details).

10.0 REFERENCES

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Appendix I

DEFINITION, CLASSIFICATION, LEGISLATION & BEST PRACTICE

DEFINITION OF INVASIVE ALIEN PLANT SPECIES

Alien (or non-native) plants are defined as those plants which have been introduced into Ireland by humans and their activities, either purposefully or accidentally.

Alien (or non-native) **invasive** species are so-called as they typically display one or more of the following characteristics or features: (1) prolific reproduction through seed dispersal and/or re-growth from plant fragments; (2) rapid growth patterns; and (3) resistance to standard weed control methods.

Where a non-native species displays invasive qualities, and is not managed appropriately, it can potentially: (1) outcompete native vegetation, affecting plant community structure and habitat for wildlife; (2) cause damage to infrastructure including road carriageways, footpaths, walls and foundations; (3) result in soil erosion; (4) have an adverse effect on landscape quality through a loss of naturalness, aesthetics and regional identity; and, (5) impact on road safety (Dolan, 2004).

The introduction of *Rhododendron ponticum,* to Glengarriff Nature Reserve and Killarney National Park was perhaps the most widely cited example of an invasion by a non-native invasive species which has had a significant effect on the Irish landscape and elements within it. However, Japanese knotweed has recently become the focus of much media attention given the rate at which it has spread and its potential for infrastructural impacts.

CLASSIFICATION OF INVASIVE ALIEN PLANT SPECIES

A number of Irish agencies are monitoring and classifying invasive alien species in an effort to focus research programs, further monitoring, risk assessments, management and action plans and to meet with statutory obligations associated with the introduction of recent and future legislation.

Invasive Species Ireland

Invasive Species Ireland (www.invasivespeciesireland.com) a joint initiative by the Northern Ireland Environment Agency and NPWS, previously classified invasive species under the following headings based on a risk assessment:

- Most Unwanted: Established Threat
- High Risk: Recorded Species
- Amber List: Recorded Species (which under the right conditions could represent a significant impact on native species or habitats)
- Amber List: Uncertain Risk (their ecological impact remains uncertain due to lack of data showing impact or lack of impact)

The classification was based on the publication Kelly *et al*. (2013) Risk Analysis and prioritisation for invasive and non-native invasive species in Ireland and Northern Ireland (http://invasivespeciesireland.com/wp-content/uploads/2013/03/Risk-analysis-andprioritization-29032012-FINAL.pdf). The Invasive Species Ireland website currently lists a number of species under 'Established' or 'Potential'.

National Biodiversity Data Centre

The National Biodiversity Data Centre (http://www.biodiversityireland.ie/projects/invasive-species/species-lists/) has prepared a catalogue of invasive alien plant species and has risk assessed and classified a number of species into the following headings

- High Impact (http://www.biodiversityireland.ie/wordpress/wp-content/uploads/Invasives _taggedlist_HighImpact_2013RA-1.pdf)
- Medium Impact (http://www.biodiversityireland.ie/wordpress/wp-content/uploads/Invasives_taggedMediumImpact_2013RA-2.pdf)
- Watch List Species (http://www.biodiversityireland.ie/wordpress/wp-content/uploads/Invasives_tagged_PotentialHighmpact_2013RA-1.pdf)

A detailed risk assessment for 41 of these species was undertaken in 2014 (http://nonnativespecies.ie.) The detailed risk assessment is called NAPRA Ireland.

The classification is also based on the publication Kelly *et al*. (2013).

National Roads Authority/Transport Infrastructure Ireland (NRA/TII)

In 2008, the NRA first prepared Guidelines on the Management of Noxious Weeds and Non-native Species on National Roads (NRA, 2010 revised) and identified 9 No. invasive species which have been shown to have an adverse impact on landscape quality, native biodiversity

or infrastructure; and are likely to be encountered during road schemes as follows:

- Japanese knotweed
- Giant hogweed
- Himalayan balsam
- Giant rhubarb
- Montbretia
- Winter heliotrope
- Old man's beard
- Common or Pontic rhododendron
- Buddleia

Department of Agriculture, Food and the Marine (DAFM)

The Department of Agricultural, Food and Marine have named 7 No. Alien Invasive Plant Species *i.e.* Giant hogweed, Giant rhubarb, Himalayan balsam, Japanese knotweed, Montbretia, Old man's beard and Rhododendron on its Plant Health Trade webpage (https://www.agriculture.gov.ie/farmingsectors/planthealthtrade/alieninvasiveplantspecies/

CERIS

It is understood that the control of Winter Heliotrope is currently the subject of an EPA funded project led by CERIS, Institute of Technology, Sligo which is targeting the Prevention, Control and Eradication of Invasive Alien Species (IAS) on the Island of Ireland.

RELEVANT LEGISLATION

There is a range of legislation under which statutory obligations directly or indirectly apply to invasive species, and indeed, conventions which underpin the requirement to survey for and manage IAPS where they occur:

- EU Regulation 1143/2014 of the European Parliament and of the Council of 22 October 2014 on the prevention and management of the introduction and spread of invasive alien species [2014] OJ L 317/35
- European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011) to 2015, as amended
- Wildlife Acts, 1976 to 2012, as amended
- European Conventions

The main pieces of legislation are discussed in this section.

EU Regulation 1143/2014 on Invasive Alien Species

The EU Regulation 1143/2014 on Invasive Alien Species came into force on the 3rd August 2016. Some of the core provisions of EU Regulation 1143/2014 deal with, among other things, bringing into the territory of the Union, keeping, breeding, transporting and placing on the market, species included on the list of invasive alien species of Union Concern (the 'Union list'). This first "Union List" of 37 No. species consisting of 23 animals and 14 plants came into force, following the publication of the Commission Implementing Regulation (2016/1141), in the Official Journal of the Union on the 14th July 2016. The 'Union list' comprises species whose potential adverse impacts across the European Union are such that concerted action across Member States is required (https://www.npws.ie/sites/default/files/files/Union%20 list%20of%20IAS.pdf). Japanese knotweed is not included on the Union List.

On the 13th July 2017, Giant rhubarb along with a further 11 other species were added to the 'Union List' under EU Regulation 1143/2014 as per the Commission Implementing Regulation 2017/1263.

European Communities (Birds and Natural Habitats) Regulations 2011 to 2015

There are statutory obligations under S.I. 477 of 2011 of the European Communities (Birds and Natural Habitats) Regulations 2011 to 2015 to address invasive species in Ireland. There are a number of plant species including Japanese knotweed listed under the 3rd Schedule: Part 1 – Plants and Part 3: Vector Materials which are subject to restrictions under Regulations 49 & 50. Part 3: Vector Materials refers to soil or spoil taken from places infested with Japanese knotweed (*Fallopia japonica*), Giant knotweed (*Fallopia sachalinensis*) or their hybrid Bohemian knotweed (*Fallopia* x *bohemica*). Regulation 49 deals with the 'Prohibition on introduction and dispersal' while Regulation 50 deals with the 'Prohibition on dealing with and keeping certain species'. Regulation 50 has yet to be brought into Irish law (http://www.irishstatutebook.ie/eli/2011/si/477/made/en/print and http://www.Irishstatutebook.ie/eli/2015/si/355/made/en/print). A license application to NPWS is required under

Regulation 49(2) in order to transport soil or spoil *i.e.,* vector material containing Japanese knotweed, Giant knotweed and Bohemian knotweed off site.

Further to consultation with Gerry Lecky of the Wildlife Licensing Unit of NPWS, an invasive species management plan, a method statement, a letter of acceptance from the receiving waste facility and the Waste Collection Permit Number from the National Waste Collection Permit Office (NWCPO) for the haulage company is required as part of the license submission.

Where treatment of an IAPS which poses a threat to the Conservation Objectives of a Natura 2000 site (European Site), is required, a licence pursuant to 49(14) [an amendment to the 2011 Regulations under Regulation 12 of the European Communities (Birds and Natural Habitats) (Amendment) Regulations 2015] may be required. Where it is determined that an invasive species poses a threat to the conservation status of a habitat or species, and it is necessary to treat an invasive species during the overwintering period, a licence under Regulation 49(13) may be required.

The treatment of an invasive species within a Natura 2000 site may also require Ministerial Consent under Regulation 30.

The Wildlife Acts

The Wildlife Acts, 1976 to 2012, contain a number of provisions relating to invasive species covering several sections and subsections of the Acts. With regard to exotic species, it is prohibited without a licence to plant or otherwise cause to grow in a wild state, in any place in the State, any species of flora, or the flowers, roots, seeds or spores of flora.

In relation to the management of invasive species, the Wildlife Amendment Act 2000 (S.46.1) provides that it is an offence to cut, grub, burn or destroy any vegetation on uncultivated land or such growing in any hedge or ditch from the 1st March to the 31st August. Exemptions include the clearance of vegetation in the course of road or other construction works or in the development or preparation of sites on which any building or other structure is intended to be provided.

European Conventions

Ireland has also ratified a number of European conventions including

- Convention on Biological Diversity
- Bern Convention
- International Plant Protection Convention

The ratification of these conventions obliges the Irish government to address the issue of invasive alien plant species.

SUD Directive and PPP Regulations

The main method of managing IAPS is through the use of pesticides *i.e.* herbicides and the burial of recovered spoil. In addition to the statutory obligations discussed above the following are relevant to the management of invasive species using herbicides and burial of recovered spoil:

- Directive 2009/128/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for Community action to achieve the sustainable use of pesticides *i.e.* the 'Sustainable Use of Pesticides Directive' or 'SUD'
- European Communities (Sustainable Use of Pesticides) Regulations, 2012, (S.I. No. 155 of 2012)
- Regulation (EC) No. 1107/2009 of the European Parliament and of the Council of 21 October 2009 concerning the placing of plant protection products on the market and repealing Council Directives 79/117/EEC and 91/414/EEC- 'Plant Protection Products Regulation'
- European Communities (Plant Protection Products) Regulations, 2012 (S.I. No. 159 of 2012)
- Waste Management Acts, 1996 to 2013, and related legislation.

Directive 2009/128/EC of the European Parliament and of the Council of 21 October 2009 more commonly referred to as "the Sustainable Use Directive" or "SUD", aims to establish a framework for Community action to achieve the sustainable use of pesticides. It was transposed into Irish law by Statutory Instrument No. 155 of 2012, European Communities (Sustainable Use of Pesticides) Regulations 2012. The European Communities Sustainable Use of Pesticides Regulations 2012 (S.I. 155 of 2012) places additional restrictions and, in some cases, prohibitions, on the use of pesticides in certain restricted and sensitive areas (referred to herein as SUD restrictions and restricted/sensitive areas). These SUD restrictions and restricted/sensitive areas include transport routes (such as railway lines); areas used by the general public or defined vulnerable groups (*e.g.* public parks, hospitals, public schools and public playgrounds); and Natura 2000 sites.

There are also safeguard zones or exclusion zones (see Table 1.1) where no plant protection products can be applied in order to protect surface water abstraction sources (*e.g.* areas for the abstraction of drinking water such as surface waters, springs, wells or boreholes) and groundwater vulnerable landscape features (*e.g.* karst areas, sinkholes, collapse features).

Table 1.1 Safeguard Zones for Open Wells, Boreholes and water abstraction points

Water Source	Distance
Abstraction point of any surface waters, borehole, spring or well used for the abstraction of water for human consumption in a water scheme supplying 100 m^3 or more of water per day or serving 500 or more persons	200 m
Abstraction point of any surface waters, borehole, spring or well used for the abstraction of water for human consumption in a water scheme supplying 10 m^3 or more of water per day or serving 50 – 500 persons	100 m
Abstraction point of any surface waters, borehole, spring or well used for the abstraction of water for human consumption in a water scheme supplying 1-10 m^3 of water per day or serving 10-50 persons	25 m
Abstraction point of any surface waters, borehole, spring or well used for the abstraction of water for human consumption in a water scheme supplying 1m^3 or less of water per day or serving 10 or less persons	5 m

It should be noted that the gathering of data on SUDS Restrictions and Restricted/Sensitive Areas is essential to the preparation of an IAPS management plan, as the presence of any such constraints will underpin the ability to deploy chemical herbicides, the selection of chemical herbicide, timing and application methods. In this regard, pesticides selected for use on any site should be fit for the purpose for which they are intended. Details of permitted pesticides authorised for use by the Irish competent authority, the Pesticide Registration and Controls Divisions and the Pesticide Control Laboratory of the Department of Agriculture Food and the Marine (DAFM) can be found at http://www.pcs.agriculture.gov.ie/.

Only a Registered Professional User (RPU) with the Department of Agriculture, Food and Marine can apply herbicides authorised for professional use from the 26th November 2015. A risk assessment and method statement for the management of IAPS should be prepared by an IAPS Specialist Ecologist in conjunction with an IAPS Specialist Contractor to take into account the various constraints/disturbance regimes/SUDS restrictions identified in an IAPS management plan and should propose and detail site specific control measures to avoid or minimise these risks including adherence to Regulation 12 of SUD Directive which identifies the requirement to complete specific site records as part of pre- and post-treatment reporting.

Waste Management

Specific obligations under the Waste Management Acts, 1996 to 2013, and related legislation pertaining to the waste categorisation of spoil and burial onsite or offsite are unclear in the absence of guidance from the Environmental Protection Agency (EPA) for Japanese knotweed contaminated soil.

The EPA has recently clarified that a Waste License is required under the Waste Management (Licensing) Regulations 2004 to bury soil contaminated with vector material within a site.

As discussed above a license application to NPWS is required under Regulation 49(2) European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) in order to transport soil or spoil *i.e.* vector material containing Japanese knotweed, Giant knotweed and Bohemian knotweed off site.

Appendix II

INVASIVE SPECIES

A. JAPANESE KNOTWEED

A.1 Species Description & Ecology

Native to Japan, northern China, Taiwan, and the Korea peninsula, Japanese Knotweed (*Fallopia japonica*) is an invasive perennial herbaceous plant which was introduced to Europe in the 1820's.

The first record for Japanese knotweed in Europe appears to be from an artificial wetland habitat in Chiswick, London from 1825. A second introduction to Europe is known from 1847, to a nursery in Leiden, The Netherlands. In 1850, Japanese knotweed plants arrived at the Royal Botanical Gardens at Kew, UK, and by 1854, the plant, had also arrived at the Royal Botanic Gardens in Edinburgh.

Japanese knotweed plants were subsequently sold by commercial nurseries around the UK and Europe as it became one of the most popular garden plants of the 19th Century. During this period the sharing of cuttings and the discarding of unwanted rhizomes was the primary pathway for dispersal. While it was originally planted for its foliage and "attractive" white flowers, in later years Japanese knotweed was also promoted as a potential source of animal fodder. Of note is that the plant could still be found widely available for sale in garden centres in the 1930s and even up until the 1980s in the UK (Bailey & Connolly, 2000; History of Japanese Knotweed in Europe — University of Leicester).

The first naturalised record of Japanese Knotweed in Ireland is dated 1905 from a garden in Dublin. Since its introduction to Ireland, it has spread across the island, particularly along watercourses, transport routes and in waste or disturbed ground. During the 'Celtic Tiger' years, in particular, rhizome fragments were dispersed as a result of soil movement associated with road building and other construction projects.

A.2 Invasive Qualities

In its native countries, it is found growing along riverbanks, roadside verges, managed pastures and in sunny places on hills and high mountains. Over thousands of years, it has evolved to become one of the first species to colonise lands within 20 years of volcanic activity and is replaced by other herbaceous species after 50 years or so. It typically reaches 0.3 - 1.5m tall and is attacked by a suite of 226 natural enemies, including insects and fungi, which keep it in check.

In Ireland (and other countries to which it has been introduced worldwide), the absence of natural enemies combined with its ability to colonise volcanic landscapes means that the plant can grow unchecked reaching heights of up to 3-4m, to form dense colonies, and like a number of tree species is capable of accessing existing weaknesses or joints in bitumen, concrete, stone masonry and hard standing areas; thus, causing impacts to hard landscaping or services (see Photographs A.1, A.2 and A.4).

Japanese knotweed has an underground network of stems known as rhizomes. In more mature Japanese Knotweed plants, a central rhizome 'crown', develops from which the main stems emerge above ground (see Table A.1 for details of the plants life cycle). The ability to penetrate existing weaknesses and joints comes from its underground rhizome network.

Underneath, the central crown, the radial rhizomes twist together to form a sizeable and considerable upward penetrating force. As the plant matures the crown expands thus opening up existing weaknesses such as cracks or joints which may cause damage to hard landscaping or services. However, while Japanese knotweed has the ability to cause damage, it rarely does so, as rhizomes will typically grow around any objects and structures which they encounter.

Photograph A.1 Japanese Knotweed breaking through a bituminous surface in Cork City (Source: John O' Donovan, O' Donovan Agri-Environmental Services)

The crown also acts as the plants' carbohydrate food store during the winter months when the leaves die back. While most of the plants' rhizomes are found in the top 0.25m of the soil, they can also go deep into the soil and extend up to several metres out from the plant, depending on ground conditions and disturbance regimes. Based on the authors experience of recovering Japanese knotweed vector material from a broad range of sites across Ireland, rhizomes of Japanese knotweed have rarely been found to extend beyond 3m laterally and 2.5m deep.

Fennell *et al*. (2018) demonstrated that even large stands of Japanese knotweed do not usually produce rhizomes that extend further than 4m. The study found that Japanese knotweed rhizomes rarely extend more than 4m from above ground plants and are typically found within 2m for small stands and 2.5m for large stands. Similarly, the mean vertical

extent recorded averaged between 1.02m for the small stands and 1.64m for the large stands, (with a maximum of 3.2m recorded).

While Japanese Knotweed is generally not considered capable of producing viable seeds in Ireland (in simplistic terms only female cloned plants are present), the species displays an extraordinary ability to disperse and rapidly regenerate predominantly from rhizome (but also stem) fragments to colonise and invade disturbed land. Previous studies indicated that less than 0.7g of a rhizome can produce roots and shoots in 10 days, however, current research indicates that viable rhizome fragments are typically larger (see Table A.2).

Photograph A.2 Japanese Knotweed having gained internal access to a private dwelling in Co. Cork (Source: O' Donovan Agri-Environmental Services)

Under favourable conditions it can grow up to 10cm a day and can rapidly invade disturbed ground in the absence of native vegetation. No correlation between soil type, plant size or vigour has been identified, suggesting that it can grow on any substrate.

While Japanese Knotweed is generally not considered capable of producing viable seed, it has evolved in terms of its ability to hybridise with close relatives *e.g.* Giant Knotweed to produce Bohemian Knotweed which is capable of producing viable seed.

It also has a number of plant defence mechanisms which it may deploy when under threat including an ability to remain dormant underground for a number of years following chemical herbicide treatment; known as chemical dormancy. It can also produce bonsai regrowth in

response to cutting and sub-lethal bonsai regrowth in response to chemical herbicide treatment (see Table A.3). Bonsai regrowth is cryptic given its small size, unusual stem and leaf colour and morphology and is therefore easily overlooked in the absence of a specialist survey (see Photograph A.3).

Photograph A.3 Bonsais of Japanese Knotweed within amenity grassland in Cork City (Source: Lisa M. J. Dolan, Ecosystem Services)

Knotweed has the ability to execute the following plant defence mechanisms in response to herbicide:

- Sub-lethal bonsai regrowth (see Photograph A.3)
- Lateral growth of rhizomes and development of new radial shoots
- Chemical dormancy - rhizomes can lay dormant and viable for a number of years before regrowth
- Compartmentalisation
- Resistance or tolerance to standard chemical herbicide-based programmes

Japanese Knotweed can also respond to cutting or burial by deploying a number of other plant defence mechanisms. Therefore, to cut, flail, mow, dig or bury the plant may only result in:

- Dispersal of plant fragments which can regrow elsewhere
- Bonsai regrowth
- Rapid regrowth and increase in the height and extent of the plant
- Lateral growth of rhizomes and the development of new radial shoots
- Regrowth from buried depths of <5m
- Buried rhizomes can survive for up to 20 years

Given the plant defence mechanisms displayed by this species, herbicides should only be applied by those who are qualified and have knowledge and understanding of the ecology of the plant and industry best practice treatment options to eradicate the species.

Photograph A.4 Japanese Knotweed breaking through cavity blocks resulting in a structural crack in the wall of a garden in Co. Cork (Source: Lisa M. J. Dolan, Ecosystem Services)

A.3 Impacts from Japanese Knotweed

In terms of ecology, landscapes and amenities, Japanese knotweed is known to have potential significant negative ecological impacts on native habitats and species, on landscape character and quality, and on visual and recreational amenities.

In relation to semi-natural habitats, the species out-competes native herbaceous and juvenile woody plants, reducing species diversity (see Photograph A.5). Once established the height, dense canopy and aggressive nature of the plant essentially excludes other species.

In addition, Japanese Knotweed has also been shown to have allelopathic effects on native vegetation, permitting germination but limiting biomass.

Along riverbanks, new shoots have been observed developing primarily from floating stems from which fragments can be broken off by floods which lodge downstream to form new outlier populations; therefore, an upstream catchment wide management approach is required to achieve eradication of knotweed species along habitats where there is upstream surface water connectivity.

Photograph A.5 Japanese Knotweed dominating riverbanks of a stream in Co. Kerry (Source: Lisa Dolan, Ecosystem Services)

In Ireland, Japanese Knotweed is often associated with roadsides, railways, car parks, car wash facilities, quarries, maintenance depots, abandoned/waste ground; in particular, disturbed areas where native vegetation is absent and where fly-tipping of spoil has occurred.

During landscaping and construction activities Japanese Knotweed can be disturbed by machinery, and spread within or be brought onto a site, in the form of plant fragments within the soil load or on the tyres of machinery and dumpsters, especially on machinery with tracks. The maintenance of Japanese Knotweed by mechanical methods such as cutting and strimming can distribute fragments, which can then be carried along road corridors by wind or on the tyres of vehicles including cars (see Wace, 1977; Wilcox, 1989). Fragments can also be carried on the footwear of pedestrians. Cutting and mowing results in the creation of bonsai regrowth which can go undetected.

With regards to increased flood risk, Japanese knotweed once established can dominate watercourses where it may impede water flow through the obstruction of conveyance (or drainage) in ditches, streams, and rivers, particularly when water levels are high; thus,

contributing to flooding. During senescence or winter dieback, Japanese knotweed may leave riverbanks exposed to erosion, leading to bank collapse.

Land use and access to lands and infrastructure can also be impacted or restricted where large dense monospecific stands block access routes, invade landscaped areas and open spaces such as gardens and urban parks/woodlands, impact on the quiet enjoyment and use of domestic gardens, encroach on roadways and agricultural fields, and occupy large swathes of unmanaged lands. Signage and sightlines on roadways can also be impinged. In addition to these impacts, Japanese knotweed, like certain tree species, also has the ability to access existing weaknesses and joints and may in certa*in situ*ations cause damage to footpaths and hard landscaping and based on experience may impact on more vulnerable structures such as old stone masonry walls and walls constructed from cavity blocks. However, while Japanese knotweed has the ability to cause damage, it rarely does so, as rhizomes will typically grow around any objects and structures which they encounter.

Table A.1 Life Cycle of Japanese Knotweed

Details	Photographs
An excavated crown structure in winter. Old dead stems from previous years growth are scattered on the ground	
Crown *in situ* with pink buds and stems emerging in early spring	

Details	Photographs
Red stems turning green as the plant grows, red leaves unfurl in late spring	
Red leaves changing to green as stems grow in early summer	
Fully opened leaves in summer	

Details	Photographs
Japanese knotweed commences flowering from July onwards	
Senescence or winder dieback occurs after flowering and depends on local day and night temperatures and other environmental stress factors. Typically occurs from September onwards	
After leaf fall, only the crown structures with dead stems remain in winter. The dead stems may persist over winter or break off and fall to the ground.	

Japanese knotweed has acquired its infamous reputation, as it exhibits a number of characteristics which are not typically displayed by those tree species whose roots have the potential to damage infrastructure. Namely, it is a rhizomatous species which can be easily dispersed, it exhibits a rapid growth pattern and is considerably more tolerant to chemical herbicide, thus making it significantly more difficult to eradicate than most trees. However, onsite experience and recent research has shown that it does not live up the reputation it has previously been afforded in terms of risk to infrastructure (see Fennell *et al*., 2018 for further details).

A.4 Legal Obligations

In light of the potential risk of negative impacts posed by Japanese knotweed on semi-natural habitats, it is a 'listed' species under Irish legislation *i.e.,* the Third Schedule: Part 1 of the European Communities (Birds and Natural Habitats) Regulations 2011 to 2015 which is a list of invasive alien plant species subject to restrictions under Regulations 49 & 50.

Regulation 49 of the European Communities (Birds and Natural Habitats) Regulations 2011 to 2015 deals with the 'Prohibition on introduction and dispersal' while Regulation 50 deals with the 'Prohibition on dealing with and keeping certain species'. Regulation 50 has yet to be enacted into Irish law (http://www.irishstatutebook.ie/eli/2011/si/477/made/en /print and http://www.Irishstatutebook.ie/eli/2015/si/355/made/en/print).

Japanese knotweed is also listed under the Third Schedule: Part 3 Vector Materials of the European Communities (Birds and Natural Habitats) Regulations 2011 to 2015. Part 3 governs the movement of soil or spoil taken from places infested with Japanese knotweed, Giant knotweed (*Fallopia sachalinensis*) or their hybrid Bohemian knotweed (*Fallopia* x *bohemica*). A license application to National Parks and Wildlife Service (NPWS) is required under Regulation 49(2) in order to transport soil or spoil *i.e.* vector material containing Japanese knotweed, Giant knotweed and Bohemian knotweed off a site.

Table A.2 Establishment of Japanese Knotweed from a Rhizome Fragment

Details	Photographs
Rhizome fragment recovered from the ground	

Details	Photographs
Transverse section through the rhizome fragment showing evidence of viable (**orange**) tissue when cut open.	
Signs of new rhizome growth are visible on the old rhizome fragment. New white rhizomes are emerging.	
The **growing tip** of the rhizome is initially white. The rhizome becomes dark brown, thick and woody with a knotty appearance as it matures.	

Details	Photographs
New leaves emerging from a rhizome fragment	
New plant leaf appearing above ground from a buried rhizome fragment	
Young plant emerging from a buried fragment in the ground	

Details	Photographs
Multiple young plants emerging from buried rhizome fragments	
Leaves will change from red to green and start photosynthesising as the growing season progresses. After 4 years of spring/summer growth and winter dieback the plant will start to develop a crown structure as per Table 2.1.	

The licensing process is required to ensure that in circumstances where vector material is to be taken off site for disposal, that it is appropriately disposed of at a licensed receiving facility.

The licencing process also requires that best practice is deployed throughout all stages of the recovery process *i.e.* during excavation of the vector material at the donor site, transportation by the haulage company along the public road network and during disposal at the receiving facility. This level of scrutiny is necessary as any fragments of rhizomes or stems which are accidentally dispersed during the recovery process can readily sprout shoots and establish new plants within the donor site, along the public road network, or indeed, at the receiving facility.

A.5 Control & Management Programmes

The foliar application of chemical herbicide usually requires up to 3 years (+) of treatment to acquire an effective reduction in the viability and eradication of the underground rhizome network; as sufficient herbicide has to enter the plant via the leaves and travel to the underground network to achieve eradication. Alternative methods of delivering a higher and

more effective dose of herbicide to the underground rhizome network via the stem, are referred to as stem injection or stem filling. As the names suggest these methods involve directly introducing herbicide to the stem of the plant such that a larger dose of herbicide reaches the underground rhizomes. This achieves a higher effective kill and/or eradication of the underground rhizome network in a shorter period of time, reducing future risk to a development by reducing the extent of any regrowth. As stem injection and stem filling are labour intensive, and more costly to deploy than foliar application, they are only deployed where time is a limiting factor, or where sensitive habitats exist in close proximity to the Japanese knotweed (which could be indirectly impacted from spray drift during the foliar application of herbicide), or where crowns are found to be growing up against infrastructure.

Treatment via the foliar application of chemical herbicide should be undertaken during the optimum treatment period. The optimum treatment period for the deployment of chemical herbicide treatment (on an annual basis), to Japanese knotweed is dependent on the timing of the plants' annual growth cycle, its unusual plant physiology, seasonal factors and local day and night temperatures. It is considered best practice to spray after the commencement of flowering and before the first frost *i.e.* the commencement of senescence. Flowering typically commences between July and October each year. Japanese knotweed goes into senescence (commences winter die back) after the first frost. It is important that Japanese knotweed is sprayed each year before the commencement of senescence to ensure that a maximum effective dose is delivered to the underground rhizome network of the plant and to avoid triggering the plants defence mechanisms.

A treatment programme should be followed by monitoring and viability testing of the underground rhizomes of Japanese knotweed at the location of each infestation to determine the presence/absence of viable plant tissue in the underground rhizome network as per Paragraph B2.8 of The Control of Japanese Knotweed (*Fallopia japonica*) in Construction and Landscape Contracts (Welsh Government, 2011) on completion of the growing season in the fourth and fifth year following a 3 yr treatment programme. Whether 'eradication' of Japanese knotweed has been achieved should be determined by the IAPS Specialist Ecologist.

Inappropriate Treatment

It should be noted that the inappropriate deployment of herbicide during the treatment of knotweed species can result in the following:

D. Above ground kill of leafy vegetation *i.e.* '**Top Kill**' only (with viable stems remaining post-treatment)
E. **'Partial'** above ground kill of vegetation (green leaves and/or viable stems remaining post-treatment)

'Top Kill' or 'Partial Kill' of leafy vegetation and stem tissue may trigger:

I. The creation of dormant rhizomes below ground which can go undetected for several years before regrowth
II. Rapid regrowth the following April resulting in an increase in the height of the infestation

III. The activation of dormant rhizomes the following April resulting in an increase in the extent of the infestation and the active rhizome network
IV. Lateral growth in the rhizome network the following April resulting in an increase in the extent of the infestation
V. Slow regrowth of the plants with smaller, curled, or red leaves and red stems which are cryptic; known as sub-lethal 'bonsai' regrowth the following growing season. Plants displaying sub-lethal bonsai regrowth are not receptive to herbicide treatment.

'Top Kill' or 'Partial Kill' are most likely to occur where:

I. An incorrect chemical herbicide is used
II. A sub-lethal dose of chemical herbicide is used (too little or too much herbicide)
III. The correct chemical herbicide is used outside of the optimum treatment period *i.e.* at the incorrect time of year or seasonal plant cycle /plant growth stage
IV. Weather conditions are not suitable *i.e.* significant spray drift/volatilisation or rain/dew pre- or post-treatment
V. Poor application methods are deployed
   - The equipment utilised is not to the standard required
   - Herbicide is not applied to the canopy/leaves in accordance with best practice
   - Herbicide is not applied to entire canopy; access not gained to the adjacent property or to the necessary height in order to treat the entire stand

Consequences for a Development Site

The main consequences of Top or Partial Kill in relation to a development site are as follows:

Top Kill

- The viability of plant tissue in the underground rhizome network will not have been effectively reduced and continues to remain highly viable. The treatment will therefore have been rendered ineffectual.
- The unproductive use of herbicide in the environment
- The creation of a protracted *in situ* treatment regime going forward with associated costs and delays to commencement of Site Clearance and construction at the site.
- Plants may exhibit a greater resistance to chemical herbicides in the following growing season

Partial Kill

- The viability of plant tissue in the underground rhizome network will not have been effectively reduced and continues to remain highly viable. The treatment will therefore have been rendered ineffectual.
- The plant will be in a position to transport carbohydrates to the crown for food storage for the winter months
- The remaining presence of highly viable rhizome tissue post treatment means that there will continue to be a high risk of dispersal and regrowth from these plant fragments *e.g.* where it is proposed to remove the soil containing vector material of

Japanese Knotweed off site there is a higher risk of regrowth and the donor and receiving facility.

- The unproductive use of herbicide in the environment
- The creation of a protracted *in situ* treatment regime going forward with associated costs and delays to commencement of Site Clearance and construction at the site.
- Plants may exhibit a greater resistance to chemical herbicides in the following growing season

Inappropriate Biosecurity Measures

The inappropriate deployment or lack of biosecurity measures during the treatment of knotweed species can result in the dispersal of viable plant fragments by the following vectors:

A. Accidental physical disturbance during the deployment of herbicides or recovery of soils resulting in the dispersal of plant fragments on tools, footwear, wheels of vehicles, in surface water runoff *etc*.
B. Where mechanical cutting methods are selected to gain access to a stand to 'assist' treatment of large stands resulting in the dispersal of plant fragments and the reduced receptivity of the plant to herbicide and therefore effectiveness of the treatment

As a result, there will be a higher risk of dispersal of viable plant fragments within a site and off site to adjacent lands, semi-natural habitats, watercourses, licensed waste facilities, plant hire facilities, waste segregation hire facilities, other development sites, refuelling depots, service areas, private residences, road networks and other sites.

Details of the classification, risk assessment and legislative requirements in relation Japanese knotweed, are presented in Appendix I.

Table A.3 Bonsai and Sub-lethal Bonsai Regrowth

Details	Photographs
Bonsai regrowth is a particular miniature growth form of Japanese knotweed which is triggered by the plants defence mechanisms in response to frequent cutting. The bonsai plant will persist unless the mowing regime ceases.	

Details	Photographs
Sub-lethal bonsai regrowth is another particular miniature growth form of Japanese knotweed which is triggered by the plants defence mechanisms in response to the inappropriate use of chemical herbicide.	

B. BUDDLEIA

B.1 Species Description & Ecology

Buddleia (*Buddleja davidii*) is a deciduous shrub native to China, that grows 1-4m tall with arching stems. The leaves are opposite, 10-20 cm long, and lanced-shaped with a slightly serrated edge and a felted-velvety whitish under surface.

It typically flowers during the period June to September, when dense clusters of tubular flowers develop. These flowers have 4 petals and can be purple, white, or pink. The flowers produce high quantities of nectar and are attractive to butterflies, hence the common name – Butterfly Bush.

The desiccated flower heads and seed capsules may remain on the shrub over winter. The developing seed pods are small upright and ovate and may not be readily visible through the remnants of the flower. When mature, the pods area a dark brown and opened at the tip. The seeds produced are extremely small and numerous with up to 3 million produced per plant. The seeds are dust-like particles which can easily be distributed by the wind. They can also remain viable in soils and gravels for many years (https://www.invasiveplantatlas.org/subject. html?sub=11608; NRA, 2010).

Although butterflies use Buddleia as a nectar source, their larvae cannot survive on it. By replacing native larval food source plants, Buddleia can have a negative impact on wildlife (https://www.invasiveplantatlas.org/subject.html?sub=11608).

B.2 Invasive Qualities of Buddleia

Buddleia as a prolific reseeder can quickly establish scrub transitional communities, in particular disturbed sites. Like many invasives, it can rapidly colonise bare ground forming mono-typic stands.

As buddleia can tolerate nutrient poor soils, it is capable of growing on walls, rocky outcrops or sub-soils. Buddleia can also readily establish on very dry hard standing areas constructed

from gravel, and other similar compacted loose materials, and in cracks and crevices in old concrete and bituminous finished surfaces.

In particular, Buddleia creates issues on road schemes where features are being left to re-colonise naturally as in rock cuttings, eskers, *etc*. (NRA, 2010) for wildlife conservation purposes.

It can result in considerable maintenance of landscaped areas and hard standing, in particular car parks, yards, brownfield sites, building sites, quarries and road schemes.

B.3 Control & Management Programmes

According to Ream (2006) formulations of glyphosate effectively control Buddleia up to two years old; where required it should be followed up at 6 monthly intervals.

For more mature plants a combination of spraying the entire plant and painting herbicide concentrate on recently cut stumps is effective in controlling Buddleia (Ream, 2006), thus preventing the dispersal of seeds within a site and into the surrounding landscape.

According to NRA (2010) recommended practice for the application of herbicides requires the cutting back of plants to a basal stump during active growth (late spring to early summer) which is then treated (brushed on) immediately with a systemic weed killer mix (Starr *et al*., 2003).

Even after the Buddleia shrub has been cut down, a new sprout may grow from the stump. In order to completely eradicate the shrub, it may be necessary to remove the stump using a stump grinder or similar to grind the stump down to ground level, followed by digging out major connecting roots.

It is also possible to kill the stump using accelerated decay to rot the stump before removing it. To use this method, a series of holes are drilled into the top and sides of the stump. The holes are then filled with slow-release fertilizer and watered well before the stump is covered with a mound of soil to begin the process of decay. After a few weeks, the stump will have rotted from the inside out and ready for removal.

Management methods such as digging it out (grubbing) are applicable only to minor infestations at the initial stage of invasion. Hand-picking of young plants is feasible but should be undertaken with care to avoid soil disturbance which can give rise to a flush of new seedling. Grubbing of mature stands as a sole attempt at control is not recommended for the same reason.

After uprooting, it is essential to monitor for regrowth and treat with chemical herbicide or to plant the ground in order to prevent a flush of new seedling growth. Mowing of young plants does not provide control as they re-sprout with vigour.

Where removal of mature plants is not feasible in the short term, the flower heads should be cut off in June before seeds are released. Where desiccated flower heads and seed capsules remain on the tree over winter these can also carefully be removed to minimise further dispersal.

C. THREE-CORNERED GARLIC

C.1 Species Description & Ecology

Three-cornered garlic (*Allium triquetrum*) is native to the west and central Mediterranean (Preston *et al*., 2002; Stace, 1997) including Portugal, Southern Spain (including the Balearics), France (including Corsica), Italy (including Sardinia and Sicily) and Africa: Algeria, Morocco and Tunisia (Dowen, 2011).

It is thought to have been introduced to Ireland some three-hundred years ago (Devlin, 2014) and has become established in the south and southeast of Ireland, outside of which it has a scattered occurrence (Preston *et al*, 2002; Reynolds, 2002; Stace, 1997). A large discrepancy between the Botanical Society of Britain and Ireland (BSBI) maps and those of the National Biodiversity Data Centre (NBDC) suggest that the true extent of the species in Ireland may be greater. It is likely, as in the case with many alien plants, to be poorly reported in that many of the sites it grows in are in large demesnes or wild gardens, many of which are privately owned and often not recorded as 'wild' places as they border the margins of cultivation. The extent of Waterford and Wexford records is largely due to intensive floristic work in these two counties.

C.2 Invasive Qualities

Typical habitats where it is known to invade or naturalise include hedgerows, parks, footpaths, roadsides, waste areas, disturbed/cultivated sites, orchards, open woodlands, forests, moist pastures, riparian areas (Reynolds, 2002; Stace, 1997) and gardens. The species is also intentionally planted in gardens.

In Ireland the Three-Cornered Leek flowers from April to June. In Western Australia, time to first flower from seed is 2 years with a medium seedbank persistence of 1 to 5 years and generally survives fire (https://florabase.dpaw.wa.gov.au/browse/profile/1378).

Three-Cornered Leek is known to spread via natural and human assisted dispersal. Human assisted dispersal plays a greater role in the long distance spread of the species relative to natural dispersal.

Localised spread of the species is likely underpinned by natural dispersal. It can spread vegetatively in clumps producing daughter bulbs, while seeds are spread by ants (BSBI, 2011; Preston *et al*., 2002). According to Davies (1992) the seeds have an oil-bearing appendage which is attractive to ants. Thus, the ants carry the seed away to eat the oil and then discard the seed, thus aiding dispersal of the plant.

Anthropogenic dispersal occurs through garden waste, transportation of bulbils and/or seeds on grass-cutting equipment, while the seed can also be transported in the air turbulence created by vehicles along road corridors which is likely to be the most significant means of future long distance spread of the species, with roadside verges the most at risk habitat to future spread (Dowen, 2011, BSBI, 2011).

Further spread of the species is dependent on suitable climatic conditions, which are likely to manifest over the coming years as a result of global warming. Habitat availability is not expected to be a limiting factor to future spread.

There is no published literature on the impact Three-cornered Leek on biodiversity in Ireland to-date. It is known to become dominant in grass swards where it has been present for over 10 years, total cover can be as high as 10-33%. There is no data on the effects of such cover on native species especially as many other cultivated species (Narcissus, Crocus, Hyacinthoides *etc*.) are often present. In Australia, Three-Cornered Leek has been shown to reduce understory biodiversity significantly and to affect regeneration of native flora. It forms monocultures and its allelopathic traits endanger species such as orchids, native lilies and grasses (Tehranchian, 2011) (cited in http://nonnativespecies.ie/wp-content/uploads/2014/03/Allium-triquetrum-Three-cornered-Leek1.pdf).

C.3 Control & Management Programmes

There are no known eradication campaigns currently in place in Ireland for this species. Control in other countries has been shown to require a combination of manual cultivation, removal and herbicide spraying of the exposed bulbs (HerbiGuide, 2014). Recovery is easier to do in spring when surface vegetation is present, providing an indicator of the extent of the infestation and, ensuring that all bulbous material is removed.

In addition to Glyphosate and 2-4, D a number of other chemical herbicides have been identified in the literature, however, none of these are suitable for use or approved for use by the Pesticide Control Service for use in Ireland.

Annual spraying in early flowering stage *i.e.* before April is recommended as this will result in the application of herbicide at the bulb exhaustion stage.

When applying foliar herbicides, it is advised to use a wetting agent, especially on young plants as they are hard to wet given the limited surface area and run off associated with the narrow lanceolate waxy leaves and associated run off (https://florabase.dpaw.wa.gov.au/browse /profile/1378). Ideally leaves should be allowed to mature to provide maximum surface area for absorption of chemical and the waxy leaves should be bruised or trampled to increase uptake.

D. SPANISH BLUEBELL

D.1 Species Description & Ecology

The Spanish Bluebell (*Hyacinthoides hispanica*) is native to the western Iberian Peninsula (Portugal and western Spain) and North Africa (Hackney, 2008; Meek, 2011; Parnell and Curtis, 2012; Taylor, 2002). The common Bluebell, (*H. non-scripta*), is native to Ireland, Britain & western Europe as far south as central Spain (Hackney, 2008; Kohn *et al*., 2009 Taylor, 2002). The Hybrid Bluebell, (*H. hispanica* x *H. non-scripta*), is perhaps the commonest cultivated bluebell in gardens. In the wild this hybrid is said to arise spontaneously where the native and/or introduced ranges of the parents meet (Taylor, 2002). There are unresolved questions, however, about the taxonomic status of these taxa; whether the 'Spanish' Bluebell is the same as the bluebells in Spain and whether it is merely a subspecies of the common bluebell, as the two hybridise freely (BSBI, 2010; Rix, 2004; Taylor, 2002).

The Spanish Bluebell was introduced as a garden plant more than 300 years ago, but it took another 200 years before it was present in the wild. In the UK, the increasing distribution of the Spanish and Hybrid bluebell was recognised in the late 1980s (Kohn *et al*. 2009).

Spanish Bluebells have a localised distribution in Ireland, with most existing records of the species concentrated in the southeast and south, respective (Taylor, 2002; BSBI, 2010,). The hybrid bluebell's range and frequency are increasing but it is still unevenly recorded (Taylor, 2002). The Spanish Bluebell may be continuing to increase slowly, but it has long been confused with the hybrid and probably remains somewhat over recorded in error for the hybrid (Reynolds, 2002; Taylor, 2002; Hackney, 2008). A key to distinguish the different *Hyacinthoides* spp. can be found in Grundmann *et al*. (2010).

Spanish and Hybrid Bluebells are intentionally planted domestically in horticultural habitat *e.g.,* gardens demesnes, parkland, churchyards, cemeteries. From cultivation in horticultural habitat, the species can spread via natural and human assisted dispersal into the wild *e.g.,* woodlands, roadsides and waste ground. Spanish and Hybrid Bluebell are also intentionally planted in the wild, particularly woodland areas for perceived 'landscape improvement' and 'wildlife value'.

The Spanish and Hybrid bluebell are spring-flowering, bulbous perennials, producing the fresh season's leaves in about December (Kohn *et al*., 2009).

The Spanish Bluebell and Hybrid is fully fertile and produces abundant seed. All bluebells retain much of their seed in the papery fruits until well into the winter and leaves die back completely from about the end of summer (Hackney, 2008). The plant can establish from seed sown at any time of the year (Seedaholic, 2014). The seeds of Spanish Bluebell take five years to reach the mature stage (Merryweather & Fitter 1995a; Van der Veken *et al*. 2007) and is likely due to plants taking time to accumulate enough resources to develop a bulb before allocating resources to flower production. Rix (2004) also reports that Spanish Bluebell typically only flowers after four years of age, indicating that flowering is dependent on resource accumulation rather than some internal mechanism that takes exactly five seasons of growth (cited in Allum, Lill, Natalie, 2016). Flower spikes appear in April and May and the flowers are insect-pollinated (Hackney, 2008). It is said to have no, to some, self-compatibility, with insect pollinators consisting mainly of Bombus species and syrphids (Corbet, 1998).

The longevity of the seed is not known, and no dormancy has been detected beyond the ability to remain quiescent through their first winter (Blackman and Rutter, 1954; Meek, 2011; Thompson and Grime, 1979). (cited in http://nonnativespecies.ie/wp-content/uploads/2014/03/Hyacinthoides-hispanica-Spanish-Bluebell-and-Hybrid.pdf). The bulb is entirely renewed annually and as a result flowering and plant size are sensitive to drought and leaf loss experienced in the previous year (Blackman and Rutter, 1954; Littlemore and Barker, 2001). The bulb renewal process can sometimes lead to the bulb splitting in two *i.e.* clonal reproduction (Wilson 1959; Grabham & Packham 1983; Merryweather & Fitter 1995a). Seeds have no apparent adaptations for dispersal (Knight, 1964) (cited in Allum, Lill, Natalie, 2016). Seedling survival and establishment is facilitated by mycorrhizal associations (Merryweather and Fitter, 1995).

There is a dearth of information to be found in the literature about the fecundity and dispersal of Spanish Bluebell and the native Bluebell. Spanish Bluebells are however considered to be poor natural dispersers and spread of the taxa is thought to be largely depended on human-

assisted dispersal. (cited in http://nonnativespecies.ie/wp-content/uploads/2014/03/Hyacinthoides-hispanica-Spanish-Bluebell-and-Hybrid.pdf). Natural seed dispersal is achieved when the raceme and fruit dry and the plants collapse or are knocked to the ground by wind action or by animals, *i.e.* barochory (Honnay *et al*. 1999). Van der Veken *et al*. (2007) reported very slow spread for the English Bluebell, and due to their similar dispersal method, this is likely also true for the Spanish Bluebell. Kohn *et al*. (2009) suggest that, if the spread is indeed equally slow, then hybridisation is likely the bigger threat to the native Bluebell (cited in cited in Allum, Lill, Natalie, 2016).

D.2 Control & Management Programmes

Bluebells are resistant to many herbicides commonly used in the garden. Applications of herbicide are best made after the plant has flowered in April and May. Flower heads should be cut to prevent the formation of seed. Repeat applications may be required to deplete the soil seed bank, although a persistent seed bank is not associated with Spanish Bluebell as no dormancy has been detected beyond the ability to remain quiescent through their first winter (Blackman and Rutter, 1954; Meek, 2011; Thompson and Grime, 1979). The seeds of Spanish Bluebell take five years to reach flowering (Merryweather & Fitter 1995a; Van der Veken *et al*. 2007).

The plants and bulbs can be mechanically excavated and removed. The best time to undertake mechanical control is early spring before the plant starts flowering. These perennial plants form large clumps via self-seeding and are said to send out underground runners that spread rapidly and form new bulbs, although the presence of runners is disputed by some. It is important to ensure to uproot all of the bulbous material and associated runners where present. Where all bulbous material is not removed regular follow up will be required with chemical herbicide to deal with regrowth from bulbs or split bulbous material.

E. WINTER HELIOTROPE

The recommended optimum treatment period for the deployment of Glyphosate to Winter Heliotrope is February and March after flowering or in mid to late summer according to the NRA (2010). New foliage begins to appear after flowering later in spring (though last years' foliage may not dieback completely). Winter Heliotrope flowers between January and March and in certain climatic conditions the plants flower between November and March (http://www.irishwildflowers.ie/pages/200a.html;(http://www.irishwildflowers.ie/pages/200a.html; http://www.irishwildflowers.ie/pages/433a.html).

According to NRA (2010) the recovery of Winter Heliotrope vector material can be undertaken at any time of year. It is important to ensure to uproot the entire rhizome network. Where all rhizomes are not removed regular follow-ups will be required to deal with regrowth from rhizomes. Deep burial (more than 2m deep) of recovered material is recommended (NRA, 2010).

It is understood that the control of Winter Heliotrope is currently the subject of an EPA funded project led by CERIS, Institute of Technology, Sligo which is targeting the Prevention, Control and Eradication of Invasive Alien Species (IAS) on the Island of Ireland.

F. MONTBRETIA

Non-chemical treatment, chemical treatment, or a combination of both can be employed to remove this species.

Physical control of Montbretia is difficult as the corms break up from their chains very readily and cause re-infestation or further spread. Where infestations are limited in extent, the entire stand of Montbretia can be controlled by removing the plants and corms (NRA, 2010; Weeds of New Zealand, 2016) and burying them to a depth of at least 2m, alternatively they can be incinerated or disposed of to a licensed landfill. Corms should be disposed properly in order to avoid re-sprouts. It should be noted that the corms are very hardy and are not suitable for composting.

As Montbretia is capable of regeneration from corms and small fragments of rhizome, all material must be handled and disposed of in a way which does not result in the potential for further spread. Small pieces of plant material may be spread unintentionally on shoes, clothes, and agricultural equipment; therefore, biosecurity protocols should be strictly adhered to at all times.

According to DAFM, the most effective time to excavate Montbretia is just before full flowering occurs in summer, while NRA (2010) states that excavation can take place at any time of the year, when the soil is suitably dry.

Due to the potential for reinfestation from corms and fragments of rhizomes, regular follow-up with chemical herbicide may be required for a number of years to deal with any regrowth (NRA, 2010;(https://www.agriculture.gov.ie/media/migration/farmingschemesandpayments/glastraining/MontbretiaFinalDraft230616.pdf).

Chemical control can be achieved using glyphosate or Metsulfuron during active growth in late spring or summer with foliar spray, wiper applicator or spot treatment (NRA, 2010). In Australia and New Zealand, herbicides such as glyphosate and Metsulfuron-methyl have been used to control infestations of Montbretia (Ensbey *et al*., 2011; Weeds of New Zealand, 2016; https://www.cabi.org/isc/datasheet/107826/aqb).

Complete eradication of Montbretia from a site may take a number of years. Non-chemical treatment, chemical treatment, or a combination of both can be employed to remove the species. As Montbretia is capable of regeneration from corms and small fragments of rhizome, all material must be handled and disposed of in a way which does not result in the potential for further spread. Small pieces of plant material may be spread unintentionally on shoes, clothes, and agricultural equipment. The most effective time to remove Montbretia is just before full flowering occurs in summer. Please note that control will require continued input and follow-up over a number of years to deal with any re-growth by corms or rhizomes (https://www.agriculture.gov.ie/media/migration/farmingschemesandpayments/glastraining/MontbretiaFinalDraft230616.pdf).

G. SYCAMORE

Sycamore trees can be felled and with herbicide applied immediately to the stump with a brush. Even after the sycamore tree has been cut down, a new sprout may grow from the stump. In order to completely eradicate the tree, the stump should be removed using a stump grinder to grind the stump down to ground level, followed by digging out major connecting roots. It is also possible to kill the stump using accelerated decay to rot the stump before removing it. To use this method, a series of holes are drilled into the top and sides of the stump. The holes are then filled with slow-release fertilizer and watered well before the stump is covered with a mound of soil to begin the process of decay. After a few weeks, the stump will have rotted from the inside out and ready for removal (https://homeguides.sfgate.com/methods-killing-sycamore-trees-27914.html).

H. TRAVELLERS JOY

Glyphosate can be used as a foliar spray or as a spot treatment for Traveller's Joy and should be applied in summer during active growth before senescence, when it is not very hot or during drought. Following control, regular monitoring will be required with appropriate follow up to deal with regrowth or new seedling germination over a period of 2–3 years.

For mature plants, they can be physically removed from the ground, or the vines can be cut back to ground level or waist height in winter or spring with a straight horizontal cut. Herbicide is then applied immediately to the wound with a brush and the subsequent regrowth can be then foliar sprayed. This method will avoid impacting on the host plant the vine may be covering. The plants should be left *in situ* until they are dead. Where plants are not killed in a single application, wait until re growth before re spraying.

Appendix 7.1

Outline Mobility Management Plan

Outline Mobility Management Plan

ARUP

Tiznow Property Company Limited (Comer Group Ireland)

City Park Development at The Former Tedcastles Site

Outline Mobility Management Plan

Reference: 267365-ARUP-XX-XX-RP-YT-0012

P02 | 25 March 2022

This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 267365-00

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ARUP

Project title	City Park Development at The Former Tedcastles Site
Document title	Outline Mobility Management Plan
Job number	267365-00
Document ref	267365-ARUP-XX-XX-RP-YT-0012
File reference	4-04-02

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		Signature			
P02	25 March 2022	**Filename**	267365-ARUP-XX-XX-RP-YT-0012		
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			Prepared by	**Checked by**	**Approved by**
		Name	James Glenn-Craigie	Clifford Killeen	John Hynes
		Signature			
		Filename			
		Description			
			Prepared by	**Checked by**	**Approved by**
		Name			
		Signature			

Issue Document Verification with Document ✓

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1. Introduction

1.1 Context

Arup have been commissioned by Tiznow Property Company Limited (Comer Group Ireland) to prepare an Outline Mobility Management Plan (MMP) for a proposed strategic housing development at The Former Tedcastles Site, in the South Docks area of Cork City.

This report presents an assessment of the site accessibility, presents the objectives of the Outline MMP, sets mode split targets for the proposed development and sets out initiatives proposed to help meet these targets.

1.2 Proposed Development

The proposed development will consist of the demolition of the existing structures on site and the construction of a strategic housing development of 823 no. apartments, resident amenity and ancillary commercial areas including childcare facilities. The development will comprise 6 no. buildings ranging in height from 1 no. to 35 no. storeys over lower ground floor level. The proposed development also comprises hard and soft landscaping, pedestrian bridges, car parking, bicycle stores and shelters, bin stores, ESB substations, plant rooms and all ancillary site development works. Vehicular access to the proposed development will be provided via Centre Park Road.

The development will deliver a new neighbourhood which will be conveniently located in proximity to Cork City Centre and to the south-eastern suburbs. The site lies on the strategic transport corridor intended to facilitate a rapid transit system as identified in the Cork Metropolitan Area Transport Strategy.

The site will have controlled internal vehicle accesses to a total of 268 residential car parking below podium level via the internal site access road, which will be accessed via Centre Park Road. In addition, 1,718 bicycle parking spaces and a further 412 visitor cycle parking spaces are proposed.

2. Site Assessment

2.1 Location

The development site is located in the eastern suburb of Cork City, approximately 2km east of the city centre, within the South Docklands, at The Former Tedcastles Site. The site is bounded to the north by Marina Walk, to the south by Centre Park Road and to the west by industrial lands. The site is also located quite close to Páirc Uí Chaoimh Stadium and Marina Park. The location of the site in the context of Cork City Centre can be seen in Figure 1.

The development site is approximately 4.86 hectares in area and is currently not in use although there are remnants of a number of industrial-type buildings still present on site.

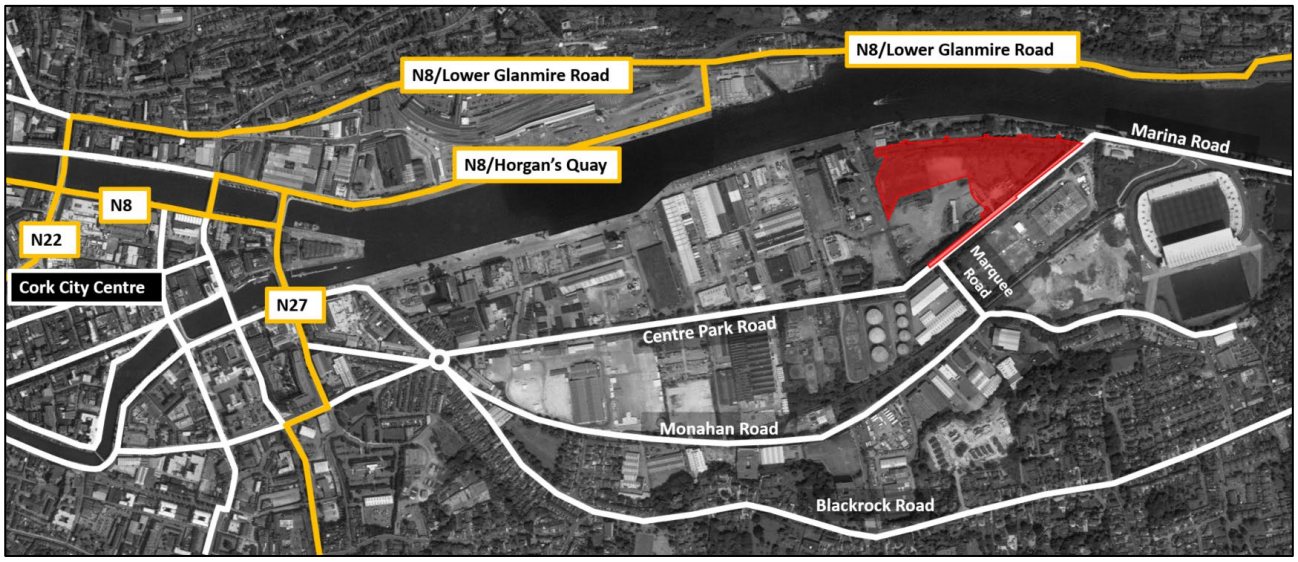

Figure 1: Site Location – Cork City Centre Context

2.2 Local Road Network

The roads located in the proximity of the development are described below and can be seen in Figure 1. The local area surrounding the site at present can largely be described as industrial in use, with a number of dormant sites towards the eastern end of the South Docklands. Centre Park Road and Monahan Road are connecting routes to Cork City Centre to the west, and to the Blackrock and Ballintemple suburban areas to the east/south-east. These routes are standard two-lane carriageways for the most part (with some localised flaring in certain locations). Marquee Road is a connecting road that links Centre Park Road and Monahan Road.

2.2.1 Centre Park Road

Centre Park Road is a 1.5km long, two-lane wide road which runs from the Victoria Road Roundabout to the West, to the Marina Road to the East. The road will be used to gain access to the development site. There are pedestrian facilities on both sides of the road and there are segregated cycle facilities (outbound) in place on the route. The 212 city bus service (Kent Station to Mahon Point) has an outbound stop on Centre Park Road approximately 250m west of the site.

Centre Park Road also acts as a link to the city centre from Blackrock Village via The Marina. Currently, there are no significantly active entrances on the section of Centre Park Road to the north-east of the junction with Marquee Road, and as such this section of Centre Park Road experiences very light traffic flows. Furthermore, Cork City Council have implemented through traffic restrictions along the Marina to the north-east as of the end of 2021, which effectively prohibits any non-essential through traffic along Centre Park Road east of its junction with Marquee Road.

2.2.2 Monahan Road

Monahan Road is a 2km long, two-lane wide road, which runs from the Victoria Road to the west to the Blackrock Road to the east. The northern side of the road has a footpath running the length of the road. There is on street parking on some sections of the southern side of the road, with intermittent footpath provision. There are segregated cycling facilities (inbound) in place on the route.

The 212 city bus service (Kent Station to Mahon Point) has inbound and outbound stops on Monahan Road approximately 200m south-east of the site.

The road experiences low-to-moderate traffic flow during the AM and PM peak periods as there are several employment areas situated along the road and the route also facilitates onward traffic flow to Centre Park Road. Monahan Road also acts as a link to the city centre from Blackrock Village and Ballintemple via Maryville/Blackrock Road.

2.2.3 Marquee Road

Marquee Road is a 135m long, two-lane wide road which links Centre Park Road with Monahan Road. There are no bus stops on the route, but the route has footpaths on both sides as well as segregated cycling infrastructure on the eastern side, connecting Centre Park Road to Monahan Road.

As with the other roads in the locality, Marquee Road experiences low-to-moderate traffic flow during the AM and PM peak periods as there are several employment areas situated in the vicinity and the route also facilitates onward traffic between Centre Park Road and Monahan Road, as well as traffic routing from Maryville/Blackrock Road to Centre Park Road to and from the city centre.

2.2.4 The Marina

The Marina is a narrow, two-lane road which runs along the southern bank of the River Lee, connecting Blackrock Village with Centre Park Road. The Marina has been designated by Cork City Council (as of late 2020) as a pedestrian and cyclist-only area, with restrictions in place preventing vehicular use of the route and limiting vehicle access to local access only.

Local access to the Shandon Boat Club, the Lee Rowing Club and Páirc Uí Chaoimh is retained, but no vehicular access is permitted to the east of the vehicle entrance to Páirc Uí Chaoimh (the road is now closed at this location). Further east, access via Blackrock Village is permitted for vehicles up to the junction with Church Avenue; west of this junction, no vehicle access is permitted.

Outbound traffic on Centre Park Road is also permitted to access the Marina for local access to the Lee Rowing Club, and to the Marina Park car park, and for access to Páirc Uí Chaoimh stadium. Otherwise, the Marina now carries no traffic flows of note.

2.3 Pedestrian Accessibility

All of the routes discussed in Section 2.2 have footpaths of varying quality. A program of footpath improvement works has been carried out in recent years in the site vicinity which has seen the replacement and upgrade of a significant portion of the existing footpaths along Centre Park Road in particular. Monahan Road has a continuous footpath along the northern side of the route, and intermittent footpath provision on the southern side. The pedestrian network in the site vicinity is extremely popular as a leisure walking and running route due to the onward connection to the southern bank of the River Lee (along The Marina). Marquee Road has footpaths provided on both sides of the road, of varying quality.

Figure 2 below shows the walking catchment of the development site (in 5-minute bands). It can be seen that Páirc Uí Chaoimh is within the 10-minute catchment. Marina Commercial Park, the South Docks Area and the Blackrock Road are all within the 15-minute catchment. Douglas Street is reachable within 30-minutes and Victoria Road is just outside the 20-minute walking catchment.

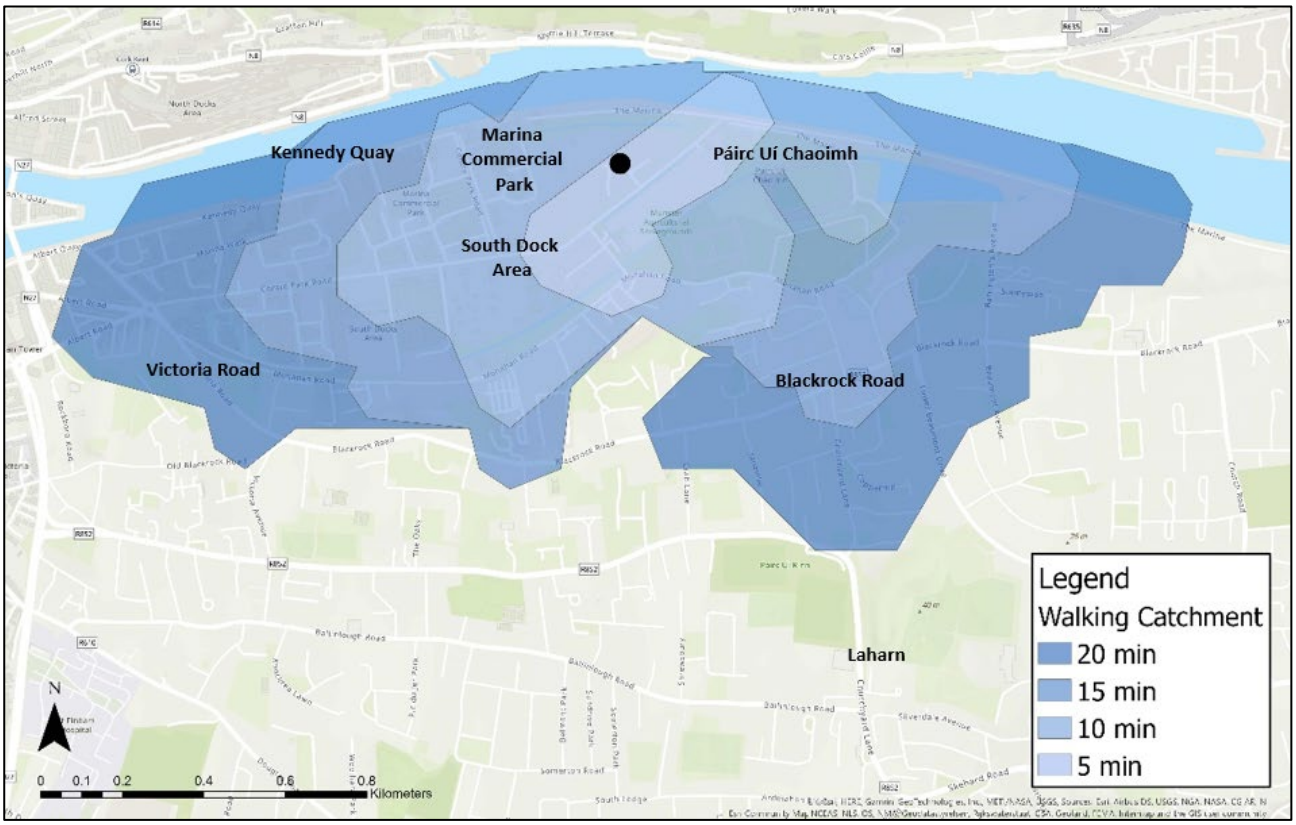

Figure 2: Walking Catchment of proposed development site

As set out in the Cork Metropolitan Area Transport Strategy (CMATS) a key aim is to improve walking infrastructure across the city to ensure the pedestrian environment is significantly enhanced, more attractive and safer.

2.4 Cycle Accessibility

As outlined above, there are a number of dedicated cycle infrastructure improvement schemes which have recently been implemented by Cork City Council in the site vicinity. Segregated cycle infrastructure is now in place on Centre Park Road (outbound), Monahan Road (inbound), Marquee Road (connecting Centre Park Road and Monahan Road), and segregated cycle infrastructure is also now in place between Centre Park Road (at the Victoria Road Roundabout) and Grand Parade, providing high-quality connections directly between the city centre core and the site. To the east, The Marina is also now a pedestrian and cyclist-only area, and approximately 1km from the site, the Passage Greenway line is accessible directly from the Marina.

The greenway is an extremely popular facility used for leisure and commuting, providing access via ramped connections to the Mahon Point area (via a ramped connection at St. Michael's Drive) and to Skehard Road (via a ramped connection in the vicinity of the Skehard Road/Mahon Link Road junction), and ultimately linking onwards to Cork City Centre.

The Passage Greenway is currently being upgraded by Cork City Council to allow for a wider facility, additional CCTV and public lighting, and new ramped connections from the adjacent road and street network. This is under construction at present and is expected to be complete and opened in mid-2022.

Figure 3 below shows the cycling catchment for the site. It can be seen that the catchment encompasses most of Cork City. The city centre and Blackrock are within a 20-minute cycle from the site. University College Cork, Black Ash, Blackpool, Douglas and Ballyvolane are all within the 30-minute catchment. Munster Technological University (MTU), Whites Cross and Cork Airport are within the 40-minute catchment area.

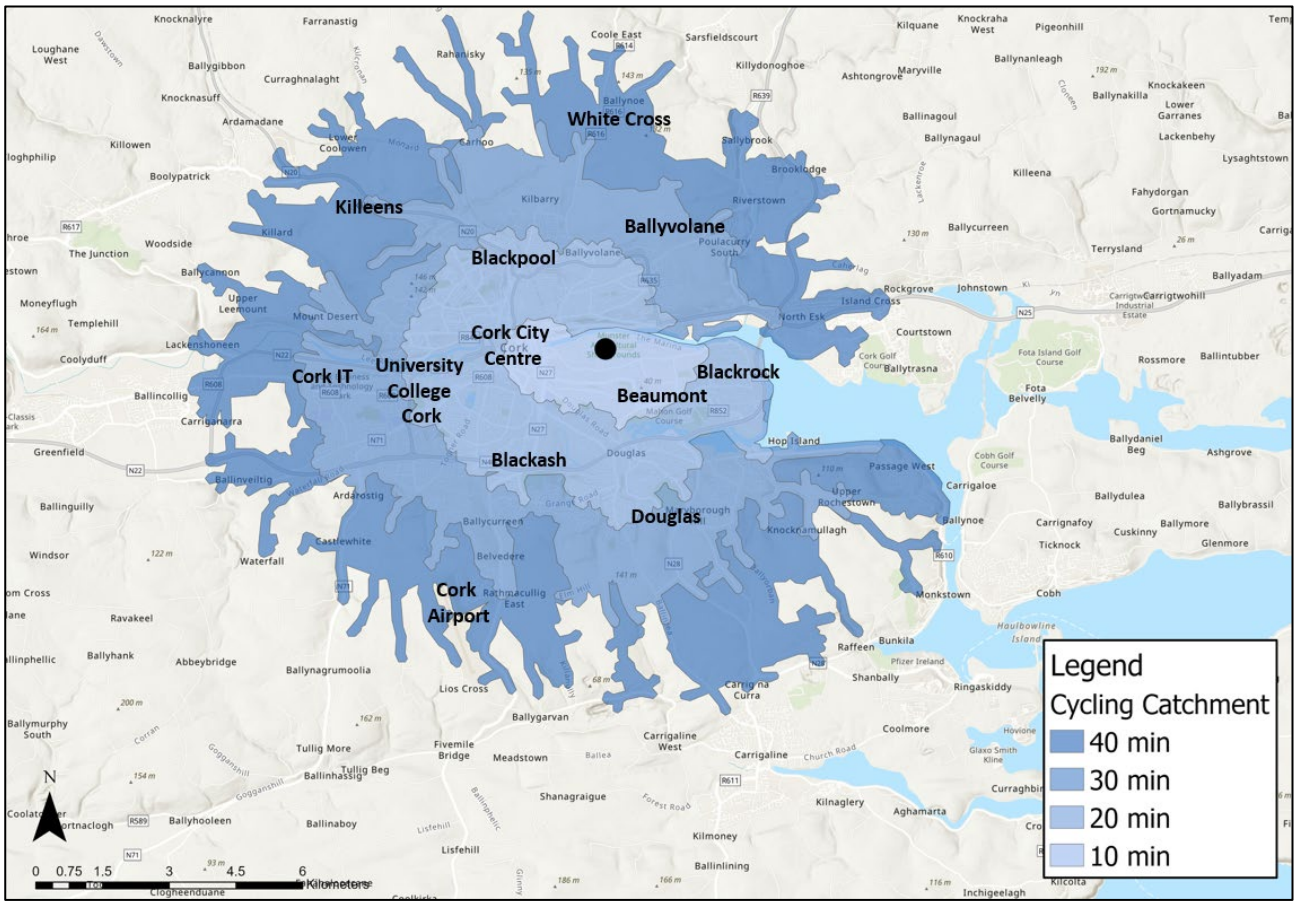

Figure 3: Cycling Catchment of proposed development site

Under the Cork Metropolitan Area Cycle Network Plan, a network of cycling facilities has been identified and are due to be implemented; Figure 4 and Figure 5 below show the cycle proposed cycling facilities for Cork City Centre and for the road network surrounding the site, respectively.

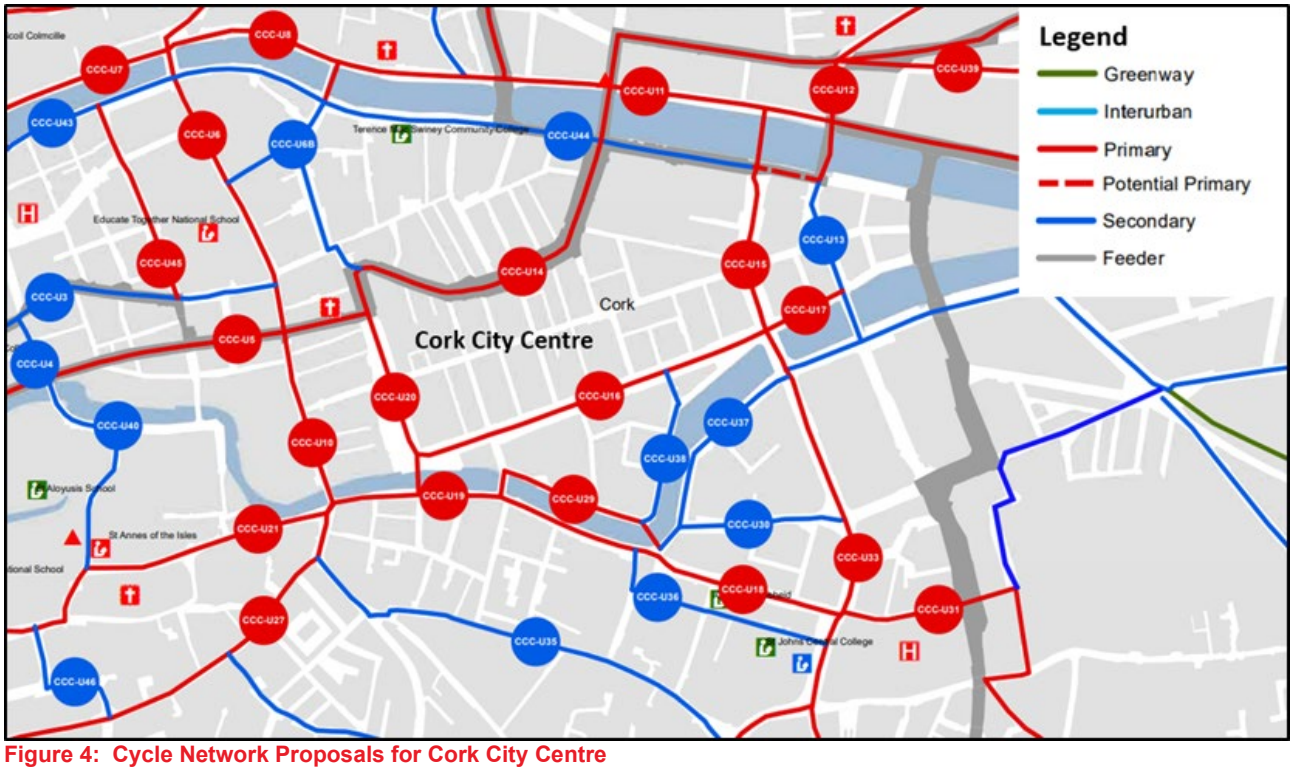

Figure 4: Cycle Network Proposals for Cork City Centre

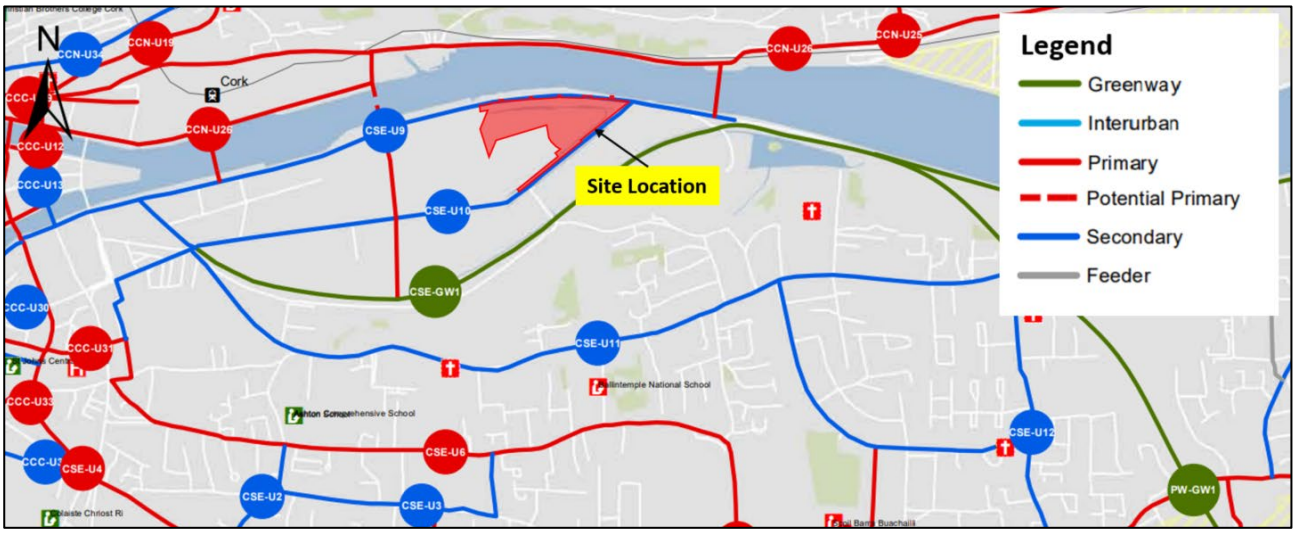

Figure 5: Cycle Network Proposals for site environs

In addition to the above, the Cork Metropolitan Area Transport Strategy (CMATS) outlines cycle proposals in the site environs. Figure 6 below illustrates the proposed cycle network as indicated in CMATS. The CMATS proposals are assumed in this regard to supersede the Cork Metropolitan Area Cycle Network Plan as the purpose of the strategy is to amalgamate all relevant proposals into a single framework for implementation. It is seen in Figure 6 below that CMATS proposes to amend the cycle network as proposed in the Cork Metropolitan Area Cycle Network Plan to extend the greenway on the Marina further west towards the city centre.

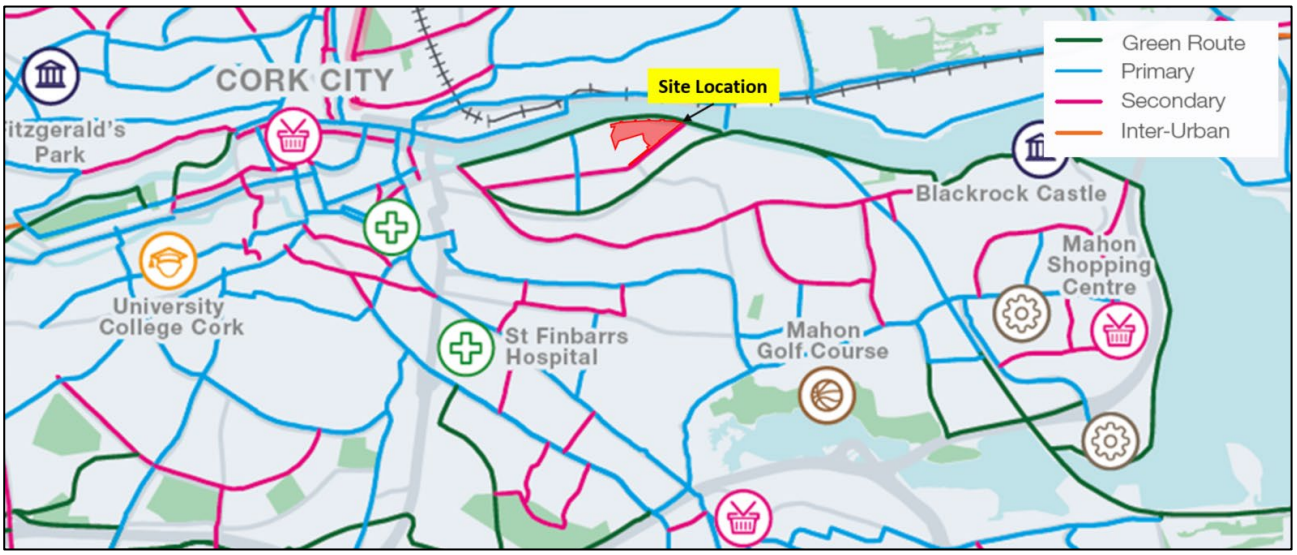

Figure 6: Cycle Network Proposals for Site Environs

Cork City is also served by a public bike hire scheme which covers a large portion of the city centre and extends from University College Cork in the west to Kent station in the east, as shown below in Figure 7. The nearest public bike share scheme docking stations to the site are on Lapp's Quay and Anglesea Street, approximately 1.9km walking distance from the site. It is an ongoing objective of Cork City Council and the National Transport Authority to seek to expand the coverage of the network where feasible. An additional 11 stations have been announced for the scheme, of which 6 are constructed and operational with the remainder expected to be implemented and operational in mid-2022. These additional stations will include a proposed station at Victoria Road, which will be approximately 1.4km from the site.

Figure 7: Existing Public Bike Hire station locations in site vicinity

2.5 Public Transport Accessibility

Cork City Centre has a large number of public transport services including city bus services, regional and commuter bus services and commuter/suburban rail. These are described in more detail below.

2.5.1 Cork City Bus Network

Cork City is served by 30 city bus services. Of these, 27 services travel to or through the City Centre. There are 3 main bus-stop/termini areas in the city centre; namely South Mall, St. Patricks Street and Merchants Quay/Parnell Place Station (see Figure 8 below). The Marina Commercial Park stop is located within 250m walking distance to the west of the site and is served by the 212 service, thereby connecting the development site directly with Cork City Centre to the west and Mahon Point to the east. To the south-east, the existing stop on Monahan Road is approximately 200m walking distance from the site.

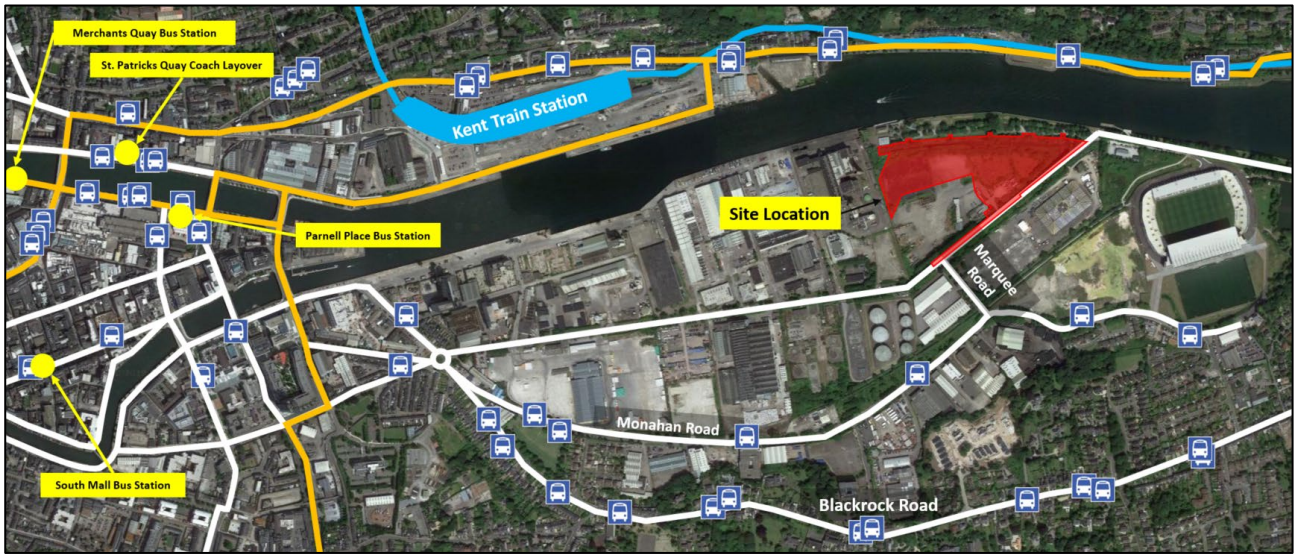

Figure 8: Cork City Bus Service Termini and routes/stops in site vicinity

The Bus Éireann 202/202A service (which runs from Mahon Point to Knocknaheeny at 10-minute frequencies) also has its' primary route corridor on Blackrock Road, approximately 800m walking distance south-east from the site.

Figure 9: Existing bus stops and bus routes in site vicinity

Figure 10 and **Figure** 11 below show the 15, 30, 45 and 60-minute public transport catchments for the site during the AM peak (departing at 08:30) and the PM peak (arriving at 18:00).

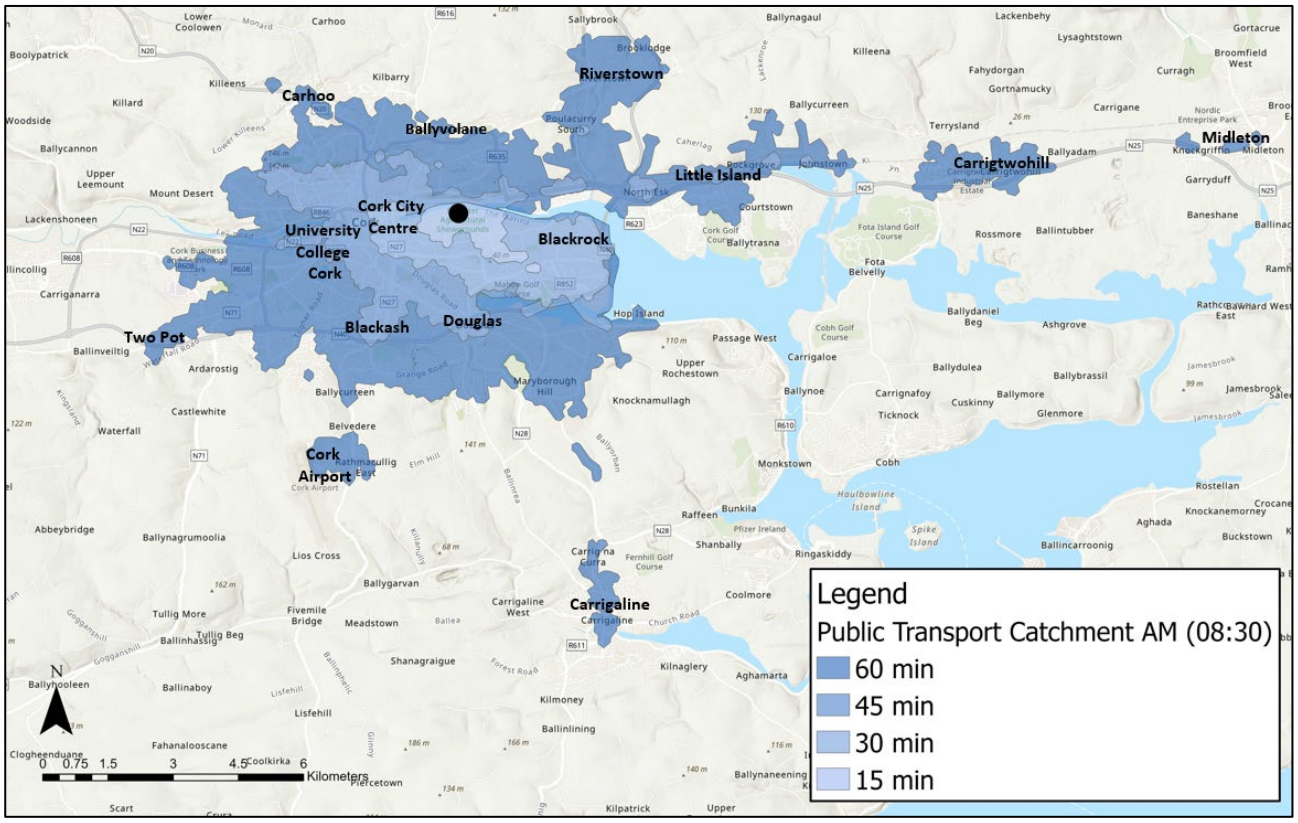

Figure 10: AM Peak (08:30) Public Transport Catchment of proposed development site

During the AM Peak Cork City Centre can be reached from the site within 30 minutes, with the western edge of the city centre area within a 45-minute catchment. The 45-minute catchment encompasses Blackrock/Mahon Point and University College Cork. Outside of this, the majority of the Cork City area is within the 60-minute catchment, as well as Riverstown to the north, and the Black Ash and Douglas to the south. Cork Airport lies just inside the 60-catchment area.

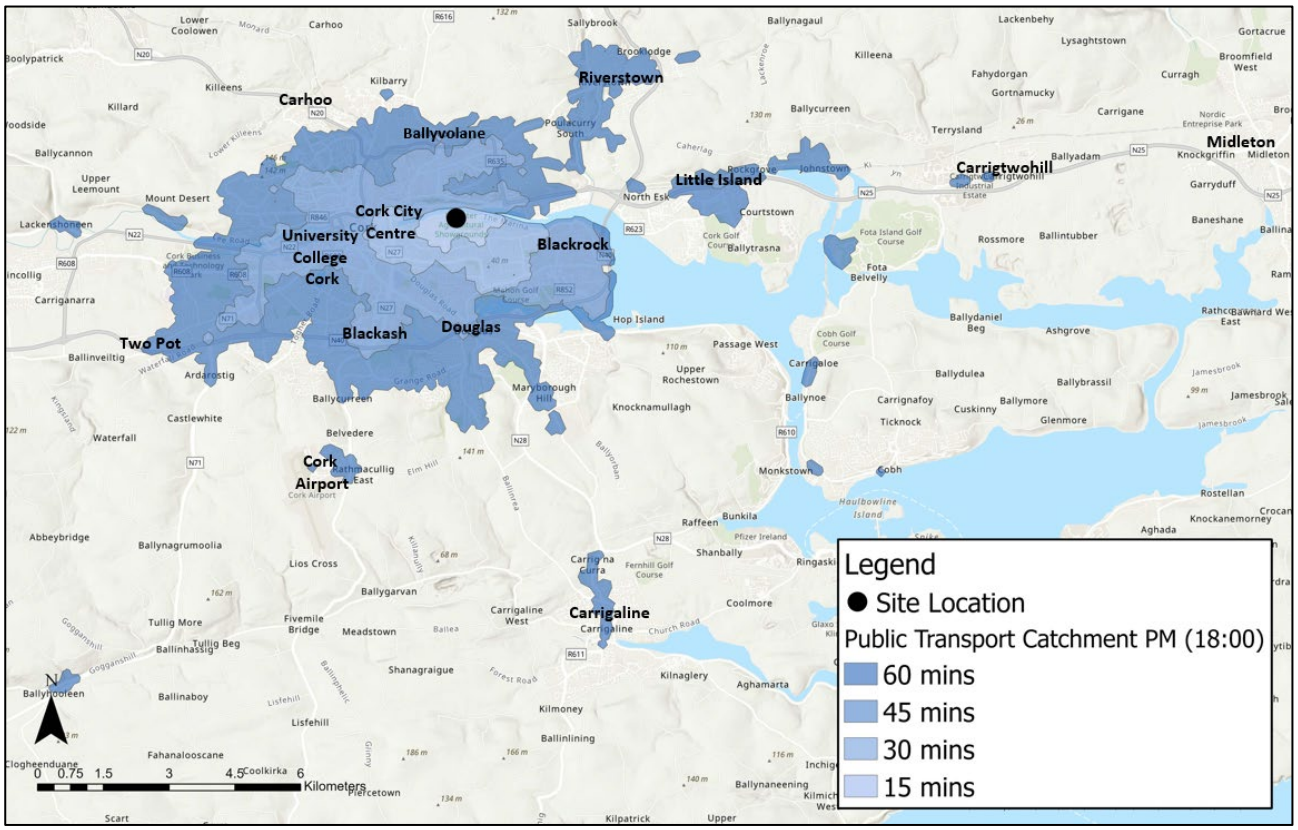

Figure 11: PM Peak Public (18:00) Transport Catchment of proposed development site

During the PM Peak the site can be reached from Cork City Centre within 30 minutes. Blackrock and University College Cork can be reached by public transport within 45-minutes. Ballyandreen, Riverstown and Carhoo to the north are within 60-minutes by public transport from the site. Cork Airport, Douglas and the Black Ash to the south are also within 60-minutes from the site.

2.5.2 BusConnects Cork – Draft City Bus Network

In November 2021, the National Transport Authority announced details of a new metropolitan area bus network for Cork. This new network is currently at draft stage and a consultation process is underway, following which the final proposed new city bus network will be published.

The draft network design maps indicate that a proposed service (Route 9) is intended to link Jacobs Island, at 20-minute weekday frequencies and will pass the site on Marquee Road along its route. Additionally, the proposed Route 11 will link Mahon Point to Farranree at 30-minute frequencies and will route along the Blackrock Road. The online map of the draft network indicates that this proposed new network would place an estimated 1,000 additional jobs within a 30-minute travel time, and an additional 7,000 jobs within a 60-minute travel time.

Figure 12 below illustrates the catchment of the proposed new city bus network in relation to the development site.

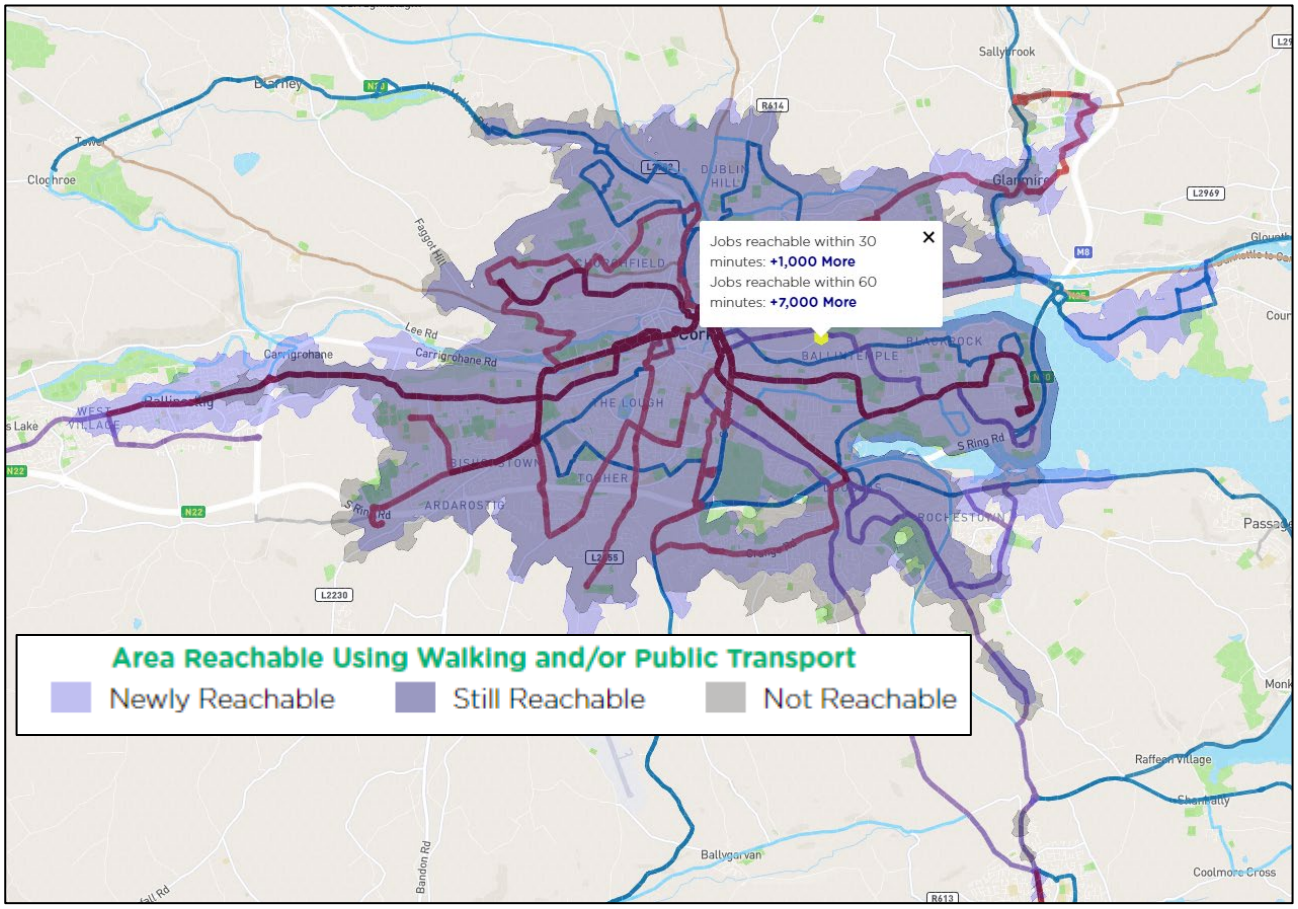

Figure 12: Public Transport Destination Accessibility from The Site [Base map source: BusConnects.ie]

2.5.3 Regional / Commuter Bus Services

A significant number of Bus Éireann Regional and Commuter services terminate or stop at Parnell Place bus station in the city centre, approximately 2.0km from the site.

2.5.4 Commuter/Suburban Rail Services

Kent Station is the principal train station serving Cork City. Services to and from Cobh, Mallow, Midleton and Dublin arrive and depart from Kent Station. The station is approximately 1.2km due north-west of the site but is approximately 2.5km by road.

The commuter services to and from Cobh run every 30 mins during the AM and PM peak periods (i.e., 07:00-09:00 and 16:00-19:00). There are 4 services from Mallow which arrive in Kent Station during the AM peak period and 6 services which depart from Cork to Mallow during the PM peak period. Services to and from Midleton run every 30 mins during the AM and PM peak periods.

Intercity services from Cork- Dublin typically run every hour during the day – a number of these are direct services and others have scheduled stops along the route.

2.6 Site Access Arrangements

The proposed development will have a single vehicle access point directly from Centre Park Road. This will lead vehicles to an internal roadway (Street A), from which there will be controlled vehicle accesses to the car parking proposed at sub-podium level.

Pedestrian and cyclist access and permeability through the site is provided throughout. The site is bounded by Centre Park Road and the Shandon Boat Club access road to the south and north, respectively, and by the year of opening (estimated to be 2015) it is envisaged that the Monahan Road to the south will be extended (by Cork City Council) – this project has planning consent and construction is expected to commence in mid-2022 (with an estimated 12-month construction duration). The site is bounded to the west by existing industrial lands.

The development site access strategy is shown in **Figure 13**.

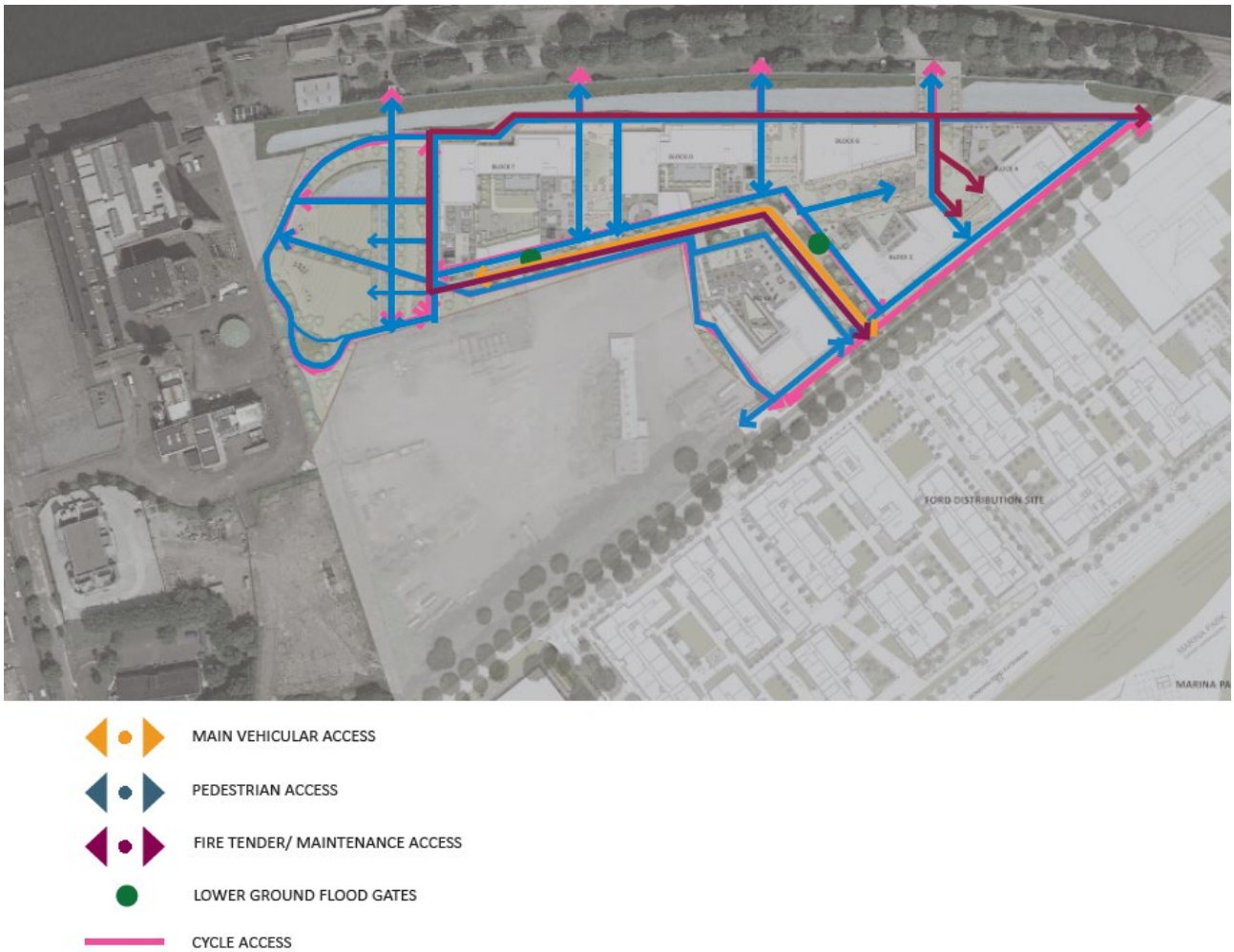

Figure 13: Development Site Access Strategy

2.7 Strategic Transport Proposals

The Cork South Docklands is envisaged to be a major regeneration hub for the city and will result in a substantial population and employment increase within the study area (including within the proposed development site). This will in turn require a commensurate improvement in both transport infrastructure and transport services.

Local and strategic transport proposals for the transport network in the site vicinity include upgrades to the local road network and additional road infrastructure in the site vicinity (including some additional river crossings), and at a strategic level the site lies along a proposed rapid transit corridor linking Mahon to Ballincollig via Cork City Centre. Therefore, regardless of the implementation of the proposed development, the local road network will see a significant increase in traffic flow arising from the redevelopment of the South Docklands and the implementation of new major transport infrastructure projects.

2.7.1 Cork Metropolitan Area Transport Strategy (CMATS)

CMATS has been developed by the National Transport Authority in collaboration with Transport Infrastructure Ireland, Cork City Council and Cork County Council. CMATS represents a co-ordinated land-use and transport strategy for the Cork Metropolitan Area to cover the period to 2040. The strategy builds upon previous similar strategies, including the Cork City Centre Movement Strategy (CCMS), the Cork Area Strategic Plan (CASP) and the Cork Metropolitan Area Cycle Network Plan.

CMATS is intended to provide a coherent transport planning policy framework and implementation plan for the measures contained therein.

CMATS aspires to support the future development of the Cork Metropolitan Area and specifically the South Docklands area as a key development zone within Cork City; to this end, high-frequency bus services are proposed across the entire Cork Metropolitan Area, with most services intended to have frequencies of 15 minutes or less. It is also understood that to serve the South Docklands in the short term, high-frequency bus services are deemed critical. The proposed bus network identified in CMATS is to be delivered in the coming years by the NTA and Cork City Council via the 'BusConnects Cork' funding programme.

Figure 14: CMATS Bus Network Proposals in site vicinity

A significant portion of the proposed network above will be provided with bus priority measures – these are being developed by the National Transport Authority under the BusConnects Cork programme at present and are expected to be released for an initial public consultation in mid-2022.

In addition, a Bus Rapid Transit (BRT) system is initially envisaged to serve the South Docklands area as part of a proposed rapid transit corridor to link Ballincollig to Mahon via Cork City Centre; ultimately, it is expected that this corridor will be upgraded to Light Rail Transit (LRT). A route feasibility study is underway at present to determine the preferred route corridor for a future LRT system.

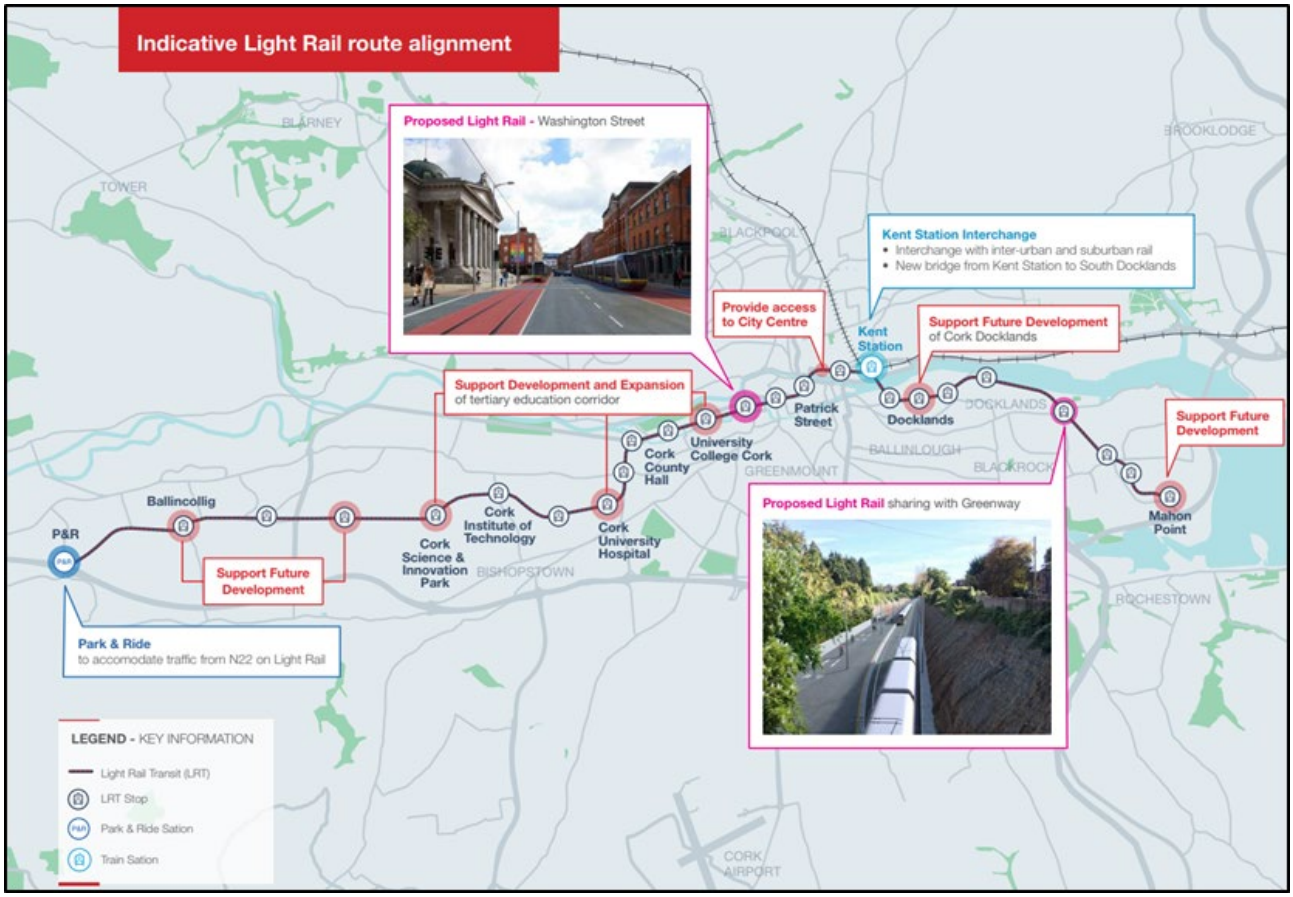

Figure 15: Proposed LRT East-West Corridor

Figure 16: Proposed Light Rail Transit Corridor through South Docklands and along site boundary

This transit corridor is proposed to route from Mahon to Ballincollig (via Cork City Centre) and to pass directly along the site boundary on Centre Park Road.

Improved throughput at Kent Station is also proposed as part of the CMATS, in order to enable direct train services from Mallow to Midleton/Cobh without requiring passengers to interchange between services at Kent Station. In addition, CMATS proposes the implementation of eight new train stations along the route to create a better suburban network.

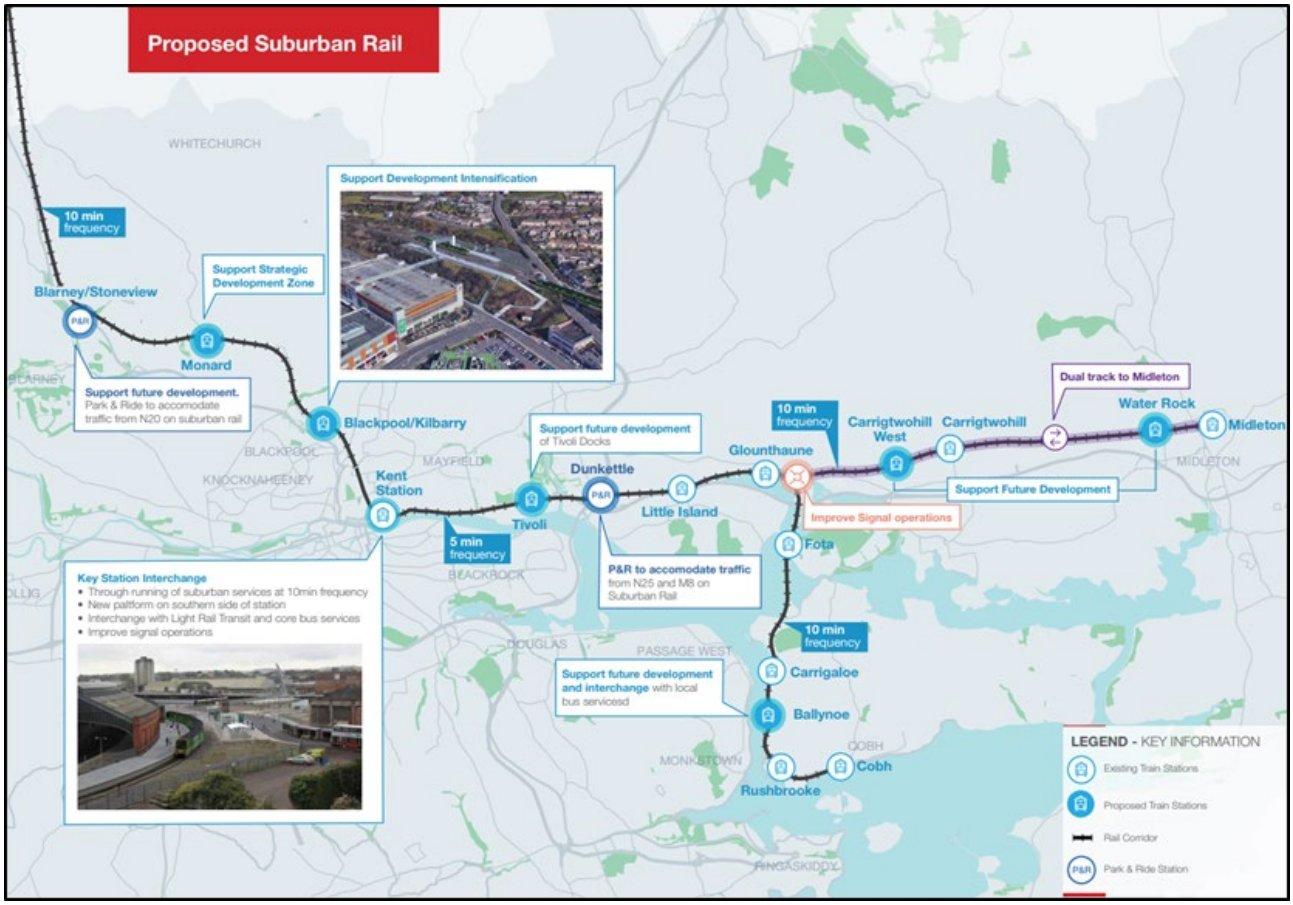

Figure 17: Proposed Suburban Rail Improvements

As outlined above, since publication of CMATS a proposed LRT Route Feasibility Study has been tendered and awarded to a design consultant, and the BusConnects Infrastructure Cork project has also been awarded to consultants to develop the relevant infrastructure proposals for bus services on a number of corridors across the city and suburbs. Further details on these two transformational projects are expected in mid-2022.

2.7.2 South Docklands Area-Based Transport Assessment (ABTA)

CMATS is supported at a local level by an 'Area-Based Transport Assessment' (ABTA) for the South Docklands, developed by Cork City Council (due to be finalised and published in 2022). The CMATS and ABTA assessments in turn will then inform the (ongoing) development of a new Local Area Plan for the South Docklands. It is noted that the outputs from the ABTA study have been incorporated into a specific section of the Draft Cork City Development Plan (2022-2028) that outlines the strategic objectives for the South Docklands area.

The ABTA for the South Docklands is fully aligned with the proposals outlined in CMATS (including the proposed public transport services and transport infrastructure proposals) and is based on a 2040 horizon year to include full achievement of the population and employment growth for Cork envisaged in the National Planning Framework as well as full build-out of the South Docklands (including the proposed development site). The CMATS and ABTA have therefore determined the necessary transport infrastructure required to support this population and employment growth in the period to 2040.

The CMATS and ABTA also both support the implementation of a comprehensive cycle network across the metropolitan area, and specifically within the South Docklands dedicated cycle infrastructure is proposed on all roads that pass the site.

To complement the above transport proposals, the proposed development will adopt a robust approach to demand management, to include a reduced parking provision at the site and the promotion of walking, cycling and public transport. As a result, the expected trip generation for the scheme will be reduced, and the resultant impacts on the local road network will be reduced.

The scheme will have one distinct vehicle access point on Centre Park Road. This will also rationalise the distribution of traffic onto the local road network.

Crucially, the site is extremely well-placed to avail of the transformational sustainable transport proposals envisaged for the South Docklands and the wider city area and indeed to support the viability of these services.

The proposed rapid transit corridor is seen in Figure 16 above to cross the River Lee using a new proposed public transport-only bridge (the Mill Road Bridge) and route directly to Kent Rail Station, providing interchange opportunity with suburban and inter-city rail services, and with city bus services that serve Kent Station. The LRT corridor continues eastwards to Mahon Point, and westwards to Ballincollig via the city centre, with proposed stops at key destination and interchange locations, including:

- Mahon Point;
- St. Patrick's Street;
- University College Cork;
- Cork County Hall;
- Cork University Hospital;
- Cork Institute of Technology;
- Cork Science & Innovation Park; and
- Ballincollig.

The LRT system is intended to ultimately operate at 5-minute frequencies. The site location along the proposed LRT system alignment on Centre Park Road ensures the proposed development is ideally placed to support the rapid transit corridor and to avail of the benefit of a flagship public transport system.

2.7.3 Cork Docklands to City Centre Road Improvement Scheme

The Docklands to City Centre Road Network Improvement Scheme has been identified by Cork City Council as an important project to support development in the South Docks of Cork City.

Funding has been secured by Cork City Council from the Local Infrastructure and Housing Activation Fund (LIHAF) to implement measures aimed at unlocking sustainable transport access between the South Docks and the city centre which will facilitate the beginning of the Docklands area realising its stated potential. The road improvement works will form part of Cork City Council's long-term infrastructure proposals for both the North and South Docks which will interconnect all zones within the Docklands area as development parcels are advanced.

The main project aims of the Docklands to City Centre Road Network Improvement scheme are:

- To provide key transport infrastructure that will act as the catalyst for the early development of the adjoining lands within the Docklands area;
- To provide a network for the optimum movement of all modes of transportation between the Docklands and the City Centre; and
- To provide a high-quality public realm consistent with the overall ambition for the Docklands area as a vibrant, innovative, mixed use, sustainable, socially inclusive, new urban quarter.

The scheme extends from the Albert Road/Albert Quay/Éamon de Valera Bridge junction eastwards along Victoria Road and incorporates the junctions at Centre Park Road, Monahan Road and Blackrock Road. The main changes proposed to the network under the scheme are as follows:

- Replacement of the existing Victoria Road Roundabout with a signalised junction;
- Introduction of a northbound contraflow bus lane on Victoria Road North from the new signalised junction to Albert Quay, continuing west along Albert Quay through the Albert Quay/Albert Street Junction and terminating at the Eglinton Street/Albert Quay and Clontarf Bridge Junction;

- Introduction of a two-way Cycle Track on Albert Quay East;
- Introduction of a two-way Cycle Track on Victoria Road North which will continue down Centre Park Road and Monahan Road (for future connectivity);
- Improvement to the Monahan Road/Victoria Road Junction;
- Re-alignment of the Old Blackrock Road/Victoria Road Junction;
- Public Realm Improvements to Albert Quay East – this quay will act as the 'gateway' to the South Docks from the city centre; and
- Public Realm Improvements to Victoria Road, Albert Road, and Marina Terrace.

The implementation of these measures is to ensure connectivity for sustainable modes of transport between the South Docks and the city centre into the future. A planning application is expected to be submitted for this scheme in mid-2022.

Figure 18: Proposed Streetscape Improvements on Albert Quay East under the Docklands to City Centre Road Network Improvement Scheme

3. Objectives and Targets

3.1 Objectives

The primary objectives of this travel plan are to:

- Reduce car dependency and demand;
- Promote the use of sustainable travel modes;
- Create awareness of alternative modes of transport available;
- Reduce the environmental effects associated with increased car use such as congestion, parking impacts, longer journey times and increased pollution; and
- Set, and work towards, achievable modal split targets based on strategies to improve alternative modes of transport.

3.2 Mode Split

3.2.1 Existing Mode Split

Until such point that the development is built and occupied, it is impossible to know the exact travel characteristics of the proposed development. However, in the interest of setting indicative mode split targets, an initial mode split has been estimated based on commuting data from the 2016 Census small areas surrounding the site.

The Central Statistics Office (CSO) Small Area Population (SAP) statistics were reviewed for the local area. A total of 5 relevant zones were identified and reviewed (Knockrea B – which contains the site itself, and Mahon A, Mahon C, Knockrea A, and Ballinlough C). The SAP information for these zones is based on Census 2016 data, and provides data on existing travel habits from the site, including mode share, departure times and distances to work, etc.

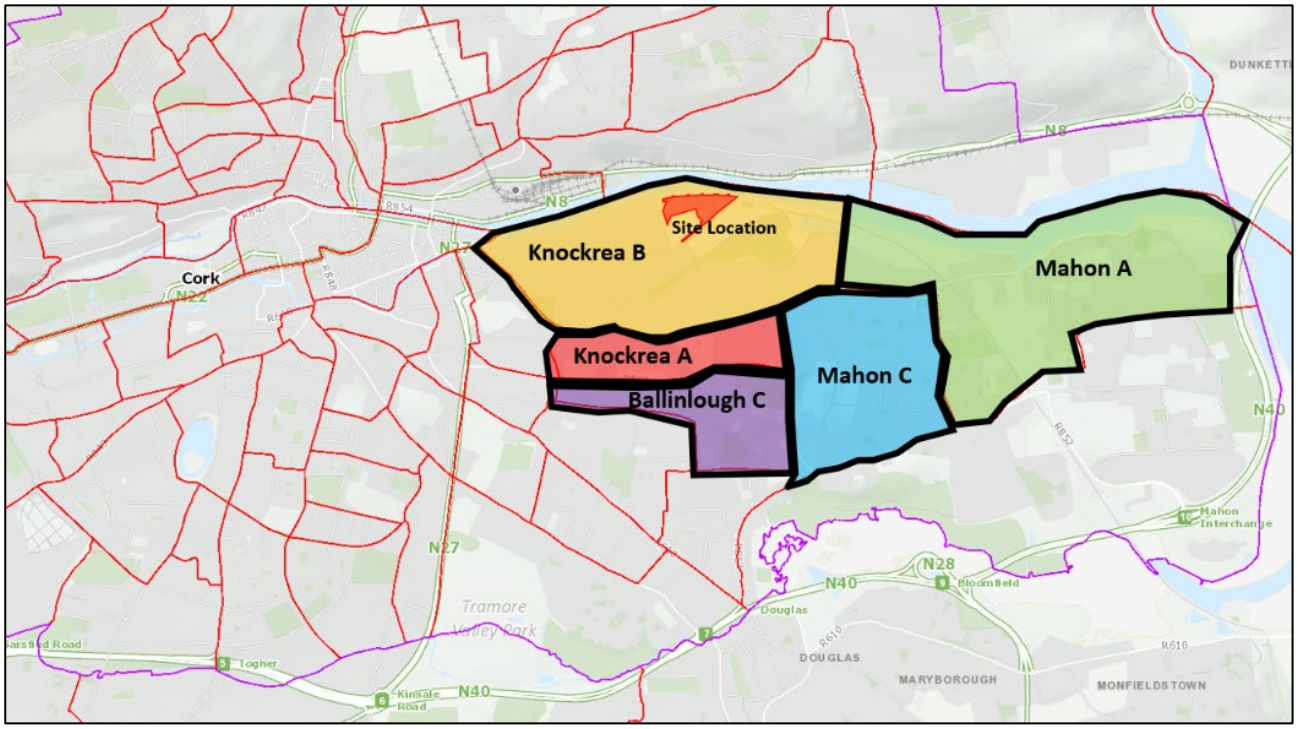

Figure 19: Electoral Division Zones in Cork City

Table 1: Existing Mode Share in Site Locality

Mode of Travel	Modal Split
On foot - Total	14%
Bicycle - Total	4%
Bus, minibus or coach - Total	8%
Train, DART or LUAS - Total	0%
Motorcycle or scooter - Total	0%
Car driver - Total	46%
Car passenger - Total	20%
Van - Total	3%
Other (incl. lorry) - Total	0%
Work mainly at or from home - Total	2%
Not stated - Total	3%
Total	100%

3.2.2 Mode Split Target

It is seen above in Table 1 that an existing mode share of 49% exists for car drivers and van drivers for these zones. This is to be expected given the proximity to both the city centre and to the Mahon employment area, and the presence of a high-frequency bus service serving these areas (the Bus Éireann 202 route) and the connection to the Passage Greenway line for cycling.

These mode share splits are also from Census 2016 and would not account for more recent improvements to public transport and cycling facilities (for example the Skehard Road improvement schemes, the Passage Greenway widening and lighting scheme, the current closure of the Marina to traffic and the new cycle infrastructure on Centre Park Road and Monahan Road).

In light of the improvements made since 2016 and the envisaged introduction of a high-frequency bus service to serve the South Docklands in the short term, a reduced mode share from the 49% noted above can be justified.

However, for robustness and to ensure a conservative assessment, it has been agreed with Cork City Council that the prevailing mode share of 49% for vehicle trips should be assumed for the site by the Opening Year scenario (2025), and that a mode share of 40% for vehicle trips can be assumed for the Opening Year +5 scenario (assumed to be 2030).

This is in recognition of the pending implementation of further walking, cycling and public transport service improvements within the South Docklands as the CMATS and ABTA strategies are applied and implemented across the Cork Metropolitan Area.

Based on the existing mode splits of the area surrounding the site, the following targets have been set for the period from 2025-2030, following the opening of the development. The achievement of this mode share is to be achieved incrementally over the period 2025-2030.

Table 2: Proposed Mode Share Target for 2030

Mode of Travel	Modal Split
On foot - Total	15%
Bicycle - Total	8%
Bus, minibus or coach - Total	12%
Train, DART or LUAS - Total	0%
Motorcycle or scooter - Total	0%
Car driver - Total	37%

Car passenger - Total	20%
Van - Total	3%
Other (incl. lorry) - Total	0%
Work mainly at or from home - Total	2%
Not stated - Total	3%
Total	100%

It is therefore proposed that a travel survey of residents will be carried out within 12 months of occupation of the first phase of the development (expected to be completed by 2025) in order to ascertain the actual travel characteristics of the proposed development.

This initial survey would be to determine the prevailing mode share at the site post-opening. It is proposed that this survey of residents would then be repeated on an annual basis to monitor the changes in travel behaviour at the site.

4. Oversight of the Mobility Management Plan Framework

A Mobility Management co-ordinator will be appointed at the development and will likely be from the Property Management Company. The Mobility Management co-ordinator will be appointed to oversee the development and implementation of the MMP and will have the chief role of promoting and monitoring the MMP going forward.

In advance of the Property Management Company being appointed, a contact from Tiznow Property Company Limited (Comer Group Ireland) will perform the role of Interim Mobility Management Co-ordinator.

4.1 Introduction

A key objective of the development will be to promote sustainable access by all modes of transport. To achieve this goal, a full Mobility Management Plan (MMP) should be created for the proposed development setting out measures to achieve.

The proposed development should have a MMP prepared as and when the occupiers are in place. This MMP would be based upon the collection of travel data from residents through a Travel Survey. At this stage (pre-planning), and for this reason, it is not possible to prepare a full MMP, but it is important to set out the aims and potential contents of such plans.

The primary objective of the MMP should be to contribute to sustainable transport by optimising the existing transportation infrastructure, reducing car dependency, and creating awareness of alternative modes of transport.

The MMP should emphasise and promote sustainable travel options through the development of planning and operational stages for the benefit of all end users and thereby to achieve the modal split targets for the building and support a limited provision of car parking.

4.2 MMP Management

4.2.1 MMP Coordinators

It is recommended that an MMP Coordinator is nominated to oversee the development and implementation of the MMP.

Amongst the key roles of the MMP Coordinator will be:

- To ensure co-ordination with the occupiers so that they are aware of and supportive of the targets set in the MMP;
- To develop and support a culture of sustainable travel into and within the site;
- To raise awareness of sustainable transport issues among residents;
- To act as a single point of contact for all queries relating to the MMP and transport issues in the area and to centrally coordinate the MMP initiatives;
- To coordinate the development and implementation of the MMP;
- To liaise with the National Transport Authority programme and channel learning and resources from the national Smarter Travel Workplace programme to the area;
- To liaise with external bodies and local public transport operators on transport issues in the area;
- To promote smarter travel events in the area in conjunction with the Steering Group; and

- To coordinate the monitoring and reporting of the MMP progress towards achieving targets, setting clear dates for actions to ensure that the MMP targets and objectives are realised.

4.2.2 Communication and Marketing

An on-going communication strategy will ensure that the initiatives being implemented are promoted to residents. Events and initiatives will be promoted through a range of possible marketing means, such as:

- Posters in breakout/common/amenity areas;
- Circulation of emails to notify residents of specific events;
- Provision of an 'Induction Manual' containing information on all travel options available to residents;
- Organising and participating in in wellness programmes (i.e., group walks, sponsored cycles, Pilate/yoga classes, etc.) to create a culture of wellbeing;
- Organisation of an intranet (if feasible) which would contain a section on travel to work which will be maintained and updated with relevant initiatives; and
- Quarterly newsletters will notify staff of any transport related changes coming up (additional bus routes/stops, new cycle parking locations etc.) and promote upcoming events. It will also report on events held in the previous quarter.

4.3 Travel Surveys

Within 12 months of occupation of the first phase of proposed development a travel survey should be undertaken to determine a baseline transport modal split. This will allow baseline travel patterns to be established and targets to be set and will also be a forum for staff to comment on any issues relating to their commute. Following this, subsequent travel surveys would be carried out at significant implementation stages (e.g., the construction of a subsequent phase), and post completion and full occupation ongoing regular surveys would be carried out at appropriate intervals.

5. Mobility Management Plan Measures

5.1 Information Provision

Informing people of travel options is a crucial tool in encouraging the use of alternative travel modes to the car. Information will be primarily provided to residents via the management company in order to provide insight into alternative travel measures to that of the car. Transport information provided may include the following:

- Details on existing bus routes and timetables in the site vicinity;
- Information regarding bicycle parking areas, nearby cycle routes;
- Information and promotion of local and national green travel initiatives; and
- Details of car sharing arrangements and car clubs, etc.

5.2 Reduced car parking provision on site

A total of 268 residential parking spaces are proposed across the proposed development, which represents 79% of the suggested maximum standards as per the ABTA guidance, and 28% of the maximum requirement as per the City Development Plan.

6. Monitoring and Review

Monitoring is crucial to the successful implementation of any MMP. An annual review will be carried out on the MMP targets and action plan to assess progress.

Travel pattern data will be obtained by undertaking a survey of existing travel patterns. A fundamental part of mobility management is the monitoring of the plan and measurement of changes in order to determine progress, identify problem areas and initiate corrective measures to ensure targets are achieved. This monitoring programme will be carried out on an on-going basis.

The basic procedure would typically consist of:

- Reviewing the implementation of the different MMP measures;
- Regularly carrying out a travel survey;
- Controlling the achievement of the different targets;
- Proposing corrective measures if needed; and
- Informing Cork City Council about the implementation and progress on the MMP.

Appendix 11.1

Cultural Heritage Photographs

Cultural Heritage Photographs

Appendix 11.1: Photographic Record

Plate 11.1: View of yard area

Plate 11.2: North-eastern and north-western elevations of Building A

Plate 11.3: South-western elevation of Building B

Plate 11.4: Interior of Building B

Plate 11.5: View of Building C from east

Plate 11.6: Eastern elevation of Building C

Plate 11.7: Hopper and weighting scales in Building C

Plate 11.8: View of drain along south end of property

Appendix 11.2

Protected Structures on North Side of River Lee within Study Area

Protected Structures on North Side of River Lee within Study Area

Appendix 11.2: Protected Structures on north side of River Lee within study area

RPS	Name
PS925	144 Lower Glanmire Road
PS924	143 Lower Glanmire Road
PS933	Harbour Commissioners workshop
PS922	Harbour Commissioners house
PS923	Harbour Commissioners slipway
PS647	12 Montenotte Road
PS646	11 Montenotte Road
PS645	9 Montenotte Road
PS644	8 Montenotte Road
PS643	7 Montenotte Road
PS642	6 Montenotte Road
PS641	4 Montenotte Road
PS640	3 Montenotte Road
PS622	Montenotte House, Lover’s Walk
PS740	Myrtle Hill House, Beale's Hill
PS726	15 Myrtle Hill Terrace
PS727	16 Myrtle Hill Terrace
PS728	17 Myrtle Hill Terrace
PS729	18 Myrtle Hill Terrace
PS730	19 Myrtle Hill Terrace
PS731	20 Myrtle Hill Terrace
PS732	21 Myrtle Hill Terrace
PS624	Bellevue Lodge
PS741	Pedestrian Bridge at Carrig House
PS627	Carrig House
PS625	Bellvue Villas
PS743	Pedestrian Bridge at Bellevue Villas
PS621	Honan Home
PS734	1 Woodhill Villas
PS735	2 Woodhill Villas
PS736	3 Woodhill Villas
PS737	4 Woodhill Villas
PS738	5 Woodhill Villas
PS739	6 Woodhill Villas
PS742	Pedestrian Bridge at Woodhill Villas
PS733	Octagonal gate lodge (adjacent to Lee Mount)

Appendix 12.1

Photomontages

Photomontages

URBAN3D

CITY PARK DEVELOPMENT

at the Former Tedcastles Site, Centre Park Road, Cork City

Visually Verified Views

Methodology Report

March 2022

STATEMENT OF RESPONSIBILITY

The verified views contained within this report have been prepared based on survey data supplied by P.C.A Ltd and proposed drawings supplied by C + W O'Brien Architects Ltd. Whilst Urban 3D endeavour to create technically accurate imagery, it is essential to recognise that photographic images / photo-montages verified or unverified alone cannot capture or reflect the complexity underlying the visual experience, and should therefore be considered an highly accurate approximation of the three-dimensional visual experience that an observer would receive in the field.

As part of a technical process, impact assessment and considered judgements using photographs and /or photo montages can only be reached by way of a visit to the location from which the photographs were taken.

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1.0 About Urban 3D

Urban 3D, established in 2003, is a multidisciplinary design and CGI company with offices in Northern Ireland and London.

We work with independent House Builders, Estate Agents, Property Developers, Architects and Planning Consultants. Our enviable list of clients include Berkeley Group, Savills, Henry Boot, Acorn Property Group, HAB Housing, London Development Group, and a range of small boutique developers and architectural practices.

We deliver high quality, technically accurate computer generated images (CGI) and a range of associated services which include, 3D property animations, drone videography, photography, photo-montages and visually verified views (VVM's).

Our in-house team are qualified in their respective fields to a minimum of degree level, and those working on visually verified montages have a relevant degree in Architecture and a minimum of 5 years experience working within the architectural field.

2.0 Visually Verified Montages

WHAT ARE VERIFIED VIEWS?

Also known as accurate visual representations (AVR), Verified images, visually verified montages (VVM) and verified photo montages, verified views are highly accurate photo montages which have been created using a methodology which is compliant with the Guidelines for Landscape and Visual Impact Assessment, third edition. A verified view is a photograph captured at a specific recorded location, and merged with a highly accurate 3D model of the proposed scheme and existing survey data of fixed structures within the photograph. The result is a verified photo montage showing the proposal in context with the existing environment, which can then be used to assess the visual impact of a proposed scheme or development. They have become central to the Irish & UK planning system.

THE NEED FOR VERIFIED VIEWS

Verified views eliminate the guesswork and artistic interpretation associated with photo montages. Using rigorous methodologies set out by the Landscape Institute and London Framework, the results give the actual impression of scale and magnitude of a proposed scheme or development.

VERIFIED VIEW COMPLIANCE

Our process for creating verified views is compliant with:

1. The Landscape Institute Guidelines for Landscape and Visual Impact Assessment: 3rd edition.
2. Photography and photo montage in landscape and visual impact assessment Landscape Institute Advice Note 01/11
3. London View Management Framework SPG (March 2012) - Appendix C: Accurate Visual Representations.

This document is intended to clearly convey the underlying principles and processes that are used in the production of Verified Views.

The information presented in this document will allow a third party to verify the accuracy of the images produced.

The “London View Management Framework” has the following to say regarding Verified Views.

“By accurately combining an image of a proposed development with a representation of its existing context, verified views explain the location and massing of a proposed development. They may also illustrate additional properties including the degree of visibility, architectural form or choice of materials selected.”

For more information on these publications

- https://www.landscapeinstitute.org/technical/glvia3-panel/
- https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/migrated-legacy/LIPhotographyAdviceNote01-11.pdf
- https://www.london.gov.uk/what-we-do/planning/implementing-London-plan/planning-guidance-and-practice-notes/London-view-management

3.0 Project Overview

This proposed development is situated on Centre Park Road Tedcastle Site, Cork, South Docks

We have been commissioned as an independent VVM consultant to produce a total of 20 verified views at the following locations.

VIEW 1
N8 Lower Glanmire Road

VIEW 2
Port of Cork Garden off Lower Glanmire Road

VIEW 3
Tivoli Estate

VIEW 4
Woodside, Tivoli – Pedestrian Railway Crossing

VIEW 5
Bellevue Villas, Lower Glanmire Road

VIEW 6
Ferryboat House, Lower Glanmire Road

VIEW 7
Horgan's Quay

VIEW 8
Custom House Quay

VIEW 9
Clontarf Bridge, Cork City Centre

VIEW 10
Middle Glanmire Road, Montenotte

VIEW 11
Maryville, Ballintemple

VIEW 12
Monahan Road, Ballintemple

VIEW 13
Centre Park Road

VIEW 14
Centre Park Road

VIEW 15
The Marina Boat Jetty Pontoon

VIEW 16
Beaumont Drive

VIEW 17
Church Yard Lane, Ballintemple

VIEW 18
Not Required

VIEW 19
Lotaville, N8 Road, Tivoli

VIEW 20
Monahan Rd

The team responsible for the information requirements to produce the VVM's are as follows:

- Architects - C + W O'Brien Architects Ltd
- Land Surveyor - P.C.A. Ltd
- Photography & VVM - Urban 3D

4.0 Photography

EQUIPMENT

Camera
Canon 5D Mark iii

Lens
Canon EF 16-35mm f/4L IS USM
(Set at 35mm) (+50mm Prime)

Filter
Neutral Density Filter

Tripod
ALTA PRO 2 263AGH Aluminium Tripod kit

Plumb Bob & Line (Plummet)
115mm body accurately machined point

Survey Paint
Semi-permanent with a tight spray

3-Axis Camera Level
Fotosnow Professional 3 Axis Bubble Spirit Level

4.1 Camera

We maintained the same camera and lens settings for all 20 VVM's to ensure continuity when comparing this proposal from the various vistas.

- Canon EOS 5D Mark iii
- Canon EF 16-35mm f/4L IS USM
- Image Width - 5760 pixels
- Image Height - 3840 pixels
- Bit depth - 24
- Focal Length - 16-35mm
- Horizontal FOV - Variable
- Vertical FOV - Variable
- Exposure - 1/250 sec | F10 | ISO 200
- Files - RAW + JPEG

4.2 Tripod & Level

As per The Landscape Institute Guidelines for Landscape and Visual Impact Assessment: 3rd edition it is critical that the camera lens is level on all axis. We need to achieve a setup that ensures zero tilting left or right and zero banking forward or backwards.

To achieve this we use a combination of 3 separate levels to ensure accuracy to within +/- 1 degree.

1. The Canon 5D Mark iii - inbuilt digital leveling system
2. The Vanguard tripod head bubble level
3. Fotosnow Professional 3 Axis Bubble Spirit Level hot-shoe mount

4.3 On-site

The following workflow was used to produce the final image set.

1. The viewpoint location is established and the tripod is set up.
2. The camera is mounted on the tripod head and leveled so that the lens axis is horizontal; this is achieved by a combination of 3 separate levels to ensure accuracy to within +/- 1 degree allowing the camera to be corrected for both roll and tilt.
3. The subject is then framed and camera settings dialed in.
4. Once the camera is level the plumb line is placed over the lens at the point of no parallax.
5. The plumb line length is set to 1.6m. (Average human eye level)
6. The tripod centre column is then raised until the plumb line makes contact with the surface below.
7. Documentation images are taken of the camera and setup for record and evidence if require.
8. The lens is manually focused so that the subject is at the plane of focus.
9. The aperture is set to F10 to create a large depth of field whilst retaining sharpness throughout the image.
10. Image capture button is remote to ensure no shake or movement within the lens and camera.
11. Images are captured in RAW format and JPEG so that the original data is preserved and no “automatic” changes are, made to the data.
12. The plumb line and bob are then used as pendulum and swung at the precise angle of the lens. This establishes the viewing angle which is then transferred to the ground using survey spray paint.
13. The cross point is the exact centre of the lens and the arrow is the exact angle of the lens, both of which will be surveyed at a later date.
14. This process is repeated for all 20 required verified views.

5.0 Topographical Survey

EQUIPMENT

Lecia GS 15 antenna with a 360 prison Lecia Flexline TS10 Total Station

SURVEY TEAM

P.C.A. Ltd.
Hillcrest House
Hillcrest Road
Sandyford
Dublin
D18 V058
Tel: 01 213 6300
Please see more information here www.pca.ie

PROCESS

Once on-site photography is complete we study each photograph and select fixed structural points, typically a minimum of 6 objects. These objects are surveyed and are later used to ensure the 3D model of the proposed building is placed within the existing photograph accurately.

To ensure accuracy at the photo-merge stage we typically require and number of fixed points within the foreground, mid-ground & background.

A number of points will also cross the y axis to establish height, some will cross the x axis to establish width and some will cross the z axis to establish depth within each of the VVM's.

The survey team document all required structural points relative to a datum point which also relates to the location and levels of the proposal.

Please see section 7 for more details.

6.0 Software

PHOTOGRAPHY - PHOTOSHOP

The photographs are captured as RAW images and are then processed in Photoshop.

SURVEY - AUTOCAD

The survey is supplied in AutoCad format.

3D MODEL - VECTORWORKS

The 3D model of the surveyed points is created in Vectorworks for mm perfect precision.

CAMERA MATCH - CINEMA 4D

We camera match the existing surveyed points and surveyed camera position to the virtual camera within Cinema 4D. All camera and lens parameters are transferred from real to virtual.

LIGHTING AND MATERIALS - CORONA RENDERER

We add all materials, lighting, reflections etc using Corona Renderer.

POST-PRODUCTION - PHOTOSHOP

Final correction and inspection of the images happens within Photoshop.

7.0 Method Explained

7.0 Photography

- Documented images showing camera setup with bank, tilt and roll corrected using levels as previously noted.
- The mid point of the lens is set to 1.6m above ground level (Average human eye level).
- Plummet (Bob & Line) set with string tied to zero parallax point on lens.
- Ground marked for survey with the intersection recording mid point of lens and the arrow recording the viewing angle.

Plumb Line & Bob with yellow arrow + cross hairs transferring the centre of lens and viewing angle to the ground ready for surveying.

Canon 5D Electronic Level, balanced

Hot-shoe External Level, balanced

Lens set at eye level 1.6M above ground

7.1 Identify required survey points

We identify fixed structural points within each photograph then label each point or object and instruct the survey team to proceed.

As noted it is best practice to have a varied range of fixed structural points between near, mid and far ground, and across the x,y,z axis.

STRUCTURAL ELEMENT

VP9.01, VP9.02, VP9.03. VP9.04
(Foreground / X & Y Axis)

WHITE LINES

VP9.05, VP9.06
(Foreground / X Axis)

BUILDING

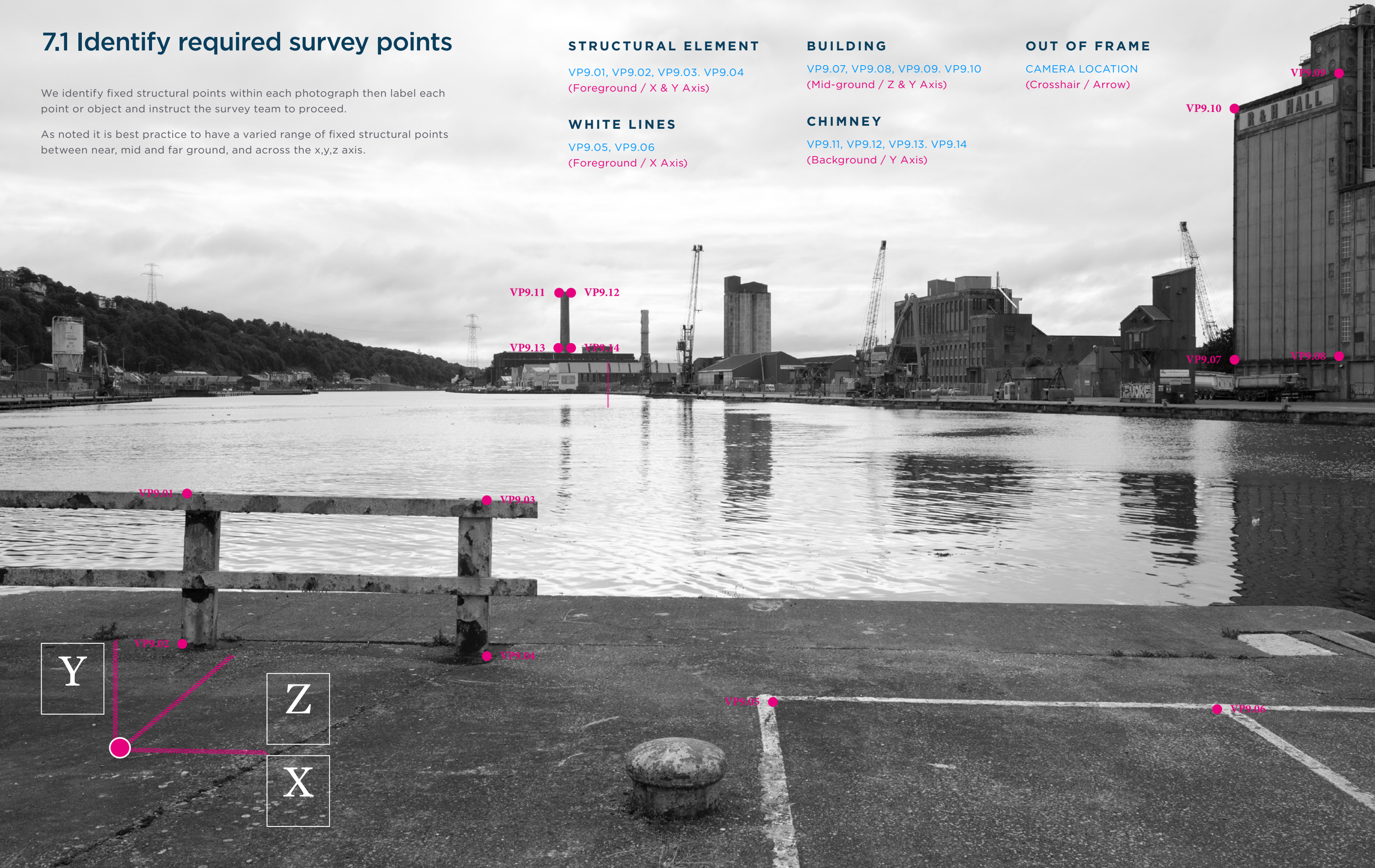
VP9.07, VP9.08, VP9.09. VP9.10
(Mid-ground / Z & Y Axis)

CHIMNEY

VP9.11, VP9.12, VP9.13. VP9.14
(Background / Y Axis)

OUT OF FRAME

CAMERA LOCATION
(Crosshair / Arrow)



7.2 Survey

Maintaining the same naming convention, the surveyor supplies us with the survey data in AutoCad format.

This data is now transferred to Vectorworks where the points are modelled in 3D space relative to the same datum point as the proposed building.

All base levels and heights of models created of the fixed structures, are set relative to the finished floor levels and ridge heights etc. of the proposal.

STRUCTURAL ELEMENT

VP9.01, VP9.02, VP9.03. VP9.04
(Foreground / X & Y Axis)

WHITE LINES

VP9.05, VP9.06
(Foreground / X Axis)

BUILDING

VP9.07, VP9.08, VP9.09. VP9.10
(Mid-ground / Z & Y Axis)

CHIMNEY

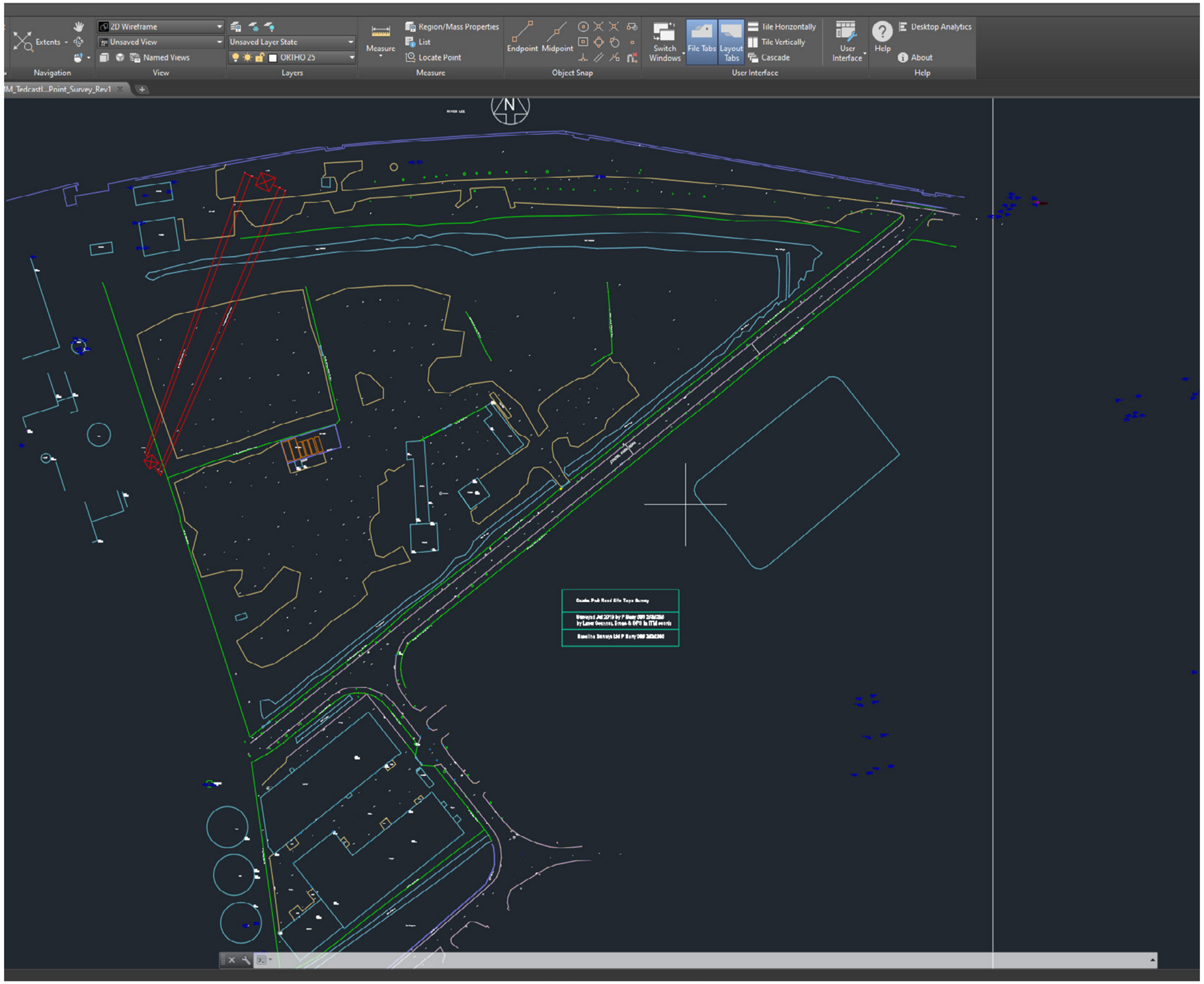
VP9.11, VP9.12, VP9.13. VP9.14
(Background / Y Axis)

OUT OF FRAME

CAMERA LOCATION
(Crosshair / Arrow)

Please download full survey data here if required.

Topographical Survey



7.3 - 3D Model

All objects / points, camera position, height and viewing angle are now modelled in 3D space relative to the proposed building model / datum.

STRUCTURAL ELEMENT

VP9.01, VP9.02, VP9.03. VP9.04
(Foreground / X & Y Axis)

WHITE LINES

VP9.05, VP9.06
(Foreground / X Axis)

BUILDING

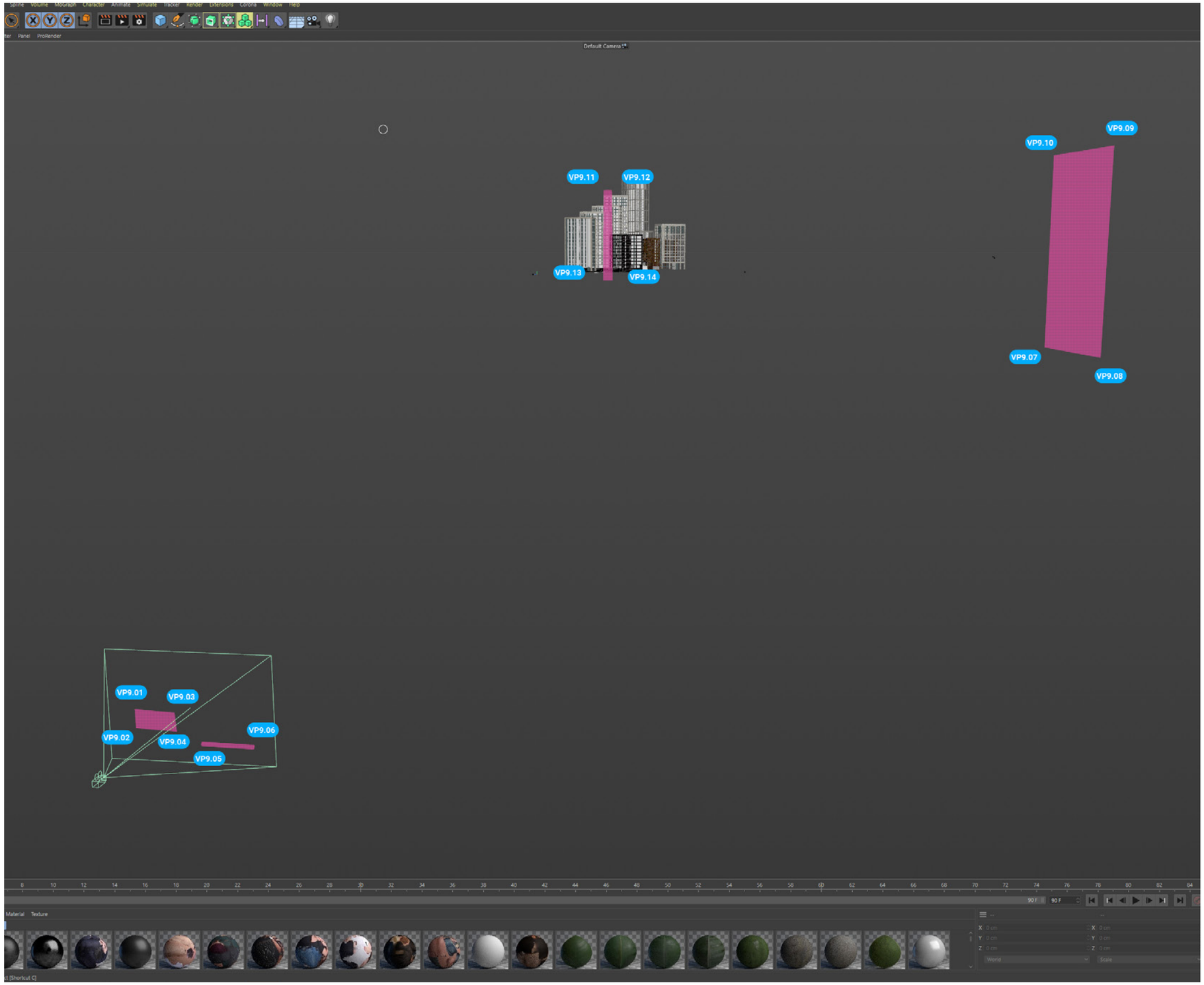
VP9.07, VP9.08, VP9.09. VP9.10
(Mid-ground / Z & Y Axis)

CHIMNEY

VP9.11, VP9.12, VP9.13. VP9.14
(Background / Y Axis)

OUT OF FRAME

CAMERA LOCATION
(Crosshair / Arrow)



Please download full survey data here if required.

Topographical Survey

7.4 - Camera Match

We now match up the two cameras (Virtual & Physical) and the points should sit at the correct position within the photographs. If they align correctly this tells us that the proposal will also sit at the correct position and scale within the same view.

STRUCTURAL ELEMENT

VP9.01, VP9.02, VP9.03. VP9.04
(Foreground / X & Y Axis)

WHITE LINES

VP9.05, VP9.06
(Foreground / X Axis)

BUILDING

VP9.07, VP9.08, VP9.09. VP9.10
(Mid-ground / Z & Y Axis)

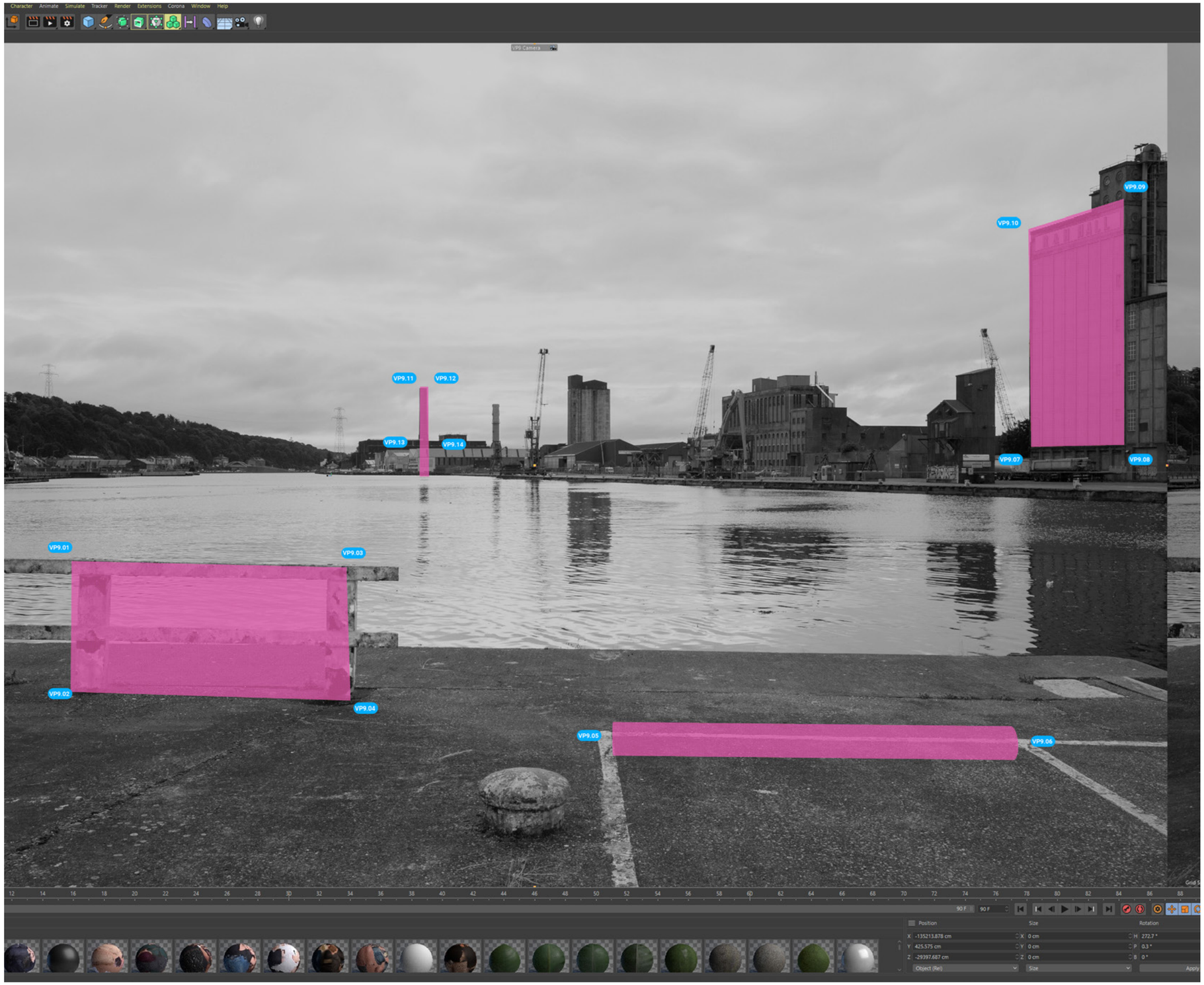
CHIMNEY

VP9.11, VP9.12, VP9.13. VP9.14
(Background / Y Axis)

OUT OF FRAME

CAMERA LOCATION
(Crosshair / Arrow)

We then repeat this method & procedure for each of the verified views on the following pages.



8.0 Verified View Locations

VIEW 1
N8 Lower Glanmire Road

VIEW 2
Port of Cork Garden off Lower Glanmire Road

VIEW 3
Tivoli Estate

VIEW 4
Woodside, Tivoli – Pedestrian Railway Crossing

VIEW 5
Bellevue Villas, Lower Glanmire Road

VIEW 6
Ferryboat House, Lower Glanmire Road

VIEW 7
Horgan's Quay

VIEW 8
Custom House Quay

VIEW 9
Clontarf Bridge, Cork City Centre

VIEW 10
Middle Glanmire Road, Montenotte

VIEW 11
Maryville, Ballintemple

VIEW 12
Monahan Road, Ballintemple

VIEW 13
Centre Park Road

VIEW 14
Centre Park Road

VIEW 15
The Marina Boat Jetty Pontoon

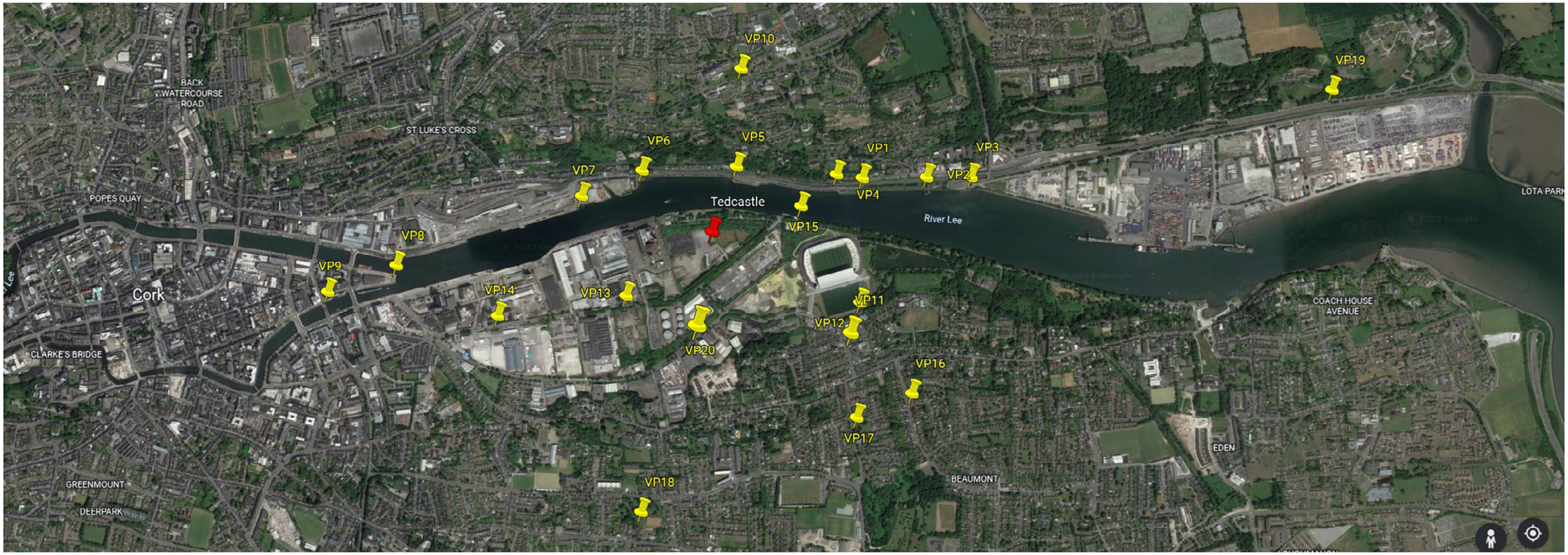
VIEW 16
Beaumont Drive

VIEW 17
Church Yard Lane, Ballintemple

VIEW 18
Not Required

VIEW 19
Lotaville, N8 Road, Tivoli

VIEW 20
Monahan Rd



9.0 Verified Views

VP1 | PHOTOGRAPH 35mm | F10

BEFORE

VP1 | VERIFIED VIEW 35mm | F10

AFTER

Panoramic Photograph (Before)

Panoramic Photomontage (After)

KEY: Former Ford Factory – Granted Permission April 2021 – REF: ABP-309069-20

Custom House Tower – Granted Permission March 2021 - REF: ABP-308596-20

VP1 | PANORAMIC

Best viewed at 820mm X 260mm on A1 Sheet Size to correlate with LI Guidance

VP2 | PHOTOGRAPH 35mm | F10

BEFORE

VP2 | VERIFIED VIEW 35mm | F10

AFTER

Panoramic Photograph (Before)

Panoramic Photomontage (After)

KEY: Former Ford Factory – Granted Permission April 2021 – REF: ABP-309069-20

Custom House Tower – Granted Permission March 2021 - REF: ABP-308596-20

VP2 | PANORAMIC

Best viewed at 820mm X 260mm on A1 Sheet Size to correlate with LI Guidance

VP3 | PHOTOGRAPH 35mm | F10

BEFORE

VP3 | VERIFIED VIEW 35mm | F10

AFTER

Panoramic Photograph (Before)

Panoramic Photomontage (After)

KEY: Former Ford Factory – Granted Permission April 2021 – REF: ABP-309069-20

Custom House Tower – Granted Permission March 2021 - REF: ABP-308596-20

VP3 | PANORAMIC

Best viewed at 820mm X 260mm on A1 Sheet Size to correlate with LI Guidance

VP4 | PHOTOGRAPH 35mm | F10

BEFORE

VP4 | VERIFIED VIEW 35mm | F10

AFTER

Panoramic Photograph (Before)

Panoramic Photomontage (After)

KEY: Former Ford Factory – Granted Permission April 2021 – REF: ABP-309069-20

Custom House Tower – Granted Permission March 2021 - REF: ABP-308596-20

VP4 | PANORAMIC

Best viewed at 820mm X 260mm on A1 Sheet Size to correlate with LI Guidance

VP5 | PHOTOGRAPH 35mm | F10

BEFORE

VP5 | VERIFIED VIEW 35mm | F10

AFTER

Panoramic Photograph (Before)

Panoramic Photomontage (After)

VP5 | PANORAMIC

Best viewed at 820mm X 260mm on A1 Sheet Size to correlate with LI Guidance

KEY: **Former Ford Factory – Granted Permission April 2021 – REF: ABP-309069-20**

VP5b | PANORAMIC

KEY: Former Ford Factory – Granted Permission April 2021 – REF: ABP-309069-20

VP6 | PHOTOGRAPH 35mm | F10

BEFORE

VP6 | VERIFIED VIEW 35mm | F10

AFTER

Panoramic Photograph (Before)

Panoramic Photomontage (After)

VP6 | PANORAMIC

Best viewed at 820mm X 260mm on A1 Sheet Size to correlate with LI Guidance

KEY: **Former Ford Factory – Granted Permission April 2021 – REF: ABP-309069-20**

VP7 | PHOTOGRAPH 35mm | F10

BEFORE

VP7 | VERIFIED VIEW 35mm | F10

AFTER

Panoramic Photograph (Before)

Panoramic Photomontage (After)

VP7 | PANORAMIC

Best viewed at 820mm X 260mm on A1 Sheet Size to correlate with LI Guidance

VP8 | PHOTOGRAPH 35mm | F10

BEFORE

VP8 | VERIFIED VIEW 35mm | F10

AFTER

Panoramic Photograph (Before)

Panoramic Photomontage (After)

VP8 | PANORAMIC

Best viewed at 820mm X 260mm on A1 Sheet Size to correlate with LI Guidance

KEY: **Former Ford Factory – Granted Permission April 2021 – REF: ABP-309069-20**

Appendix 12.2

Generic TVIA Terminology

Generic TVIA Terminology

Appendix 12.2 Generic TVIA Terminology

Terminology	Definition
Access Land	Land where the public have access either by legal right or by informal agreement.
Activity	Activity on site tends to draw the eye whether it is a moving object or light reflection of an object changing with movement and thus the degree of impact is increased. It is sudden changes in contrast ratios that draw the attention of the viewer.
Baseline Studies	Work undertaken to determine and describe the environmental conditions against which any future changes can be measured, predicted or assessed.
Characterisation	The process of identifying areas of similar landscape character, classifying and mapping them and describing their character.
Characteristics	A distinctive element or combination of elements, which make a particular contribution to distinctive landscape character.
Compensation	Measures devised to offset or compensate for residual adverse effects which cannot be prevented / avoided or further reduced.
Cumulative	The additional changes caused by a proposed development in conjunction with other similar Developments or as the combined effect of a set of Developments, taken together.
Cumulative Town /Landscape and Visual Assessment (CLVIA)	The changes to townscape / landscape or visual amenity caused by the proposed development in conjunction with similar Developments or as the combined effect of a set of Developments, taken together.
Designated Landscape	Areas of landscape/ townscape identified as being of importance at international, national or local levels, either defined by statute or identified in Development plans or other documents. e.g., Greenbelt,

	Conservation Areas, Areas of High Scenic Quality or National Parks
Development	Any proposal that results in a change to the existing landscape and / or visual environment.
Digital Terrain Model	Computerised representation of ground topography in 3D as digital model based on the contour data (either 10m or 50m grid) of the OSI Ordinance Survey Maps.
Direct Effect	An effect that is directly attributable to the proposed development
Distance	The greater the distance, the less detail is observable and the more difficult it is to discern the proposal from its background, diminishing potential impact.
“Do nothing” situation	Continued change/evolution of a landscape in the absence of the proposed development.
Elevation	Viewed from a higher elevation, a proposal is likely to be viewed against a backdrop thus decreasing the degree of impact. Viewed from a lower elevation, a proposal may be seen against the skyline and thus the impact is increased.
Enhancement	Proposals that seek to improve the landscape resource and the visual amenity of the proposed development site and its wider setting, over and above its baseline condition.
Environmental Impact Assessment (EIA)	An Environmental Impact Assessment (EIA) is the process of examining the anticipated environmental effects of a proposed project - from consideration of environmental aspects at design stage, through consultation and preparation of an Environmental Impact Assessment Report (EIAR)
Geographical Information System (GIS)	A system that captures, stores, analyses, manages and presents data linked to location. Its links spatial information to a digital database.
Indirect Effects	Effects that result indirectly from the proposed project as a consequence of the direct effects, often occurring away from the site, or as a result of a sequence of

	interrelationships or a complex pathway. They may be separated by distance or in time from the source of the effects.
Key Characteristics	The combinations of elements, which are particularly important to the current character of the landscape and help to If the key characteristics which are identified were to change or be lost, there would be significant consequences for the current condition of the landscape.
Land Cover	The surface cover of the land, usually expressed in terms of vegetation cover or lack of it. Related but not the same as Land Use.
Land Use	What land is used for, based on broad categories of functional land cover, such as urban and industrial use and different types of agriculture and forestry.
Landform	The shape and form of the land surface which as resulted from combinations of geology, geomorphology, slope, elevation and physical processes.
Landscape	An area, perceived by people, the character of which is the result of the action and interaction of natural and / or human factors.
Landscape and Visual Assessment (LVA)	A tool used to identify and assess the likely significance of the effects of change resulting from Development both on the landscape as an environmental resource in its own right and on people's views and visual amenity.
Landscape Character	A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.
Landscape Character Areas (LCA)	Landscape Character Area as defined in local or regional policy guidance. These areas that have been determined to be single unique areas that are distinct geographically or of a particular landscape type. Every LCA is geographically specific and has its own distinctive character and sense of place based upon patterns of geology, landform, land-use, cultural, historical and ecological features.

Landscape Capacity	The degree to which a particular landscape character type or area is able to accommodate change without significant effects on its character, or overall change to the landscape character type.
Landscape Constraints	Components of the landscape resource such as views or mature trees recognised as constraints to Development.
Landscape Effects	Effects on the landscape as a resource in its own right.
Landscape Elements	Individual components, which make up the landscape such as trees and hedgerows.
Landscape Features	Particularly prominent or eye-catching elements in the landscape such as tree clumps, church towers or wooded skylines.
Landscape Patterns	Spatial distributions of landscape elements combining to form patterns, which may be distinctive e.g., hedgerows that combine to form a distinctive field pattern.
Landscape Quality / Condition	A measure of the physical state of the landscape. It may include the extent to which typical character is represented in individual areas, the intactness of the landscape and condition of individual elements.
Landscape Value	The relative value that is attached to different landscapes by society. A landscape may be valued by different stakeholders for a variety of reasons.
Landscape Resource	The combination of elements that contribute to landscape context, character and value.
Magnitude (of effect)	A term that combines judgements about the size and scale of the effect, the extent the area over which it occurs, whether it is reversible or irreversible and whether it is short or long term in duration.
Mitigation	Measures including any process, activity, or design to avoid, reduce, remedy or offset for potential adverse

	environmental effects arising from a proposed development.
Perception	Combines the sensory (that we receive through our senses) with the cognitive (our knowledge and understanding gained from sources and experiences)
Photomontage	A visualisation which superimposes an image of the proposed development upon a photograph or a series of photographs.
Receptors	Defined aspects of the landscape resource that have the potential to be affected by a proposal.
Seascape	Landscapes with views of coast or seas, and coasts and adjacent marine environments with cultural, historical and archaeological links with each other.
Sensitivity	A term applied to specific receptors, combining judgements of the susceptibility of the receptor to the specific type of change or Development proposed and the value related to that receptor.
Significance	A measure of the importance or gravity of the environmental effect, defined by significance criteria specific to the environmental topic.
Townscape	The character and composition of the built environment including the buildings and relationships between them, the different types of urban open space, including green spaces, and the relationships between buildings and open spaces.
Tranquillity	A state of calm and quietude associated with peace, considered to be a significant asset of landscape.
Visual Amenity	The overall pleasantness of the views people enjoy of their surroundings, which provides an attractive visual setting or backdrop for the enjoyment of activities of the people living, working, recreating, visiting or travelling through the area.
Visual Effects	Effects on specific views and the general visual amenity experienced by people.

Visual Receptors	Individuals and / or defined groups of people who have the potential to be affected by the proposal.
Visual Reference Points	Abbreviated to VRP, these are selected locations of viewpoints within the study area towards the proposal that allow analysis of the existing and proposed visual setting.
Combined Views	This occurs when the observer is able to see two or more Developments from one viewpoint and within the same arc of vision.
Successive Views	This occurs where the observer has to turn their head to see the various Developments.
Sequential Views	This occurs when the observer has to move to another viewpoint to see the same or different Developments (i.e., when moving through the landscape).
Size	The greater the proportion of the view taken up by the proposed development the greater the impact. Camouflage brought about by form and colour can alter the degree of impact.
Visualisation	A computer simulation, photomontage or other technique illustrating the predicted appearance of a Development.
Wireframe	A computer generated line drawing of the DTM (digital terrain model) and the proposed development from a known location.
Weather conditions	Visibility is affected by the sun direction during different times of the day. It is also affected by clarity of air. For example, on a bright and sunny morning after a frosty night the air tends to be clear. This is in contrast to a heat haze, which may be experienced during summer months.
Zone of Theoretical Visibility	Often abbreviated to ZTV, this is a digitally produced map showing the areas of land within which a Development is theoretically visible.

Appendix 13.1

Land and Soils Site Visit Photographs

Land and Soils Site Visit Photographs

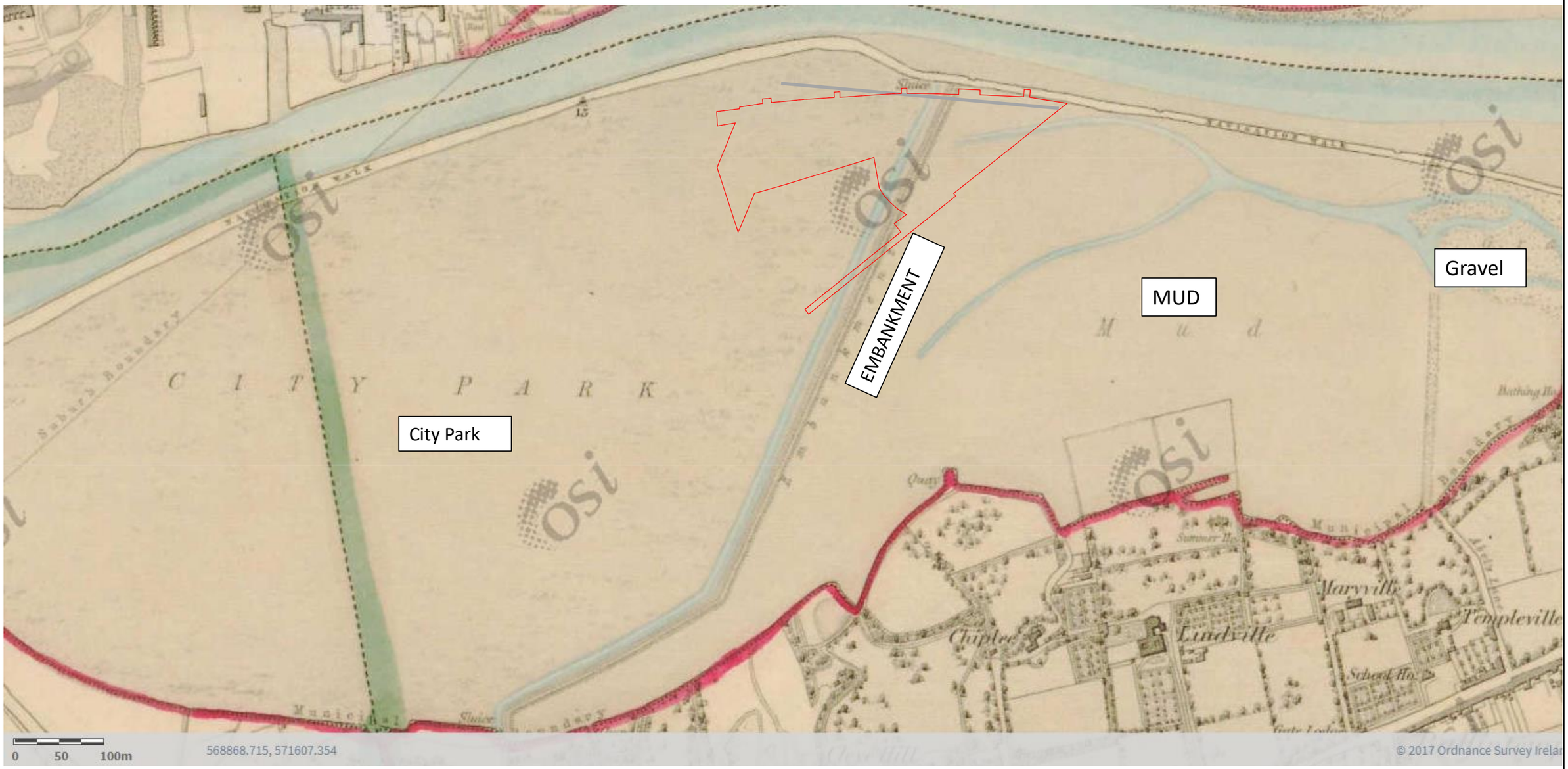
SMOKELESS
SUPER
COAL

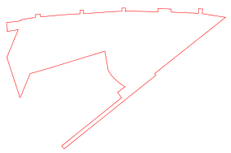
Appendix 13.2

Land and Soils Site History

Land and Soils Site History

A3





Indicative site boundary

Copyright statements

Issue	Date	By	Chkd	Appd

ARUP

50 Ringsend Road
Dublin 4, D04 T6X0
Tel +353 (0)1 233 4455 Fax +353 (0)1 668 3169
www.arup.com

Client

Job Title

6 inch Historic Map (1837 – 1845)

Scale at A3

Job No

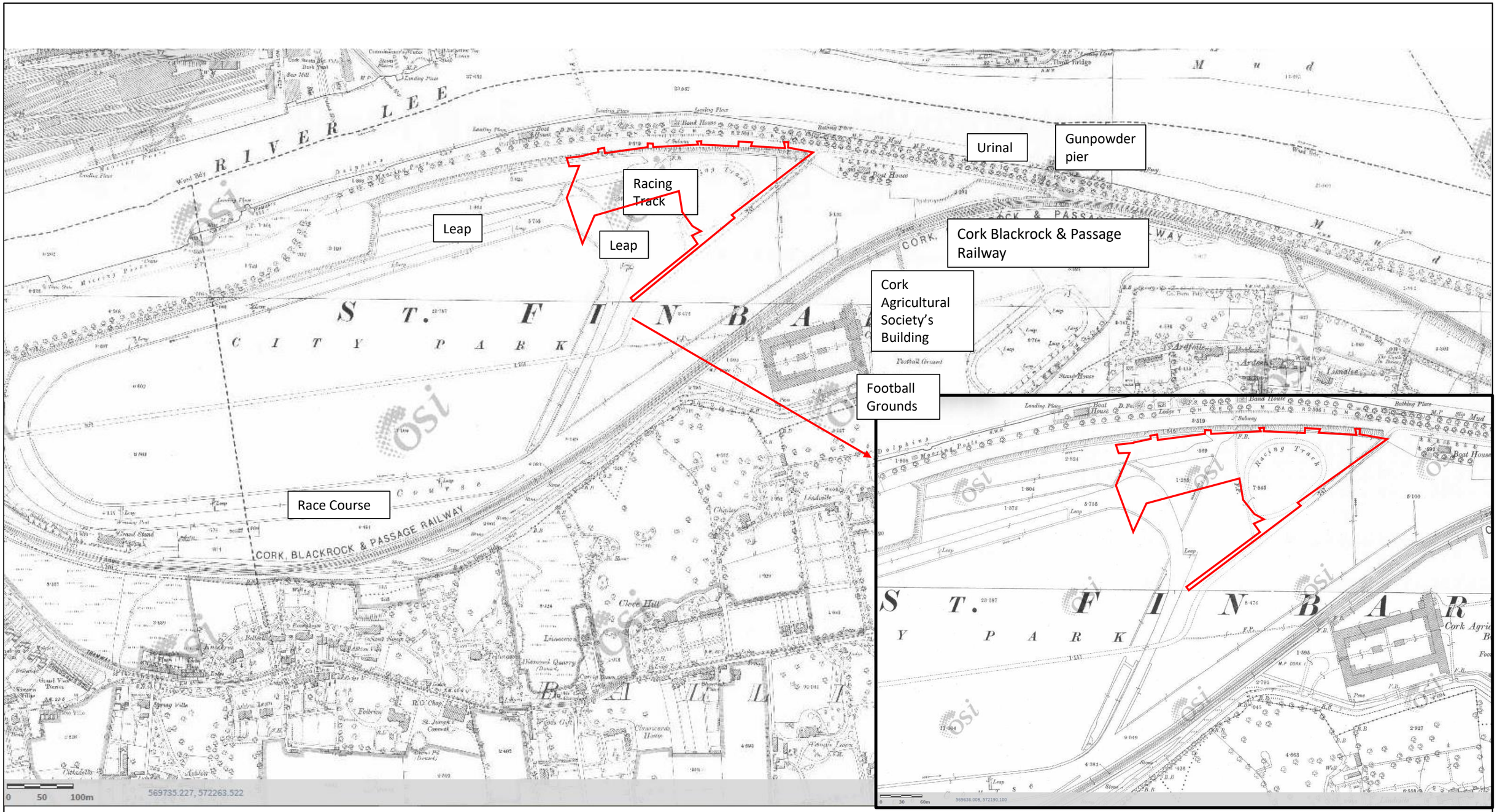
Drawing Status

Drawing No

Issue

© Arup

A3



Indicative site boundary

Copyright statements

Issue	Date	By	Chkd	Appd

ARUP

50 Ringsend Road
Dublin 4, D04 T6X0
Tel +353 (0)1 233 4455 Fax +353 (0)1 668 3169
www.arup.com

Client

Job Title

25 inch Historic Map (1897 – 1913)

Scale at A3

Job No

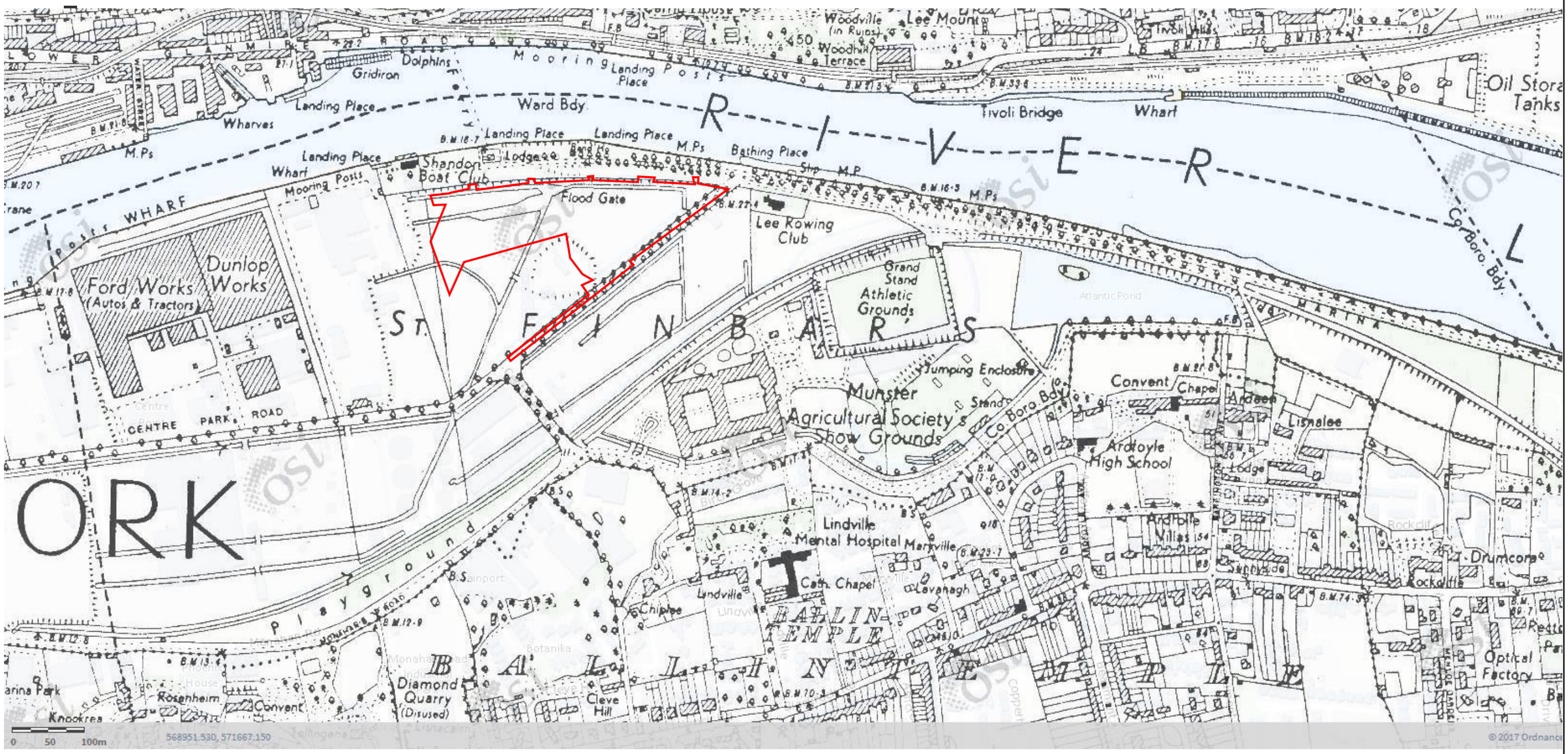
Drawing Status

Drawing No

Issue **P1**

© Arup

A3



Indicative site boundary

Copyright statements

Issue	Date	By	Chkd	Appd

ARUP

50 Ringsend Road
Dublin 4, D04 T6X0
Tel +353 (0)1 233 4455 Fax +353 (0)1 668 3169
www.arup.com

Client

Job Title

6 inch Historic Map (1830s – 1930s)

Scale at A3

Job No

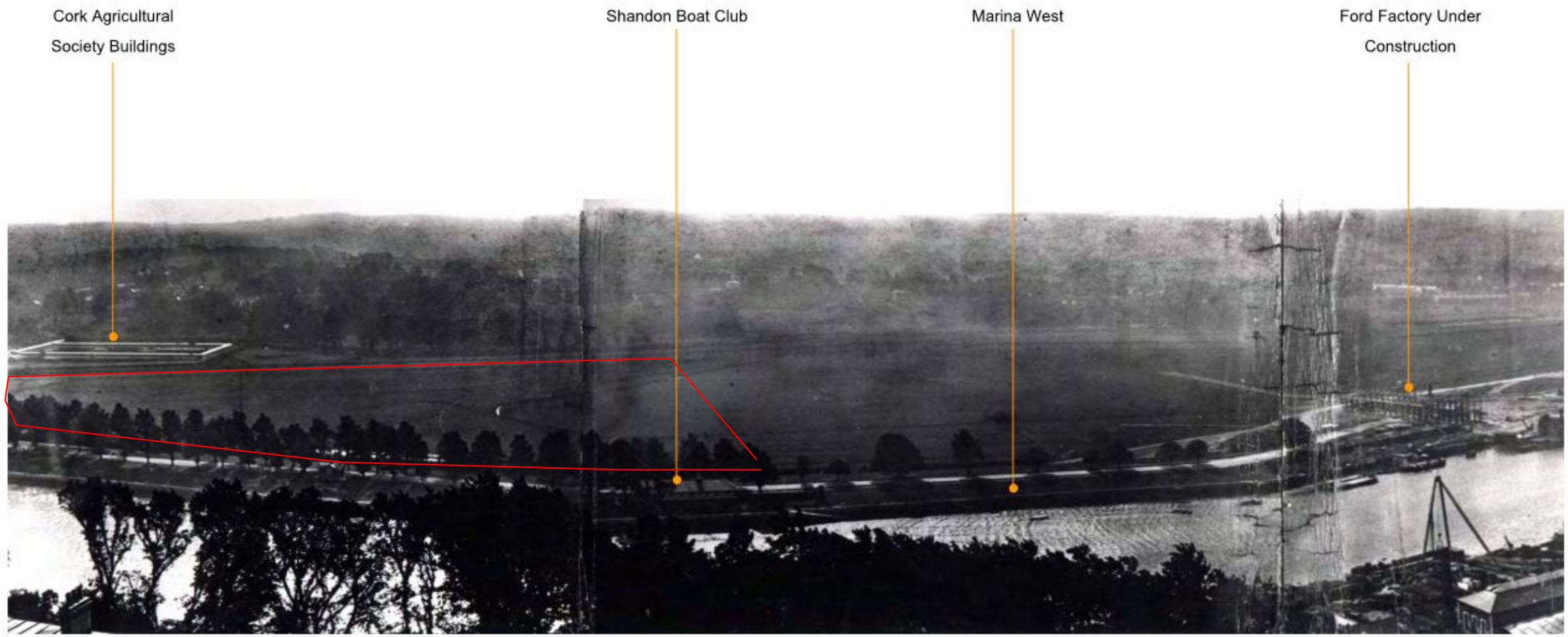
Drawing Status

Drawing No

Issue

© Arup

A3



Marina West and Eastern End of Ford Site c1920

Indicative site boundary

Copyright statements

Issue	Date	By	Chkd	Appd

ARUP

50 Ringsend Road
Dublin 4, D04 T6X0
Tel +353 (0)1 233 4455 Fax +353 (0)1 668 3169
www.arup.com

Client

Job Title

1920 aerial Photograph

Scale at A3

Job No

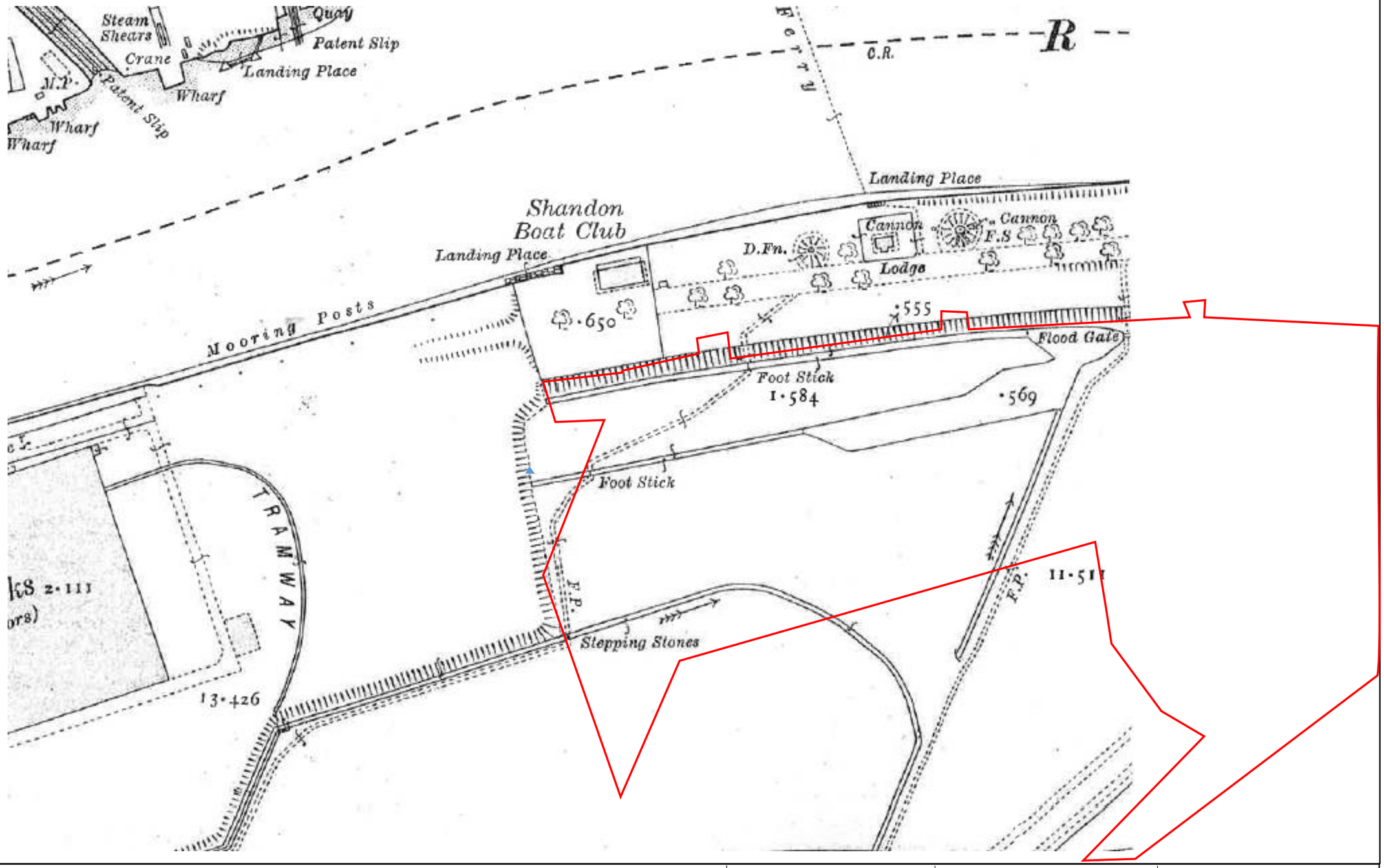
Drawing Status

Drawing No

Issue

© Arup

A3



Indicative site boundary

Copyright statements

Issue	Date	By	Chkd	Appd

ARUP

50 Ringsend Road
Dublin 4, D04 T6X0
Tel +353 (0)1 233 4455 Fax +353 (0)1 668 3169
www.arup.com

Client

Job Title

1927 Historic Map

Scale at A3

Job No

Drawing Status

Drawing No

Issue

© Arup

A3

Indicative site boundary

Copyright statements

Issue	Date	By	Chkd	Appd

ARUP

50 Ringsend Road
Dublin 4, D04 T6X0
Tel +353 (0)1 233 4455 Fax +353 (0)1 668 3169
www.arup.com

Client

Job Title

1945 Aerial Photograph

Scale at A3

Job No

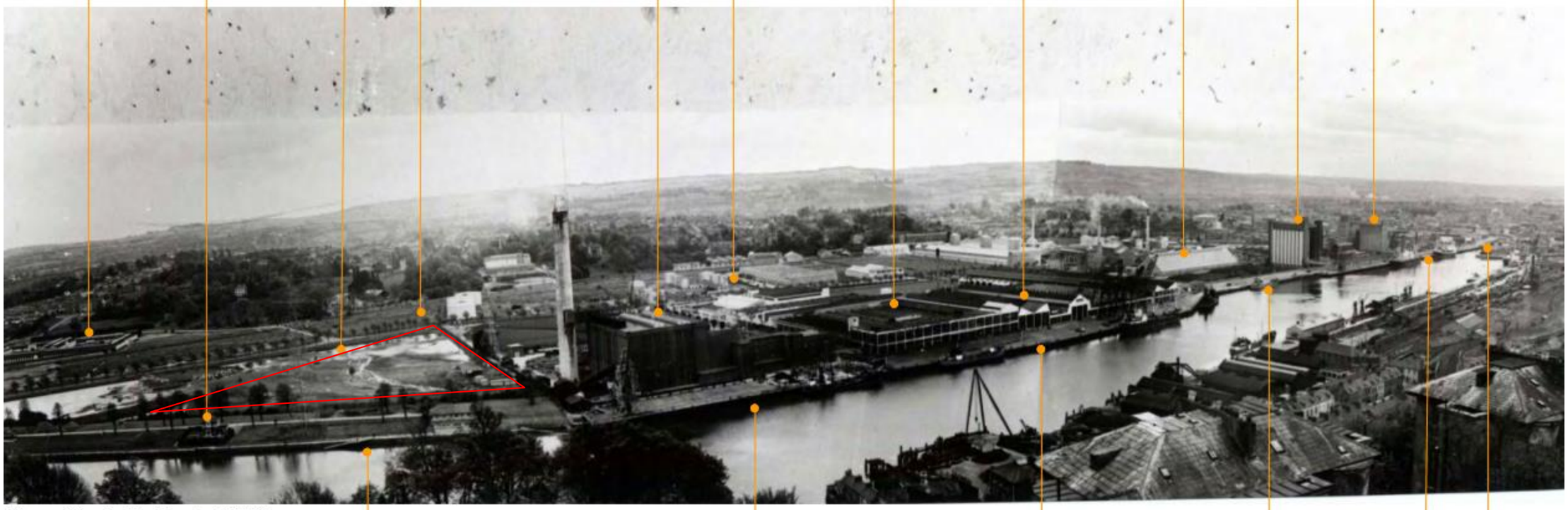
Drawing Status

Drawing No

Issue

© Arup

A3



View of South Docklands C1950's

Indicative site boundary

Copyright statements

Issue	Date	By	Chkd	Appd

ARUP

50 Ringsend Road
Dublin 4, D04 T6X0
Tel +353 (0)1 233 4455 Fax +353 (0)1 668 3169
www.arup.com

Client

Job Title

1945 Aerial Photograph

Scale at A3

Job No

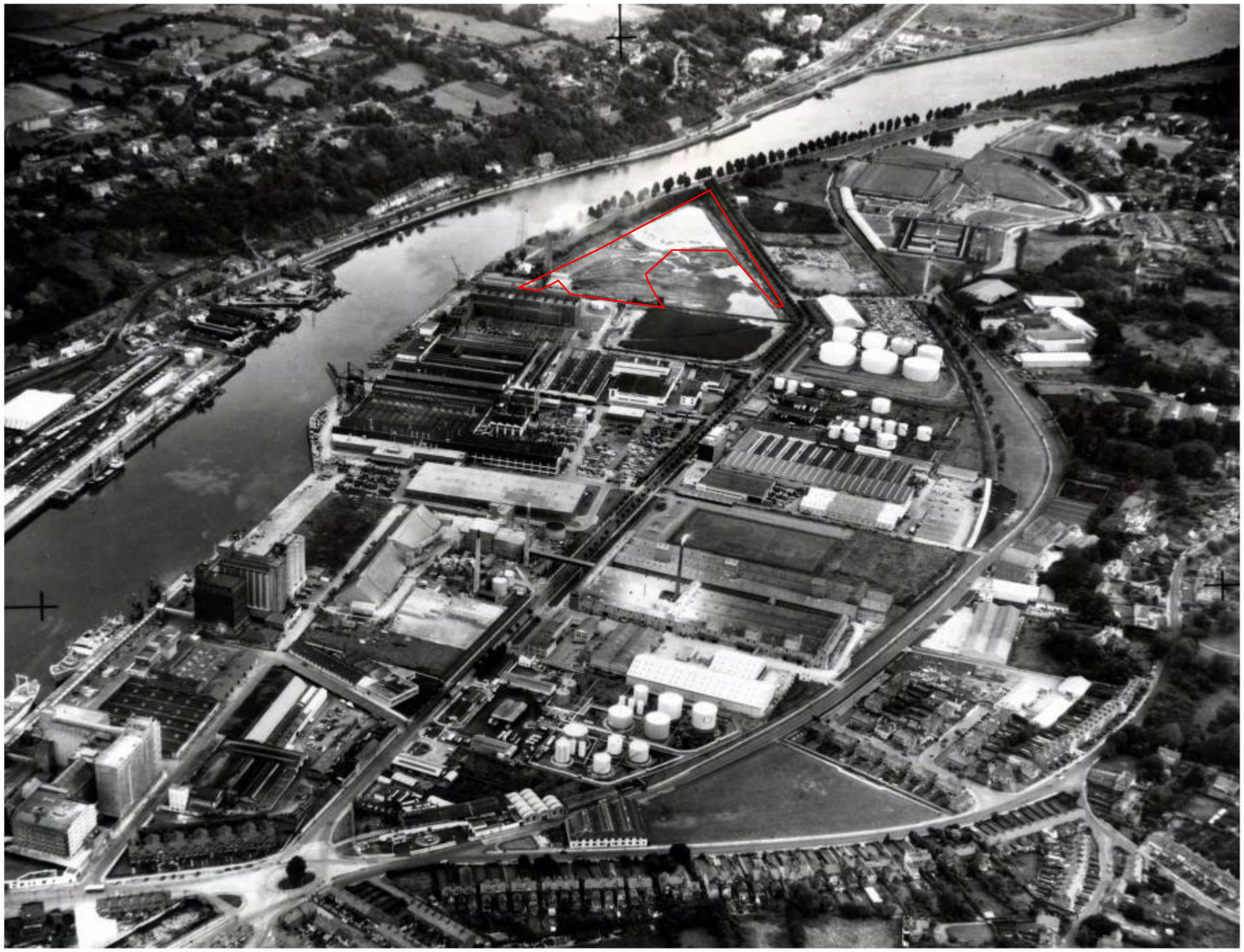
Drawing Status

Drawing No

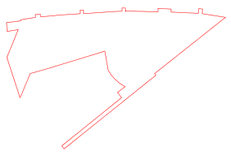
Issue

© Arup

A3



South Docklands—c1950's



Indicative site boundary

Copyright statements

Issue	Date	By	Chkd	Appd

ARUP

50 Ringsend Road
Dublin 4, D04 T6X0
Tel +353 (0)1 233 4455 Fax +353 (0)1 668 3169
www.arup.com

Client

Job Title

1950 Aerial Photograph

Scale at A3

Job No

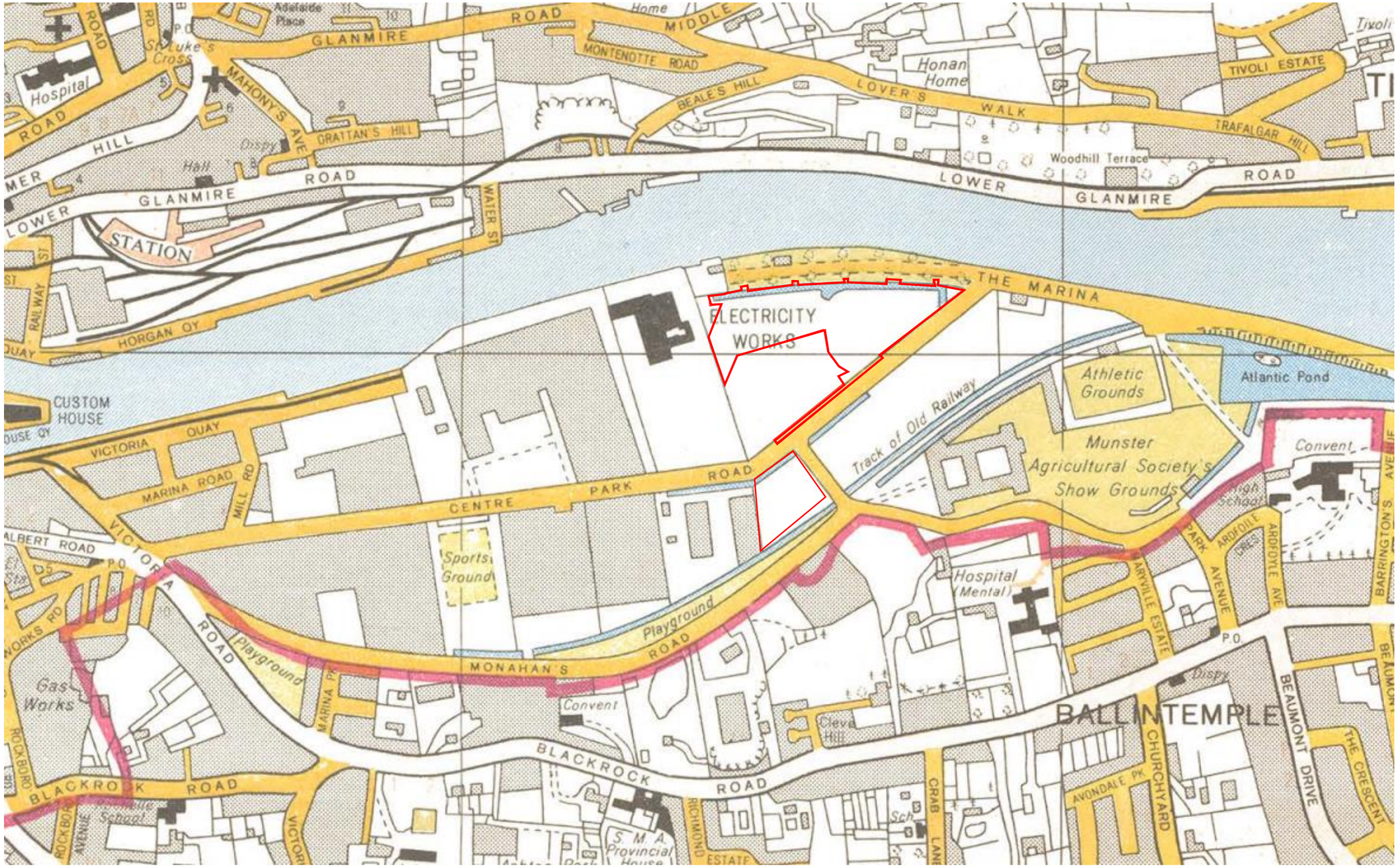
Drawing Status

Drawing No

Issue

© Arup

A3



Indicative site boundary

Copyright statements

Issue	Date	By	Chkd	Appd

ARUP

50 Ringsend Road
Dublin 4, D04 T6X0
Tel +353 (0)1 233 4455 Fax +353 (0)1 668 3169
www.arup.com

Client

Job Title

1964 Aerial Photograph

Scale at A3

Job No

Drawing Status

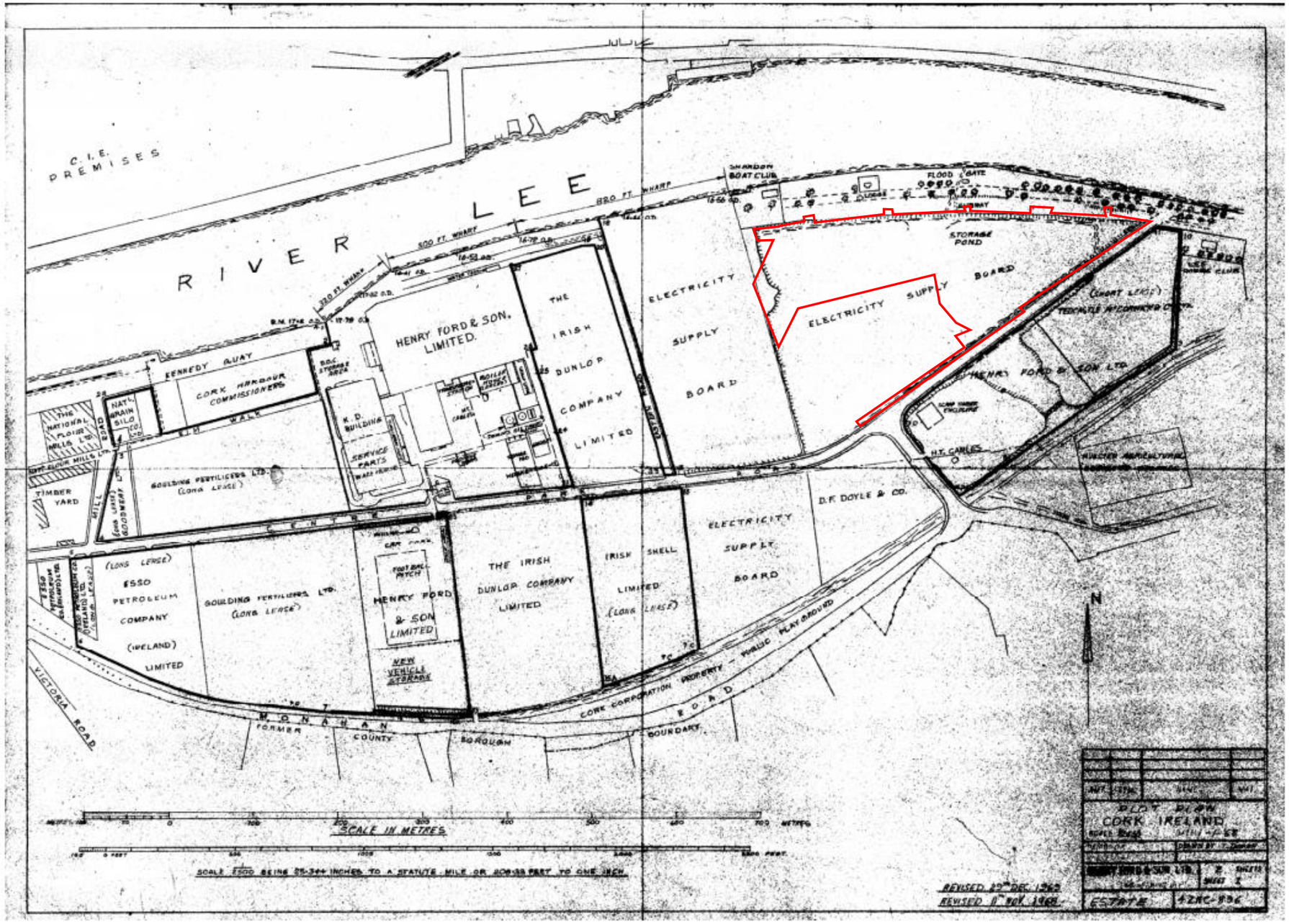
Drawing No

Issue

© Arup

A3

Henry Ford & Sons Property
Map Dated November 1968



Indicative site boundary

Copyright statements

Issue	Date	By	Chkd	Appd

ARUP

50 Ringsend Road
Dublin 4, D04 T6X0
Tel +353 (0)1 233 4455 Fax +353 (0)1 668 3169
www.arup.com

Client

Job Title

1968 Map Plan

Scale at A3

Job No

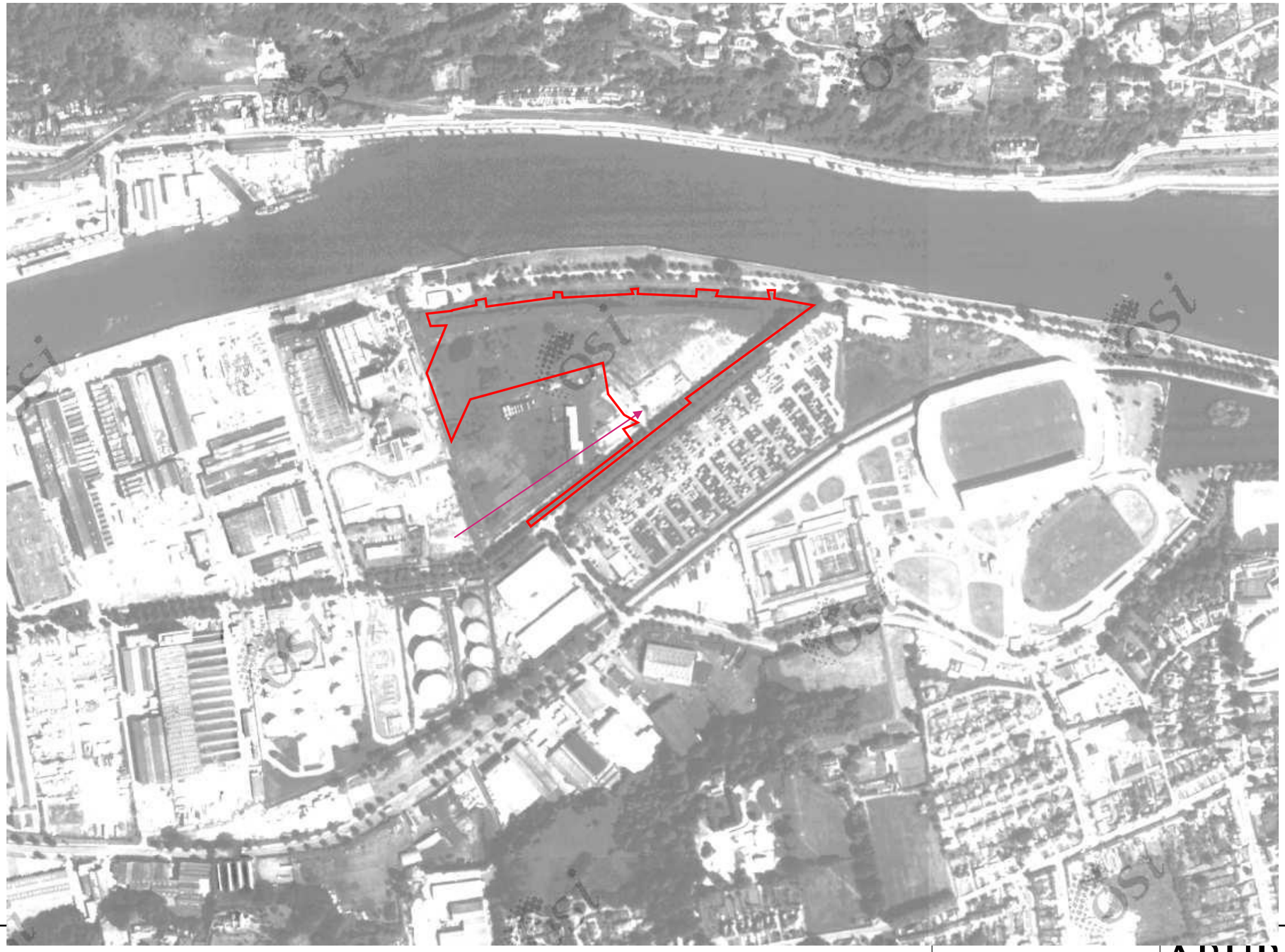
Drawing Status

Drawing No

Issue

© Arup

A3



Indicative site boundary

Issue	Date	By	Chkd	Appd

ARUP

50 Ringsend Road
Dublin 4, D04 T6X0
Tel +353 (0)1 233 4455 Fax +353 (0)1 668 3169
www.arup.com

Client

Job Title

1995 Aerial photograph

Scale at A3

Job No

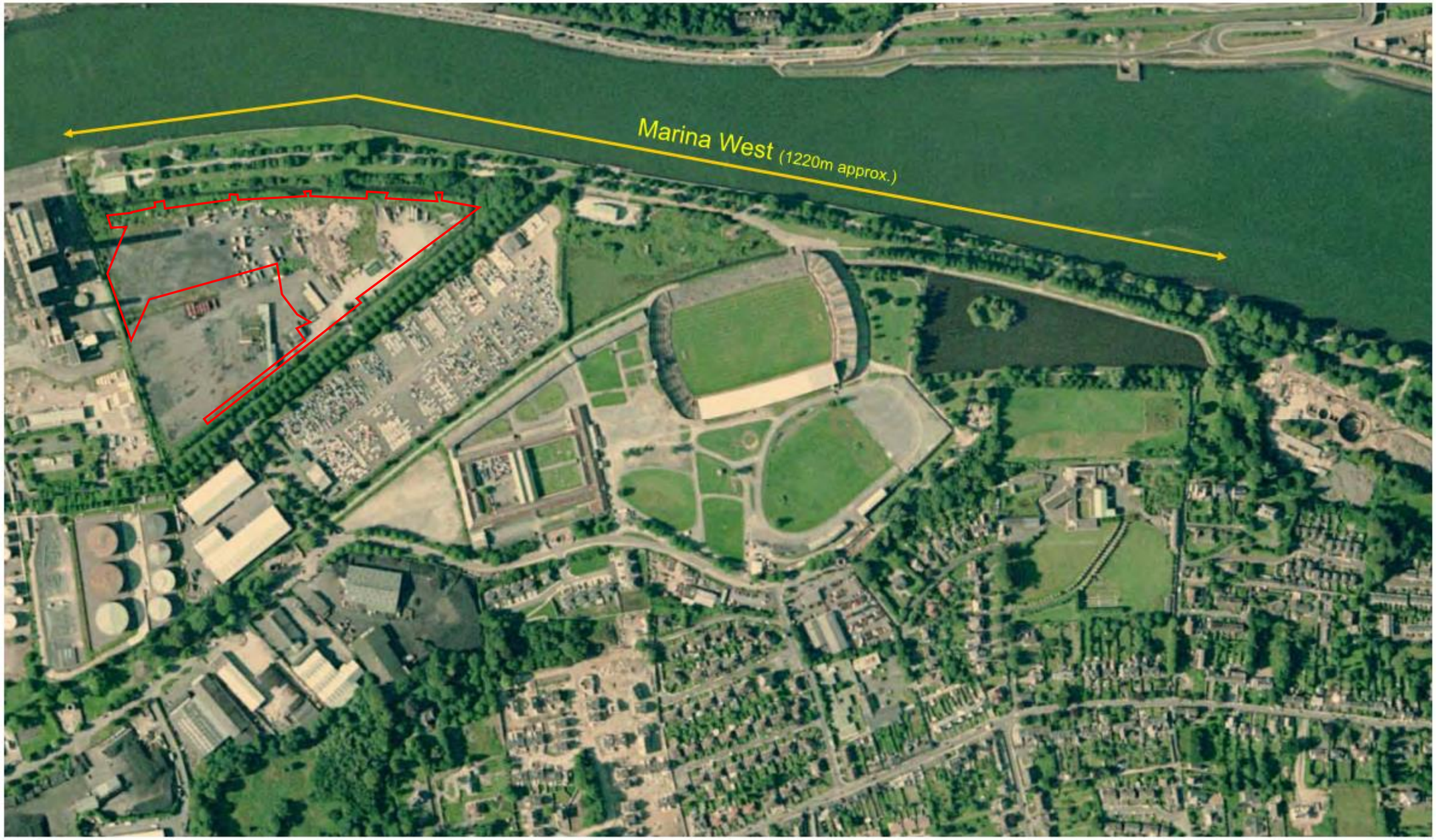
Drawing Status

Drawing No

Issue

© Arup

A3



Marina West

Indicative site boundary

Source: Google Earth

Issue	Date	By	Chkd	Appd

ARUP

50 Ringsend Road
Dublin 4, D04 T6X0
Tel +353 (0)1 233 4455 Fax +353 (0)1 668 3169
www.arup.com

Client

Job Title

2000 Aerial photograph

Scale at A3

Job No

Drawing Status

Drawing No

Issue

© Arup

A3

Indicative site boundary

Source: Google Maps

Issue	Date	By	Chkd	Appd

ARUP
50 Ringsend Road
Dublin 4, D04 T6X0
Tel +353 (0)1 233 4455 Fax +353 (0)1 668 3169
www.arup.com

Client

Job Title

2005 Aerial photograph

Scale at A3

Job No

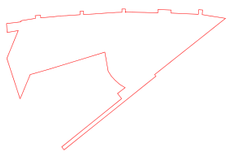
Drawing Status

Drawing No

Issue

© Arup

A3



Indicative site boundary

Source: Google Maps

Issue	Date	By	Chkd	Appd

ARUP

50 Ringsend Road
Dublin 4, D04 T6X0
Tel +353 (0)1 233 4455 Fax +353 (0)1 668 3169
www.arup.com

Client

Job Title

2020 Aerial photograph

Scale at A3

Job No

Drawing Status

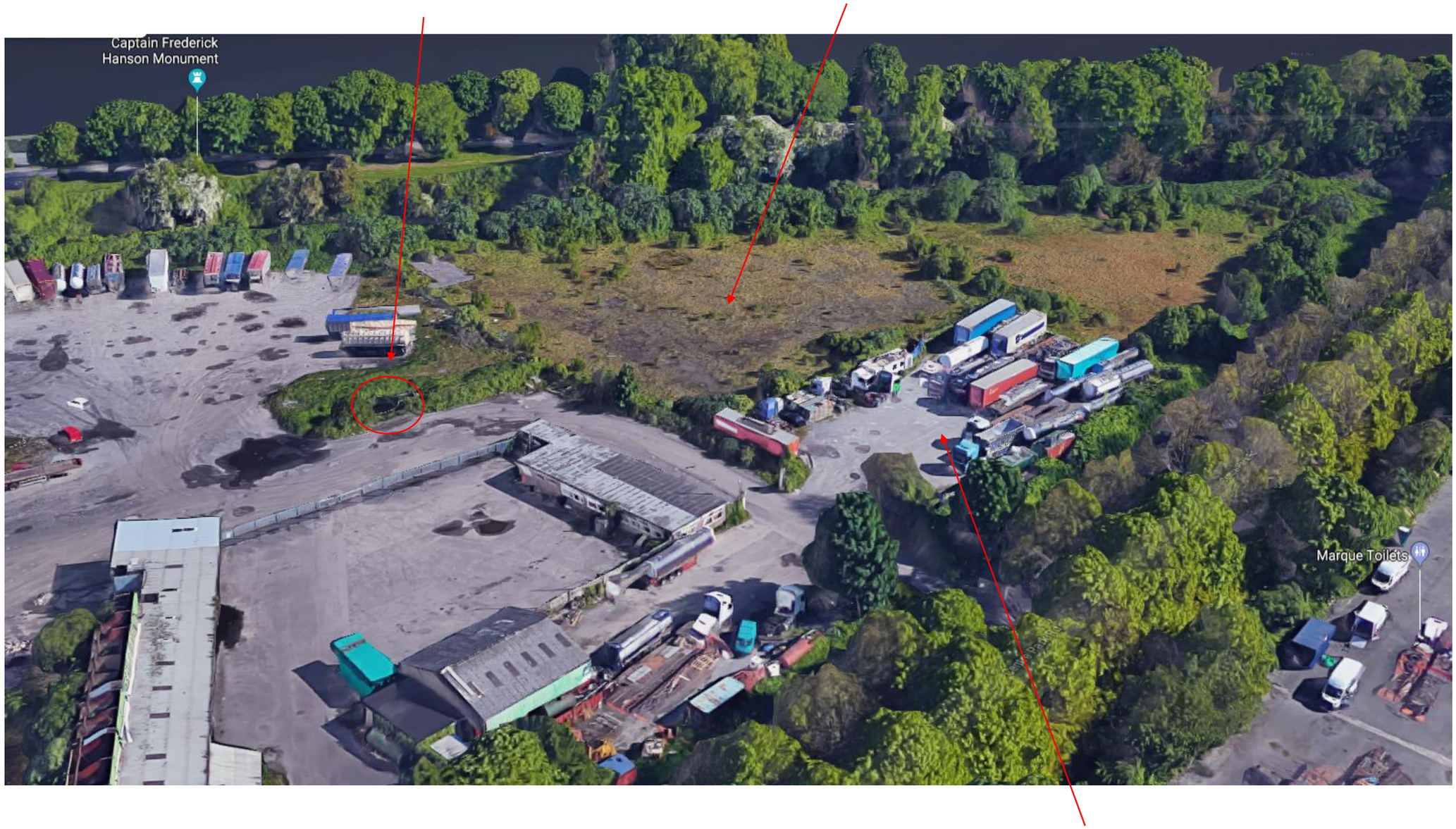
Drawing No

Issue

© Arup

A3

Possible well



Lorry storage area

Indicative site boundary

Source : Google Maps

Issue	Date	By	Chkd	Appd

ARUP
50 Ringsend Road
Dublin 4, D04 T6X0
Tel +353 (0)1 233 4455 Fax +353 (0)1 668 3169
www.arup.com

Client

Job Title

Scale at A3

Job No

Drawing Status

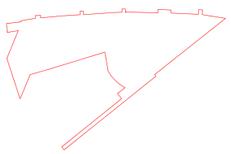
Drawing No

Issue

© Arup

A3

© Google Maps, 2019



Indicative site boundary

Source: Google Maps

Issue	Date	By	Chkd	Appd

ARUP

50 Ringsend Road
Dublin 4, D04 T6X0
Tel +353 (0)1 233 4455 Fax +353 (0)1 668 3169
www.arup.com

Client

Job Title

Scale at A3

Job No

Drawing Status

Drawing No

Issue

© Arup

Appendix 13.3

Ground Investigation

Ground Investigation

Our Ref: BS+JMS/Rp/P21206 + attachments (*.pdf)

05th April, 2022

Arup
One Albert Quay,
Ballintemple,
Cork,
T12 X8N6

Re: Tedcastles, Cork South Docklands, Ground Investigation, Factual report.

Introduction

In June, 2021, Priority Geotechnical (PGL) were requested by Arup, acting on behalf of Tiznow Unlimited Company to undertake a ground investigation for a proposed Residential Development, at the Tedcastles site, Cork South Docklands.

The site comprises two distinct parcels of land off Centre Park Road, Cork. The northern parcel of the site is bounded by Centre Park Road along the south boundary, the River Lee to the north, and ESB electricity works to the west. The southern parcel is bounded by Centre Park Road along the north boundary, Marquee Road to the east, Monahan Road to the south boundary and part of the Electricity Supply Board Marina generating station to the west. The topography of the northern parcel is relatively flat. The ground level ranges from approximately 3.9mOD in the eastern corner to approximately 2.0mOD on the western side of the northern parcel. The ground level of the southern parcel is approximately 1.7mOD.

Both sites are largely vacant, the northern parcel was partly occupied by Top Oil as an oil storage facility but was decommissioned in early 2021. The surface is covered with hardcore and is partly vegetated. The southern parcel is covered in hardstanding and foundations from demolished buildings are visible on the satellite image. The sites were formerly a marshland, before parts of the site was reclaimed from the River Lee with the construction of the Navigation wall along the Marina. The sites hosted a racing track from 1849 - 1916. In more recent times it has been used by ESB and Top Oil as a storage site for lorries, coal stocks, and oil tanks.

Purpose of Works

The proposed development at the site includes residential and commercial units together with car parking spaces and access roads. The ground investigation that is the subject of this specification is a planning stage intrusive combined geotechnical and geo-environmental investigation of the site.

Objectives

This ground investigation contract is required to determine the ground, groundwater and environmental conditions in order to inform the design of the proposed development.

Scope

The original scope of the ground investigation, which was specified by Arup, comprised of:

- Cable Percussion Boreholes;
- Follow on Rotary Boreholes;
- Inspection Pits to assess ground conditions and potential service locations;
- Trial Pits;
- Window Sample Boreholes;
- Groundwater monitoring standpipes;
- In situ testing;
- Associated sampling (geotechnical & environmental);
- Groundwater monitoring;
- Associated laboratory testing; and
- Associated reporting.

The final site works as completed is outlined, herein. This geotechnical data report presents the fieldworks records with regard to the ground investigation for the proposed residential development in Tedcastles site, Cork South Docklands. The report should be read in conjunction with the accompanying exploratory records, the photographic records and the laboratory test data.

Site Works

This investigation was carried out in accordance with Eurocode 7- Geotechnical Design Part 2, ground investigation and testing (BS EN 1997-2: 2007) and the relevant British Standards (BS 5930 (2015) Code of Practice for Site Investigation and BS 1377, Method of Tests for Soil for Civil Engineering Purposes, *in situ* Tests Parts 1 to 9).

The fieldworks were undertaken from the 22th of September, 2021 to the 14th February, 2022 under the supervision of PGL, Engineering Geologist(s). Details of the plant and equipment used are detailed on the relevant exploratory records, accompanying this report. The rotary follow on for BH05 was awaiting completion at the time of reporting.

Cable Percussion Boreholes

Seven (07) cable percussion boreholes were drilled to depths 17.00m below existing ground level (bgl) to 23.50m bgl using PGL's Dando 2000 Rig and 200mm diameter Symmetrex casing. Boreholes terminated on obstructions after chiselling. The logs are accompanying this factual report.

Location	Depth (m bgl)
BH01	20.50
BH02	18.50
BH03	20.50
BH04	19.00
BH05	23.50
BH06	1.60
BH07	17.00

Chiselling				
Location	**Depth Top (m bgl)**	**Depth Base (m bgl)**	**Duration (hh:mm)**	**Tool**
BH01	9.65	9.85	01:00	Chisel
	11.00	11.30	01:00	Chisel
	15.70	15.90	01:00	Chisel
	17.45	17.60	01:00	Chisel
BH02	1.30	1.50	01:00	Chisel.
	8.75	8.90	01:00	Chisel.
	10.55	10.80	01:00	Chisel.
	11.45	11.60	01:00	Chisel.
	14.75	14.90	01:00	Chisel.
	16.95	17.00	01:00	Chisel.
	18.40	18.50	01:00	Chisel.
BH03	1.80	2.00	01:00	Chisel.
	2.40	2.70	01:00	Chisel.
	7.35	7.50	01:00	Chisel.
	13.30	13.5	01:00	Chisel.
	16.40	16.75	01:00	Chisel.
BH04	6.80	6.90	01:00	Chisel.
	11.55	11.80	01:00	Chisel.
	18.70	18.95	01:00	Chisel.
BH05	1.70	1.90	01:00	Chisel.
	9.80	10.00	01:00	Chisel.
	12.45	12.60	01:00	Chisel.
	15.80	16.00	01:00	Chisel.

Chiselling				
Location	**Depth Top (m bgl)**	**Depth Base (m bgl)**	**Duration (hh:mm)**	**Tool**
	18.40	18.70	02:00	Chisel.
	22.50	22.75	01:00	Chisel.
	23.45	23.50	01:00	Chisel.
BH07	2.35	2.45	02:00	Chisel.
	10.45	10.60	01:00	Chisel.
	12.85	13.00	01:00	Chisel.
	14.80	15.00	01:00	Chisel.
	16.90	17.00	01:00	Chisel.

Rotary Boreholes

Two (02) rotary follow on boreholes were drilled to a depth 21.00m bgl to 39.00m bgl using PGL's Soilmech PSM Rig and 131mm diameter Symmetrex casing. The exploratory log is accompanying this factual report.

Location	Depth (m bgl)
BH05	39.00
BH06	21.00

Trial Pits

Eight (08) trial pits were excavated to depths 1.60m bgl to 3.60m bgl using 3t and 6t tracked excavators. The exploratory logs accompany this report and are discussed herein.

Location	Depth (m bgl)	Groundwater strike (m bgl)	Stability remarks
TP01	3.00	2.10, 2.80	Moderate.
TP02	3.50	3.50	Poor
TP03	3.60	None encountered	Moderate.
TP04	2.20	2.20	Moderate.
TP05	2.00	1.80	Good.
TP06	2.40	None encountered	Good.
WSTP05	1.60	1.30	Moderate
WSTP12A	2.50	None encountered	Moderate

Inspection Pits

Forty four (44) inspection pits were excavated to depths 0.3m bgl to 1.2m bgl prior to borehole drilling. Pits were dug using a 3t tracked excavator. The exploratory logs accompany this report and are discussed herein.

Location	Depth (m bgl)	Groundwater strike (m bgl)	Stability remarks
WS01	1.20	None encountered	Good.
WS02	1.20	None encountered	Good.
WS03	1.20	None encountered	Good.
WS04	1.20	None encountered	Good.
WS05	1.20	None encountered	Good.
WS06	1.20	None encountered	Good.
WS07	1.20	None encountered	Good.
WS08	1.10	None encountered	Good.
WS08A	1.20	None encountered	Good.
WS09	1.20	None encountered	Good.
WS10	0.90	None encountered	Good.
WS10A	1.20	0.60	Good.
WS11	0.30	0.20	Good.
WS12	1.20	None encountered	Good.
WS13	0.60	None encountered	Good.
WS13A	1.20	None encountered	Good.
WS14	0.30	0.30	Good.
WS14A	1.20	None encountered	Good.
WS15	1.20	None encountered	Good.
WS16	1.20	None encountered	Good.
WS17	1.20	None encountered	Good.
WS18	1.20	None encountered	Good.
WS19	1.20	None encountered	Good.
WS20	1.20	None encountered	Good.
WS21	1.10	None encountered	Good.
WS22	1.00	None encountered	Good.
WS22A	1.20	None encountered	Good.
WS23	1.20	None encountered	Good.
WS24	0.50	None encountered	Good.
WS24A	1.2	None encountered	Good.
WS25	1.20	None encountered	Good.
WS26A	1.20	None encountered	Good.
WS27	1.20	None encountered	Good.
WSBH01	1.20	None encountered	Good.

Location	Depth (m bgl)	Groundwater strike (m bgl)	Stability remarks
WSBH02	1.20	None encountered	Good.
WSBH03	1.20	None encountered	Good.
WSBH04	1.20	None encountered	Good.
WSBH05	1.20	None encountered	Good.
WSBH05A	0.50	None encountered	Good.
WSBH05B	0.40	None encountered	Good.
WSBH06	1.20	None encountered	Good.
WSBH06A	1.20	None encountered	Good.
WSBH07	1.20	None encountered	Good.

Window Sampling

Twenty seven (27) window samples were completed using PGL's Competitor dynamic probing (heavy) rig. Window samples were progressed to refusal at depths 1.4m bgl to 7.0m bgl.

Location	Depth (m bgl)
WS01	4.50
WS02	1.80
WS03	1.60
WS04	4.50
WS06	4.50
WS07	4.50
WS08A	4.50
WS09	4.50
WS10A	4.50
WS12	1.40
WS14A	4.50
WS15	4.50
WS17	6.00
WS18	4.50
WS19	3.00
WS20	5.90
WS22A	5.70
WS23	4.50
WS24A	5.70
WS25	4.50
WS27	4.50
WSBH01	7.00
WSBH02	5.00

Location	Depth (m bgl)
WSBH03	7.00
WSBH04	4.00
WSBH05B	4.80
WSBH07	5.70

Survey and Drawings

Upon completion of the fieldworks, the 'as built' exploration locations were surveyed using Trimble 5700/5800 GPS equipment to the Ordinance Survey Irish National Grid system of co-ordinates (ING) and elevations to Malin Head datum. The exploratory locations were shown on the exploratory location plans P21206-SI-A & P21206-SI-01, P21206-SI-02 & P21206-SI-03).

Location	Easting	Northing	Ground Level (mOD)	Final Depth (m bgl)	Date Start (dd/mm/yyyy)
BH01	569399.3	572156.2	1.89	20.50	08/12/2021
BH02	569447.1	571964.8	1.51	18.50	19/11/2021
BH03	569564.0	572164.6	2.32	20.50	10/11/2021
BH04	569609.5	572065.5	1.28	19.00	12/11/2021
BH05	569719.6	572168.3	1.88	39.00	16/11/2021
BH06	569511.1	571895.4	1.48	21.0	25/11/2021
BH07	569467.9	571822.5	1.14	17.0	25/11/2021
TP01	569419.3	572092.0	1.92	3.00	28/09/2021
TP02	569528.3	572164.3	2.21	3.50	28/09/2021
TP03	569513.2	571990.7	1.77	3.60	28/09/2021
TP04	569677.5	572132.1	1.87	2.20	29/09/2021
TP05	569527.8	571834.4	1.47	2.00	29/09/2021
TP06	569553.0	571879.0	1.40	2.40	29/09/2021
WS01	569397.3	572124.6	1.99	4.50	12/10/2021
WS02	569437.2	572161.3	1.61	1.80	12/10/2021
WS03	569430.6	572124.3	1.92	1.60	12/10/2021
WS04	569427.2	572051.2	1.88	4.50	29/09/2021
WS05	569433.2	572016.2	1.94	1.20	30/09/2021
WS06	569471.2	572165.4	1.96	4.50	12/10/2021
WS07	569481.6	572124.8	1.98	4.50	13/10/2021
WS08	569463.4	572074.7	1.96	1.10	30/09/2021
WS08A	569463.4	572072.0	1.95	4.50	14/10/2021
WS09	569470.4	572029.3	1.75	4.50	06/11/2021
WS10	569481.3	571991.6	1.66	0.90	30/09/2021
WS10A	569481.3	571988.9	1.70	4.50	14/10/2021
WS11	569458.3	571954.3	1.45	0.30	30/09/2021

Location	Easting	Northing	Ground Level (mOD)	Final Depth (m bgl)	Date Start (dd/mm/yyyy)
WS12	569537.9	572123.6	2.14	1.40	12/10/2021
WS13	569516.7	572083.1	2.00	0.60	30/09/2021
WS13A	569516.7	572085.8	1.98	1.20	30/09/2021
WS14	569523.6	572013.0	1.73	0.30	30/09/2021
WS14A	569523.6	572015.7	1.74	4.50	30/09/2021
WS15	569577.8	572132.2	2.15	4.50	05/10/2021
WS16	569559.2	572073.3	2.00	1.20	15/10/2021
WS17	569565.9	572036.9	1.58	6.00	30/09/2021
WS18	569623.7	572165.9	2.05	4.50	14/10/2021
WS19	569625	572123.5	2.21	4.50	01/10/2021
WS20	569677.3	572172.2	1.91	5.90	30/09/2021
WS21	569647.9	572102.9	1.93	1.10	29/11/2021
WS22	569702.3	572146.2	1.79	1.00	29/09/2021
WS22A	569702.3	572148.9	1.88	5.70	29/09/2021
WS23	569489.8	571908.8	1.26	4.50	29/09/2021
WS24	569477.3	571869.4	1.55	1.00	28/09/2021
WS24A	569477.3	571872.1	1.60	5.70	28/09/2021
WS25	569464.4	571788.7	1.53	4.50	15/10/2021
WS26	569524.6	571871.6	1.59	1.30	28/09/2021
WS26A	569524.6	571868.9	1.61	1.20	15/10/2021
WS27	569558.6	571871.8	2.71	4.70	29/09/2021
WSBH01	569397.1	572156.6	1.84	7.00	22/09/2021
WSBH02	569445.5	571967.7	1.55	5.00	27/09/2021
WSBH03	569566.3	572166	2.34	7.00	23/09/2021
WSBH04	569614.0	572067.9	1.15	4.00	27/09/2021
WSBH05	569725.2	572171.0	1.63	0.50	24/09/2021
WSBH05A	569725.2	572169.2	1.70	0.40	24/09/2021
WSBH05B	569726.1	572167.4	1.83	4.80	24/09/2021
WSBH06	569513.3	571892.7	1.51	1.20	24/09/2021
WSBH06A	569513.3	571890.0	1.50	1.20	27/09/2021
WSBH07	569469.8	571824.3	1.15	5.70	24/09/2021
WSTP05	569433.2	572016.2	1.94	1.60	15/10/2021
WSTP12A	569538.0	572126.0	2.14	2.50	15/10/2021

Sampling

A total of forty two (42) bulk disturbed samples (B) and one hundred and thirty (130) environmental samples (ENV) were recovered from the exploratory holes in accordance with Geotechnical Investigation and Sampling – Sampling Methods and Groundwater Measurements (EN ISO 22475-1:2006).

The preparation for and methods of taking environmental samples, together with their size, preservation and handling was in accordance with British Standard BS 5930: 1981-Code of Practice for Site investigation, the contract documents and the Association of Geotechnical and Geo-environmental Specialists (AGS) guide to environmental sampling, September 2010.

In-Situ Testing

Standard penetration Tests

Standard Penetration Tests (SPT) were carried out in the cable percussion and rotary boreholes using the 60° solid cone (CPT) in place of the standard split barrel sampler. The data was presented on the relevant logs in accompanying this report.

Photo Ionization Detector Readings (PID)

In-situ testing was undertaken on soil samples on the samples using a photo ionization detector (PID) to identify the presence and concentration of semi volatile organics (SVOC) and volatile organic compounds (VOC). The results were measured at 0ppm to 3ppm and are presented on the accompanying exploratory logs.

Laboratory Testing

Laboratory testing was scheduled by PGL on behalf of Arup and carried out by PGL in accordance with BS1377 (1990), Methods of test for soils for civil engineering purposes. Chemical testing was carried out by Eurofins-Chemtest Ltd. (UK) on behalf of PGL. The laboratory data accompanies this report, is discussed herein and was summarised as follows;

SUMMARY OF LABORATORY TESTING

Type	Quantity, Nr.	Remarks
Environmental suite E i	88	See attached data.
Environmental suite E ii	88	See attached data.
Environmental suite E iii	24	See attached data.
Environmental suite E iv	87	See attached data.
Environmental suite E v	10	See attached data.
Environmental suite E ix	01	See attached data.
Environmental suite E x	04	See attached data.
Environmental suite E xii	04	See attached data.

Please note that all samples shall be retained for a period no longer than 28 days from the date of this report. Thereafter all remaining samples shall be appropriately disposed of unless a written instruction to the contrary is received by PGL prior to the date of this reporting and within the 28 day period outlined above. Laboratory testing will result in a reduction of sample quantity and in some cased the use of the full sample mass. Samples already tested may not be suitable or available for further testing.

Published Geology

The Geological Survey of Ireland, 1:100,000 mapping (Sheet 25) was reviewed to determine the geology of the sites. The geology of Cork City is defined by four major units namely, Waulsortian Limestones (WA, massive unbedded Lime-mudstone), the Ballysteen Formation (BA, dark muddy Limestone & Shale), the Ringmoylan Shale Formation (RM, calcareous Shales & Crinoidal Limestones) and the Cuskinny Member (KNcu, flaser bedded Sandstone and Mudstone). A geological fault offsets the units.

Teagasc subsoil mapping indicates the area is underlain by Made Ground deposits. The national aquifer vulnerability mapping indicated a moderate rating across the study area.

Ground and Groundwater Conditions

The full details of the ground conditions encountered are provided for on the exploratory records accompanying this report. The records provide descriptions, in accordance with BS 5930 (2015) and Eurocode 7, Geotechnical Investigation and Testing, Identification and classification of soils, Part 1, Identification and description (EN ISO 14688-1: 2002),– Identification and Classification of Soil, Part 2: Classification Principles (EN ISO 14688-2:2004) and Identification and Classification of Rock, Part 1: Identification & Description (EN ISO 14689-1:2004) of the materials encountered, *in situ* testing and details of the samples taken, together with any observations made during the ground investigation.

Groundwater levels may be subject to diurnal, seasonal and climatic variations and can also be affected by drainage conditions, tidal variations etc. Low volume groundwater flow may be cut-off by borehole casing as it progresses in stiff glacial deposits. The duration trial pit excavations remain open may not be sufficient to allow for low volume flow to present. The groundwater regime should be assessed from standpipe well installations.

Groundwater was encountered during the period of fieldworks within the extent of the exploratory locations. The exploratory locations were backfilled with their arisings.

SUMMARY OF GROUNDWATER STRIKES

Location	Depth Strike (m bgl)	Remarks	Standpipe (Y/N)
BH01	2.00	See shift data.	N
BH02	0.80	See shift data.	N
BH03	5.50	See shift data.	N
BH04	4.50	See shift data.	N
BH05	5.50	See shift data.	N
BH06	6.00	See shift data	N
BH07	-	See shift data.	N
TP01	2.10	Slow flow rate.	N
TP01	2.80	Steady flow rate.	N
TP02	3.50	Trickle flow rate.	N
TP03	-	None encountered.	N
TP04	2.20	Groundwater encountered	N
TP05	1.80	Groundwater encountered	N
TP06	-	None encountered.	N
WS02	-	None encountered.	Y
WS04	-	See shift data.	N
WS05	-	None encountered.	N
WSTP05	1.30	Trickle to slow flow rate.	N
WS06	-	None encountered.	N
WS07	-	None encountered.	N
WS08	-	None encountered.	N
WS08A	-	None encountered.	Y
WS10	-	None encountered.	N
WS10A	0.60	Trickle flow rate.	Y
WS11	0.20	Fast flow rate.	N
WS12	-	None encountered.	N

Location	Depth Strike (m bgl)	Remarks	Standpipe (Y/N)
WSTP12A	-	None encountered.	N
WS13	-	None encountered.	N
WS13A	-	None encountered.	N
WS14	0.30	Groundwater encountered	N
WS14A	-	None encountered.	N
WS15	-	None encountered.	Y
WS16	-	None encountered.	N
WS17	-	None encountered.	Y
WS18	-	None encountered.	N
WS19	-	None encountered.	N
WS20	4.70	Groundwater encountered.	Y
WS21	-	None encountered.	N
WS22	-	None encountered.	N
WS22A	2.30	Groundwater encountered	Y
WS23	-	None encountered.	Y
WS24	-	None encountered.	N
WS24A	-	None encountered.	Y
WS25	-	None encountered.	N
WS26	-	None encountered.	N
WS26A	-	None encountered.	N
WS27	4.00	See shift data.	Y
WSBH01	-	See shift data.	Y
WSBH02	-	See shift data.	Y
WSBH03	-	See shift data.	Y
WSBH04	-	See shift data.	Y
WSBH05	-	None encountered.	N
WSBH05A	-	None encountered.	N
WSBH05B	-	None encountered.	N
WSBH06	-	None encountered.	N
WSBH06A	-	None encountered.	N
WSBH07	-	None encountered.	Y

Groundwater was monitored using Rugged Troll 100 level loggers. Continuous, absolute pressure (hydrostatic and barometric pressure) was measured *in situ* to determine continual groundwater levels in surrounding 50mm diameter standpipe well installations. The data is presented on separate Excel spreadsheets (.xls) and accompany this factual report.

Water quality readings were obtained using an In-Situ Aqua TROLL 400 Multi-parameter probe. Gas monitoring was undertaken over 3 subsequent site visits. The results are presented in the accompanying Excel spreadsheets (.xls).

Sixteen (16) number 50mm dia. HDPE standpipe wells were constructed to allow for groundwater and gas monitoring. A summary of the standpipe construction is presented below.

SUMMARY OF STANDPIPE CONSTRUCTION

Location	Depth Top (m bgl)	Depth Base (m bgl)	Diameter (mm)	Pipe Type
WS02	0.00	0.80	50	PLAIN
	0.80	1.80	50	SLOTTED
WS08A	0.00	0.10	50	PLAIN
	0.10	1.40	50	SLOTTED
WS10A	0.00	0.90	50	PLAIN
	0.90	2.90	50	SLOTTED
WS15	0.00	1.00	50	PLAIN
	1.00	3.50	50	SLOTTED
WS17	0.00	5.20	50	SLOTTED
	5.20	6.00	50	PLAIN
WS20	0.00	5.40	50	PLAIN
	5.40	5.90	50	SLOTTED
WS22A	0.00	1.00	50	PLAIN
	1.00	2.50	50	SLOTTED
WS23	0.00	1.30	50	PLAIN
	1.30	2.80	50	SLOTTED
WS24A	0.00	4.40	50	PLAIN
	4.40	5.60	50	SLOTTED
WS27	0.00	4.00	50	PLAIN
	4.00	4.70	50	SLOTTED
WSBH01	0.00	6.00	50	PLAIN

Location	Depth Top (m bgl)	Depth Base (m bgl)	Diameter (mm)	Pipe Type
	6.00	7.00	50	SLOTTED
WSBH02	0.00	3.80	50	PLAIN
	3.80	5.00	50	SLOTTED
WSBH03	0.00	6.00	50	PLAIN
	6.00	7.00	50	SLOTTED
WSBH04	0.00	0.50	50	PLAIN
	0.50	2.00	50	SLOTTED
WSBH05B	0.00	1.00	50	PLAIN
	1.00	2.50	50	SLOTTED
WSBH07	0.00	1.00	50	PLAIN
	1.00	2.50	50	SLOTTED

The remaining exploratory locations were backfilled with grout, gravel and their arisings.

GRAVEL Backfill to installation/borehole

ARISINGS Backfill

uPVC slotted pipe

BENTONITE Backfill to installation

Should you have any queries in relation to the data collected and presented herein, please do not hesitate to contact our office.

Yours sincerely,
For **Priority Geotechnical,**

James McSweeney BSc
Engineering Geologist

No responsibility can be held by PGL for ground conditions between exploratory locations. The exploratory logs provide for ground profiles and configuration of strata relevant to the investigation depths achieved during the fieldworks. Caution shall be taken when extrapolating between such exploratory locations. No liability is accepted for ground conditions extraneous to the exploratory locations.

No account has been taken of potential subsidence or ground movement due to mineral extraction, mining works or karstification below or in proximity to the site, unless specifically addressed.

This report has been prepared for Employer and their Representative as outline, herein. The information should not be used without their prior written permission. PGL accepts no responsibility or liability for this document being used other than for the purposes for which it was intended.

KEY TO SYMBOLS ON EXPLORATORY HOLE RECORDS

All linear dimensions are in metres or millimetres

DESCRIPTIONS

**	Drillers Description
Friable	Easily crumbled

SAMPLES

U( )	Undisturbed 102mm diameter sample, ( ) denotes number of blows to drive sampler
U( )F, U( )P	F- not recovered, P-partially recovered
U38	Undisturbed 38mm diameter sample
P(F), (P)	Piston sample - disturbed
B	Bulk sample - disturbed
D	Jar Sample - disturbed
W	Water Sample
CBR	California Bearing Ratio mould sample
ES	Chemical Sample for Contamination Analysis
SPTLS	Standard Penetration Test S lump sample from split sampler

CORE RECOVERY AND ROCK QUALITY

TCR	Total Core Recovery (% of Core Run)
SCR	Solid Core Recovery (length of core having at least one full diameter as % of core run)
RQD	Rock Quality Designation (length of solid core greater than 100mm as % of core run)

Where there is insufficient space for the TCR, SCR and RQD, the results may be found in the remarks column

If	Fracture Spacing in mm (Minimum/Average/Maximum) NI - non intact, NR - no recovery
AZCL	Assumed Zone of Core Loss
NI	Non intact

GROUNDWATER

▽	Groundwater strike
▼	Groundwater level after standing period
Date/Water	Date of shift (day/month)/Depth to water at end of previous shift shown above the date and depth to water at beginning of shift given below the date

INSITU TESTING

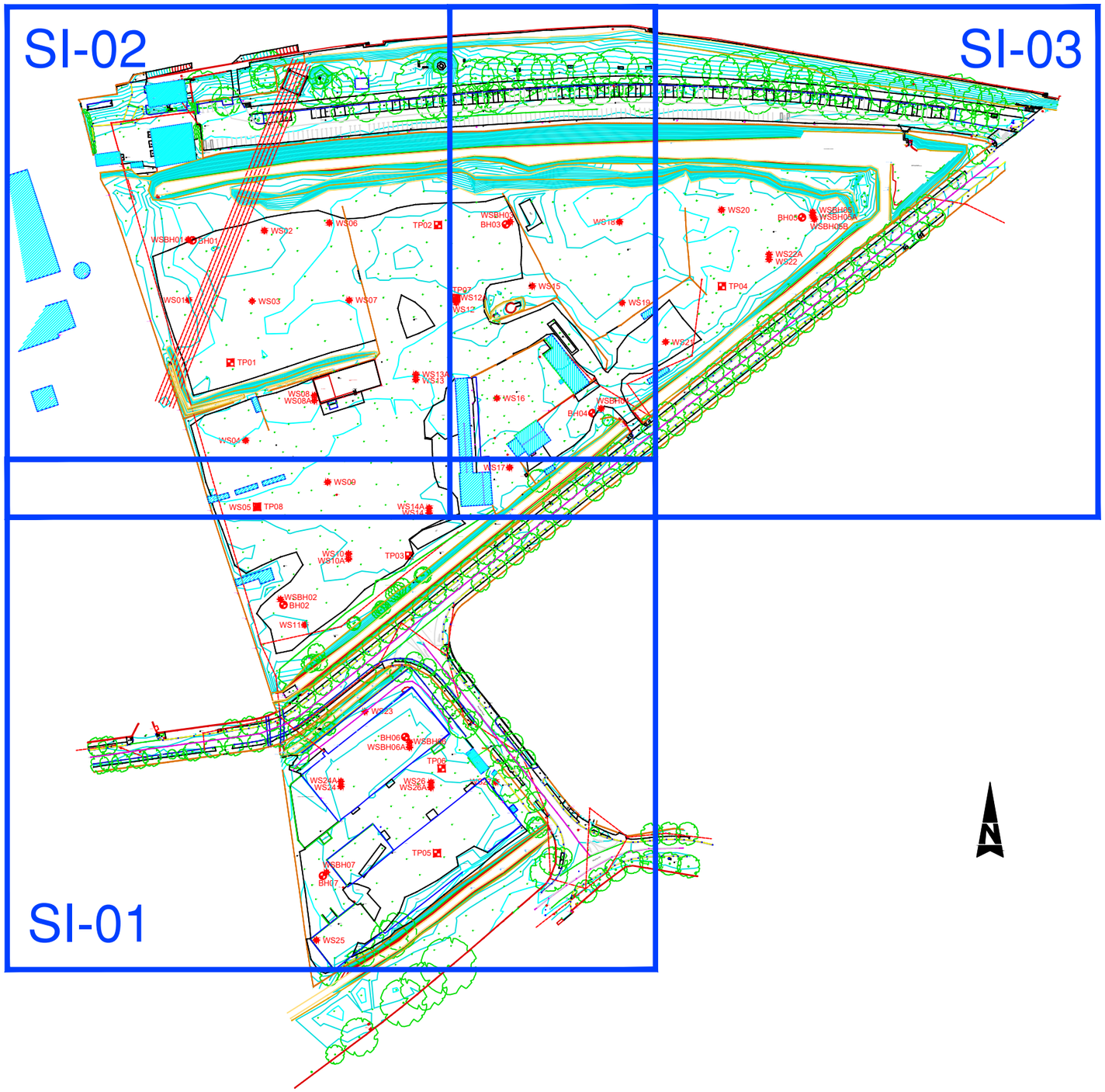
S	Standard Penetration Test - split barrel sampler
C	Standard Penetration Test - solid 60° cone
SW	Self Weight Penetration
Ivp, HVp (R)	In Situ Vane Test, Hand Vane Test (R) demonstrates remoulded strength
K(F), (C), (R), (P)	Permeability Test
HP	Hand Penetrometer Test

MEASURED PROPERTIES

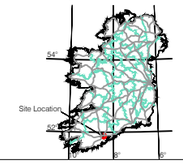
N	Standard Penetration Test - blows required to drive 300mm after seating drive
x/y	Denotes x blows for y mm within the Standard Penetration Test
x*/y	Denotes x blows for y mm within the seating drive
c_u	Undrained Shear Strength (kN/m^2)
CBR	California Bearing Ratio

ROTARY DRILLING SIZES

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



Priority Geotechnical Site



JOB NAME:

Ted Castle Site

Sheet Title:

EXPLORATORY LOCATION LAYOUT

JOB NUMBER:

P21206

DRAWING NUMBER:

P21206-SI-A

DRAWN BY:

Gary Curtin

DATE:

24/09/2021

SCALE:

1:2500 ON A3

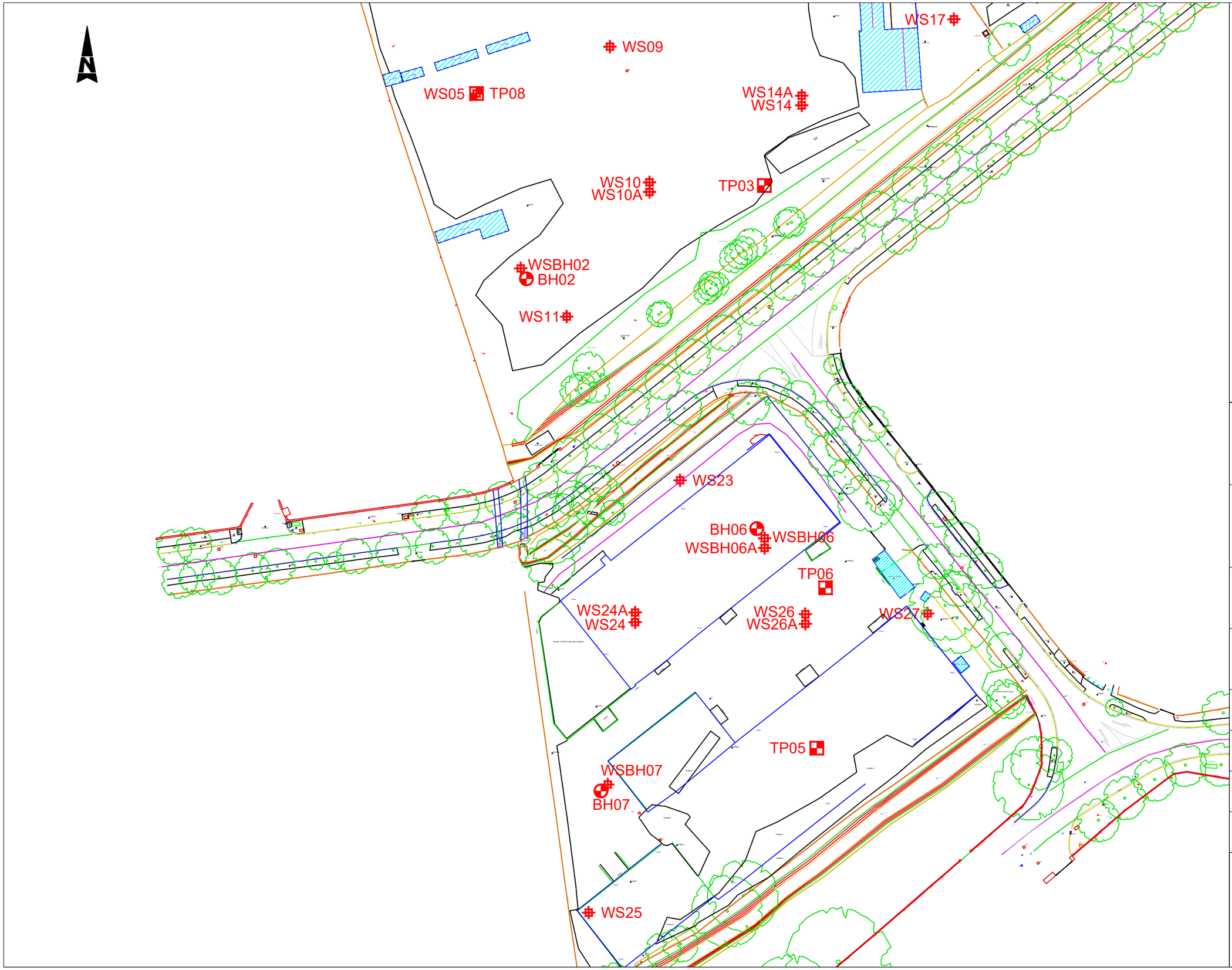
APPROVED:

GH

REVISION:

D01

pgl priority geotechnical



KEY:

- TP00 Denotes Trial Pit location
- BH00 Denotes Borehole location
- WS00 Denotes Window Sample location
- RC00 Denotes Rotary Core location

JOB NAME:

Ted Castle Site

Sheet Title:

EXPLORATION LOCATION PLAN

JOB NUMBER:

P21206

DRAWING NUMBER:

P21206-SI-01

DRAWN BY:

Gary Curtin

DATE:

24/09/2021

SCALE:

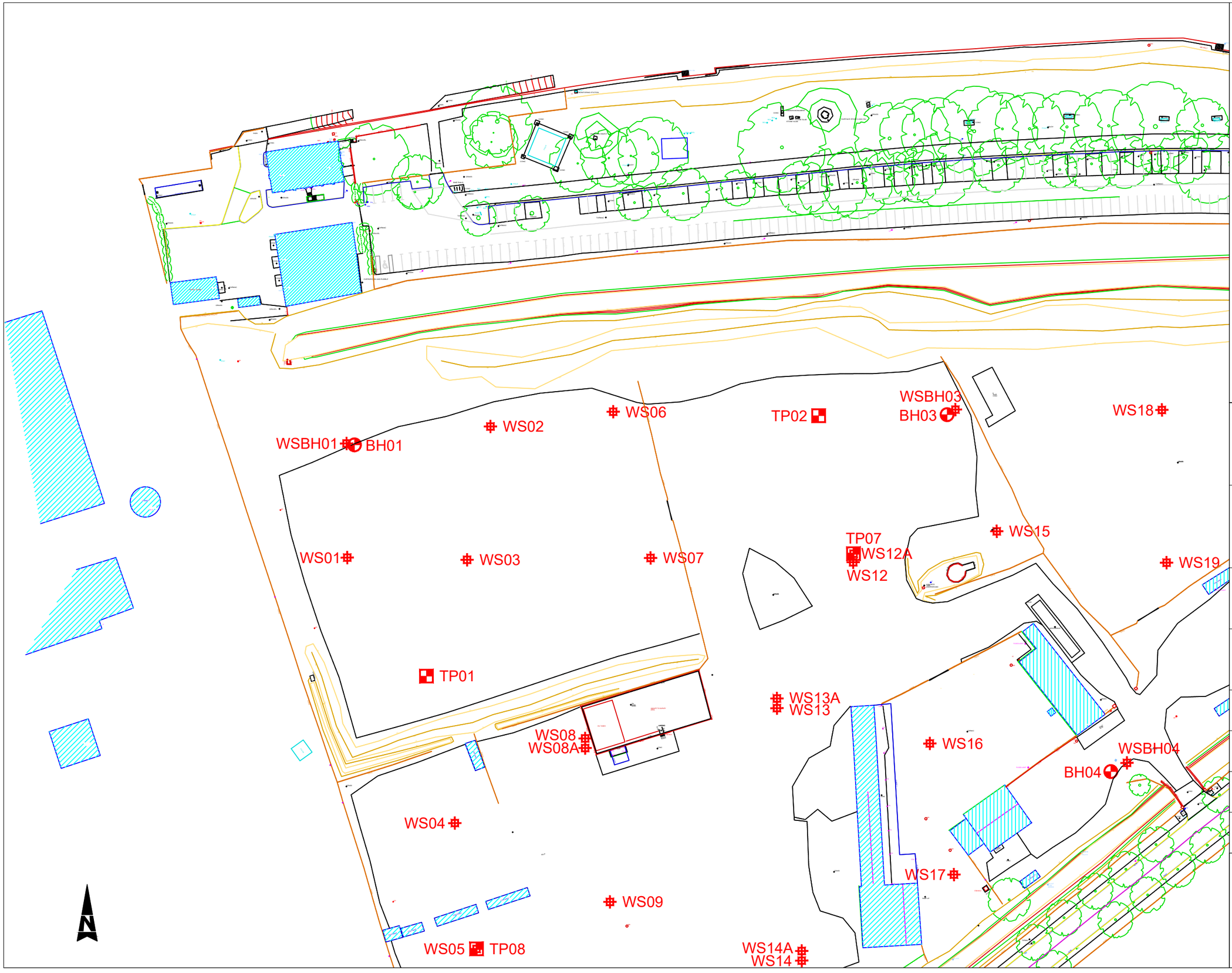
1:1000 ON A3

APPROVED:

GH

REVISION:

D01



KEY:

- TP00 Denotes Trial Pit location
- BH00 Denotes Borehole location
- WS00 Denotes Window Sample location
- RC00 Denotes Rotary Core location

JOB NAME:

Ted Castle Site

Sheet Title:

EXPLORATION LOCATION PLAN

JOB NUMBER:

P21206

DRAWING NUMBER:

P21206-SI-02

DRAWN BY:

Gary Curtin

DATE:

24/09/2021

SCALE:	APPROVED:
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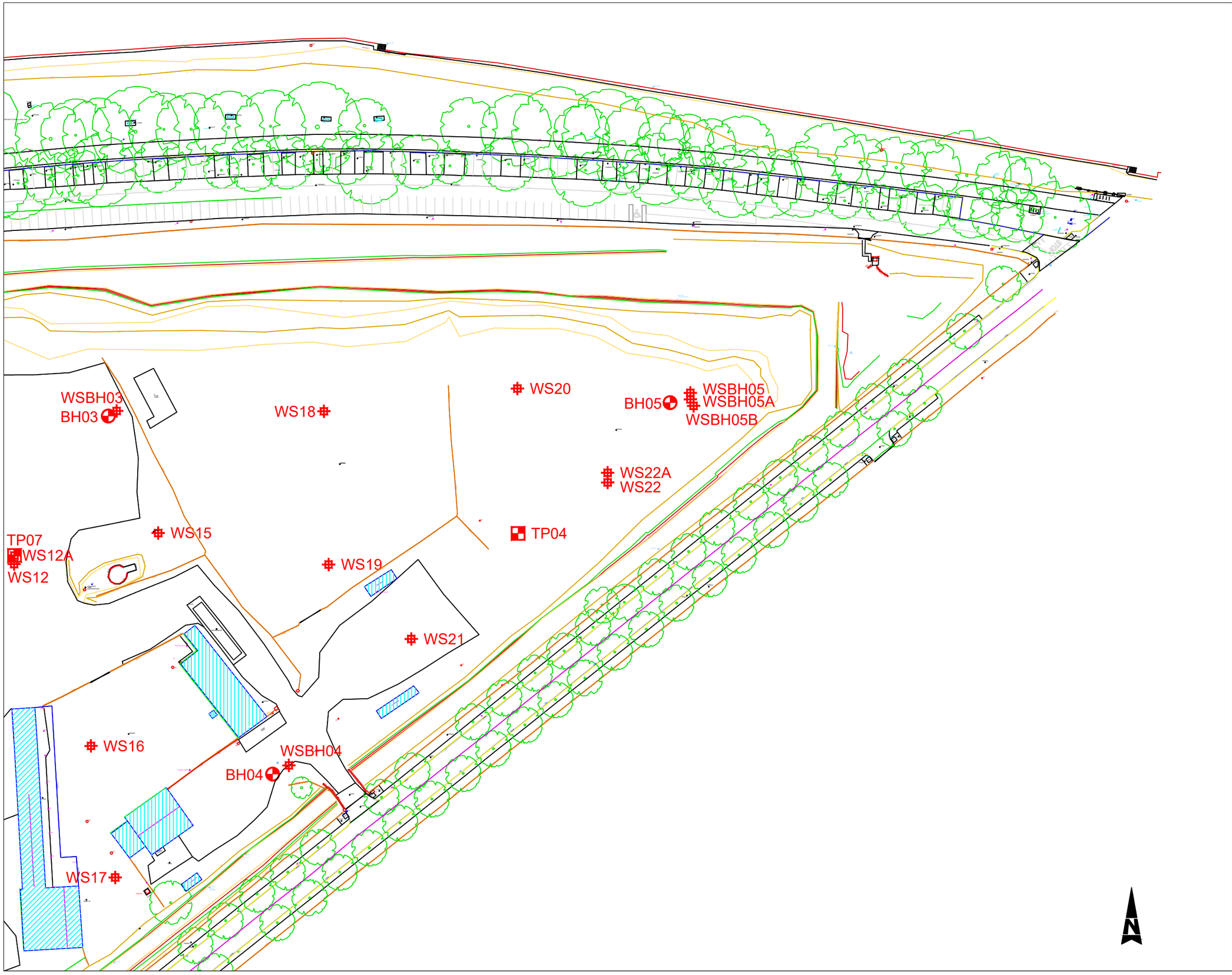
REVISION:

D01

pgl priority geotechnical



KEY:

- TP00 Denotes Trial Pit location
- BH00 Denotes Borehole location
- WS00 Denotes Window Sample location
- RC00 Denotes Rotary Core location

JOB NAME:

Ted Castle Site

Sheet Title:

EXPLORATION LOCATION PLAN

JOB NUMBER:

P21206

DRAWING NUMBER:

P21206-SI-03

DRAWN BY:

Gary Curtin

DATE:

24/09/2021

SCALE:	APPROVED:
1:1000 ON A3	GH

REVISION:

D01

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Priority Geotechnical Ltd. Tel: 021 4631600 Fax: 021 4638690 www.prioritygeotechnical.ie	Drilled By PC Logged By JR	Borehole No. **BH01** Sheet 1 of 3

Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569399E - 572156N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.89 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	08/12/2021 - 09/11/2021	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description	
		0.00 - 1.00	B					(MADE GROUND) Dark brown/black, slightly clayey very sandy GRAVEL with high cobble content, plastic and rootlets. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded. Cobbles are 63-190mm dia, angular to rounded Mudstone and Limestone.	
		1.00 - 2.00 1.00	B SPT (C)	N=7 (1,1/1,2,2,2)	1.00	0.88		(MADE GROUND) Loose, dark brown, very clayey gravelly SAND with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobbles are 63-80mm dia, sub-angular siltstone.	1
		2.00 - 3.00 2.00	B SPT (C)	N=8 (1,2/2,2,2,2)	2.00	-0.12		Loose, dark brown, slightly clayey gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.	2
		3.00 - 4.00 3.00	B SPT (C)	N=10 (2,3/3,2,3,2)	3.00	-1.12		Firm, dark grey, slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.	3
		4.00 - 5.00 4.00	B SPT (C)	N=11 (2,3/3,2,3,3)					4
		5.00 - 6.00 5.00	B SPT (C)	N=13 (2,2/3,3,4,3)					5
		6.00 - 7.00 6.00	B SPT (C)	N=8 (2,2/2,2,2,2)	6.00	-4.12		Loose to medium dense, red grey white, sandy GRAVEL with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to rounded siltstone and limestone. Cobbles are 63-80mm dia, sub-angular to sub-rounded siltstone.	6
		7.00 - 8.00 7.00	B SPT (C)	N=17 (3,4/4,5,4,4)					7
		8.00 - 9.00 8.00	B SPT (C)	N=21 (4,4/5,5,6,5)	8.00	-6.12		Medium dense, red grey white, sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to rounded Siltstone and Limestone lithology.	8
		9.00 - 10.00 9.00	B SPT (C)	N=25 (5,6/6,7,6,6)	9.00	-7.12			9

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
2.00	1.75	20		See shift data.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
20.50	200	200

Equipment: Dando 2000

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool
9.65	9.85	01:00	Chisel
11.00	11.30	01:00	Chisel
15.70	15.90	01:00	Chisel
17.45	17.60	01:00	Chisel

Remarks:

Borehole terminated at 20.50m bgl, required depth.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	08/11/2021 08:00	0.00	Start of shift.
4.00	08/11/2021 18:00	11.00	End of shift.
3.75	09/11/2021 08:00	11.00	Start of shift.
6.45	09/11/2021 18:00	20.50	End of borehole.

Priority Geotechnical Ltd. Tel: 021 4631600 Fax: 021 4638690 www.prioritygeotechnical.ie	Drilled By PC	Borehole No. **BH01**
	Logged By JR	Sheet 2 of 3

Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569399E - 572156N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.89 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	08/12/2021 - 09/11/2021	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description	
		10.00 - 11.00 10.00	B SPT (C)	N=39 (7,8/9,9,10,11)				Dense, red grey white, very gravelly SAND with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to rounded. Cobbles are 63-120mm dia, rounded siltstone.	10
		11.00 - 12.00 11.00	B SPT (C)	0 (15,25/0 for 0mm)	11.00	-9.12		Dense, dark red green grey, gravelly SAND with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobbles are 63-120mm dia, sub-rounded sandstone and siltstone.	11
		12.00 - 13.00 12.00	B SPT (C)	N=36 (6,8/9,10,9,8)					12
		13.00 - 14.00 13.00	B SPT (C)	N=34 (8,9/8,9,9,8)					13
		14.00 - 15.00 14.00	B SPT (C)	N=37 (8,9/9,9,10,9)	14.00	-12.12		Dense, red green grey, gravelly SAND with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobbles are 63-120mm dia, sub-angular to sub-rounded sandstone and siltstone.	14
		15.00 - 16.00 15.00	B SPT (C)	N=37 (7,8/8,9,10,10)					15
		16.00 - 17.00 16.00	B SPT (C)	N=41 (9,9/10,10,11,10)					16
		17.00 - 18.00 17.00	B SPT (C)	N=43 (8,10/10,11,11,11)	17.00	-15.12		Dense, red green grey white, sandy GRAVEL with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse	17
		18.00 - 19.00 18.00	B SPT (C)	N=45 (10,11/10,12,11,12)	18.00	-16.11		Dense, red green grey, gravelly SAND with medium	18

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
2.00	1.75	20		See shift data.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
20.50	200	200

Equipment: Dando 2000

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool
9.65	9.85	01:00	Chisel
11.00	11.30	01:00	Chisel
15.70	15.90	01:00	Chisel
17.45	17.60	01:00	Chisel

Remarks:

Borehole terminated at 20.50m bgl, required depth.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	08/11/2021 08:00	0.00	Start of shift.
4.00	08/11/2021 18:00	11.00	End of shift.
3.75	09/11/2021 08:00	11.00	Start of shift.
6.45	09/11/2021 18:00	20.50	End of borehole.

pgl priority geotechnical	**Priority Geotechnical Ltd.** **Tel: 021 4631600** **Fax: 021 4638690** **www.prioritygeotechnical.ie**	**Drilled By** PC **Logged By** JR	Borehole No. **BH01** Sheet 3 of 3

Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569399E - 572156N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.89 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	08/12/2021 - 09/11/2021	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description	
								Dense, red green grey, gravelly SAND with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-rounded. Cobbles are 63-100 dia, sub-rounded sandstone and siltstone.	
		19.00 - 20.00 19.00	B SPT (C)	N=49 (11,10/11,12,13,13)	19.00	-17.11		Dense, red green grey, gravelly SAND with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-rounded. Cobbles are 63-100 dia, sub-rounded sandstone and siltstone.	19
		20.00	SPT (C)	N=62 (10,11/12,15,17,18)					20
					20.50	-18.61		End of Borehole at 20.500m	
									21
									22
									23
									24
									25
									26
									27

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
2.00	1.75	20		See shift data.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
20.50	200	200

Equipment: Dando 2000

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool
9.65	9.85	01:00	Chisel
11.00	11.30	01:00	Chisel
15.70	15.90	01:00	Chisel
17.45	17.60	01:00	Chisel

Remarks:

Borehole terminated at 20.50m bgl, required depth.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	08/11/2021 08:00	0.00	Start of shift.
4.00	08/11/2021 18:00	11.00	End of shift.
3.75	09/11/2021 08:00	11.00	Start of shift.
6.45	09/11/2021 18:00	20.50	End of borehole.

pgl priority geotechnical	**Priority Geotechnical Ltd.** **Tel: 021 4631600** **Fax: 021 4638690** **www.prioritygeotechnical.ie**	**Drilled By** PC **Logged By**	Borehole No. **BH02** Sheet 1 of 3

Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569447E - 571965N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.51 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	19/11/2021 - 24/11/2021	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description	
								Driller described: (MADE GROUND) Clause 804 or similar.	
	▼	1.00	SPT (C)	62 (3,4/62 for 150mm)	1.00	0.51		Driller described: Loose, silty GRAVEL.	1
		2.00	SPT (C)	N=7 (1,1/1,2,2,2)					2
		3.00	SPT (C)	N=7 (2,2/2,2,1,2)					3
		4.00	SPT (C)	N=8 (2,2/2,2,2,2)	4.00	-2.49		Driller described: Firm, SILT.	4
		5.00	SPT (C)	N=11 (2,2/2,3,3,3)					5
					5.50	-3.99		Driller described: Dense, GRAVEL with cobble content.	
		6.00	SPT (C)	N=30 (6,7/7,6,8,9)					6
		7.00	SPT (C)	N=36 (8,9/9,10,9,8)					7
		8.00	SPT (C)	N=38 (11,10/9,9,9,11)					8
		9.00	SPT (C)	N=45 (12,10/11,9,10,15)					9

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
0.80				See shift data.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
18.50	200	200

Equipment: Dando 2000

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool
1.30	1.50	01:00	Chisel.
8.75	8.90	01:00	Chisel.
10.55	10.80	01:00	Chisel.
11.45	11.60	01:00	Chisel.
14.75	14.90	01:00	Chisel.
16.95	17.00	01:00	Chisel.

Remarks:

Borehole terminated at 18.50m bgl, refusal.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	19/11/2021 08:00	0.00	Start of shift.
0.75	19/11/2021 18:00	5.50	End of shift.
2.75	23/11/2021 08:00	5.50	Start of shift.
3.25	23/11/2021 18:00	12.50	End of shift.
2.90	24/11/2021 08:00	12.50	Start of shift.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569447E - 571965N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.51 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	19/11/2021 - 24/11/2021	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description	
								Driller described: Dense, GRAVEL with cobble content.	
		10.00	SPT (C)	N=46 (11,10/11,11,12,12)					10
		11.00	SPT (C)	N=50 (12,13/11,12,14,13)					11
		12.00	SPT (C)	N=54 (11,10/15,12,14,13)					12
		13.00	SPT (C)	N=48 (11,10/11,12,12,13)					13
		14.00	SPT (C)	N=54 (15,11/12,15,13,14)					14
		15.00	SPT (C)	N=58 (11,12/12,15,15,16)					15
		16.00	SPT (C)	N=62 (15,14/14,15,16,17)					16
		17.00	SPT (C)	N=79 (17,18/19,21,20,19)					17
		18.00	SPT (C)	121 (19,20/121 for 155mm)					18

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
0.80				See shift data.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
18.50	200	200

Equipment: Dando 2000

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool
1.30	1.50	01:00	Chisel.
8.75	8.90	01:00	Chisel.
10.55	10.80	01:00	Chisel.
11.45	11.60	01:00	Chisel.
14.75	14.90	01:00	Chisel.
16.95	17.00	01:00	Chisel.

Remarks:

Borehole terminated at 18.50m bgl, refusal.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	19/11/2021 08:00	0.00	Start of shift.
0.75	19/11/2021 18:00	5.50	End of shift.
2.75	23/11/2021 08:00	5.50	Start of shift.
3.25	23/11/2021 18:00	12.50	End of shift.
2.90	24/11/2021 08:00	12.50	Start of shift.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569447E - 571965N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.51 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	19/11/2021 - 24/11/2021	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
					18.50	-16.99		Driller described: Dense, GRAVEL with cobble content. End of Borehole at 18.500m

19 20 21 22 23 24 25 26 27

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
0.80				See shift data.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
18.50	200	200

Equipment: Dando 2000

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool
1.30	1.50	01:00	Chisel.
8.75	8.90	01:00	Chisel.
10.55	10.80	01:00	Chisel.
11.45	11.60	01:00	Chisel.
14.75	14.90	01:00	Chisel.
16.95	17.00	01:00	Chisel.

Remarks:

Borehole terminated at 18.50m bgl, refusal.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	19/11/2021 08:00	0.00	Start of shift.
0.75	19/11/2021 18:00	5.50	End of shift.
2.75	23/11/2021 08:00	5.50	Start of shift.
3.25	23/11/2021 18:00	12.50	End of shift.
2.90	24/11/2021 08:00	12.50	Start of shift.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569564E - 572165N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	2.32 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	10/11/2021 - 11/11/2021	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description	
								Driller described: (MADE GROUND) Medium dense, clayey COBBLES and BOULDERS.	
		1.00	SPT (C)	N=19 (2,2/3,4,5,7)					1
		2.00	SPT (C)	N=100 (5,8/100 for 225mm)	2.00	0.32		Driller described: Dense, clayey COBBLES.	2
		3.00	SPT (C)	N=18 (3,3/4,4,5,5)	3.00	-0.68		Driller described: Firm to stiff, SILT.	3
		4.00 - 5.00 4.00	B SPT (C)	N=12 (2,2/3,3,3,3)					4
		5.00	SPT (C)	N=14 (2,2/3,3,4,4)					5
					5.50	-3.18		Driller described: Dense, GRAVEL.	
		6.00	SPT (C)	N=30 (6,6/7,7,8,8)					6
		7.00	SPT (C)	N=38 (8,9/9,10,10,9)	7.00	-4.68		Driller described: Dense, GRAVEL with cobble content.	7
		8.00	SPT (C)	N=38 (10,11/10,7,10,11)					8
		9.00	SPT (C)	N=38 (9,8/9,9,10,10)	9.00	-6.68			9

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
5.50	2.75	20		See shift data.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
20.50	200	200

Equipment: Dando 2000

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool
1.80	2.00	01:00	Chisel.
2.40	2.70	01:00	Chisel.
7.35	7.50	01:00	Chisel.
13.30	13.50	01:00	Chisel.
16.40	16.75	01:00	Chisel.

Remarks:

Borehole terminated at 20.50m bgl, required depth.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	10/11/2021 08:00	0.00	Start of shift.
7.40	10/11/2021 18:00	9.00	End of shift.
4.20	11/11/2021 08:00	9.00	Start of shift.
6.80	11/11/2021 18:00	20.50	End of borehole.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569564E - 572165N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	2.32 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	10/11/2021 - 11/11/2021	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description	
								Driller described: Dense, GRAVEL with cobbles and boulders.	
		10.00	SPT (C)	N=39 (8,9/10,11,9,9)					10
		11.00	SPT (C)	N=35 (7,8/8,9,9,9)					11
		12.00	SPT (C)	N=28 (9,9/8,7,6,7)					12
		13.00	SPT (C)	N=100 (9,10/100 for 155mm)					13
		14.00	SPT (C)	N=38 (8,9/9,9,10,10)					14
		15.00 15.00	B SPT (C)	N=42 (7,9/10,11,11,10)					15
		16.00	SPT (C)	75 (10,11/75 for 75mm)					16
		17.00	SPT (C)	N=45 (10,9/11,10,12,12)					17
		18.00	SPT (C)	N=45 (12,10/11,10,13,11)					18

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
5.50	2.75	20		See shift data.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
20.50	200	200

Equipment: Dando 2000

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool
1.80	2.00	01:00	Chisel.
2.40	2.70	01:00	Chisel.
7.35	7.50	01:00	Chisel.
13.30	13.50	01:00	Chisel.
16.40	16.75	01:00	Chisel.

Remarks:

Borehole terminated at 20.50m bgl, required depth.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	10/11/2021 08:00	0.00	Start of shift.
7.40	10/11/2021 18:00	9.00	End of shift.
4.20	11/11/2021 08:00	9.00	Start of shift.
6.80	11/11/2021 18:00	20.50	End of borehole.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569564E - 572165N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	2.32 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	10/11/2021 - 11/11/2021	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description	
		19.00	SPT (C)	N=43 (9,10/10,11,10,12)				Driller described: Dense, GRAVEL with cobbles and boulders.	19
		20.00	SPT (C)	N=39 (10,9/9,11,10,9)					20
					20.50	-18.18		End of Borehole at 20.500m	21
									22
									23
									24
									25
									26
									27

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
5.50	2.75	20		See shift data.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
20.50	200	200

Equipment: Dando 2000

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool
1.80	2.00	01:00	Chisel.
2.40	2.70	01:00	Chisel.
7.35	7.50	01:00	Chisel.
13.30	13.50	01:00	Chisel.
16.40	16.75	01:00	Chisel.

Remarks:

Borehole terminated at 20.50m bgl, required depth.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	10/11/2021 08:00	0.00	Start of shift.
7.40	10/11/2021 18:00	9.00	End of shift.
4.20	11/11/2021 08:00	9.00	Start of shift.
6.80	11/11/2021 18:00	20.50	End of borehole.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569610E - 572065N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.28 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	12/11/2021 - 15/11/2021	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description	
								Driller described: (MADE GROUND) Gravelly CLAY	
		1.00	SPT (C)	N=7 (1,1/1,2,2,2)	1.00	0.28		Driller described: (MADE GROUND) Loose, oily GRAVEL.	1
		2.00	SPT (C)	N=8 (1,1/2,2,2,2)	2.00	-0.72		Driller described: Firm, grey, SILT with shell fragments.	2
		3.00	SPT (C)	N=8 (1,1/2,2,2,2)					3
		4.00	SPT (C)	N=9 (2,2/2,2,3,2)					4
					4.50	-3.22		Driller described: GRAVEL.	
		5.00	SPT (C)	N=13 (2,3/3,4,3,3)	5.00	-3.72		Driller described: Firm, gravelly SILT.	5
		6.00	SPT (C)	N=12 (2,3/2,3,3,4)	6.00	-4.72		Driller described: Medium dense, GRAVEL.	6
		7.00	SPT (C)	N=22 (4,4/5,5,6,6)					7
					7.50	-6.22		Driller described: Dense, GRAVEL with cobble and boulder content.	
		8.00	SPT (C)	N=35 (7,8/8,9,9,9)					8
		9.00	SPT (C)	N=37 (8,9/9,10,9,9)					9

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
4.50	4.00	20		See shift data.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
19.00	200	200

Equipment: Dando 2000

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool
6.80	6.90	01:00	Chisel.
11.55	11.80	01:00	Chisel.
18.70	18.95	01:00	Chisel.

Remarks:

Borehole terminated at 19.00m bgl, refusal.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	12/11/2021 08:00	0.00	Start of shift.
3.00	12/11/2021 18:00	7.50	End of shift.
3.00	15/11/2021 08:00	7.50	Start of shift.
6.45	15/11/2021 18:00	19.00	End of borehole.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569610E - 572065N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.28 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	12/11/2021 - 15/11/2021	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description	
								Driller described: Dense, GRAVEL with cobble and boulder content.	10
		11.00	SPT (C)	N=38 (9,10/9,9,10,10)					11
		12.00	SPT (C)	N=43 (11,10/9,11,11,12)					12
		13.00 13.00	B SPT (C)	N=44 (11,12/12,11,10,11)					13
		14.00	SPT (C)	N=54 (11,12/12,15,13,14)					14
		15.00	SPT (C)	N=58 (12,15/14,15,15,14)					15
		16.00	SPT (C)	N=58 (13,15/14,14,15,15)					16
		17.00	SPT (C)	N=52 (11,10/15,10,12,15)					17
		18.00	SPT (C)	N=51 (13,12/11,10,15,15)					18

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
4.50	4.00	20		See shift data.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
19.00	200	200

Equipment: Dando 2000

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool
6.80	6.90	01:00	Chisel.
11.55	11.80	01:00	Chisel.
18.70	18.95	01:00	Chisel.

Remarks:

Borehole terminated at 19.00m bgl, refusal.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	12/11/2021 08:00	0.00	Start of shift.
3.00	12/11/2021 18:00	7.50	End of shift.
3.00	15/11/2021 08:00	7.50	Start of shift.
6.45	15/11/2021 18:00	19.00	End of borehole.

pgl priority geotechnical	**Priority Geotechnical Ltd.** **Tel: 021 4631600** **Fax: 021 4638690** **www.prioritygeotechnical.ie**	**Drilled By** PC **Logged By**	Borehole No. **BH04** Sheet 3 of 3

Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569610E - 572065N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.28 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	12/11/2021 - 15/11/2021	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing			Depth (m bgl)	Level (mOD)	Legend	Stratum Description
		Depth (m bgl)	Type	Results				
		19.00	SPT (C)	N=64 (15,16/16,17,16,15)	19.00	-17.73		Driller described: Dense, GRAVEL with cobble and boulder content. End of Borehole at 19.000m

19 20 21 22 23 24 25 26 27

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
4.50	4.00	20		See shift data.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
19.00	200	200

Equipment: Dando 2000

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool
6.80	6.90	01:00	Chisel.
11.55	11.80	01:00	Chisel.
18.70	18.95	01:00	Chisel.

Remarks:

Borehole terminated at 19.00m bgl, refusal.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	12/11/2021 08:00	0.00	Start of shift.
3.00	12/11/2021 18:00	7.50	End of shift.
3.00	15/11/2021 08:00	7.50	Start of shift.
6.45	15/11/2021 18:00	19.00	End of borehole.

pgl priority geotechnical	**Priority Geotechnical Ltd.** **Tel: 021 4631600** **Fax: 021 4638690** **www.prioritygeotechnical.ie**	**Drilled By** PC **Logged By**	Borehole No. **BH05** Sheet 1 of 3

Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569720E - 572168N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.88 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	16/11/2021 - 18/11/2021	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description	
								Driller described: (MADE GROUND) Clayey COBBLES with concrete blocks.	1
		1.20	SPT (C)	N=6 (1,1/2,2,1,1)	1.20	0.68		Driller described: (MADE GROUND) Loose, COBBLES and BOULDERS.	
		2.00	SPT (C)	N=7 (2,1/1,2,2,2)	2.00	-0.12		Driller described: (MADE GROUND) Grey black, silty COBBLES with hydrocarbon odor.	2
		3.00	SPT (C)	N=8 (1,1/2,2,2,2)	3.00	-1.12		Driller described: Loose, silty COBBLES.	3
		4.00	SPT (C)	N=7 (1,1/1,2,2,2)	4.00	-2.12		Driller described: Soft, SILT.	4
		5.00	SPT (C)	N=11 (2,2/3,2,3,3)	5.00	-3.12		Driller described: Firm, silty PEAT.	5
		6.00	SPT (C)	N=12 (2,2/3,3,3,3)	6.00	-4.12		Driller described: Medium dense, GRAVEL.	6
		7.00	SPT (C)	N=19 (4,4/5,5,4,5)					7
					7.50	-5.62		Driller described: Dense, GRAVEL with cobble and boulder content.	
		8.00	SPT (C)	N=37 (8,9/9,10,9,9)					8
		9.00	SPT (C)	N=35 (9,10/9,8,9,9)					9

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
5.50	3.80	20		See shift data.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
23.00	200	200

Equipment: Dando 2000

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool
1.70	1.90	01:00	Chisel.
9.80	10.00	01:00	Chisel.
12.45	12.60	01:00	Chisel.
15.80	16.00	01:00	Chisel.
18.40	18.70	02:00	Chisel.
22.50	22.75	01:00	Chisel.

Remarks:

Borehole terminated at 23.50m bgl, refusal.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	16/11/2021 08:00	0.00	Start of shift.
2.8	16/11/2021 18:00	7.50	End of shift.
3.2	17/11/2021 08:00	7.50	Start of shift.
2.5	17/11/2021 18:00	16.50	End of shift.
3.45	18/11/2021 08:00	16.50	Start of shift.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569720E - 572168N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.88 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	16/11/2021 - 18/11/2021	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description	
								Driller described: Dense, GRAVEL with cobble and boulder content.	
		10.00	SPT (C)	N=38 (10,9/10,10,9,9)	10.00	-8.12		Driller described: Dense, sandy GRAVEL.	10
		11.00	SPT (C)	N=42 (9,11/10,11,11,10)					11
		12.00	SPT (C)	N=45 (11,10/9,12,13,11)					12
		13.00	SPT (C)	N=53 (13,14/11,12,15,15)					13
		14.00	SPT (C)	N=45 (12,11/10,11,11,13)					14
		15.00	SPT (C)	N=49 (12,12/11,11,12,15)					15
		16.00	SPT (C)	N=56 (13,12/14,14,13,15)					16
					16.50	-14.62		Driller described: Dense, sandy gravelly BOULDERS.	
		17.00	SPT (C)	N=58 (13,14/58 for 225mm)					17
		18.00	SPT (C)	87 (13,11/87 for 225mm)					18

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
5.50	3.80	20		See shift data.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
23.00	200	200

Equipment: Dando 2000

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool
1.70	1.90	01:00	Chisel.
9.80	10.00	01:00	Chisel.
12.45	12.60	01:00	Chisel.
15.80	16.00	01:00	Chisel.
18.40	18.70	02:00	Chisel.
22.50	22.75	01:00	Chisel.

Remarks:

Borehole terminated at 23.50m bgl, refusal.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	16/11/2021 08:00	0.00	Start of shift.
2.8	16/11/2021 18:00	7.50	End of shift.
3.2	17/11/2021 08:00	7.50	Start of shift.
2.5	17/11/2021 18:00	16.50	End of shift.
3.45	18/11/2021 08:00	16.50	Start of shift.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569720E - 572168N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.88 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	16/11/2021 - 18/11/2021	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description	
								Driller described: Dense, sandy gravelly BOULDERS.	19
		19.00	SPT (C)	N=61 (14,15/14,19,13,15)					
		20.00	SPT (C)	N=67 (15,16/18,17,16,16)	20.00	-18.12		Driller described: Dense, gravely COBBLES and BOULDERS.	20
		21.00	SPT (C)	N=72 (15,16/18,19,18,17)					21
		22.00	SPT (C)	79 (14,15/79 for 150mm)					22
		23.00	SPT (C)	75 (15,18/75 for 75mm)					23
					23.50	-21.62		End of Borehole at 23.500m	24
									25
									26
									27

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
5.50	3.80	20		See shift data.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
23.00	200	200

Equipment: Dando 2000

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool
1.70	1.90	01:00	Chisel.
9.80	10.00	01:00	Chisel.
12.45	12.60	01:00	Chisel.
15.80	16.00	01:00	Chisel.
18.40	18.70	02:00	Chisel.
22.50	22.75	01:00	Chisel.

Remarks:

Borehole terminated at 23.50m bgl, refusal.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	16/11/2021 08:00	0.00	Start of shift.
2.8	16/11/2021 18:00	7.50	End of shift.
3.2	17/11/2021 08:00	7.50	Start of shift.
2.5	17/11/2021 18:00	16.50	End of shift.
3.45	18/11/2021 08:00	16.50	Start of shift.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**		**Hole Type** RO
Location:	South Docklands, Cork City		**Level:**	m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	14/02/2022 - 15/02/2022	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
		1.50	SPT (C)	0 (31 for 105mm/0 for 0mm)				Open hole boring driller described: (MADE GROUND) Gravelly CLAY.
					2.00			Open hole boring driller described: SILT.
		3.00	SPT (C)	N=5 (1,1/1,1,2,1)				
		4.50	SPT (C)	N=5 (1,2/2,1,1,1)				
	▼	6.00	SPT (C)	N=6 (1,0/1,1,2,2)				
					6.50			Open hole boring driller described: Silty GRAVEL.
					6.90			Open hole boring driller described: Silty sandy GRAVEL.
		7.50	SPT (C)	N=16 (3,4/4,4,4,4)				
		9.00	SPT (C)	N=19 (2,3/5,4,5,5)				

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
6.00				See shift data.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
39.00	76	131

Equipment: Soilmech (PSM)

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Rotary borehole terminated at 39.0m bgl, required depth.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	14/02/2022 08:00	0.00	Start of shift.
6.00	14/02/2022 18:00	28.50	End of shift.
6.00	15/02/2022 08:00	28.50	Start of shift.
6.00	15/02/2022 18:00	39.00	End of borehole.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**		**Hole Type** RO
Location:	South Docklands, Cork City		**Level:**	m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	14/02/2022 - 15/02/2022	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
								Open hole boring driller described: Silty sandy GRAVEL.
		10.50	SPT (C)	N=19 (3,3/4,5,5,5)	10.50			Open hole boring driller described: Blowing sandy GRAVEL.
		12.00	SPT (C)	0 (0 for 0mm/0 for 0mm)	12.00			Open hole boring driller described: Blowing GRAVEL.
		13.50	SPT (C)	0 (0 for 0mm/0 for 0mm)				
					14.20			Open hole boring driller described: Fine SAND.
		15.00	SPT (C)	N=21 (2,3/4,4,6,7)				
		16.50	SPT (C)	N=9 (2,2/2,1,2,4)				
					17.50			Open hole boring driller described: Silty sandy GRAVEL.
		18.00	SPT (C)	N=21 (4,4/6,5,6,4)				

10 11 12 13 14 15 16 17 18

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
6.00				See shift data.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
39.00	76	131

Equipment: Soilmech (PSM)

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Rotary borehole terminated at 39.0m bgl, required depth.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	14/02/2022 08:00	0.00	Start of shift.
6.00	14/02/2022 18:00	28.50	End of shift.
6.00	15/02/2022 08:00	28.50	Start of shift.
6.00	15/02/2022 18:00	39.00	End of borehole.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**		**Hole Type** RO
Location:	South Docklands, Cork City		**Level:**	m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	14/02/2022 - 15/02/2022	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description	
								Open hole boring driller described: Silty sandy GRAVEL.	19
		19.50	SPT (C)	N=29 (6,6/6,7,8,8)					20
		21.00	SPT (C)	N=29 (4,5/6,6,6,11)					21
		22.50	SPT (C)	N=24 (5,5/6,6,6,6)					22
		24.00	SPT (C)	N=27 (3,5/5,6,8,8)					23
		25.50	SPT (C)	N=33 (7,8/8,8,8,9)	25.50				24
		27.00	SPT (C)	N=32 (4,5/4,6,9,13)				Open hole boring driller described: Silty sandy GRAVEL with cobbles.	25
									26
									27

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
6.00				See shift data.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
39.00	76	131

Equipment: Soilmech (PSM)

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Rotary borehole terminated at 39.0m bgl, required depth.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	14/02/2022 08:00	0.00	Start of shift.
6.00	14/02/2022 18:00	28.50	End of shift.
6.00	15/02/2022 08:00	28.50	Start of shift.
6.00	15/02/2022 18:00	39.00	End of borehole.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**		**Hole Type** RO
Location:	South Docklands, Cork City		**Level:**	m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	14/02/2022 - 15/02/2022	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description	
								Open hole boring driller described: Silty sandy GRAVEL with cobbles.	28
		28.50	SPT (C)	0 (33 for 135mm/0 for 0mm)					29
		30.00	SPT (C)	N=53 (7,8/10,13,15,15)					30
									31
		31.50	SPT (C)	25 (10,12/25 for 60mm)	31.50			Open hole boring driller described: Hard clayey sandy GRAVEL with cobbles.	32
		33.00	SPT (C)	0 (75 for 90mm/0 for 0mm)					33
									34
		34.50	SPT (C)	43 (16,16/43 for 75mm)					35
		36.00	SPT (C)	0 (39 for 75mm/0 for 0mm)	36.00			Open hole boring driller described: Hard clayey sandy GRAVEL with cobbles and boulders.	36

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
6.00				See shift data.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
39.00	76	131

Equipment: Soilmech (PSM)

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Rotary borehole terminated at 39.0m bgl, required depth.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	14/02/2022 08:00	0.00	Start of shift.
6.00	14/02/2022 18:00	28.50	End of shift.
6.00	15/02/2022 08:00	28.50	Start of shift.
6.00	15/02/2022 18:00	39.00	End of borehole.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**		**Hole Type** RO
Location:	South Docklands, Cork City		**Level:**	m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	14/02/2022 - 15/02/2022	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
		37.50	SPT (C)	25 (18,21/25 for 50mm)				Open hole boring driller described: Hard clayey sandy GRAVEL with cobbles and boulders.
		39.00	SPT (C)	0 (75 for 60mm/0 for 0mm)	39.00			End of Borehole at 39.000m

37 38 39 40 41 42 43 44 45

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
6.00				See shift data.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
39.00	76	131

Equipment: Soilmech (PSM)

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Rotary borehole terminated at 39.0m bgl, required depth.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	14/02/2022 08:00	0.00	Start of shift.
6.00	14/02/2022 18:00	28.50	End of shift.
6.00	15/02/2022 08:00	28.50	Start of shift.
6.00	15/02/2022 18:00	39.00	End of borehole.

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Drilled By	Location
PC	BH06
Logged By	Sheet 1 of 3

Project Name	Residential Development, Tedcastles Site	Project No. P21206	Co-ords	569511E - 571895N	Hole Type CP+RC
Location	South Docklands, Cork City		Level	1.48 m OD	Scale 1:50
Client	Tiznow Unlimited Company		Date	25/11/2021 - 20/12/2022	

Backfill	Water Strike (m bgl)	Sampling and In-Situ Testing: Depth (m bgl)	Type	Results	Coring %: TCR	SCR	RQD	FI	Spacing (mm)	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
													Driller described: (MADE GROUND) Dense, clayey COBBLES and BOULDERS.
		1.20	SPT(C)	85 (6,8/85 for 80mm)									
		1.50	SPT(C)	N=20 (3,3/4,6,5,5)						1.60	-0.12		Open hole boring. Driller described: Odorous, gravelly CLAY.
										2.30	-0.82		Open hole boring. Driller described: Soft, silty CLAY.
		3.00	SPT(C)	N=7 (1,1/1,2,2,2)									
		4.50	SPT(C)	N=6 (1,0/1,1,2,2)									
	▼	6.00	SPT(C)	N=5 (2,1/2,1,1,1)									
										7.00	-5.52		Open hole boring. Driller described: Medium dense, clayey sandy GRAVEL.
		7.50	SPT(C)	N=15 (2,3/3,4,4,4)									
		9.00	SPT(C)	N=7 (2,3/7 for 227mm)						9.00	-7.52		
					TCR	SCR	RQD						

Depth scale: 1, 2, 3, 4, 5, 6, 7, 8, 9

Shift Data

Date & Time	Depth (m bgl)	Water (m bgl)	Remarks
25/11/2021 08:00	0.00		Start of shift.
25/11/2021 18:00	1.60	Dry	End of shift.
20/12/2021 08:00	1.60		Start of shift.
20/12/2021 18:00	21.00	6.00	End of borehole.

Chiselling Details

Top (m bgl)	Base (m bgl)	Duration (hh:mm)	Tool
1.45	1.60	02:00	Chisel.

Equipment

Dando 2000 & Soilmec PSM

Method

Compressed air mist.

Hole Information

Depth (m bgl)	Hole (mm)	Casing (mm)
21.00	131	131

Remarks

Cable percussion borehole terminated at 1.60m bgl, refusal.
Rotary coring borehole terminated at 21.00m bgl.

Groundwater Details

Strike (m bgl)	Rose (m bgl)	After (Mins)	Remarks
6.00			See shift data

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Drilled By	Location
PC	BH06
Logged By	Sheet 2 of 3

Project Name	Residential Development, Tedcastles Site	Project No. P21206	Co-ords	569511E - 571895N	Hole Type CP+RC
Location	South Docklands, Cork City		Level	1.48 m OD	Scale 1:50
Client	Tiznow Unlimited Company		Date	25/11/2021 - 20/12/2022	

Backfill	Water Strike (m bgl)	Sampling and In-Situ Testing: Depth (m bgl)	Type	Results	Coring %: TCR	SCR	RQD	FI	Spacing (mm)	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
		10.50	SPT(C)	N=22 (3,4/4,5,6,7)									Open hole boring. Driller described: Medium dense, silty sandy GRAVEL.
		12.00	SPT(C)	N=30 (4,4/6,8,8,8)						12.00	-10.52		Open hole boring. Driller described: Dense, silty sandy GRAVEL with cobble content.
		13.50	SPT(C)	66 (7,13/66 for 225mm)									
		15.00	SPT(C)	N=38 (6,8/8,9,10,11)									
		16.50	SPT()	45 (14,19/45 for 115mm)									
		18.00	SPT(C)	50 (25 for 40mm/50 for 70mm)									
					TCR	SCR	RQD						

10 11 12 13 14 15 16 17 18

Shift Data

Date & Time	Depth (m bgl)	Water (m bgl)	Remarks
25/11/2021 08:00	0.00		Start of shift.
25/11/2021 18:00	1.60	Dry	End of shift.
20/12/2021 08:00	1.60		Start of shift.
20/12/2021 18:00	21.00	6.00	End of borehole.

Chiselling Details

Top (m bgl)	Base (m bgl)	Duration (hh:mm)	Tool
1.45	1.60	02:00	Chisel.

Equipment

Dando 2000 & Soilmec PSM

Method

Compressed air mist.

Hole Information

Depth (m bgl)	Hole (mm)	Casing (mm)
21.00	131	131

Remarks

Cable percussion borehole terminated at 1.60m bgl, refusal.
Rotary coring borehole terminated at 21.00m bgl.

Groundwater Details

Strike (m bgl)	Rose (m bgl)	After (Mins)	Remarks
6.00			See shift data

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	Logged By:	Sheet 3 of 3

Project Name	Residential Development, Tedcastles Site	Project No. P21206	Co-ords	569511E - 571895N	Hole Type: CP+RC
Location	South Docklands, Cork City		Level	1.48 m OD	Scale: 1:50
Client	Tiznow Unlimited Company		Date	25/11/2021 - 20/12/2022	

Backfill	Water Strike (m bgl)	Sampling and In-Situ Testing: Depth (m bgl)	Type	Results	Coring %: TCR	SCR	RQD	FI	Spacing (mm)	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
		19.50	SPT(C)	N=59 (7,8/13,15,15,16)									Open hole boring. Driller described: Dense, silty sandy GRAVEL with cobble content.
		21.00	SPT(C)	46 (8,13/46 for 105mm)						21.00	-19.52		End of Borehole at 21.000m
					TCR	SCR	RQD						

19 20 21 22 23 24 25 26 27

Shift Data

Date & Time	Depth (m bgl)	Water (m bgl)	Remarks
25/11/2021 08:00	0.00		Start of shift.
25/11/2021 18:00	1.60	Dry	End of shift.
20/12/2021 08:00	1.60		Start of shift.
20/12/2021 18:00	21.00	6.00	End of borehole.

Chiselling Details

Top (m bgl)	Base (m bgl)	Duration (hh:mm)	Tool
1.45	1.60	02:00	Chisel.

Equipment

Dando 2000 & Soilmec PSM

Method

Compressed air mist.

Hole Information

Depth (m bgl)	Hole (mm)	Casing (mm)
21.00	131	131

Remarks

Cable percussion borehole terminated at 1.60m bgl, refusal.
Rotary coring borehole terminated at 21.00m bgl.

Groundwater Details

Strike (m bgl)	Rose (m bgl)	After (Mins)	Remarks
6.00			See shift data

pgl priority geotechnical	**Priority Geotechnical Ltd.** **Tel: 021 4631600** **Fax: 021 4638690** **www.prioritygeotechnical.ie**	**Drilled By** PC **Logged By**	Borehole No. **BH07** Sheet 1 of 2

Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569468E - 571822N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.14 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	25/11/2021 - 29/11/2021	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description	
								Driller described: (MADE GROUND) Medium dense to dense, gravelly COBBLES and BOULDERS with concrete and metal.	1
		1.20	SPT (C)	N=18 (3,3/4,4,5,5)					
		2.00	SPT (C)	61 (4,4/61 for 150mm)					2
		3.00	SPT (C)	N=11 (2,2/2,3,3,3)	3.00	-1.86		Driller described: Medium dense to loose, silty GRAVEL.	3
		4.00	SPT (C)	N=8 (2,2/2,2,2,2)					4
		5.00	SPT (C)	N=7 (2,1/1,2,2,2)					5
		6.00	SPT()	N=19 (2,4/4,5,5,5)	6.00	-4.86		Driller described: Medium dese becoming dense, gravelly COBBLES.	6
		7.00	SPT (C)	N=25 (5,6/6,7,6,6)					7
		8.00	SPT (C)	N=25 (6,7/6,6,7,6)					8
		9.00	SPT (C)	N=33 (8,9/8,8,9,8)					9

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
				See shift data.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
17.00	200	200

Equipment: Dando 2000

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool
2.35	2.45	02:00	Chisel.
10.45	10.60	01:00	Chisel.
12.85	13.00	01:00	Chisel.
14.80	15.00	01:00	Chisel.
16.90	17.00	01:00	Chisel.

Remarks:

Borehole terminated at 17.00m bgl, refusal.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	25/11/2021 08:00	0.00	Start of shift.
	25/11/2021 18:00	2.50	End of shift.
	26/11/2021 08:00	2.50	Start of shift.
3.45	26/11/2021 18:00	13.50	End of shift.
	29/11/2021 08:00	13.50	Start of shift.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569468E - 571822N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.14 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	25/11/2021 - 29/11/2021	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description	
								Driller described: Medium dese becoming dense, gravelly COBBLES.	
		10.00	SPT (C)	N=38 (9,8/8,7,11,12)					10
		11.00	SPT (C)	N=54 (10,11/12,15,14,13)					11
		12.00	SPT()	N=57 (11,12/14,14,15,14)					12
		13.00	SPT (C)	N=63 (12,15/14,15,17,17)					13
					13.50	-12.36		Driller described: Dense, gravelly COBBLES and BOULDERS.	
		14.00	SPT (C)	N=49 (10,12/12,13,12,12)					14
		15.00	SPT (C)	N=67 (14,15/15,16,17,19)					15
		16.00	SPT (C)	N=60 (13,14/15,15,13,17)					16
		17.00	SPT (C)	0 (100 for 0mm/0 for 0mm)	17.00	-15.86		End of Borehole at 17.000m	17
									18

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
				See shift data.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
17.00	200	200

Equipment: Dando 2000

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool
2.35	2.45	02:00	Chisel.
10.45	10.60	01:00	Chisel.
12.85	13.00	01:00	Chisel.
14.80	15.00	01:00	Chisel.
16.90	17.00	01:00	Chisel.

Remarks:

Borehole terminated at 17.00m bgl, refusal.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	25/11/2021 08:00	0.00	Start of shift.
	25/11/2021 18:00	2.50	End of shift.
	26/11/2021 08:00	2.50	Start of shift.
3.45	26/11/2021 18:00	13.50	End of shift.
	29/11/2021 08:00	13.50	Start of shift.

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Trial Pit No
TP01
Sheet 1 of 1

Project Name: Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:** 569419E - 572092N **Level:** 1.92m OD	**Date** 28/09/2021
Location: South Docklands, Cork City		**Dimensions (m):** 2.60 × 0.70	**Scale** 1:25
Client: Tiznow Unlimited Company		**Depth:** 3.00m BGL	**Logged** BS

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.20	1.72		(MADE GROUND) Light brown silty GRAVEL with high cobble content. Gravel is fine to coarse, subangular to rounded. Cobbles are 63mm to 110mm dia, sub-angular to rounded.
	0.50 - 1.50	B					(MADE GROUND) Black gravelly SILT with medium cobble content. Gravel is fine to coarse, sub-angular to rounded. cobbles are 63mm to 130mm dia, sub-angular to rounded.
	1.30 - 1.50 1.30	ENV PID	PID=0				
	1.60 - 2.50	B		1.60	0.32		Grey black, slightly sandy slightly gravelly SILT. Sand is fine to medium. Gravel is fine to medium, sub-rounded to rounded.
	1.70 - 1.90 1.70	ENV PID	PID=0				
	2.60 - 3.00	B		2.60	-0.68		Grey, SILT with shell fragments.
	2.80 - 3.00 2.80	ENV PID	PID=0				
				3.00	-1.08		End of Pit at 3.000m

1
2
3
4
5

Stability: Moderate.
Plant: 6T track machine
Backfill: Arising.

Groundwater: 2.10m: Slow flow rate.

Remarks: Trial pit terminated at 3.00m bgl, water ingress.

Photographic Record

Number:	**TP01**	**Project** **Project No** **Engineer**	Ted Castle Site, Cork South Docklands P21206 ARUP

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Trial Pit No
TP02
Sheet 1 of 1

Project Name: Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:** 569528E - 572164N **Level:** 2.21m OD	**Date** 28/09/2021
Location: South Docklands, Cork City		**Dimensions (m):** 2.70 × 0.70	**Scale** 1:25
Client: Tiznow Unlimited Company		**Depth:** 3.50m BGL	**Logged** BS

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							(MADE GROUND) Hardcore.
	0.20 - 1.00 0.20	B PID	PID=0	0.20	2.01		(MADE GROUND) Dark brown gravelly SILT. Gravel is fine to coarse, sub-angular to rounded.
	0.50	ENV					
	0.80	PID	PID=1				
	1.00 - 2.00 1.10	B PID	PID=1	1.00	1.21		(MADE GROUND) Brown, slightly sandy gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to rounded.
	1.50 1.50	ENV PID	PID=1				
				2.20	0.01		Black, slightly sandy SILT. Sand is fine to medium.
	2.50 - 3.50 2.60	B ENV					
				3.50	-1.29		End of Pit at 3.500m

1 2 3 4 5

Stability: Poor
Plant: 3t tracked excavator.
Backfill: Arisings.

Groundwater: 3.50m: Trickle flow rate.

Remarks: Trial pit terminated at 3.50m bgl, Track machine reach exceeded.

Photographic Record

Number:	**TP02**	**Project**	Ted Castle Site, Cork South Docklands
		Project No	P21206
		Engineer	ARUP

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Trial Pit No
TP03
Sheet 1 of 1

Project Name: Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:** 569513E - 571991N **Level:** 1.77m OD	**Date** 28/09/2021
Location: South Docklands, Cork City		**Dimensions (m):** 2.60 × 0.70	**Scale** 1:25
Client: Tiznow Unlimited Company		**Depth:** 3.60m BGL	**Logged** BS

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.10	1.67		(MADE GROUND) Hardcore.
	0.50 - 1.50	B					(MADE GROUND) Grey black, slightly sandy gravelly SILT with large concrete blocks. Sand is fine to medium. Gravel is fine to coarse sub-angular to sub-rounded.
	0.80	ENV					
	1.50	ENV		1.50	0.27		Black grey, slightly sandy SILT with shell fragments.
	1.50 - 2.50	B					
	2.50 - 3.50	B					
				3.60	-1.83		End of Pit at 3.600m

1 2 3 4 5

Stability: Moderate.
Plant: 3t tracked excavator.
Backfill: Arisings.
Groundwater: None encountered.
Remarks: Trial pit terminated at 3.60m bgl, Track machine reach exceeded.

Photographic Record

Number:	**TP03**	**Project** **Project No** **Engineer**	Ted Castle Site, Cork South Docklands P21206 ARUP

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Trial Pit No
TP04
Sheet 1 of 1

Project Name: Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:** 569677E - 572132N **Level:** 1.87m OD	**Date** 29/09/2021
Location: South Docklands, Cork City		**Dimensions (m):** 2.20 × 0.70	**Scale** 1:25
Client: Tiznow Unlimited Company		**Depth:** 2.20m BGL	**Logged** BS

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.30	1.57		(MADE GROUND) Brown slightly sandy gravelly SILT with high cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobbles are 63mm to 140mm dia, sub-angular to sub-rounded.
	0.50 0.50 - 1.50	ENV B					(MADE GROUND) Dark grey/black, slightly sandy gravelly SILT with high cobble content, large concrete blocks. Sand is fine to medium. Gravel is fine to coarse, sub-angular to rounded. Cobbles are sub-angular to sub-rounded with dia of 63-200mm. Concrete blocks are 1.5m long and 0.3m wide.
	1.40	ENV					
	1.80 - 1.90	B		1.80	0.07		Grey, slightly gravelly SILT. Gravel is fine to medium, sub-angular to rounded.
	1.90 - 2.20	B		1.90	-0.03		Grey, silty sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular.
	2.00	ENV					
				2.20	-0.33		End of Pit at 2.200m

1 2 3 4 5

Stability: Moderate.
Plant: 6T track machine.
Backfill: Arisings.

Groundwater: Groundwater encountered at 2.20m bgl.

Remarks: Trial pit terminated at 2.20m bgl, groundwater ingress.

Photographic Record

Number:	**TP04**	**Project** **Project No** **Engineer**	Ted Castle Site, Cork South Docklands P21206 ARUP

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Trial Pit No
TP05
Sheet 1 of 1

Project Name: Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:** 569528E - 571834N **Level:** 1.47m OD	**Date** 29/09/2021
Location: South Docklands, Cork City		**Dimensions (m):** 2.50 × 0.70	**Scale** 1:25
Client: Tiznow Unlimited Company		**Depth:** 2.00m BGL	**Logged** BS

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							CONCRETE
	0.20 - 0.80	B		0.20	1.27		(MADE GROUND) Brown, slightly sandy gravelly SILT with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to rounded. Cobbles are sub-angular to rounded with dia of 63-100mm.
	0.80 - 1.20	B		0.80	0.67		(MADE GROUND) Black, slightly sandy gravelly SILT. Sand is fine to medium. Gravel is fine to coarse, sub-angular to rounded SILT.
	1.00 1.00	ENV PID	PID=0				
	1.20 - 1.80	B		1.20	0.27		(MADE GROUND) Grey, slightly sandy gravelly SILT. Sand is fine to medium. Gravel is fine to coarse, sub-angular to rounded.
▼	1.80 - 2.00	B		1.80	-0.33		Grey, silty gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse.
	1.90 1.90	ENV PID	PID=0	2.00	-0.53		End of Pit at 2.000m

1 2 3 4 5

Stability: Good.
Plant: 6t track machine.
Backfill: Arisings.
Groundwater: Groundwater at 1.80m bgl.
Remarks: Trial pit terminated at 2.00m bgl.

Photographic Record

Number:	**TP05**	**Project**	Ted Castle Site, Cork South Docklands
		Project No	P21206
		Engineer	ARUP

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Trial Pit No
TP06
Sheet 1 of 1

Project Name: Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:** 569553E - 571879N **Level:** 1.40m OD	**Date** 29/09/2021
Location: South Docklands, Cork City		**Dimensions (m):** 2.50 × 0.70	**Scale** 1:25
Client: Tiznow Unlimited Company		**Depth:** 2.40m BGL	**Logged** BS

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							CONCRETE.
				0.15	1.25		(MADE GROUND) Grey, slightly sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse.
				0.25	1.15		(MADE GROUND) Brown, slightly silty slightly sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, sub-rounded to rounded, sandstone.
	0.50	ENV					
	1.20 - 1.50	B		1.20	0.20		(MADE GROUND) Black, slightly sandy gravelly SILT with medium cobble content. Cobbles are sub-angular to rounded with dia of 63-150mm.
	1.50	ENV		1.50	-0.10		Black, slightly clayey slightly sandy gravelly SILT.
	1.50 - 2.20	B					
	2.20 - 2.40	B		2.20	-0.80		Grey, silty sandy GRAVEL with low cobble content. Gravel is sub-angular to sub-rounded with dia of 63-100mm.
				2.40	-1.00		End of Pit at 2.400m

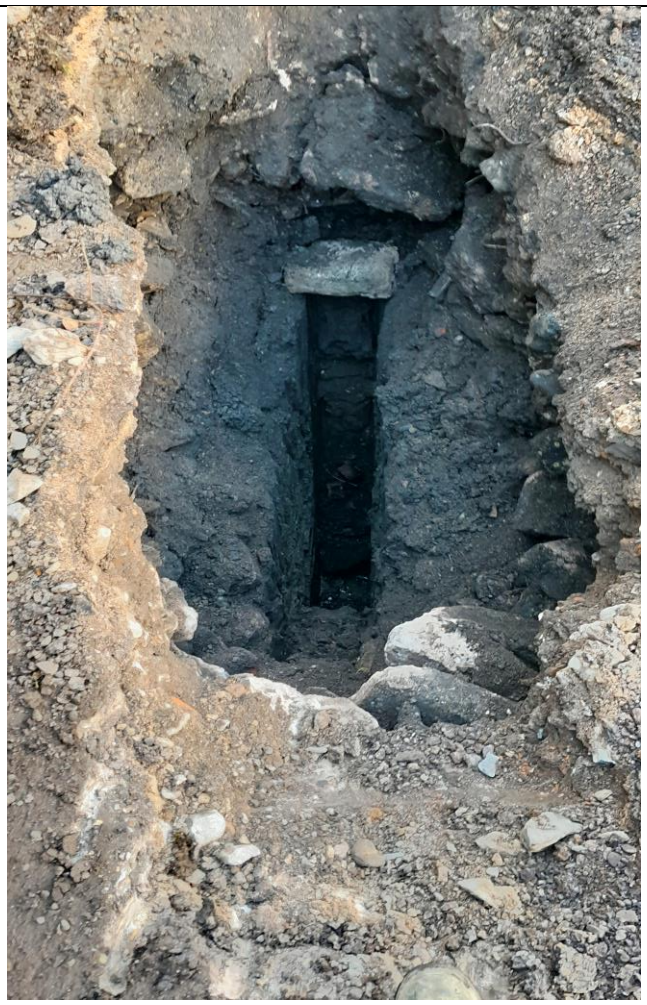
1 2 3 4 5

Stability: Good.
Plant: 6t track machine.
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 2.40m bgl.

Photographic Record



Number:	**TP06**	**Project**	Ted Castle Site, Cork South Docklands
		Project No	P21206
		Engineer	ARUP

pgl priority geotechnical	**Priority Geotechnical Ltd.** **Tel: 021 4631600** **Fax: 021 4638690** **www.prioritygeotechnical.ie**	**Drilled By** JOR **Logged By** BS	Borehole No. **WS01** Sheet 1 of 1

Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569397E - 572125N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.99 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	12/10/2021 - 12/10/2021	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
					0.20	1.79		(MADE GROUND) GRAVEL. *0.00m - 1.20m: Inspection pit.*
		0.50	ENV					(MADE GROUND) Light brown gravelly SILT. Gravel is fine to coarse, sub-angular to sub-rounded.
		0.90	ENV		0.80	1.19		(MADE GROUND) Black, slightly sandy slightly gravelly SILT. Sand is fine to medium. Gravel is fine to coarse, sub-angular.
					1.20	0.79		No recovery: Assumed (MADE GROUND) Black, slightly sandy slightly gravelly SILT based on previous strata.
					2.00	-0.01		(MADE GROUND) Brown grey sandy gravelly CLAY, metal found. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
		2.50	ENV					
					3.00	-1.01		Grey, slightly sandy SILT. Sand is fine to medium.
		3.50	ENV					
					4.50	-2.51		End of Borehole at 4.500m

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
4.50	100	100

Equipment: Competitor DP

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Window sample terminated at 4.50m bgl, required depth.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	12/10/2021 08:00	0.00	Start of shift.
1.10	12/10/2021 18:00	4.50	End of borehole.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569437E - 572161N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.61 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	12/10/2021 -	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
		0.20	ENV		0.10	1.51		(MADE GROUND) Hardcore GRAVEL.
		0.20	PID	PID=0ppm	0.30	1.31		(MADE GROUND) Brown, slightly sandy gravelly SILT. Sand is fine to coarse, gravel is fine to coarse, angular to rounded.
		0.80	ENV					(MADE GROUND) Grey, gravelly SILT with low cobble content and a petroleum odor. Gravel is fine to coarse, sub-angular to rounded. Cobbles are 63mm to 100mm dia, sub-angular to sub-rounded.
		0.80	PID	PID=1ppm	1.00	0.61		
		1.10	ENV					(MADE GROUND) Grey black, slightly sandy slightly gravelly SILT, strong odor and lots of decaying roots and leaves. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
		1.10	PID	PID=1ppm	1.20	0.41		
		1.50	ENV					
		1.50	PID	PID=0ppm				
					1.80	-0.19		(MADE GROUND) Grey black, slightly sandy slightly gravely SILT. Sand is fine to coarse, Gravel is fine to coarse, sub-angular to rounded.
								End of Borehole at 1.800m

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
				None encountered.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
1.80	100	100

Equipment: Competitor DP

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Window sample terminated at 1.80m bgl, refusal. 50mm dia. standpipe installed. Response zone from 0.80m - 1.80m bgl.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	12/10/2021 08:00	0.00	Start of shift.
Dry	12/10/2021 18:00	1.80	End of borehole.

pgl priority geotechnical	**Priority Geotechnical Ltd.** **Tel: 021 4631600** **Fax: 021 4638690** **www.prioritygeotechnical.ie**	**Drilled By** JOR **Logged By** BS	Borehole No. **WS03** Sheet 1 of 1

Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569431E - 572124N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.92 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	12/10/2021 -	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
					0.05	1.86		(MADE GROUND) GRAVEL.
					0.10	1.82		(MADE GROUND) GRAVEL.
		0.50 0.50	ENV PID	PID=0ppm				(MADE GROUND) Brown, gravelly SILT with medium cobble content, bricks concrete wire and plastic found. Gravel is fine to coarse, sub-angular to rounded. Cobbles are 63mm ro 200mm dia, sub-angular to sub-rounded
					1.20	0.72		
					1.40	0.52		(MADE GROUND) Grey brown, slightly sandy slightly gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
		1.50 1.50	ENV PID	PID=0ppm	1.60	0.32		Grey, slightly sandy slightly gravelly SILT. Sand is fine to coarse. gravel is fine to coarse, sub-angular to sub-rounded.

End of Borehole at 1.600m

1 2 3 4 5 6 7 8 9

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
1.60	100	100

Equipment: Competitor DP

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Window sample terminated at 1.60m bgl, refusal.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	12/10/2021 08:00	0.00	Start of shift.
1.10	12/10/2021 18:00	1.60	End of borehole.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569427E - 572051N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.88 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	29/09/2021 - 01/10/2021	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
					0.10	1.78		(MADE GROUND) GRAVEL.
					0.30	1.58		(MADE GROUND) Light brown, silty GRAVEL. Gravel is fine to coarse, angular to sub-angular.
		0.50 0.50	ENV PID	PID=0ppm	0.80	1.08		(MADE GROUND) Dark grey, slightly sandy gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
		1.20 1.20	ENV PID	PID=0ppm	1.20	0.68		(MADE GROUND) Black, slightly sandy gravelly SILT. Sand is fine to coarse. Grvael is fine to coarse, sub-angular to sub-rounded.
					1.60	0.28		(MADE GROUND) Brown grey, slightly sandy gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
		2.00 2.00	ENV PID	PID=0ppm	2.00	-0.12		(MADE GROUND) Grey, slightly sandy SILT. Sand is fine to medium.
					2.60	-0.72		(MADE GROUND) Grey, slightly sandy slightly gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
					3.00	-1.12		(MADE GROUND) Grey, slightly sandy SILT, timber found.
					4.00	-2.12		Grey, slightly sandy SILT with shell fragments.
					4.30	-2.42		Grey, SILT.
					4.35	-2.47		Grey, silty slightly gravelly SAND. Sand is fine to coarse. Gravel is fine to medium, sub-angular to rounded.
					4.50	-2.62		Grey, SILT.

End of Borehole at 4.500m

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
				See shift data.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
4.50	100	100

Equipment: Competitor DP

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Window sample terminated 4.50m bgl, required depth.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	01/10/2021 08:00	0.00	Start of shift.
Dry	01/10/2021 18:00	2.00	End of shift.
Dry	05/10/2021 08:00	2.00	Start of shift.
4.30	05/10/2021 18:00	4.50	End of borehole.

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Trial Pit No
WS05
Sheet 1 of 1

Project Name: Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:** 569433E - 572016N **Level:** 1.94m OD	**Date** 30/09/2021
Location: South Docklands, Cork City		**Dimensions (m):** 1.00 × 1.00	**Scale** 1:25
Client: Tiznow Unlimited Company		**Depth:** 1.20m BGL	**Logged** BS

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.10	1.84		Bituminous surfacing.
				0.40	1.54		(MADE GROUND) Black slightly sandy gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
	0.40	ENV					
	0.40	PID	PID=0				
	0.50	ENV					
	0.50	PID	PID=0				
				0.80	1.14		(MADE GROUND) Light brown, slightly sandy gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
	1.00	ENV					
	1.00	PID	PID=0				
				1.20	0.74		(MADE GROUND) Black, silty very gravelly SAND. Sand is fine to medium. Gravel is fine to coarse, sub-angular to sub-rounded.
							End of Pit at 1.200m

1
2
3
4
5

Stability: Good
Plant: 3t tracked excavator.
Backfill: Arising.

Groundwater: None encountered.

Remarks: Inspection pit terminated at 1.20m bgl. refusal in hard ground.

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Trial Pit No
WSTP05
Sheet 1 of 1

Project Name: Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:** 569433E - 572016N **Level:** 1.94m OD	**Date** 15/10/2021
Location: South Docklands, Cork City		**Dimensions (m):** 2.60 × 0.70	**Scale** 1:25
Client: Tiznow Unlimited Company		**Depth:** 1.60m BGL	**Logged** BS

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
	1.50	ENV		1.60	0.34		(MADE GROUND) Dark grey, silty sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse.
							End of Pit at 1.600m

1
2
3
4
5

Stability:
Plant: 3t tracked excavator.
Backfill: Arisings.

Groundwater: 1.30m: Trickle to slow flow rate.

Remarks: Trial Pit terminated at 1.60m bgl.

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	Logged By BS	**WS06** Sheet 1 of 1

Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569471E - 572165N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.96 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	12/10/2021 -	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
					0.20	1.76		(MADE GROUND) Light brown orange, slightly sandy silty GRAVEL with high cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobbles are sub-angular to sub-rounded with dia of 63-150mm.
		0.40	ENV					
								(MADE GROUND) Black brown, gravelly SILT with medium cobble content and large concrete blocks. Gravel is fine to coarse, sub-angular to rounded. Cobbles are sub-angular to rounded with dia of 63-200mm.
		1.30	ENV		1.20	0.76		
					1.60	0.36		(MADE GROUND) Brown grey, slightly sandy gravelly CLAY with concrete. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
								Grey black, slightly sandy SILT.
		2.50	ENV					
		3.50	ENV		3.40	-1.44		Grey, slightly sandy SILT with shell fragments.
					4.50	-2.54		End of Borehole at 4.500m

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
				None encountered.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
4.50		

Equipment: 3t tracked excavator.

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Trial pit terminated at 4.50m bgl.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569482E - 572125N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.98 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	13/10/2021 -	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
					0.10	1.88		(MADE GROUND) Hardcore. GRAVEL.
					0.20	1.78		(MADE GROUND) Light brown, silty sandy GRAVEL with high cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobbles are 63mm to 180mm dia, sub-angular to rounded.
		0.40	ENV					
		0.40	PID	PID=0ppm				
					1.20	0.78		(MADE GROUND) Grey, clayey gravelly SILT containing glass and tiles. Gravel is fine to coarse, angular to rounded.
								0.20m: Cloth layer separating gravel fill from strata below.
		1.50	ENV					
		1.50	PID	PID=0ppm	1.60	0.38		(MADE GROUND) Grey brown, slightly sandy gravelly SILT with plant material. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to rounded.
					2.00	-0.02		Grey mottled black, slightly sandy SILT. Sand is fine to medium.
					2.35	-0.37		Grey, slightly sandy SILT. Sand is fine to medium.
								Grey, silty fine SAND.
		2.70	ENV		2.70	-0.72		Grey, slightly sandy SILT with shell fragments. Sand is fine.
		2.70	PID	PID=0ppm				
		3.80	ENV					
		3.80	PID	PID=0ppm				
					4.50	-2.52		End of Borehole at 4.500m

Depth scale: 1, 2, 3, 4, 5, 6, 7, 8, 9

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
				None encountered.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
4.50	100	100

Equipment: 3t tracked excavator.

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Window sample terminated at 4.50m bgl. required depth.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	13/10/2021 08:00	0.00	Start of shift.
	13/10/2021 18:00	4.50	End of borehole.

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Trial Pit No
WS08
Sheet 1 of 1

Project Name: Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:** 569463E - 572075N **Level:** 1.96m OD	**Date** 30/09/2021
Location: South Docklands, Cork City		**Dimensions (m):** 1.00 × 1.00	**Scale** 1:25
Client: Tiznow Unlimited Company		**Depth:** 1.10m BGL	**Logged** BS

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							(MADE GROUND) Clause 804 or similar. GRAVEL.
				0.30	1.66		Concrete.
	0.60	ENV		0.50	1.46		(MADE GROUND) Grey mottled white, slightly sandy gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to rounded.
				1.10	0.86		End of Pit at 1.100m

Stability: Moderate.
Plant: 3t tracked excavator.
Backfill: Arising.
Groundwater: None encountered.
Remarks: Inspection pit terminated at 1.10m bgl, refusal in concrete block.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569463E - 572072N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.95 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	14/10/2021 -	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
					0.10	1.85		(MADE GROUND) Clause 804 or similar. GRAVEL.
		0.40 0.40	ENV PID	PID=1ppm	0.40	1.55		(MADE GROUND) Light brown, silty sandy GRAVEL with high cobble content, contains glass and fill material. Sand is fine to coarse. Gravel s fine to coarse, sub-angular to sub-rounded. Cobbles are 63mm to 180mm dia, sub-angular to rounded.
					1.20	0.75		(MADE GROUND) Grey silty sandy GRAVEL with medium cobble content. Sand is fine to coarse, Gravel is fine to coarse, angular to sub-rounded. Cobbles are 63mm to 150mm dia, sub-angular to sub-rounded.
		1.50 1.50	ENV PID	PID=3ppm	1.40	0.55		*0.40m: Pastic sheet between strata.*
								(MADE GROUND) Grey black silty GRAVEL with a strong petroleum odor. Gravel is fine to coarse, angular to sub-angular
					2.00	-0.05		Grey black, slightly sandy slightly gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
		2.50 2.50	ENV PID	PID=0ppm	2.40	-0.45		Grey, SAND. Sand is fine to coarse.
								Grey, SILT with shell fragments.
		3.80 3.80	ENV PID	PID=0ppm	3.90	-1.95		Grey, SILT with decayed wood and leaves.
					4.50	-2.55		End of Borehole at 4.500m

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
				None encountered.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
4.50	100	100

Equipment: 3t tracked excavator.

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Window sample terminated at 4.50m bgl, required depth. 50mm dia. standpipe installed.
Response zone from 0.10m to 1.40m bgl.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	14/10/2021 08:00	0.00	Start of shift.
	14/11/2021 18:00	4.50	End of borehole.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569470E - 572029N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.75 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	06/11/2021 -	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
					0.10	1.65		Bituminous surfacing.
					0.25	1.50		(MADE GROUND) Light brown, silty very sandy GRAVEL Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
								(MADE GROUND) Black, gravelly SILT. gravel is fine to coarse, sub-angular to sub-rounded.
		1.00 1.00	ENV PID	PID=0ppm	1.20	0.55		
								(MADE GROUND) Grey black, slightly sandy gravelly SILT with low cobble content, contained timber. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobbles are 63mm to 90mm, sub-angular.
		1.80 1.80	ENV PID	PID=0ppm	2.00	-0.25		
								Grey black, slightly sandy SILT with plant material. Sand is fine to coarse.
		2.40 2.40	ENV PID	PID=0ppm	2.80	-1.05		
								Grey, SILT with shell fragments.
		3.50 3.50	ENV PID	PID=0ppm				
					4.50	-2.75		End of Borehole at 4.500m

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
4.50	100	100

Equipment: Competitor (DPH) Rig

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Window sample terminated at 4.50m bgl, required depth.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	06/10/2021 08:00	0.00	Start of shift.
2.1	06/10/2021 18:00	4.50	End of borehole.

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Trial Pit No
WS10
Sheet 1 of 1

Project Name: Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:** 569481E - 571992N **Level:** 1.66m OD	**Date** 30/09/2021
Location: South Docklands, Cork City		**Dimensions (m):** 1.00 × 1.00	**Scale** 1:25
Client: Tiznow Unlimited Company		**Depth:** 0.90m BGL	**Logged** BS

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.10	1.56		Bituminous surfacing.
				0.30	1.36		(MADE GROUND) Light brown clayey sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
				0.90	0.76		(MADE GROUND) Black gravelly SILT. Gravel is fine to coarse.
							End of Pit at 0.900m

1
2
3
4
5

Stability: Moderate
Plant: 3t tracked excavator.
Backfill: Arising.

Groundwater: None encountered.

Remarks: Inspection pit terminated at 0.90m bgl, refusal on large concrete blocks.

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	Logged By	**WS10A**
		Sheet 1 of 1

Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569481E - 571989N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.70 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	14/10/2021 -	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
					0.10	1.60		Bituminous surfacing.
		0.30 0.30	ENV PID	PID=0ppm	0.45	1.25		(MADE GROUND) Grey, silty slightly sandy gravely COBBLES. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobbles are 63mm to 120mm, angular to sub-angular.
		0.70 0.70	ENV PID	PID=0ppm				(MADE GROUND) Black, slightly sandy gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
					1.20	0.50		(MADE GROUND) Grey black, slightly sandy gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
		1.50 1.50	ENV PID	PID=0ppm	1.80	-0.10		Grey black, slightly sandy SILT with rootlets. Sand is fine to medium.
		2.50 2.50	ENV PID	PID=0ppm	2.70	-1.00		Grey, SILT with shell fragments.
		3.50 3.50	ENV PID	PID=0ppm				
					4.50	-2.80		End of Borehole at 4.500m

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
0.60				0.60m: Trickle flow rate.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
1.10	100	100

Equipment: Competitor (DPH) Rig

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Window sample terminated at 4.50m bgl, required depth.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	14/10/2021 08:00	0.00	Start of shift.
	14/10/2021 18:00	4.50	End of borehole.

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Trial Pit No
WS11
Sheet 1 of 1

Project Name: Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:** 569458E - 571954N **Level:** 1.45m OD	**Date** 30/09/2021
Location: South Docklands, Cork City		**Dimensions (m):** 1.00 × 1.00	**Scale** 1:25
Client: Tiznow Unlimited Company		**Depth:** 0.30m BGL	**Logged** BS

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.10	1.35		Bituminous surfacing.
				0.30	1.15		(MADE GROUND) Grey, sandy gravelly COBBLES. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to rounded. Cobbles are 63mm to 100mm dia, sub-angular. End of Pit at 0.300m

1
2
3
4
5

Stability: good
Plant: 3t tracked excavator.
Backfill: Arising.

Groundwater: 0.20m: Fast flow rate.

Remarks: Inspection pit terminated at 0.30m bgl due to water infill

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569538E - 572124N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	2.14 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	12/10/2021 -	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
					0.10	2.04		(MADE GROUND) Hardcore
		0.40 0.40	ENV PID	PID=0ppm	0.30	1.84		(MADE GROUND) Light brown, silty slightly sand GRAVEL with high cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular. Cobbles are 63mm to 120mm dia, sub-angular to sub-rounded.
					1.40	0.74		(MADE GROUND) Brown black, slightly sandy gravelly SILT with medium cobble content with bricks, concrete glass plastic red brick and rubber. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
								End of Borehole at 1.400m

1 2 3 4 5 6 7 8 9

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
				None encountered.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
1.40	100	100

Equipment: Competitor (DPH) Rig

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Window sample terminated at 1.40m bgl, refusal on hard ground.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	12/10/2021 08:00	0.00	Start of shift.
	12/10/2021 18:00	1.40	End of borehole.

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Trial Pit No
WSTP12A
Sheet 1 of 1

Project Name: Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:** 569538E - 572126N **Level:**	**Date** 15/10/2021
Location: South Docklands, Cork City		**Dimensions (m):** 2.60 × 0.70	**Scale** 1:25
Client: Tiznow Unlimited Company		**Depth:** 2.50m BGL	**Logged** BS

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.05			(MADE GROUND) packed GRAVEL.
				0.40			(MADE GOUND) Brown, silty gravelly COBBLES, brick, sub-angular to rounded cobbles with a dia of up to 150mm, fine to coarse sub-angular to sub-rounded gravel.
	0.50	ENV					(MADE GROUND) Black brown, gravelly SILT with low cobble content, concrete present at 1.1m, redbrick and plastic, fine to coarse grained sub-angular to rounded gravel, sub-angular to sub-rounded cobbles with a dia of up to 120mm.
				1.40			Grey black, slightly sandy gravelly CLAY. Sand is fine to medium. Gravel is fine to coarse.
	1.50	ENV		1.70			Grey black with brown mottling, slightly sandy gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse.
				2.50			End of Pit at 2.500m

1 2 3 4 5

Stability:
Plant: 6T track machine.
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial Pit terminated at 2.50m bgl.

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Trial Pit No
WS13
Sheet 1 of 1

Project Name: Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:** 569517E - 572083N **Level:** 2.00m OD	**Date** 30/09/2021
Location: South Docklands, Cork City		**Dimensions (m):** 1.00 × 1.00	**Scale** 1:25
Client: Tiznow Unlimited Company		**Depth:** 0.60m BGL	**Logged** BS

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							(MADE GROUND) Grey, sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
				0.40	1.60		(MADE GROUND) Black, gravelly SILT.
				0.50	1.50		(MADE GROUND) Red brown, gravelly SILT with low cobble content. Gravel is fine to coarse. Cobbles are 63mm to 80mm dia, sub-angular.
				0.60	1.40		End of Pit at 0.600m

1
2
3
4
5

Stability: Moderate
Plant: 3t tracked excavator.
Backfill: Arising.
Groundwater: None encountered.
Remarks: Window sample terminated at 0.60m bgl, refusal.

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Trial Pit No
WS13A
Sheet 1 of 1

Project Name: Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:** 569517E - 572086N **Level:** 1.98m OD	**Date** 30/09/2021
Location: South Docklands, Cork City		**Dimensions (m):** 1.00 × 1.00	**Scale** 1:25
Client: Tiznow Unlimited Company		**Depth:** 1.20m BGL	**Logged** BS

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.10	1.88		(MADE GROUND) Packed GRAVEL.
				0.20	1.78		Bituminous layer.
							(MADE GROUND) Black, gravelly SILT. Coal present
	0.40 0.40	ENV PID	PID=0	0.40	1.58		(MADE GROUND) Red brown, gravelly SILT with low cobble content. Gravel is fine to coarse, sub-angular to rounded. Cobbles are sub-angular to sub-rounded, 63 to 90 dia.
				0.70	1.28		(MADE GROUND) Grey, slightly sandy gravelly SILT. Woods, bricks and concrete present.
	1.00	ENV					
				1.20	0.78		End of Pit at 1.200m

1
2
3
4
5

Stability: Moderate
Plant: Competitor (DPH) Rig
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Window sample terminated at 1.20m bgl, obstruction.

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Trial Pit No
WS14
Sheet 1 of 1

Project Name: Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:** 569524E - 572013N **Level:** 1.73m OD	**Date** 30/09/2021
Location: South Docklands, Cork City		**Dimensions (m):** 1.00 × 1.00	**Scale** 1:25
Client: Tiznow Unlimited Company		**Depth:** 0.30m BGL	**Logged** BS

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.10	1.63		Bituminous surfacing.
				0.30	1.43		(MADE GROUND) Grey, sandy GRAVEL with high cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub angular to rounded. Cobbles are sub-angular to sub-rounded, 63-190 dia. End of Pit at 0.300m

1
2
3
4
5

Stability: Moderate
Plant: Competitor (DPH) Rig
Backfill: Arisings

Groundwater: Groundwater encountered at 0.30m.

Remarks: Window sample terminated at 0.30m bgl, obstruction.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569524E - 572016N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.74 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	30/09/2021 -	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
					0.10	1.64		Bituminous surfacing.
					0.30	1.44		(MADE GROUND) Light brown, slightly sandy GRAVEL.
		0.50	ENV					(MADE GROUND) Black, gravelly SILT with low cobble content. Gravel is fine to coarse, sub angular to rounded. Cobbles are sub angular to sub rounded, 63-120 dia.
		0.50	PID	PID=0ppm				
					1.00	0.74		(MADE GROUND) Black, clayey slightly sandy gravelly SILT. Sand is fine to medium. Gravel is fine to coarse, sub angular to rounded.
		1.20	ENV		1.20	0.54		
		1.20	PID	PID=0ppm	1.35	0.39		
		1.35	ENV		1.40	0.34		(MADE GROUND) Grey brown, slightly sandy gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded.
		1.35	PID	PID=0ppm				
								Black organic layer.
					2.00	-0.26		Grey, slightly sandy slightly gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse, sub rounded.
								Grey black, sandy SILT with shell fragments.
		2.50	ENV					
		2.50	PID	PID=0ppm				
					2.70	-0.96		Grey, SILT with shell fragments.
					3.00	-1.26		Grey, SILT with shell fragments.
		3.50	ENV					
		3.50	PID	PID=0ppm				
					4.00	-2.26		Grey, SILT with shell fragments.
					4.10	-2.36		Grey, silty gravelly SAND. Gravel is fine to medium, sub-angular to rounded. Sand is fine to coarse.
					4.30	-2.56		
					4.50	-2.76		Grey, slightly sandy SILT with plant material.
								End of Borehole at 4.500m

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
				None encountered.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
4.50	100	100

Equipment: Competitor (DPH) Rig

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Window sample terminated at 4.50m bgl, required depth reached.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	30/09/2021 08:00	0.00	Start of shift.
4	30/09/2021 18:00	4.50	End of borehole.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569578E - 572132N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	2.15 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	05/10/2021 -	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
					0.10	2.05		(TOPSOIL) Brown, gravelly SILT with medium COBBLE content. Cobbles are sub-angular to sub-rounded, 63-180mm dia.
		0.50 0.50	ENV PID	PID=0ppm				(MADE GROUND) Brown black, slightly sandy gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse.
					1.20	0.95		(MADE GROUND) Brown grey, silty slightly sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, angular to sub rounded.
					1.35	0.80		Concrete.
					1.50	0.65		(MADE GROUND) Brown grey, slightly sandy gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse, angular to sub angular.
					1.70	0.45		Concrete.
		1.80 1.80	ENV PID	PID=0ppm	1.80	0.35		(MADE GROUND) Brown, slightly sandy gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular.
					2.00	0.15		(MADE GROUND) Grey, slightly sandy slightly gravelly SILT with low cobble content. Cobbles are sub-angular to sub rounded, 63-70mm dia.
					2.30	-0.15		Grey, SILT with shell fragments.
		2.70 2.70	ENV PID	PID=0ppm				
		3.90 3.90	ENV PID	PID=0ppm				
					4.50	-2.35		End of Borehole at 4.500m

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
				None encountered.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
4.50	100	100

Equipment: Competitor (DPH) Rig

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Window sample terminated at 4.50m bgl, required depth reached.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	05/10/2021 08:00	0.00	Start of shift.
	05/10/2021 18:00	4.50	End of borehole.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569559E - 572073N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	2.00 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	15/10/2021 -	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
					0.20	1.80		Bituminous material.
		0.50 0.50	ENV PID	PID=0ppm				(MADE GROUND) Brown grey, slightly sandy gravelly SILT, contains large concrete blocks, fine to coarse grained sand, fine to coarse sub-angular to rounded gravel.
					1.20	0.80		End of Borehole at 1.200m
		1.50 1.50	ENV PID	PID=0ppm				
		2.50 2.50	ENV PID	PID=0ppm				

1 2 3 4 5 6 7 8 9

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
				None encountered.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
1.20	100	100

Equipment: Competitor (DPH) Rig

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Window sample terminated at 1.20m bgl, obstruction.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	15/10/2021 08:00	0.00	Start of shift.
	15/10/2021 18:00	1.20	End of borehole.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569566E - 572037N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.58 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	30/09/2021 -	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
					0.07	1.51		Bituminous material.
					0.40	1.18		(MADE GROUND) Light brown, slightly sandy GRAVEL.
		0.60 0.60	ENV PID	PID=0ppm				(MADE GROUND) Dark brown, slightly sandy gravelly SILT with large concrete blocks. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
					1.20	0.38		(MADE GROUND) Black, gravelly SAND. Bricks and slate pieces found. Gravel is fine to coarse, sub-angular to sub-rounded. Sand is fine to coarse.
		1.50 1.50	ENV PID	PID=0ppm				
					1.80	-0.22		(MADE GROUND) Soft, black, slightly sandy SILT. Sand is fine to medium.
		2.00 2.00	ENV PID	PID=0ppm				
					2.20	-0.62		Soft, dark grey, slightly sandy SILT with shells. Sand is fine to medium.
					3.00	-1.42		Grey, SILT.
					3.90	-2.32		
					4.00	-2.42		Grey, slightly sandy slightly gravelly SILT. Sand is fine to coarse. Gravel is fine to medium, sub-angular to sub-rounded.
					4.50	-2.92		Grey, slightly gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
					4.70	-3.12		Purple, gravelly SAND. Gravel is fine to coarse, sub-angular to sub-rounded.
					4.90	-3.32		Grey, sandy SILT. Sand is fine to coarse.
					5.00	-3.42		Grey purple, silty SAND.
					5.15	-3.57		Grey, sandy SILT. Sand is fine to coarse.
								Grey, silty slightly sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, sub angular to rounded.
					6.00	-4.42		End of Borehole at 6.000m

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
6.00	100	100

Equipment: Competitor (DPH) Rig

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Window sample terminated at 6.00m bgl, required depth reached.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	30/09/2021 08:00	0.00	Start of shift.
	30/09/2021 18:00	6.00	End of borehole.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569624E - 572166N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	2.05 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	14/10/2021 -	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
		0.20 0.20	ENV PID	PID=0ppm	0.10	1.95		(TOPSOIL) Brown, gravelly SILT. Gravel is fine to coarse.
		0.80 0.80	ENV PID	PID=0ppm	0.70	1.35		(MADE GROUND) Brown, slightly sandy gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to rounded. (MADE GROUND) Black, gravelly SILT.
		1.80 1.80	ENV PID	PID=0ppm	1.20	0.85		(MADE GROUND) Grey black, slightly sandy slightly gravelly CLAY with red bricks. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
		2.30 2.30	ENV PID	PID=0ppm	2.00 2.15	0.05 -0.10		(MADE GROUND) Black grey, slightly sandy slightly gravelly SILT with red bricks. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. (MADE GROUND) Grey, slightly sandy slightly gravelly SILT. Sand is fine to medium. G`ravel is fine to medium, sub-angular to rounded.
		3.80 3.80	ENV PID	PID=0ppm	3.00 3.10	-0.95 -1.05		Grey brown, sandy SILT with low cobble content. Grey, SILT with shell fragments.
					4.50	-2.45		End of Borehole at 4.500m

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
4.50	100	100

Equipment: Competitor (DPH) Rig

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Window sample terminated at 4.50m bgl, required depth reached.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	14/10/2021 08:00	0.00	Start of shift.
	14/10/2021 18:00	4.50	End of borehole.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569625E - 572124N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	2.21 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	01/10/2021 -	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
					0.10	2.11		(TOPSOIL) Brown, gravelly SILT.
								(MADE GROUND) Brown, slightly sandy gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse.
					1.20	1.01		(MADE GROUND) Grey brown, slightly sandy gravelly SILT with orange oxidation staining.
					1.70	0.51		Concrete.
					1.75	0.46		Brown, sandy SILT.
					2.00	0.21		Grey black with orange oxidation staining, slightly sandy SILT. Sand is fine to coarse.
					4.50	-2.29		End of Borehole at 4.500m

1 2 3 4 5 6 7 8 9

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
				None encountered

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
4.50	100	100

Equipment: Competitor (DPH) Rig

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Window sample terminated at 4.50m bgl, refusal.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	01/10/2021 08:00	0.00	Start of shift.
Dry	01/10/2021 18:00	4.50	End of borehole.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569677E - 572172N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.91 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	30/09/2021 -	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
					0.15	1.76		(TOPSOIL) Brown, gravelly SILT. Gravel is fine to coarse, sub-angular to sub-rounded.
								(MADE GROUND) Brown grey, slightly sandy gravelly SILT with medium cobble and low boulder content. Cobbles are sub-angular to sub-rounded with dia of 63-200mm. Boulders are sub-angular with dia of 200-250mm.
					1.20	0.71		(MADE GROUND) Firm, red/brown, slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobbles are sub-rounded with dia of 63-70mm.
					2.00	-0.09		Dark grey, SILT.
		2.45 2.45	ENV PID	PID=0ppm	2.40 2.50	-0.49 -0.59		Dark grey, slightly sandy gravelly SILT with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobbles are sub-rounded with dia of 63-70mm.
					3.00	-1.09		No recovery.
		3.80 3.80	ENV PID	PID=0ppm				Dark grey, slightly sandy slightly gravelly SILT with shellfish. sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
	▼				4.80	-2.89		Dark grey, sandy SILT. Sand is fine to medium.
		5.20 5.20	ENV PID	PID=0ppm				
					5.80 5.90	-3.89 -3.99		Dark grey, slightly silty gravelly SAND. End of Borehole at 5.900m

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
4.70				Groundwater encountered at 4.70m

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
5.90	100	100

Equipment: Competitor (DPH) Rig

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Window sample terminated at 5.90m bgl, refusal on hard ground. 50mm dia. standpipe installed. Response zone from 5.40m-5.90m.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	30/09/2021 08:00	0.00	Start of shift.
4.70	30/09/2021 18:00	5.90	End of borehole.

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Trial Pit No
WS21
Sheet 1 of 1

Project Name: Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:** 569648E - 572103N **Level:** 1.92m OD	**Date** 29/11/2021
Location: South Docklands, Cork City		**Dimensions (m):** 1.00 × 1.00	**Scale** 1:25
Client: Tiznow Unlimited Company		**Depth:** 1.10m BGL	**Logged** BS

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.20	1.72		(MADE GROUND) Brown, silty slightly sandy GRAVEL. Sand is fine to medium. Gravel is fine to coarse, sub-angular to sub-rounded.
				1.10	0.82		(MADE GROUND) Brown, gravelly SILT with medium cobble and low boulder content, concrete blocks. Cobbles are sub-angular to sub-rounded with dia of 63-200mm. Boulders are sub-angular with dia of 200-300.
							End of Pit at 1.100m

1 2 3 4 5

Stability: Good.
Plant: 3t tracked excavator.
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Inspection pit terminated at 1.10m bgl, refusal.

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Trial Pit No
WS22
Sheet 1 of 1

Project Name: Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:** 569702E - 572146N **Level:** 1.78m OD	**Date** 29/09/2021
Location: South Docklands, Cork City		**Dimensions (m):** 1.00 × 1.00	**Scale** 1:25
Client: Tiznow Unlimited Company		**Depth:** 1.00m BGL	**Logged** BS

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.10	1.68		(MADE GROUND) Brown, silty slightly sandy GRAVEL. Gravel is fine to coarse, sub-angular to sub-rounded.
							(MADE GROUND) Black, gravelly SILT with medium cobble content. Gravel is fine to coarse, sub-angular to rounded. Cobbles are sub-angular to sub-rounded with dia of 63-160mm.
				1.00	0.78		End of Pit at 1.000m

1 2 3 4 5

Stability: Good.
Plant: 3t tracked excavator.
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Inspection pit terminated at 1.00m bgl, refusal.

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	Logged By EK	Sheet 1 of 1

Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569702E - 572149N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.88 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	29/09/2021 -	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
								Inspection Pit.
					1.20	0.68		(MADE GROUND) Brown, gravelly CLAY with low cobble content. Gravel is fine to coarse, sub-angular.
		1.90 1.90	ENV PID	PID=0ppm	2.00	-0.12		(MADE GROUND) Brown, silty GRAVEL. Gravel is fine to coarse.
		2.70 2.70	ENV PID	PID=0ppm	2.60	-0.72		Grey, slightly sandy SILT. Sand is fine to coarse.
		3.70 3.70	ENV PID	PID=0ppm	4.00	-2.12		Dark grey, slightly sandy gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
					5.00	-3.12		Red grey, slightly silty gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse, sub-rounded.
					5.70	-3.82		End of Borehole at 5.700m

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
2.30				Groundwater encountered at 2.30m

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
1.20	100	100

Equipment: Competitor (DPH) Rig

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Window sample terminated at 5.70m bgl, refusal. 50MM DIA. STANDPIPE INSTALLED. rESPONSE ZONE FRO 1.00M TO 2.50M BGL

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	29/09/2021 08:00	0.00	Shift start.
	29/09/2021 18:00	5.70	End of borehole.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569490E - 571909N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.26 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	29/09/2021 -	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
					0.10	1.16		Bituminous material.
					0.40	0.86		(MADE GROUND) Light brown slightly sandy GRAVEL/ Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
								(MADE GROUND) Dark brown, slightly sandy gravelly SILT with large concrete blocks. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
					1.20	0.06		(MADE GROUND) Brown grey slightly sandy gravelly SILT. Sand is fine to coarse, Gravel is fine to coarse.
		1.40 1.40	ENV PID	PID=0ppm				
					1.80	-0.54		Grey, slightly gravelly SILT. Gravel is fine to medium, sub-angular to sub-rounded.
					2.40	-1.14		Grey, SILT with shell fragments.
		3.80 3.80	ENV PID	PID=0ppm	3.80 3.90	-2.54 -2.64		Grey, silty SAND. Sand is fine to coarse. Grey, SILT with shell fragments.
					4.20	-2.94		Grey, silty slightly gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to rounded.
					4.50	-3.24		End of Borehole at 4.500m

1 2 3 4 5 6 7 8 9

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
				None encountered

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
4.50	100	100

Equipment: Competitor (DPH) Rig

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Window sample terminated at 4.50m bgl, obstruction.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	29/09/2021 08:00	0.00	Start of shift.
Dry	29/09/2021 18:00	4.50	End of borehole.

pgl priority geotechnical	**Priority Geotechnical Ltd.** **Tel: 021 4631600** **Fax: 021 4638690** **www.prioritygeotechnical.ie**	**Drilled By** **Logged By** BS	Borehole No. **WS24** Sheet 1 of 1

Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569477E - 571869N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.55 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	28/09/2021 -	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
					0.20	1.35		Concrete.
					0.50	1.05		(MADE GROUND) Brown, slightly sandy gravelly SILT with high cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to rounded. Cobbles are 63mm to 140mm dia, sub-angular to rounded
					1.00	0.55		(MADE GROUND) Dark brown, slightly clayey gravelly SAND with high cobble content. Sand is fine to coarse. Gravel is fine to coarse. End of Borehole at 1.000m

1 2 3 4 5 6 7 8 9

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
				None encountered.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
0.50		

Equipment: 3t tracked excavator.

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Window sample terminated at 1.00m bgl, obstruction. See also WS24A.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569477E - 571872N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.60 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	28/09/2021 -	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
					0.20	1.40		Concrete.
								(MADE GROUND) Brown slightly sandy gravelly SILT with high cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to rounded. Cobbles are 63mm to 120mm dia, sub-angular to rounded.
					1.20	0.40		COBBLES. Cobbles are 63mm to 200mm dia, sub angular to sub-rounded.
					2.00	-0.40		Brown, silty gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse, sub-rounded to rounded.
		2.50 2.50	ENV PID	PID=0ppm	2.40	-0.80		Grey black, slightly sandy organic SILT. Sand is fine to coarse.
					3.50	-1.90		Grey brown, silty very gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse, sub-rounded to rounded.
		3.90 3.90	ENV PID	PID=0ppm	4.00	-2.40		Brown, silty very sandy GRAVEL. Sand is fine to coarse, Gravel is fine to coarse, sub-rounded to rounded.
					5.70	-4.10		End of Borehole at 5.700m

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
5.70	100	100

Equipment: Competitor (DPH) Rig

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Window sample terminated at 5.70m bgl, refusal.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	28/09/2021 08:00	0.00	Start of shift.
Dry	28/09/2021 18:00	5.70	End of borehole.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569464E - 571789N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.53 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	15/10/2021 -	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
					0.30	1.23		Concrete foundation
		0.40	ENV					(MADE GROUND) Grey brown, slightly sandy silty GRAVEL with medium cobble content, fine to coarse sub-angular to rounded gravel, fine to coarse grained sand, sub-angular cobbles with a dia of up to 120mm.
		0.40	PID	PID=0ppm				
					0.70	0.83		
		0.80	ENV					
		0.80	PID	PID=0ppm	0.90	0.63		(MADE GROUND) Light brown, silty GRAVEL with a low cobble content, fine to coarse sub-angular to rounded gravel, sub-angular cobbles with a dia of up to 90mm.
		1.10	ENV		1.00	0.53		
		1.10	PID	PID=0ppm	1.20	0.33		
								Bituminous material.
					1.60	-0.07		Brown, gravelly SILT with a medium cobble content, sub-angular cobbles with a dia of up to 130mm.
								Grey black, slightly sandy gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
								Grey, slightly gravelly SILT. Gravel is fine to coarse, sub-angular to rounded.
		2.50	ENV					
		2.50	PID	PID=0ppm				
					3.00	-1.47		Grey, SILT with shell fragments.
		3.60	ENV					
		3.80	PID	PID=0ppm				
					4.00	-2.47		Grey, silty SAND. Sand is fine to coarse.
					4.30	-2.77		Grey SILT with shell fragments.
					4.50	-2.97		End of Borehole at 4.500m

Depth scale: 1, 2, 3, 4, 5, 6, 7, 8, 9

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
				None encountered.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
4.50	100	100

Equipment: Competitor (DPH) Rig

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

window sample terminated at 4.50m bgl, required depth.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	15/10/2021 08:00	0.00	Start of shift.
3.70	15/10/2021 18:00	4.50	End of borehole.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569525E - 571872N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.59 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	28/09/2021 -	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
					0.10	1.49		Bituminous material.
								(MADE GROUND) Red, slightly clayey gravelly SAND with low cobble content. Sand is fine to coarse. Gravel is fine to coarse and sub-angular to rounded. Cobbles are 63mm to 130mm dia and rounded.
					1.20	0.39		No recovery.
					1.30	0.29		End of Borehole at 1.300m

1 2 3 4 5 6 7 8 9

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
				None encountered.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
1.30	100	100

Equipment: Competitor DP(H)

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Inspection pit dug to 1.20m bgl. Window sample terminated at 1.30m bgl due to refusal.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	28/09/2021 08:00	0.00	Start of shift.
Dry	28/09/2021 18:00	1.30	End of borehole

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Trial Pit No
WS26A
Sheet 1 of 1

Project Name: Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:** 569525E - 571869N **Level:** 1.61m OD	**Date** 15/10/2021
Location: South Docklands, Cork City		**Dimensions (m):** 1.00 × 1.00	**Scale** 1:25
Client: Tiznow Unlimited Company		**Depth:** 1.20m BGL	**Logged** BS

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
	0.50	ENV		0.05	1.56		Bituminous material.
							(MADE GROUND) Red brown, slightly sandy gravelly SILT with high cobble content, Sand is fine to coarse. Gravel is fine to coarse sub-angular to rounded. Cobbles are 63mm to 200mm dia, sub-angular to rounded.
				1.20	0.41		End of Pit at 1.200m

1
2
3
4
5

Stability: Moderate.
Plant: 3t tracked excavator.
Backfill: Arising.

Groundwater: None encountered.

Remarks: Inspection pit terminated at 1.20m bgl, refusal in hard ground.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569559E - 571872N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	2.71 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	29/09/2021 -	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
					0.07	2.64		Bituminous material.
								(MADE GROUND) Brown, slightly sandy gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse, angular to rounded.
					1.20	1.50		(MADE GROUND) Brown orange, very sandy GRAVEL with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobbles are 63mm to 80mm, sub-angular.
					1.80	0.90		(MADE GROUND) Dark grey black, slightly gravelly CLAY. Gravel is fine to medium, sub-angular.
					2.00	0.70		Dark, grey SILT with low cobble content. Cobbles are 63mm to 90mm dia, sub-angular to sub-rounded.
		2.20 2.20	ENV PID	PID=0ppm				
					3.00	-0.30		Dark grey, slightly gravelly SILT. Gravel is fine to medium, sub-angular.
	▼	3.70 3.70	ENV PID	PID=0ppm				
					3.90	-1.20		Grey, silty sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse.
					4.70	-2.00		End of Borehole at 4.700m

1 2 3 4 5 6 7 8 9

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
4.00				See shift data.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
4.50	100	100

Equipment: Competitor (DPH) Rig

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Window sample terminated at 4.50m bgl, required depth. 50mm dia. standpipe installed.
Response zone from 4.00m to 4.50m.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	29/09/2021 08:00	0.00	Start of shift.
Dry	29/09/2021 18:00	4.70	End of borehole.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569397E - 572157N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.84 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	22/09/2021 -	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
		0.10	ENV		0.10	1.74		(TOPSOIL) Dark brown black, slightly sandy slightly gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular.
		0.70	ENV		0.60	1.24		(MADE GROUND) Brown dark brown, slightly gravelly sandy SILT with a hydro carbon sheen in sections and metal waste. Sand is fine to coarse. Gravel is fine to coarse, angular to rounded.
		0.70	PID	PID=1ppm	0.85	0.99		
					1.00	0.84		(MADE GROUND) Brown orange, slightly silty gravelly SAND with a slight hydrocarbon sheen. Sand is fine to coarse. Gravel is fine to coarse, angular to rounded.
		1.70	ENV					Grey, slightly gravelly SAND with slight hydrocarbon sheen. Sand is fine to coarse. Gravel is fine to coarse, angular to rounded.
		1.70	PID	PID=1ppm				
					2.00	-0.16		(MADE GROUND) Grey slightly silty slightly gravelly SAND with ceramics. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
		2.15	ENV					
		2.15	PID	PID=1ppm	2.30	-0.46		Grey, slightly sandy slightly gravelly SILT with slight hydrocarbon odor. Sand is fine. Gravel is fine to medium, sub-angular to sub-rounded.
					2.40	-0.56		
					2.60	-0.76		Grey black, slightly gravelly SAND with possible coal fragments. Sand is fine to coarse. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
					3.00	-1.16		
		3.15	ENV					
		3.15	PID	PID=0ppm				Grey slightly silty SAND with some coal fragments. Sand is fine to coarse.
								(MADE GROUND) Grey black, slightly gravelly SAND with coal fragments. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
					4.00	-2.16		Soft to firm light grey green, slightly sandy SILT with shell fragments and a slight sulphur odor. Sand is fine.
		4.40	ENV					Soft to firm, green grey, slightly sandy SILT with shell fragments and plant material. Sand is fine.
		4.40	PID	PID=0ppm				
		5.20	ENV					
		5.20	PID	PID=0ppm				
					5.40	-3.56		Purple grey, GRAVEL. Gravel is fine to coarse, sub-rounded to rounded.
					5.60	-3.76		Soft to firm, green grey, slightly sandy SILT with shell fragments and plant material. Sand is fine.
					6.00	-4.16		Grey green purple, slightly sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, sub-rounded to rounded with a sandstone lithology.
					6.30	-4.46		No recovery. assumed same as pervious strata.
					7.00	-5.16		End of Borehole at 7.000m

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
				See shift data.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
7.00	100	100

Equipment: Competitor (DPH) Rig

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Window sample terminated at 7.00m bgl, required depth.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	22/09/2021 08:00	0.00	Start of shift.
3.60	22/09/2021 18:00	7.00	End of borehole.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569446E - 571968N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.55 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	27/09/2021 -	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
					0.10	1.45		Bituminous material.
					0.30	1.25		(MADE GROUND) Grey, slightly sandy GRAVEL with high cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular. Cobbles are 63mm to 200mm dia, angular to sub-angular.
		0.50 0.50	ENV PID	PID=0ppm				(MADE GROUND) Grey, slightly sandy slightly gravelly CLAY with medium cobble content, contains brick fragments. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobbles are 63mm to 200mm dia, angular to sub-angular.
					1.20	0.35		Black, slightly sandy gravelly SILT with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular. Cobbles are 63mm to 70mm dia.
					2.00	-0.45		Black, SILT with low cobble content and shell fragments. Cobbles are 63mm to 70mm dia, sub-angular.
		2.40 2.40	ENV PID	PID=0ppm	2.30	-0.75		Dark grey, slightly sandy SILT with shell fragments. Sand is fine to coarse.
					3.70	-2.15		Dark grey, slightly sandy slightly gravelly SILT with shell fragments. sand is fine to medium. Gravel is fine to medium, sub-angular to sub-rounded.
		3.90 3.90	ENV PID	PID=0ppm	4.00	-2.45		Dark grey, slightly silty sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
		4.70 4.70	ENV PID	PID=0ppm				
					5.00	-3.45		End of Borehole at 5.000m

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
5.00		

Equipment: Competitor (DPH) Rig

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Window sample terminated at 5.0m bgl, refusal.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	27/09/2021 08:00	0.00	Start of shift.
2.40	27/09/2021 18:00	5.00	End of borehole.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569566E - 572166N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	2.34 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	23/09/2021 -	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description	
					0.30	2.04		(MADE GROUND) Grey brown, slightly silty slightly sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular	
		0.60 0.60	ENV PID	PID=0ppm				(MADE GROUND) Black, slightly sandy slightly gravelly CLAY with coal fragments. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.	
					1.00	1.34		(MADE GROUND) Dark grey black, slightly sandy slightly gravelly SILT with a slight hydrocarbon odor and ceramic fragments. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.	1
		1.40 1.40	ENV PID	PID=0ppm					
					2.00	0.34		Dark grey, slightly sandy slightly gravelly SILT with hydrocarbon odor. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.	2
					2.60	-0.26		Dark grey, slightly sandy slightly gravelly CLAY with plant material. Sand is fine to coarse, Gravel is fine to medium, sub-rounded to rounded. (Possible MADE GROUND)	
		2.70 2.70	ENV PID	PID=1ppm					3
					3.00	-0.66		Dark grey, slightly sandy gravelly SILT with shell fragments and plant material. Sand is fine to coarse. Gravel is fine to coarse, sub-rounded to rounded. (Possible MADE GROUND).	
		3.60 3.60	ENV PID	PID=0ppm					
					4.00	-1.66		Grey, slightly sandy SILT with metal fragment at 4.10 and coarse sand pocket at 4.90. Sand is fine to medium.	4
		4.15 4.15	ENV PID	PID=0ppm					
					5.00	-2.66		Grey, slightly sandy SILT. Sand is fine to coarse.	5
					5.25	-2.91		Grey purple, slightly silty slightly sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, sub-rounded to rounded with a sandstone lithology.	
		5.50 5.50	ENV PID	PID=0ppm	5.60	-3.26		Grey, SILT.	
					5.80	-3.46		Slightly silty slightly sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, sub-rounded to rounded.	6
					6.00	-3.66			
					6.20	-3.86		Grey, slightly sandy slightly gravelly SILT Sand is fine to coarse. Gravel is fine to coarse, sub-rounded to rounded.	
					6.30	-3.96			
		6.50 6.50	ENV PID	PID=0ppm	6.60	-4.26		Grey, sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, sub-rounded to rounded.	
					6.70	-4.36			
					6.80	-4.46		Grey, slightly sandy SILT. Sand is fine.	7
					7.00	-4.66		Grey purple, sandy GRAVEL. Sand is fine to coarse. Gravel is fine to medium, sub-rounded to rounded with a varied lithology.	
								Grey, slightly sandy slightly gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse, sub-rounded to rounded with a varied lithology.	
								Grey purple, slightly sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, sub-rounded to rounded with a varied lithology.	8
								End of Borehole at 7.000m	
									9

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
7.00	100	100

Equipment: Competitor (DPH) Rig

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Window sample terminated at 7.00m bgl, refusal.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	23/09/2021 08:00	0.00	Start of shift.
3.30	23/09/2021 18:00	7.00	End of borehole.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569614E - 572068N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.15 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	27/09/2021 -	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
					0.05	1.10		(TOPSOIL)
		0.60 0.60	ENV PID	PID=0ppm	0.50	0.65		(MADE GROUND) Red brown, slightly sandy gravelly SILT with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to rounded. Cobbles are 63mm to 130mm dia, sub-angular to sub-rounded.
		1.40 1.40	ENV PID	PID=1ppm	1.20 1.30	-0.05 -0.15		(MADE GROUND) Black, slightly sandy gravelly SILT with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to rounded. Cobbles are 63mm to 120mm dia, sub-angular to sub-rounded.
								Dark brown, clayey slightly sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, angular
								Dark brown grey, organic SILT with shell fragments.
					2.40	-1.25		Dark grey, slightly sandy slightly gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse, sub-rounded.
		3.40 3.40	ENV PID	PID=0ppm				
					4.00	-2.85		End of Borehole at 4.000m

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
4.00	100	100

Equipment: Competitor (DPH) Rig

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Window sample terminated at 4.0m bgl, refusal.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	27/09/2021 00:00	0.00	Start of shift.
1.40	27/09/2021 18:00	4.00	End of borehole.

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Trial Pit No
WSBH05
Sheet 1 of 1

Project Name: Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:** 569725E - 572171N **Level:** 1.63m OD	**Date** 24/09/2021
Location: South Docklands, Cork City		**Dimensions (m):** 1.00 × 1.00	**Scale** 1:25
Client: Tiznow Unlimited Company		**Depth:** 0.50m BGL	**Logged** BS

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.10	1.53		(TOPSOIL)
				0.50	1.13		(MADE GROUND) Dark brown grey, slightly sandy gravelly SILT with high cobble content with large concrete blocks. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobbles are 63mm to 200mm dia, sub-angular to sub-rounded.
							End of Pit at 0.500m

1
2
3
4
5

Stability: Moderate
Plant: 3t tracked excavator.
Backfill: Arising.

Groundwater: None encountered.

Remarks: Inspection pit terminated at 0.50m bgl, refusal in concrete blocks.

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Trial Pit No
WSBH05A
Sheet 1 of 1

Project Name: Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:** 569725E - 572169N **Level:** 1.70m OD	**Date** 24/09/2021
Location: South Docklands, Cork City		**Dimensions (m):** 1.00 × 1.00	**Scale** 1:25
Client: Tiznow Unlimited Company		**Depth:** 0.40m BGL	**Logged** BS

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.10	1.60		(TOPSOIL) Brown, slightly sandy slightly gravelly SILT. Sand is fine to coarse, Gravel is fine to coarse, sub-angular to sub-rounded.
				0.40	1.30		(MADE GROUND) Brown, slightly sandy slightly gravelly SILT with brick fragments. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
							Concrete blocks.
							End of Pit at 0.400m

1
2
3
4
5

Stability: Moderate.
Plant: 3t tracked excavator.
Backfill: Arising.

Groundwater: None encountered.

Remarks: Inspection pit terminated at 0.40m bgl, refusal on concrete blocks.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569726E - 572167N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.83 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	24/09/2021 -	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
					0.10	1.73		(TOPSOIL)
								(MADE GROUND) Dark brown, slightly sandy gravelly SILT with concrete blocks. Sand is fine to medium. Gravel is fine to coarse, sub-angular to rounded.
		0.80	ENV		0.80	1.03		
		0.80	PID	PID=0ppm				Grey black, slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobbles are 63mm to 100mm dia, sub-angular to sub-rounded.
		1.10	ENV					
		1.10	PID	PID=0ppm	1.20	0.63		
					1.30	0.53		Brown grey, slightly sandy gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
		1.50	ENV					
		1.50	PID	PID=0ppm				Grey black, slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse sub-angular to rounded.
					2.20	-0.37		Grey, slightly sandy gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to rounded.
		2.40	ENV					
		2.40	PID	PID=0ppm				
					3.00	-1.17		Grey, slightly sandy SILT. Sand is fine to coarse.
					3.77	-1.94		Grey, silty SAND. Sand is fine to coarse.
					3.80	-1.97		Grey, slightly sandy SILT. Sand is fine to medium.
					4.30	-2.47		Grey, silty very sandy GRAVEL. Sand is fine to medium. Gravel is fine to coarse, sub-angular to rounded.
					4.50	-2.67		
		4.70	ENV					
		4.70	PID	PID=0ppm	4.80	-2.97		Grey, sandy SILT.
								End of Borehole at 4.800m

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment
				None encountered

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
4.80	100	100

Equipment: Competitor (DPH) Rig

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Window sample terminated at 4.80m bgl, refusal.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	24/09/2021 08:00	0.00	Start of shift.
Dry	24/09/2021 18:00	4.80	End of borehole.

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Trial Pit No
WSBH06
Sheet 1 of 1

Project Name: Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:** 569513E - 571893N **Level:** 1.51m OD	**Date** 24/09/2021
Location: South Docklands, Cork City		**Dimensions (m):** 1.00 × 1.00	**Scale** 1:25
Client: Tiznow Unlimited Company		**Depth:** 1.20m BGL	**Logged** OD

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							CONCRETE.
				0.15	1.36		(MADE GROUND) Grey, slightly sandy GRAVEL FILL.
				0.25	1.26		(MADE GROUND) Brown, slightly silty slightly sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, sub-rounded to rounded, sandstone.
	0.90	ENV					
				1.20	0.31		End of Pit at 1.200m

1 2 3 4 5

Stability: Good.
Plant: 3t tracked excavator.
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Inspection pit terminated at 1.20m bgl, required depth reached.

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Trial Pit No
WSBH06A
Sheet 1 of 1

Project Name: Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:** 569513E - 571890N **Level:** 1.50m OD	**Date** 27/09/2021
Location: South Docklands, Cork City		**Dimensions (m):** 1.00 × 1.00	**Scale** 1:25
Client: Tiznow Unlimited Company		**Depth:** 1.20m BGL	**Logged** BS

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.20	1.30		Concrete.
	0.50	ENV					(MADE GROUND) Brown, slightly sandy gravelly SILT with high cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to rounded. Cobbles are 63mm to 100mm dia, sub-angular to rounded.
				1.20	0.30		End of Pit at 1.200m

1 2 3 4 5

Stability: Moderate.
Plant: 3t tracked excavator.
Backfill: Arising.

Groundwater: None encountered.

Remarks: Inspection pit terminated at 1.20m bgl, refusal on concrete block.

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Project Name:	Residential Development, Tedcastles Site	**Project No.** P21206	**Co-ords:**	569470E - 571824N	**Hole Type** CP
Location:	South Docklands, Cork City		**Level:**	1.15 m OD	**Scale** 1:50
Client:	Tiznow Unlimited Company		**Date:**	24/09/2021 -	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing: Depth (m bgl)	Type	Results	Depth (m bgl)	Level (mOD)	Legend	Stratum Description
					0.15	1.00		Bituminous material.
		0.50 0.50	ENV PID	PID=0ppm				Brown, slightly sandy gravelly SILT with high cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded. Cobbles are 63mm to 200mm, angular to sub-angular.
					1.20	-0.05		Grey brown, very sandy GRAVEL with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular. Cobbles are 63mm to 80mm dia, sub-angular.
		1.90 1.90	ENV PID	PID=0ppm	1.80 2.00	-0.65 -0.85		Dark grey black, slightly silty slightly gravelly CLAY. Gravel is fine to coarse, angular.
								Grey, silty CLAY.
		2.90 2.90	ENV PID	PID=0ppm	2.80 3.00	-1.65 -1.85		Black grey, slightly sandy SILT. Grey SILT.
		3.60 3.60	ENV PID	PID=0ppm	3.45	-2.30		Grey, silty slightly gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse.
					4.00 4.20	-2.85 -3.05		Grey, very sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse sub-rounded to rounded
					4.50	-3.35		Grey, silty SAND. Sand is fine to coarse.
		4.60 4.60	ENV PID	PID=0ppm	4.75 4.90 5.00	-3.60 -3.75 -3.85		Grey, slightly sandy SILT. Grey, silty SAND. Grey, sandy SILT.
					5.35	-4.20		Grey, gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse, sub-rounded to rounded. Grey, very sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse sub-rounded to rounded.
					5.70	-4.55		End of Borehole at 5.700m

Groundwater:

Struck (m bgl)	Rose to (m bgl)	After (mins)	Sealed (m bgl)	Comment

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
5.70	100	100

Equipment: Competitor (DPH) Rig

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool

Remarks:

Window sample terminated at 5.70m bgl, refusal

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	24/09/2021 08:00	0.00	Start of shift.
Dry	24/09/2021 18:00	5.70	End of borehole.

P21206 Tedcastle Site												
Gas Monitoring 04/11/2021												
Location	**Flow**	**CH4**	**CO2**	**O2**	**Balance**	**CO**	**H2S**	**CH4 lel**	**CH4 peak**	**Baro pressure**	**Relative pressure**	**Comment**
WS02	0.00 l/h	0%	0%	21.30%	78.50%	0ppm	0ppm	1%	0%	1026 mb	-0.16	
WSBH05	0.2 l/h	0%	0.10%	20.90%	78.90%	0ppm	0ppm	1%	0%	1026 mb	-0.09	
WS20	0.1 l/h	0%	2%	17.60%	80.50%	0ppm	0ppm	1%	0%	1026 mb	0.26	
WSBH04	0.0 l/h	0%	0.20%	20.00%	79.70%	0ppm	0ppm	1%	0%	1027 mb	-0.07	
WS15	0.0 l/h	0.1%	0.10%	20%	79.60%	0ppm	0ppm	1%	0.10%	1027 mb	-0.07	
WS23	0.0 l/h	0.1%	0.10%	19.90%	79.90%	3ppm	0ppm	1%	0%	1027 mb	-0.02	
WSBH07	0.0 l/h	0.1%	0.10%	20%	80.00%	2ppm	0ppm	1%	0.10%	1027 mb	-0.13	
WS08	1.9 l/h	0%	0.10%	18.60%	81.30%	0ppm	0ppm	1%	0%	1027 mb	-10.49	flush cover was filled gas tap below flush cover was submerged with water
WS10	0.3 l/h	0.1	0.1	19.5	80.3	0ppm	0ppm	1	0.1	1027 mb	3.44	

Gas Monitoring 08/12/2021												
Location	**Flow**	**CH4**	**CO2**	**O2**	**Balance**	**CO**	**H2S**	**CH4 lel**	**CH4**	**Baro**	**Relative pressure**	**Comment**
WS02	0.00 l/h	0%	0%	19.10%	80.80%	0ppm	0ppm	1%	0%	999 mb	0.04	
WSBH05	0.0 l/h	0%	0.10%	19.70%	80.10%	0ppm	0ppm	1%	0%	999 mb	0.04	
WS20	0.0 l/h	0%	0%	20.10%	79.70%	0ppm	0ppm	1%	0%	999 mb	3.64	
WSBH04	0.0 l/h	0%	0.10%	20.60%	79.20%	0ppm	0ppm	1%	0%	999 mb	4.2	
WS15	0.1 l/h	0.10%	0.10%	21%	79.20%	0ppm	0ppm	1%	0.10%	999 mb	4.2	
WS23	0.0 l/h	0.10%	0.20%	19.70%	80.10%	1ppm	0ppm	1%	0%	1000 mb	0.01	
WSBH07	0.0 l/h	0.10%	0.10%	20%	79.70%	0ppm	0ppm	1%	0.10%	1000mb	-0.16	
WS08	0.0 l/h	0%	0.10%	20.30%	79.50%	0ppm	0ppm	1%	0%	999 mb	4.2	
WS10	0.0l l/h	0.1	0.1	20.1	79.7	0ppm	0ppm	1	0.1	999 mb	4.2	

Gas Monitoring 17/12/2021												
Location	**Flow**	**CH4**	**CO2**	**O2**	**Balance**	**CO**	**H2S**	**CH4 lel**	**CH4**	**Baro**	**Relative pressure**	**Comment**
WS02	-5.9	0.10%	0.10%	20.80%	79%	0 ppm	0ppm	1%	0.10%	1040 mb	0.02	
WSBH05	0.00 l/h	0.10%	0.10%	20.70%	79.10%	0ppm	0ppm	1%	0.10%	1040 mb	0.02	
WS20	0.2 l/h	0.10%	0.10%	20.90%	78.90%	0ppm	0ppm	1%	0.10%	1040 mb	-0.02	
WSBH04	0.0 l/h	0.10%	0.60%	16.60%	82.70%	0ppm	0ppm	1%	0.10%	1041 mb	-0.01	
WS15	0.1 l/h	0.10%	0.60%	20.20%	79.00%	0ppm	0ppm	1%	0.10%	1040 mb	0.02	
WS23	0.1 l/h	0.10%	0.60%	19.10%	80.20%	0ppm	0ppm	1%	0.10%	1041 mb	-0.05	
WSBH07	0.0 l/h	0.10%	0.10%	20.40%	79.40%	0ppm	0ppm	1%	0.10%	1041 mb	-0.02	
WS08	0.2 l/h	0.10%	0.10%	20.80%	79.00%	0ppm	0ppm	1%	0.10%	1041 mb	0.01	
WS10	0.2l/h	0.10%	0.10%	20.50%	79.40%	0ppm	0ppm	1%	0.10%	1041 mb	0	

Date	27/09/2021 (14.50)	04/10/2021 (14:00 to 17:00)	15/10/2021 (16:15)	01/11/2021 (After 14:00)	10/11/2021 (Before 14:00)	17/11/2021	07/12/2021	24/01/2022	25/01/2022
GW Level (mBGL))									
WSBH01	2.88	1.9	2.48	1.65	1.66		2.37	1.85	
WSBH02		2.06	2.03	1.69	1.78		2.25	1.82	
WSBH03	3.04	2.78	3.09	2.28	2.45		3.48	2.65	
WSBH04	1.35	1.44	1.03	1.1		1.22		1.22	
WSBH05	2.08	0.77	0.72						
WS02				0.83				1.23	
WS08						0.7		0.83	
WS10				0.73				0.95	
WS15				1.36				1.77	
WS17				2.7	1.79		2.8	1.98	
WS20				2.4	2.15		3.15	2.65	
WS22				1.53					
WS23				1.08					1.3
WS24				1.75	1.81		2.28	2.3	
WS27				1.7	1.4		2.1		1.56

KEY TO SYMBOLS - LABORATORY TEST RESULT

U	Undisturbed Sample	
P	Piston Sample	
TWS	Thin Wall Sample	
B	Bulk Sample - Disturbed	
D	Jar Sample - Disturbed	
W	Water Sample	
pH	Acidity/Alkalinity Index	
SO_3	% - Total Sulphate Content (acid soluble)	
SO_3	g/ltr - Water Soluble Sulphate (Water or 2:1 Aqueous Soil Extract)	
+	Calcareous Reaction	
Cl	Chloride Content	
PI	Plasticity Index	
<425	% of material in sample passing 425 micron sieve	
LL	Liquid Limit	
PL	Plastic Limit	
MC	Water Content	
NP	Non Plastic	
Yb	Bulk Density	
Yd	Dry Density	
Ps	Particle Density	
U/D	Undrained/Drained Triaxial	
U/C	Unconsolidated/Consolidated Triaxial	
T/M	Single Stage/Multistage Triaxial	
100/38	Sample Diameter (mm)	
REM	Remoulded Triaxial Test Specimen	
TST	Triaxial Suction Test	
V	Vane Test	
DSB	Drained Shear Box	
RSB	Residual Shear Box	
RS	Ring Shear	
σ_3	Cell Pressure	
σ_1-σ_3	Deviator Stress	
c	Cohesion	
c_	Effective Cohesion Intercept	
ϕ	Angle of Shearing Resistance - Degrees	
ϕ_	Effective Angle of Shearing Resistance	
εf	Strain at Failure	
*	Failed under 1st Load	
**	Failed under 2nd Load	
#	Untestable	
##	Excessive Strain	
p_o	Effective Overburden Pressure	
m_v	Coefficient of Volume Decrease	
c_v	Coefficient of Consolidation	
Opt	Optimum	
Nat	Natural	
Std	Standard Compaction - 2.5kg Rammer	(¶ CBR)
Hvy	Heavy Compaction - 4.5kg Rammer	(§ CBR)
Vib	Vibratory Compaction	
CBR	California Bearing Ratio	
Sat m.c.	Saturation Moisture Content	
MCV	Moisture Condition Value	

Eurofins Chemtest Ltd
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CB8 0AL
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Email: info@chemtest.com

Amended Report

Report No.:	21-38709-2		
Initial Date of Issue:	10-Nov-2021	**Date of Re-Issue:**	23-Nov-2021
Client	Priority Geotechnical Ltd		
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland		
Contact(s):	Colette Kelly		
Project	P21206 Tedcastles Sites		
Quotation No.:	Q21-24611	**Date Received:**	04-Nov-2021
Order No.:	14093	**Date Instructed:**	04-Nov-2021
No. of Samples:	1		
Turnaround (Wkdays):	5	**Results Due:**	10-Nov-2021
Date Approved:	10-Nov-2021		

Approved By:

Details: Glynn Harvey, Technical Manager

Results - Leachate

Project: P21206 Tedcastles Sites

Client: Priority Geotechnical Ltd					**Chemtest Job No.:**	21-38709
Quotation No.: Q21-24611					**Chemtest Sample ID.:**	1313188
					Sample Location:	WSTP12
					Sample Type:	SOIL
					Top Depth (m):	2.50
					Date Sampled:	15-Oct-2021
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
Total Dissolved Solids	N	1020	10:1	mg/l	1.0	170
Chloride	U	1220	10:1	mg/l	1.0	2.6
Fluoride	U	1220	10:1	mg/l	0.050	2.6
Sulphate	U	1220	10:1	mg/l	1.0	22
Arsenic (Dissolved)	U	1455	10:1	mg/l	0.0002	0.0073
Barium (Dissolved)	U	1455	10:1	mg/l	0.005	0.049
Cadmium (Dissolved)	U	1455	10:1	mg/l	0.00011	< 0.00011
Chromium (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005
Copper (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0018
Molybdenum (Dissolved)	U	1455	10:1	mg/l	0.0002	0.022
Nickel (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0015
Lead (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005
Antimony (Dissolved)	U	1455	10:1	mg/l	0.0005	0.019
Selenium (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0010
Zinc (Dissolved)	U	1455	10:1	mg/l	0.002	0.003
Mercury Low Level	U	1460	10:1	mg/l	0.000010	< 0.00001
Dissolved Organic Carbon	U	1610	10:1	mg/l	2.0	5.1
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: P21206 Tedcastles Sites

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-38709
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1313188
			Sample Location:		WSTP12
			Sample Type:		SOIL
			Top Depth (m):		2.50
			Date Sampled:		15-Oct-2021
			Asbestos Lab:		COVENTRY
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	24
pH	M	2010		4.0	8.9
Arsenic	M	2450	mg/kg	1.0	7.2
Barium	M	2450	mg/kg	10	27
Cadmium	M	2450	mg/kg	0.10	0.11
Molybdenum	M	2450	mg/kg	2.0	< 2.0
Antimony	N	2450	mg/kg	2.0	< 2.0
Copper	M	2450	mg/kg	0.50	19
Mercury	M	2450	mg/kg	0.10	0.11
Nickel	M	2450	mg/kg	0.50	8.9
Lead	M	2450	mg/kg	0.50	33
Selenium	M	2450	mg/kg	0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	39
Chromium (Trivalent)	N	2490	mg/kg	1.0	9.1
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
LOI	M	2610	%	0.10	12
Total Organic Carbon	M	2625	%	0.20	11
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10
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	M	2680	mg/kg	1.0	[B] < 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	[B] < 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	[B] < 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	[B] < 1.0
Aliphatic TPH >C21-C35	M	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	M	2680	mg/kg	1.0	[B] < 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	[B] < 1.0
Aromatic TPH >C12-C16	M	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	M	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

Results - Soil

Project: P21206 Tedcastles Sites

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-38709
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1313188
			Sample Location:		WSTP12
			Sample Type:		SOIL
			Top Depth (m):		2.50
			Date Sampled:		15-Oct-2021
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[B] < 10
Benzene	M	2760	µg/kg	1.0	[B] < 1.0
Toluene	M	2760	µg/kg	1.0	[B] < 1.0
Ethylbenzene	M	2760	µg/kg	1.0	[B] < 1.0
m & p-Xylene	M	2760	µg/kg	1.0	[B] < 1.0
o-Xylene	M	2760	µg/kg	1.0	[B] < 1.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	[B] < 1.0
Naphthalene	M	2800	mg/kg	0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	< 0.10
Anthracene	M	2800	mg/kg	0.10	< 0.10
Fluoranthene	M	2800	mg/kg	0.10	< 0.10
Pyrene	M	2800	mg/kg	0.10	< 0.10
Benzo[a]anthracene	M	2800	mg/kg	0.10	< 0.10
Chrysene	M	2800	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	< 0.10
Coronene	N	2800	mg/kg	0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	< 2.0
PCB 28	U	2815	mg/kg	0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010
Total PCBs (7 Congeners)	U	2815	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:
1313188			WSTP12	15-Oct-2021	B	Amber Glass 250ml
1313188			WSTP12	15-Oct-2021	B	Amber Glass 60ml
1313188			WSTP12	15-Oct-2021	B	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity 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.
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).
1460	Mercury low-level in Waters by AFS	Mercury	Atomic Fluorescence Spectrometry, with collimated UV source, wavelength 253.7 nm.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
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
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
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.

Test Methods

SOP	Title	Parameters included	Method summary
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
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
640	Characterisation of Waste (Leaching C10)	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 Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	21-37354-1		
Initial Date of Issue:	03-Nov-2021		
Client	Priority Geotechnical Ltd		
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland		
Contact(s):	Colette Kelly		
Project	P21206 Tedcastles		
Quotation No.:	Q21-24611	**Date Received:**	26-Oct-2021
Order No.:	14093	**Date Instructed:**	28-Oct-2021
No. of Samples:	9		
Turnaround (Wkdays):	5	**Results Due:**	03-Nov-2021
Date Approved:	03-Nov-2021		

Approved By:

Details: Glynn Harvey, Technical Manager

Results - Leachate

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd					**Chemtest Job No.:**	21-37354	21-37354	21-37354	21-37354	21-37354	21-37354	21-37354	21-37354
Quotation No.: Q21-24611					**Chemtest Sample ID.:**	1306725	1306726	1306727	1306728	1306729	1306730	1306731	1306732
					Sample Location:	WSTP05	WS25	WS25	WS25	WS25	WS25	WS16	WSTP16
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	1.50	0.40	0.80	1.10	2.50	3.60	0.50	1.50
					Date Sampled:	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**								
Total Dissolved Solids	N	1020	10:1	mg/l	1.0	340	1600	180	200	180	160	290	200
Chloride	U	1220	10:1	mg/l	1.0	1.2	1.6	1.7	4.5	2.9	2.8	20	3.5
Fluoride	U	1220	10:1	mg/l	0.050	1.1	0.21	0.17	0.24	0.16	0.11	0.88	0.77
Sulphate	U	1220	10:1	mg/l	1.0	160	20	42	33	13	50	130	47
Arsenic (Dissolved)	U	1455	10:1	mg/l	0.0002	0.15	0.0003	< 0.0002	0.0047	0.0022	0.0013	0.0041	0.0054
Barium (Dissolved)	U	1455	10:1	mg/l	0.005	0.063	0.088	0.007	< 0.005	0.007	< 0.005	0.007	0.029
Cadmium (Dissolved)	U	1455	10:1	mg/l	0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011
Chromium (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	0.021	0.0040	0.0036	< 0.0005	< 0.0005	0.0014	0.0006
Copper (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	0.0026	0.0013	0.0020	0.0008	0.0011	0.0082	0.013
Molybdenum (Dissolved)	U	1455	10:1	mg/l	0.0002	0.013	0.0076	0.0029	0.0030	0.0038	0.0044	0.0061	0.022
Nickel (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0019	0.0009	< 0.0005	< 0.0005	0.0006	< 0.0005	0.0020	0.0044
Lead (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	0.0012	0.0012	< 0.0005	< 0.0005	< 0.0005	0.0011	0.0047
Antimony (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0036	< 0.0005	0.0011	0.0005	0.0006	0.0008	0.0031	0.017
Selenium (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	0.0008	0.0006	0.0013	0.0011	< 0.0005	0.0012	0.0011
Zinc (Dissolved)	U	1455	10:1	mg/l	0.002	0.003	0.019	0.013	< 0.003	0.004	0.003	0.007	0.020
Mercury Low Level	U	1460	10:1	mg/l	0.000010	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	0.00001
Dissolved Organic Carbon	U	1610	10:1	mg/l	2.0	7.2	3.2	2.3	3.7	9.1	7.3	6.7	14
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030

Results - Leachate

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd					**Chemtest Job No.:**	21-37354
Quotation No.: Q21-24611					**Chemtest Sample ID.:**	1306733
					Sample Location:	WSTP16
					Sample Type:	SOIL
					Top Depth (m):	2.50
					Date Sampled:	15-Oct-2021
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
Total Dissolved Solids	N	1020	10:1	mg/l	1.0	78
Chloride	U	1220	10:1	mg/l	1.0	2.7
Fluoride	U	1220	10:1	mg/l	0.050	0.28
Sulphate	U	1220	10:1	mg/l	1.0	3.4
Arsenic (Dissolved)	U	1455	10:1	mg/l	0.0002	0.028
Barium (Dissolved)	U	1455	10:1	mg/l	0.005	0.015
Cadmium (Dissolved)	U	1455	10:1	mg/l	0.00011	< 0.00011
Chromium (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005
Copper (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0017
Molybdenum (Dissolved)	U	1455	10:1	mg/l	0.0002	0.0036
Nickel (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0009
Lead (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005
Antimony (Dissolved)	U	1455	10:1	mg/l	0.0005	0.018
Selenium (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0020
Zinc (Dissolved)	U	1455	10:1	mg/l	0.002	0.003
Mercury Low Level	U	1460	10:1	mg/l	0.000010	< 0.00001
Dissolved Organic Carbon	U	1610	10:1	mg/l	2.0	3.8
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-37354	21-37354	21-37354	21-37354	21-37354	21-37354	21-37354	21-37354	21-37354
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1306725	1306726	1306727	1306728	1306729	1306730	1306731	1306732	1306733
			Sample Location:		WSTP05	WS25	WS25	WS25	WS25	WS25	WS16	WSTP16	WSTP16
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.50	0.40	0.80	1.10	2.50	3.60	0.50	1.50	2.50
			Date Sampled:		15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	IN-TRAN-D	IN-TRAN-D	DURHAM	IN-TRAN-D
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192		N/A	Fibres/Clumps	-	-	-	-	-	-	Fibres/Clumps	-
Asbestos Identification	U	2192		N/A	Amosite	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	Chrysotile	No Asbestos Detected
Asbestos by Gravimetry	U	2192	%	0.001	<0.001							<0.001	
Total Asbestos	U	2192	%	0.001	<0.001							<0.001	
Moisture	N	2030	%	0.020	48	2.5	2.7	3.5	28	32	5.5	16	49
pH	M	2010		4.0	6.6	11.2	10.3	10.1	8.6	8.3	8.9	8.5	8.8
Arsenic	M	2450	mg/kg	1.0	34	6.0	4.4	18	< 1.0	< 1.0	2.5	1.8	35
Barium	M	2450	mg/kg	10	95	14	< 10	20	< 10	< 10	46	34	72
Cadmium	M	2450	mg/kg	0.10	0.35	0.44	0.32	0.22	< 0.10	< 0.10	0.32	0.12	0.12
Molybdenum	M	2450	mg/kg	2.0	4.1	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Antimony	N	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	2.1
Copper	M	2450	mg/kg	0.50	47	34	28	47	9.5	2.0	36	27	30
Mercury	M	2450	mg/kg	0.10	0.11	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.11	0.25	< 0.10
Nickel	M	2450	mg/kg	0.50	180	13	5.9	11	6.2	2.8	12	7.7	24
Lead	M	2450	mg/kg	0.50	37	7.4	11	34	8.6	2.9	49	62	33
Selenium	M	2450	mg/kg	0.20	0.61	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	0.24	< 0.20
Zinc	M	2450	mg/kg	0.50	410	21	11	27	14	5.8	44	94	47
Chromium (Trivalent)	N	2490	mg/kg	1.0	33	7.4	2.8	7.0	7.0	2.5	12	8.0	13
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
LOI	M	2610	%	0.10	16	0.84	0.70	2.5	3.4	2.7	4.1	13	12
Total Organic Carbon	M	2625	%	0.20	17	7.6	9.1	5.8	1.8	1.1	4.3	10	11
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	24000	< 10	< 10	< 10	< 10	< 10	280	250	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 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	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	25	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	260	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	960	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	13	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	19000	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	280	240	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	4000	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	24000	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	280	250	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 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	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	75	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	2600	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	2.4	14	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	240	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1200	750	< 1.0

Results - Soil

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-37354	21-37354	21-37354	21-37354	21-37354	21-37354	21-37354	21-37354	21-37354
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1306725	1306726	1306727	1306728	1306729	1306730	1306731	1306732	1306733
			Sample Location:		WSTP05	WS25	WS25	WS25	WS25	WS25	WS16	WSTP16	WSTP16
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.50	0.40	0.80	1.10	2.50	3.60	0.50	1.50	2.50
			Date Sampled:		15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	IN-TRAN-D	IN-TRAN-D	DURHAM	IN-TRAN-D
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	2900	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	1200	760	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	27000	< 10	< 10	< 10	< 10	< 10	1400	1000	< 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	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 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	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 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								
1,1,1,2-Tetrachloroethane	N	2760	µg/kg	0.20	< 0.20								
Ethylbenzene	N	2760	µg/kg	0.20	< 0.20								
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	2.7
m & p-Xylene	N	2760	µg/kg	0.20	< 0.20								

Results - Soil

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-37354	21-37354	21-37354	21-37354	21-37354	21-37354	21-37354	21-37354	21-37354
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1306725	1306726	1306727	1306728	1306729	1306730	1306731	1306732	1306733
			Sample Location:		WSTP05	WS25	WS25	WS25	WS25	WS25	WS16	WSTP16	WSTP16
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.50	0.40	0.80	1.10	2.50	3.60	0.50	1.50	2.50
			Date Sampled:		15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	IN-TRAN-D	IN-TRAN-D	DURHAM	IN-TRAN-D
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	N	2760	µg/kg	0.20	< 0.20								
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 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								
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
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								
Hexachloroethane	N	2790	mg/kg	0.050	< 0.050								
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								

Results - Soil

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-37354	21-37354	21-37354	21-37354	21-37354	21-37354	21-37354	21-37354	21-37354
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1306725	1306726	1306727	1306728	1306729	1306730	1306731	1306732	1306733
			Sample Location:		WSTP05	WS25	WS25	WS25	WS25	WS25	WS16	WSTP16	WSTP16
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.50	0.40	0.80	1.10	2.50	3.60	0.50	1.50	2.50
			Date Sampled:		15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	IN-TRAN-D	IN-TRAN-D	DURHAM	IN-TRAN-D
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
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	< 0.050								
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	1.2								
Anthracene	N	2790	mg/kg	0.050	0.46								
Carbazole	N	2790	mg/kg	0.050	< 0.050								
Di-N-Butyl Phthalate	N	2790	mg/kg	0.050	< 0.050								
Fluoranthene	N	2790	mg/kg	0.050	1.9								
Pyrene	N	2790	mg/kg	0.050	1.5								
Butylbenzyl Phthalate	N	2790	mg/kg	0.050	< 0.050								

Results - Soil

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-37354	21-37354	21-37354	21-37354	21-37354	21-37354	21-37354	21-37354	21-37354
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1306725	1306726	1306727	1306728	1306729	1306730	1306731	1306732	1306733
			Sample Location:		WSTP05	WS25	WS25	WS25	WS25	WS25	WS16	WSTP16	WSTP16
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.50	0.40	0.80	1.10	2.50	3.60	0.50	1.50	2.50
			Date Sampled:		15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	IN-TRAN-D	IN-TRAN-D	DURHAM	IN-TRAN-D
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Benzo[a]anthracene	N	2790	mg/kg	0.050	0.88								
Chrysene	N	2790	mg/kg	0.050	0.95								
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	< 0.050								
Benzo[k]fluoranthene	N	2790	mg/kg	0.050	< 0.050								
Benzo[a]pyrene	N	2790	mg/kg	0.050	< 0.050								
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	< 0.050								
4-Nitrophenol	N	2790	mg/kg	0.050	< 0.050								
Naphthalene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.55	2.2	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.14	0.15	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.50	0.27	< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.41	0.37	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	0.74	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	3.4	4.7	< 0.10
Anthracene	M	2800	mg/kg	0.10	0.23	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.82	0.91	< 0.10
Fluoranthene	M	2800	mg/kg	0.10	0.80	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	5.2	6.9	< 0.10
Pyrene	M	2800	mg/kg	0.10	0.57	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	4.7	5.9	< 0.10
Benzo[a]anthracene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	2.1	2.9	< 0.10
Chrysene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	2.2	2.9	< 0.10
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	3.0	4.1	< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.89	1.5	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	2.5	3.0	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.8	2.0	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.47	0.50	< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.4	1.7	< 0.10
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	2.3	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	30	40	< 2.0
PCB 28	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
SVOC TIC	N	2790	mg/kg	N/A	None Detected								

Results - Soil

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-37354	21-37354	21-37354	21-37354	21-37354	21-37354	21-37354	21-37354	21-37354
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1306725	1306726	1306727	1306728	1306729	1306730	1306731	1306732	1306733
			Sample Location:		WSTP05	WS25	WS25	WS25	WS25	WS25	WS16	WSTP16	WSTP16
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.50	0.40	0.80	1.10	2.50	3.60	0.50	1.50	2.50
			Date Sampled:		15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021	15-Oct-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	IN-TRAN-D	IN-TRAN-D	DURHAM	IN-TRAN-D
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
VOC TIC	N	2760	µg/kg	N/A	None Detected								

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity 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.
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).
1460	Mercury low-level in Waters by AFS	Mercury	Atomic Fluorescence Spectrometry, with collimated UV source, wavelength 253.7 nm.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
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
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
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

Test Methods

SOP	Title	Parameters included	Method summary
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
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
640	Characterisation of Waste (Leaching C10)	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 Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	21-36538-1		
Initial Date of Issue:	29-Oct-2021		
Client	Priority Geotechnical Ltd		
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland		
Contact(s):	Colette Kelly		
Project	P21206 Tedcastles		
Quotation No.:	Q21-24611	**Date Received:**	20-Oct-2021
Order No.:	14093	**Date Instructed:**	22-Oct-2021
No. of Samples:	15		
Turnaround (Wkdays):	5	**Results Due:**	28-Oct-2021
Date Approved:	29-Oct-2021		

Approved By:

Details: Glynn Harvey, Technical Manager

Results - Leachate

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd					**Chemtest Job No.:**	21-36538	21-36538	21-36538	21-36538	21-36538	21-36538	21-36538	21-36538
Quotation No.: Q21-24611					**Chemtest Sample ID.:**	1302312	1302314	1302315	1302317	1302318	1302319	1302321	1302322
					Sample Location:	WS10A	WS10A	WS10A	WS07	WS07	WS07	WS08A	WS08A
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.30	1.50	2.50	1.50	2.70	3.80	1.50	2.50
					Date Sampled:	14-Oct-2021	14-Oct-2021	14-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	14-Oct-2021	14-Oct-2021
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**								
Total Dissolved Solids	N	1020	10:1	mg/l	1.0	27	47	100	52	46	61	43	91
Chloride	U	1220	10:1	mg/l	1.0	< 1.0	< 1.0	1.2	4.8	5.1	4.8	1.4	< 1.0
Fluoride	U	1220	10:1	mg/l	0.050	0.10	0.46	0.12	0.095	0.11	0.12	0.13	0.10
Sulphate	U	1220	10:1	mg/l	1.0	< 1.0	13	58	23	5.2	3.9	< 1.0	38
Arsenic (Dissolved)	U	1455	10:1	mg/l	0.0002	0.0003	0.0058	0.0024	0.0005	0.0053	0.0063	0.0059	0.0043
Barium (Dissolved)	U	1455	10:1	mg/l	0.005	< 0.005	< 0.005	< 0.005	0.007	0.006	< 0.005	0.006	0.008
Cadmium (Dissolved)	U	1455	10:1	mg/l	0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011
Chromium (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Copper (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0014	0.0006	< 0.0005	0.0011	0.0007	0.0007	0.0017	< 0.0005
Molybdenum (Dissolved)	U	1455	10:1	mg/l	0.0002	< 0.0002	0.0020	0.0055	0.0004	0.033	0.0041	0.0027	0.037
Nickel (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	0.0006	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0010	< 0.0005
Lead (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Antimony (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	0.0014	0.0007	< 0.0005	0.0064	< 0.0005	0.0041	0.0013
Selenium (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0007	< 0.0005
Zinc (Dissolved)	U	1455	10:1	mg/l	0.002	< 0.003	< 0.003	0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
Mercury Low Level	U	1460	10:1	mg/l	0.000010	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Dissolved Organic Carbon	U	1610	10:1	mg/l	2.0	3.0	5.4	2.8	2.1	2.2	7.6	4.0	3.8
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030

Results - Leachate

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd					**Chemtest Job No.:**	21-36538	21-36538	21-36538	21-36538	21-36538	21-36538	21-36538
Quotation No.: Q21-24611					**Chemtest Sample ID.:**	1302323	1302324	1302327	1302328	1302329	1302330	1302331
					Sample Location:	WS08A	WS08	WS12	WS06	WS18	WS18	WS18
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	3.80	0.80	1.30	1.50	0.20	0.80	1.80
					Date Sampled:	14-Oct-2021	12-Oct-2021	14-Oct-2021	12-Oct-2021	14-Oct-2021	14-Oct-2021	14-Oct-2021
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**							
Total Dissolved Solids	N	1020	10:1	mg/l	1.0	98	72	61	190	43	85	36
Chloride	U	1220	10:1	mg/l	1.0	4.8	1.9	< 1.0	< 1.0	1.5	< 1.0	2.8
Fluoride	U	1220	10:1	mg/l	0.050	0.14	0.18	0.17	0.10	0.096	0.083	0.089
Sulphate	U	1220	10:1	mg/l	1.0	37	22	23	110	7.6	40	4.3
Arsenic (Dissolved)	U	1455	10:1	mg/l	0.0002	0.0006	0.0053	0.0015	0.0014	0.0022	0.0026	0.0016
Barium (Dissolved)	U	1455	10:1	mg/l	0.005	< 0.005	< 0.005	0.005	0.007	< 0.005	0.008	< 0.005
Cadmium (Dissolved)	U	1455	10:1	mg/l	0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011
Chromium (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Copper (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0012	0.0010	0.0005	< 0.0005	0.0025	0.0021	0.0013
Molybdenum (Dissolved)	U	1455	10:1	mg/l	0.0002	0.0024	0.0034	0.0010	0.0019	0.0006	0.0020	0.0007
Nickel (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	< 0.0005	< 0.0005	0.0007	< 0.0005	< 0.0005	< 0.0005
Lead (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	0.0007	< 0.0005	< 0.0005	0.0014	0.0007	0.0005
Antimony (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	0.0019	0.0006	0.0008	0.0036	0.0011	< 0.0005
Selenium (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	< 0.0005	< 0.0005	0.0009	0.0008	< 0.0005	< 0.0005
Zinc (Dissolved)	U	1455	10:1	mg/l	0.002	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
Mercury Low Level	U	1460	10:1	mg/l	0.000010	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Dissolved Organic Carbon	U	1610	10:1	mg/l	2.0	5.9	6.3	3.3	2.5	7.5	3.2	3.7
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030

Results - Soil

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-36538	21-36538	21-36538	21-36538	21-36538	21-36538	21-36538	21-36538	21-36538
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1302312	1302314	1302315	1302317	1302318	1302319	1302321	1302322	1302323
			Sample Location:		WS10A	WS10A	WS10A	WS07	WS07	WS07	WS08A	WS08A	WS08A
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.30	1.50	2.50	1.50	2.70	3.80	1.50	2.50	3.80
			Date Sampled:		14-Oct-2021	14-Oct-2021	14-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	14-Oct-2021	14-Oct-2021	14-Oct-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	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	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	2.2	22	24	13	42	25	30	22	23
Chromatogram (TPH)	N			N/A							See Attached	See Attached	See Attached
pH	M	2010		4.0	9.4	8.0	8.3	8.5	8.1	8.8	9.1	8.8	8.2
Arsenic	M	2450	mg/kg	1.0	26	9.7	6.3	7.0	13	11	37	22	8.2
Barium	M	2450	mg/kg	10	31	120	< 10	16	100	23	70	44	< 10
Cadmium	M	2450	mg/kg	0.10	0.67	0.36	< 0.10	< 0.10	0.41	0.13	0.20	< 0.10	< 0.10
Molybdenum	M	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	2.1	< 2.0	26	< 2.0	< 2.0
Antimony	N	2450	mg/kg	2.0	< 2.0	2.9	< 2.0	< 2.0	3.9	< 2.0	< 2.0	< 2.0	< 2.0
Copper	M	2450	mg/kg	0.50	25	49	5.7	15	55	66	47	24	11
Mercury	M	2450	mg/kg	0.10	< 0.10	0.94	< 0.10	< 0.10	0.59	0.26	0.16	< 0.10	< 0.10
Nickel	M	2450	mg/kg	0.50	7.0	19	11	14	34	18	130	22	18
Lead	M	2450	mg/kg	0.50	30	160	8.6	16	220	52	79	13	8.8
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20	0.23	0.23	0.44	1.2	< 0.20	0.35
Zinc	M	2450	mg/kg	0.50	23	780	39	35	840	78	81	30	43
Chromium (Trivalent)	N	2490	mg/kg	1.0	3.7	14	11	14	24	17	28	8.0	16
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
LOI	M	2610	%	0.10	0.87	9.6	5.5	3.6	32	2.0	21	2.9	3.8
Total Organic Carbon	M	2625	%	0.20	1.5	2.7	2.4	2.4	28	1.0	12	1.0	1.3
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Diesel Present	N	2670		N/A							False	False	False
Total TPH >C6-C40	M	2670	mg/kg	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	< 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	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 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	< 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	< 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	< 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	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 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	< 1.0	< 1.0	< 1.0

Results - Soil

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-36538	21-36538	21-36538	21-36538	21-36538	21-36538	21-36538	21-36538	21-36538
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1302312	1302314	1302315	1302317	1302318	1302319	1302321	1302322	1302323
			Sample Location:		WS10A	WS10A	WS10A	WS07	WS07	WS07	WS08A	WS08A	WS08A
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.30	1.50	2.50	1.50	2.70	3.80	1.50	2.50	3.80
			Date Sampled:		14-Oct-2021	14-Oct-2021	14-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	14-Oct-2021	14-Oct-2021	14-Oct-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 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	< 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	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Dichlorodifluoromethane	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
Tetraethyl Lead	N	2760	µg/kg	10							< 10	< 10	< 10
Tetramethyl Lead	N	2760	µg/kg	10							< 10	< 10	< 10
Chloromethane	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
Vinyl Chloride	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
Bromomethane	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
Chloroethane	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
Trichlorofluoromethane	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
1,1-Dichloroethene	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
Trans 1,2-Dichloroethene	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
1,1-Dichloroethane	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
cis 1,2-Dichloroethene	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
Bromochloromethane	N	2760	µg/kg	0.50							< 0.50	< 0.50	< 0.50
Trichloromethane	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
1,1,1-Trichloroethane	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
Tetrachloromethane	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
1,1-Dichloropropene	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
Benzene	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
Trichloroethene	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
1,2-Dichloropropane	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
Dibromomethane	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
Bromodichloromethane	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
cis-1,3-Dichloropropene	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
Toluene	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
1,1,2-Trichloroethane	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
Tetrachloroethene	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
1,3-Dichloropropane	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
Dibromochloromethane	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
1,2-Dibromoethane	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
Chlorobenzene	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
1,1,1,2-Tetrachloroethane	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20

Results - Soil

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-36538	21-36538	21-36538	21-36538	21-36538	21-36538	21-36538	21-36538	21-36538
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1302312	1302314	1302315	1302317	1302318	1302319	1302321	1302322	1302323
			Sample Location:		WS10A	WS10A	WS10A	WS07	WS07	WS07	WS08A	WS08A	WS08A
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.30	1.50	2.50	1.50	2.70	3.80	1.50	2.50	3.80
			Date Sampled:		14-Oct-2021	14-Oct-2021	14-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	14-Oct-2021	14-Oct-2021	14-Oct-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Ethylbenzene	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
Tribromomethane	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
Isopropylbenzene	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
Bromobenzene	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
1,2,3-Trichloropropane	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
N-Propylbenzene	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
2-Chlorotoluene	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
1,3,5-Trimethylbenzene	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
4-Chlorotoluene	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
Tert-Butylbenzene	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
1,2,4-Trimethylbenzene	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
Sec-Butylbenzene	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
1,3-Dichlorobenzene	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
4-Isopropyltoluene	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
1,4-Dichlorobenzene	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
N-Butylbenzene	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
1,2-Dichlorobenzene	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
1,2,4-Trichlorobenzene	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
Hexachlorobutadiene	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
1,2,3-Trichlorobenzene	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
Methyl Tert-Butyl Ether	N	2760	µg/kg	0.20							< 0.20	< 0.20	< 0.20
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Phenol	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
2-Chlorophenol	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Bis-(2-Chloroethyl)Ether	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
1,3-Dichlorobenzene	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
1,4-Dichlorobenzene	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
1,2-Dichlorobenzene	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
2-Methylphenol	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Bis(2-Chloroisopropyl)Ether	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Hexachloroethane	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050

Results - Soil

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-36538	21-36538	21-36538	21-36538	21-36538	21-36538	21-36538	21-36538	21-36538
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1302312	1302314	1302315	1302317	1302318	1302319	1302321	1302322	1302323
			Sample Location:		WS10A	WS10A	WS10A	WS07	WS07	WS07	WS08A	WS08A	WS08A
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.30	1.50	2.50	1.50	2.70	3.80	1.50	2.50	3.80
			Date Sampled:		14-Oct-2021	14-Oct-2021	14-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	14-Oct-2021	14-Oct-2021	14-Oct-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
N-Nitrosodi-n-propylamine	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
4-Methylphenol	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Nitrobenzene	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Isophorone	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
2-Nitrophenol	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
2,4-Dimethylphenol	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Bis(2-Chloroethoxy)Methane	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
2,4-Dichlorophenol	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
1,2,4-Trichlorobenzene	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Naphthalene	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
4-Chloroaniline	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Hexachlorobutadiene	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
4-Chloro-3-Methylphenol	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
2-Methylnaphthalene	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Hexachlorocyclopentadiene	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
2,4,6-Trichlorophenol	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
2,4,5-Trichlorophenol	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
2-Chloronaphthalene	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
2-Nitroaniline	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Acenaphthylene	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Dimethylphthalate	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
2,6-Dinitrotoluene	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Acenaphthene	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
3-Nitroaniline	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Dibenzofuran	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
4-Chlorophenylphenylether	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
2,4-Dinitrotoluene	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Fluorene	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Diethyl Phthalate	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
4-Nitroaniline	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Azobenzene	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
4-Bromophenylphenyl Ether	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Hexachlorobenzene	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Pentachlorophenol	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Phenanthrene	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Anthracene	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Carbazole	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Di-N-Butyl Phthalate	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050

Results - Soil

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-36538	21-36538	21-36538	21-36538	21-36538	21-36538	21-36538	21-36538	21-36538
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1302312	1302314	1302315	1302317	1302318	1302319	1302321	1302322	1302323
			Sample Location:		WS10A	WS10A	WS10A	WS07	WS07	WS07	WS08A	WS08A	WS08A
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.30	1.50	2.50	1.50	2.70	3.80	1.50	2.50	3.80
			Date Sampled:		14-Oct-2021	14-Oct-2021	14-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	14-Oct-2021	14-Oct-2021	14-Oct-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Fluoranthene	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Pyrene	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Butylbenzyl Phthalate	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Benzo[a]anthracene	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Chrysene	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Di-N-Octyl Phthalate	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Benzo[b]fluoranthene	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Benzo[k]fluoranthene	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Benzo[a]pyrene	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Indeno(1,2,3-c,d)Pyrene	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Dibenz(a,h)Anthracene	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Benzo[g,h,i]perylene	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
4-Nitrophenol	N	2790	mg/kg	0.050							< 0.050	< 0.050	< 0.050
Naphthalene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 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	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	1.7	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.40	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	M	2800	mg/kg	0.10	0.13	0.49	0.33	2.3	0.26	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	M	2800	mg/kg	0.10	0.12	0.42	0.26	1.8	0.23	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	M	2800	mg/kg	0.10	< 0.10	0.22	0.22	1.3	0.12	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	M	2800	mg/kg	0.10	< 0.10	0.20	0.19	1.1	0.12	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	< 0.10	0.36	0.24	1.8	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	< 0.10	0.12	0.15	0.65	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	< 0.10	0.23	0.19	1.3	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	0.22	0.98	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	0.11	0.31	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	< 0.10	< 0.10	0.15	0.83	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	< 2.0	2.0	2.1	15	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
PCB 28	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010

Results - Soil

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-36538	21-36538	21-36538	21-36538	21-36538	21-36538	21-36538	21-36538	21-36538
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1302312	1302314	1302315	1302317	1302318	1302319	1302321	1302322	1302323
			Sample Location:		WS10A	WS10A	WS10A	WS07	WS07	WS07	WS08A	WS08A	WS08A
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.30	1.50	2.50	1.50	2.70	3.80	1.50	2.50	3.80
			Date Sampled:		14-Oct-2021	14-Oct-2021	14-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	14-Oct-2021	14-Oct-2021	14-Oct-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
SVOC TIC	N	2790	mg/kg	N/A							None Detected	None Detected	None Detected
VOC TIC	N	2760	µg/kg	N/A							None Detected	None Detected	None Detected

Results - Soil

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-36538	21-36538	21-36538	21-36538	21-36538	21-36538
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1302324	1302327	1302328	1302329	1302330	1302331
			Sample Location:		WS08	WS12	WS06	WS18	WS18	WS18
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.80	1.30	1.50	0.20	0.80	1.80
			Date Sampled:		12-Oct-2021	14-Oct-2021	12-Oct-2021	14-Oct-2021	14-Oct-2021	14-Oct-2021
			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	9.7	18	24	7.7	13	8.6
Chromatogram (TPH)	N			N/A	See Attached					
pH	M	2010		4.0	8.8	8.5	7.8	9.9	8.3	8.7
Arsenic	M	2450	mg/kg	1.0	12	10	56	14	23	13
Barium	M	2450	mg/kg	10	120	71	210	67	110	120
Cadmium	M	2450	mg/kg	0.10	0.72	0.29	0.14	0.22	0.18	0.86
Molybdenum	M	2450	mg/kg	2.0	< 2.0	< 2.0	5.0	< 2.0	2.4	< 2.0
Antimony	N	2450	mg/kg	2.0	< 2.0	< 2.0	4.1	< 2.0	4.6	2.3
Copper	M	2450	mg/kg	0.50	74	56	89	85	80	50
Mercury	M	2450	mg/kg	0.10	0.27	1.3	< 0.10	0.25	1.2	0.15
Nickel	M	2450	mg/kg	0.50	24	25	100	27	15	26
Lead	M	2450	mg/kg	0.50	140	140	29	120	320	85
Selenium	M	2450	mg/kg	0.20	0.21	0.37	< 0.20	< 0.20	0.26	< 0.20
Zinc	M	2450	mg/kg	0.50	130	100	57	120	92	170
Chromium (Trivalent)	N	2490	mg/kg	1.0	19	24	21	20	11	19
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
LOI	M	2610	%	0.10	6.6	5.5	7.2	3.3	9.9	3.7
Total Organic Carbon	M	2625	%	0.20	5.9	3.0	4.0	1.3	7.4	2.0
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	4100	< 10	< 10	< 10	180	< 10
Diesel Present	N	2670		N/A	True					
Total TPH >C6-C40	M	2670	mg/kg	10	8300					
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	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	270	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	1200	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	1700	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	880	< 1.0	< 1.0	< 1.0	180	< 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	4100	< 5.0	< 5.0	< 5.0	180	< 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	42	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	71	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	910	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	890	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Results - Soil

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-36538	21-36538	21-36538	21-36538	21-36538	21-36538
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1302324	1302327	1302328	1302329	1302330	1302331
			Sample Location:		WS08	WS12	WS06	WS18	WS18	WS18
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.80	1.30	1.50	0.20	0.80	1.80
			Date Sampled:		12-Oct-2021	14-Oct-2021	12-Oct-2021	14-Oct-2021	14-Oct-2021	14-Oct-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	340	< 1.0	< 1.0	290	350	< 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	2200	< 5.0	< 5.0	290	350	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	6300	< 10	< 10	290	540	< 10
Dichlorodifluoromethane	N	2760	µg/kg	0.20	< 0.20					
Tetraethyl Lead	N	2760	µg/kg	10	< 10					
Tetramethyl Lead	N	2760	µg/kg	10	< 10					
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	0.50					
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 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	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 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					
1,1,1,2-Tetrachloroethane	N	2760	µg/kg	0.20	< 0.20					

Results - Soil

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-36538	21-36538	21-36538	21-36538	21-36538	21-36538
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1302324	1302327	1302328	1302329	1302330	1302331
			Sample Location:		WS08	WS12	WS06	WS18	WS18	WS18
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.80	1.30	1.50	0.20	0.80	1.80
			Date Sampled:		12-Oct-2021	14-Oct-2021	12-Oct-2021	14-Oct-2021	14-Oct-2021	14-Oct-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Ethylbenzene	N	2760	µg/kg	0.20	0.70					
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.3
m & p-Xylene	N	2760	µg/kg	0.20	< 0.20					
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	11
o-Xylene	N	2760	µg/kg	0.20	< 0.20					
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 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	4.0					
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	4.7					
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	14					
Sec-Butylbenzene	N	2760	µg/kg	0.20	19					
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	7.4					
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					
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
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					
Hexachloroethane	N	2790	mg/kg	0.050	< 0.050					

Results - Soil

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-36538	21-36538	21-36538	21-36538	21-36538	21-36538
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1302324	1302327	1302328	1302329	1302330	1302331
			Sample Location:		WS08	WS12	WS06	WS18	WS18	WS18
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.80	1.30	1.50	0.20	0.80	1.80
			Date Sampled:		12-Oct-2021	14-Oct-2021	12-Oct-2021	14-Oct-2021	14-Oct-2021	14-Oct-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
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	0.47					
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	2.4					
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	< 0.050					
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	0.41					
3-Nitroaniline	N	2790	mg/kg	0.050	< 0.050					
Dibenzofuran	N	2790	mg/kg	0.050	0.51					
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	0.74					
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	2.9					
Anthracene	N	2790	mg/kg	0.050	1.2					
Carbazole	N	2790	mg/kg	0.050	0.32					
Di-N-Butyl Phthalate	N	2790	mg/kg	0.050	< 0.050					

Results - Soil

Project: P21206 Tedcastles

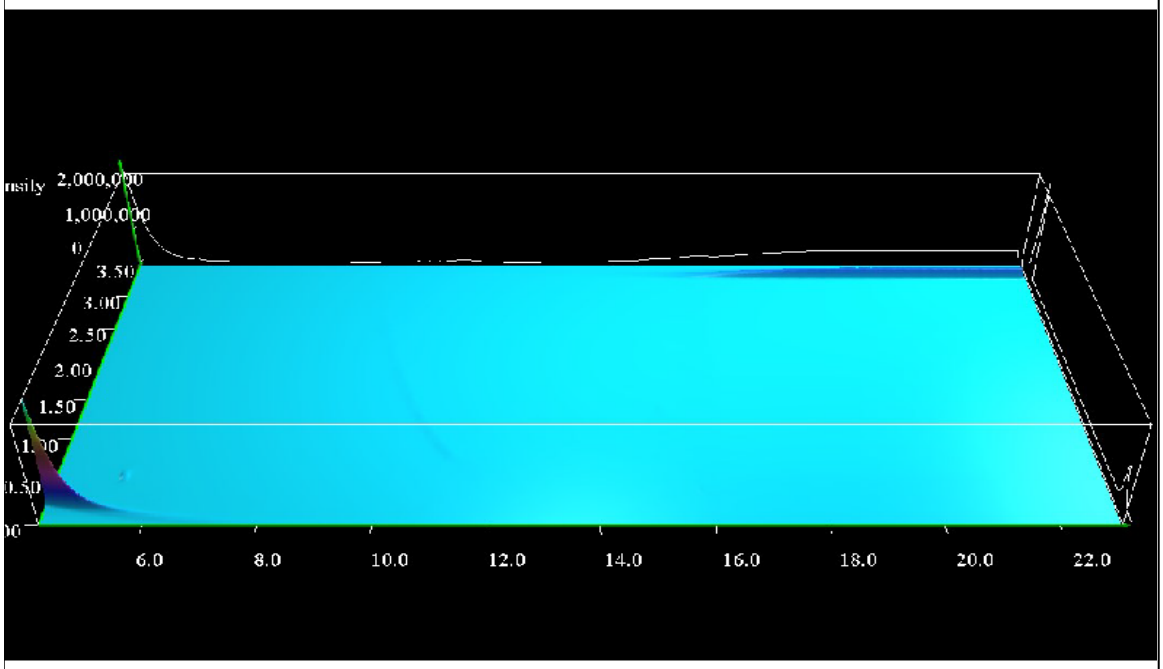
Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-36538	21-36538	21-36538	21-36538	21-36538	21-36538
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1302324	1302327	1302328	1302329	1302330	1302331
			Sample Location:		WS08	WS12	WS06	WS18	WS18	WS18
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.80	1.30	1.50	0.20	0.80	1.80
			Date Sampled:		12-Oct-2021	14-Oct-2021	12-Oct-2021	14-Oct-2021	14-Oct-2021	14-Oct-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Fluoranthene	N	2790	mg/kg	0.050	4.6					
Pyrene	N	2790	mg/kg	0.050	4.4					
Butylbenzyl Phthalate	N	2790	mg/kg	0.050	< 0.050					
Benzo[a]anthracene	N	2790	mg/kg	0.050	2.4					
Chrysene	N	2790	mg/kg	0.050	2.2					
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.050	1.2					
Di-N-Octyl Phthalate	N	2790	mg/kg	0.050	< 0.050					
Benzo[b]fluoranthene	N	2790	mg/kg	0.050	2.9					
Benzo[k]fluoranthene	N	2790	mg/kg	0.050	0.79					
Benzo[a]pyrene	N	2790	mg/kg	0.050	2.1					
Indeno(1,2,3-c,d)Pyrene	N	2790	mg/kg	0.050	1.5					
Dibenz(a,h)Anthracene	N	2790	mg/kg	0.050	0.28					
Benzo[g,h,i]perylene	N	2790	mg/kg	0.050	1.9					
4-Nitrophenol	N	2790	mg/kg	0.050	< 0.050					
Naphthalene	M	2800	mg/kg	0.10	1.2	0.19	< 0.10	< 0.10	2.2	0.31
Acenaphthylene	N	2800	mg/kg	0.10	0.24	< 0.10	< 0.10	< 0.10	0.32	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	0.76	< 0.10	< 0.10	< 0.10	0.62	0.26
Fluorene	M	2800	mg/kg	0.10	1.5	0.16	< 0.10	< 0.10	1.2	0.29
Phenanthrene	M	2800	mg/kg	0.10	4.2	0.68	0.20	0.39	5.6	2.2
Anthracene	M	2800	mg/kg	0.10	0.61	0.24	< 0.10	0.15	1.3	0.62
Fluoranthene	M	2800	mg/kg	0.10	5.4	1.3	0.33	0.53	4.8	6.6
Pyrene	M	2800	mg/kg	0.10	4.7	1.1	0.40	0.50	3.3	5.7
Benzo[a]anthracene	M	2800	mg/kg	0.10	2.7	0.86	0.12	0.40	2.0	3.1
Chrysene	M	2800	mg/kg	0.10	2.4	0.77	0.11	0.43	2.1	3.4
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	3.7	0.71	< 0.10	0.57	2.1	4.8
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	1.3	0.20	< 0.10	0.31	0.80	1.6
Benzo[a]pyrene	M	2800	mg/kg	0.10	2.8	0.76	< 0.10	0.41	1.3	3.7
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	2.3	0.66	< 0.10	1.0	1.1	3.0
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	0.42	0.16	< 0.10	1.1	0.49	0.59
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	1.7	0.50	< 0.10	0.75	0.92	2.9
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	36	8.3	< 2.0	6.5	30	39
PCB 28	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010

Results - Soil

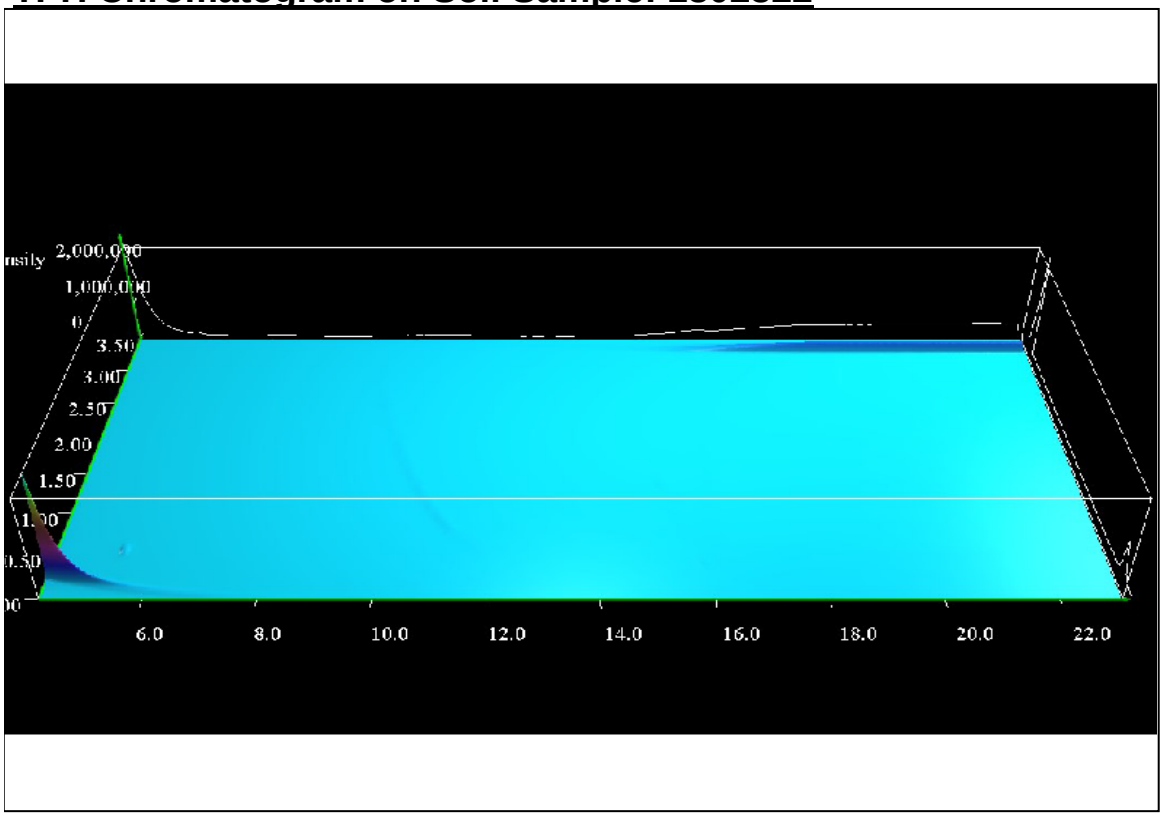
Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-36538	21-36538	21-36538	21-36538	21-36538	21-36538
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1302324	1302327	1302328	1302329	1302330	1302331
			Sample Location:		WS08	WS12	WS06	WS18	WS18	WS18
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.80	1.30	1.50	0.20	0.80	1.80
			Date Sampled:		12-Oct-2021	14-Oct-2021	12-Oct-2021	14-Oct-2021	14-Oct-2021	14-Oct-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
SVOC TIC	N	2790	mg/kg	N/A	None Detected					
VOC TIC	N	2760	µg/kg	N/A	None Detected					

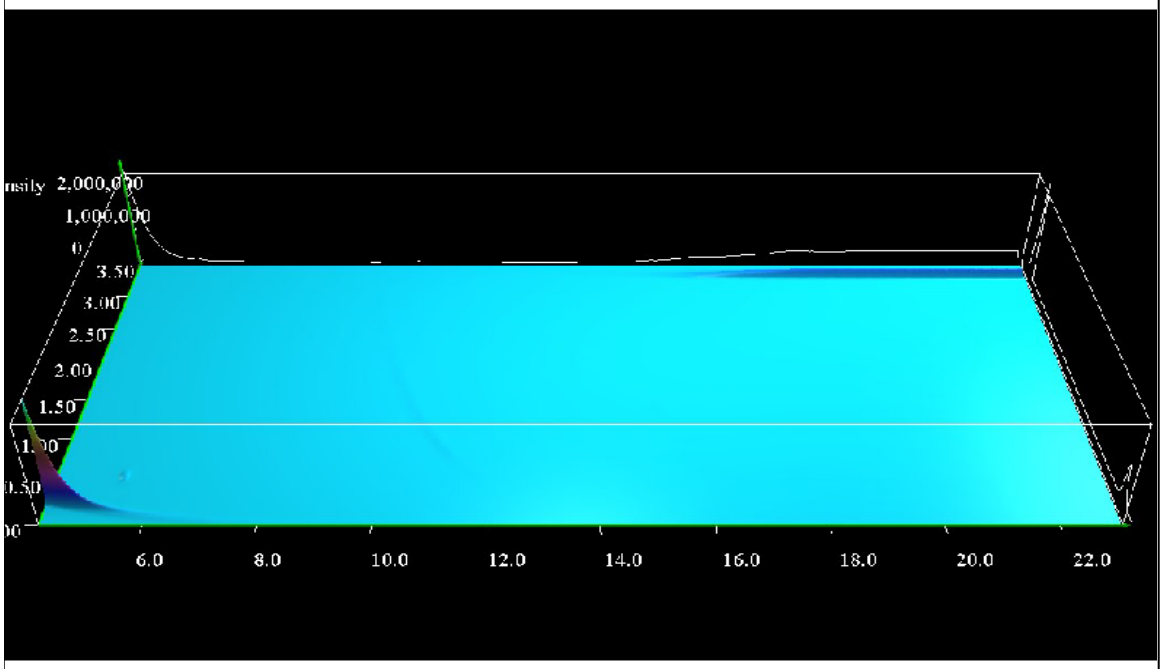
TPH Chromatogram on Soil Sample: 1302321



TPH Chromatogram on Soil Sample: 1302322



TPH Chromatogram on Soil Sample: 1302323



TPH Chromatogram on Soil Sample: 1302324

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TPH Interpretation

Job	Sample	Matrix	Location	Sample Ref	Sample ID	Sample Depth (m)	Gasoline / Diesel Present	TPH Interpretation
21-36538	1302321	S	WS08A			1.50	No	N/A
21-36538	1302322	S	WS08A			2.50	No	N/A
21-36538	1302323	S	WS08A			3.80	No	N/A
21-36538	1302324	S	WS08			0.80	Yes	Diesel

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity 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.
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).
1460	Mercury low-level in Waters by AFS	Mercury	Atomic Fluorescence Spectrometry, with collimated UV source, wavelength 253.7 nm.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
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
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
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
2730	Organo-Leads	Organo-Leads	Solvent extraction / GCMS 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

Test Methods

SOP	Title	Parameters included	Method summary
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
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
640	Characterisation of Waste (Leaching C10)	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 Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	21-36396-1		
Initial Date of Issue:	29-Oct-2021		
Client	Priority Geotechnical Ltd		
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland		
Contact(s):	Colette Kelly		
Project	P21206 Tedcastles Site		
Quotation No.:	Q21-24611	**Date Received:**	19-Oct-2021
Order No.:	14093	**Date Instructed:**	21-Oct-2021
No. of Samples:	10		
Turnaround (Wkdays):	5	**Results Due:**	27-Oct-2021
Date Approved:	29-Oct-2021		
Approved By:			
Details:	Glynn Harvey, Technical Manager		

Results - Leachate

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd					**Chemtest Job No.:**	21-36396	21-36396	21-36396	21-36396	21-36396	21-36396	21-36396	21-36396
Quotation No.: Q21-24611					**Chemtest Sample ID.:**	1301444	1301445	1301447	1301448	1301449	1301450	1301451	1301453
					Sample Location:	WS03	WS03	WS01	WS07	WS12	WS02	WS02	WS02
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.50	1.50	0.90	0.40	0.40	0.20	0.80	1.50
					Date Sampled:	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**								
Total Dissolved Solids	N	1020	10:1	mg/l	1.0	91	98	180	1000	120	78	1500	190
Chloride	U	1220	10:1	mg/l	1.0	1.6	1.6	4.1	< 1.0	< 1.0	< 1.0	2.2	3.1
Fluoride	U	1220	10:1	mg/l	0.050	0.21	1.1	0.51	0.21	0.15	0.20	0.20	0.78
Sulphate	U	1220	10:1	mg/l	1.0	13	16	50	910	12	8.8	1500	36
Arsenic (Dissolved)	U	1455	10:1	mg/l	0.0002	0.0022	0.0099	0.0005	0.0023	0.0008	0.0014	0.0017	0.017
Barium (Dissolved)	U	1455	10:1	mg/l	0.005	0.007	0.020	0.049	0.028	0.005	0.013	0.026	0.017
Cadmium (Dissolved)	U	1455	10:1	mg/l	0.00011	< 0.00011	< 0.00011	0.00050	0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011
Chromium (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Copper (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0034	0.0017	0.0019	0.0044	0.0022	0.0029	0.0025	0.0013
Molybdenum (Dissolved)	U	1455	10:1	mg/l	0.0002	0.0085	0.0031	0.0039	0.010	0.0023	0.0039	0.0081	0.0038
Nickel (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	0.0013	0.0010	0.0023	0.0006	< 0.0005	0.0013	< 0.0005
Lead (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0006	< 0.0005	0.0009	< 0.0005	0.0008	0.0005	< 0.0005	< 0.0005
Antimony (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0012	0.0038	0.0015	0.0061	0.0009	0.0010	0.0030	0.0012
Selenium (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0006	0.0016	0.0008	0.0010	< 0.0005	0.0006	0.0006	0.0008
Zinc (Dissolved)	U	1455	10:1	mg/l	0.002	< 0.003	< 0.003	0.38	0.012	< 0.003	< 0.003	0.006	< 0.003
Mercury Low Level	U	1460	10:1	mg/l	0.000010	0.00046	0.00038	0.00042	0.00039	0.00035	0.00040	0.00035	0.00038
Dissolved Organic Carbon	U	1610	10:1	mg/l	2.0	37	7.9	71	9.4	33	55	11	4.7
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030

Results - Leachate

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd					**Chemtest Job No.:**	21-36396	21-36396
Quotation No.: Q21-24611					**Chemtest Sample ID.:**	1301454	1301455
					Sample Location:	WS06	WS06
					Sample Type:	SOIL	SOIL
					Top Depth (m):	0.40	2.50
					Date Sampled:	12-Oct-2021	12-Oct-2021
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**		
Total Dissolved Solids	N	1020	10:1	mg/l	1.0	220	98
Chloride	U	1220	10:1	mg/l	1.0	< 1.0	1.3
Fluoride	U	1220	10:1	mg/l	0.050	1.7	0.15
Sulphate	U	1220	10:1	mg/l	1.0	110	24
Arsenic (Dissolved)	U	1455	10:1	mg/l	0.0002	0.0026	0.013
Barium (Dissolved)	U	1455	10:1	mg/l	0.005	0.013	0.020
Cadmium (Dissolved)	U	1455	10:1	mg/l	0.00011	< 0.00011	< 0.00011
Chromium (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	< 0.0005
Copper (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0030	0.0012
Molybdenum (Dissolved)	U	1455	10:1	mg/l	0.0002	0.0055	0.0027
Nickel (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0005	< 0.0005
Lead (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	< 0.0005
Antimony (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0022	0.0023
Selenium (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	0.0053
Zinc (Dissolved)	U	1455	10:1	mg/l	0.002	< 0.003	< 0.003
Mercury Low Level	U	1460	10:1	mg/l	0.000010	0.00043	0.00034
Dissolved Organic Carbon	U	1610	10:1	mg/l	2.0	6.4	4.5
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-36396	21-36396	21-36396	21-36396	21-36396	21-36396	21-36396	21-36396	21-36396
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1301444	1301445	1301447	1301448	1301449	1301450	1301451	1301453	1301454
			Sample Location:		WS03	WS03	WS01	WS07	WS12	WS02	WS02	WS02	WS06
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	1.50	0.90	0.40	0.40	0.20	0.80	1.50	0.40
			Date Sampled:		12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192		N/A	-	-	-	-	-	Fibres/Clumps	Fibres/Clumps	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	Chrysotile	Chrysotile	No Asbestos Detected	No Asbestos Detected
Asbestos by Gravimetry	U	2192	%	0.001						0.001	0.002		
Total Asbestos	U	2192	%	0.001						0.001	0.002		
Moisture	N	2030	%	0.020	5.7	44	33	9.5	8.9	8.9	12	31	9.3
pH	M	2010		4.0	8.8	8.6	8.2	8.0	8.3	8.0	8.0	8.8	8.3
Arsenic	M	2450	mg/kg	1.0	9.3	50	17	11	13	15	16	27	21
Barium	M	2450	mg/kg	10	76	280	1400	78	230	370	91	140	140
Cadmium	M	2450	mg/kg	0.10	0.26	0.55	< 0.10	0.71	0.67	0.62	0.35	0.24	0.79
Molybdenum	M	2450	mg/kg	2.0	< 2.0	4.0	6.2	< 2.0	< 2.0	< 2.0	2.6	2.8	4.2
Antimony	N	2450	mg/kg	2.0	4.8	7.6	44	2.3	3.0	2.5	2.6	2.5	3.4
Copper	M	2450	mg/kg	0.50	65	96	240	20	31	40	41	64	67
Mercury	M	2450	mg/kg	0.10	0.18	< 0.10	0.41	0.71	0.27	0.42	0.44	< 0.10	2.5
Nickel	M	2450	mg/kg	0.50	40	100	42	15	19	21	18	46	31
Lead	M	2450	mg/kg	0.50	64	69	830	83	91	120	120	32	160
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	2.3	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	140	210	< 0.50	270	170	200	120	63	120
Chromium (Trivalent)	N	2490	mg/kg	1.0	12	17	17	8.1	11	14	17	11	51
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
LOI	M	2610	%	0.10	2.4	9.3	21	3.7	5.6	4.5	4.9	11	7.0
Total Organic Carbon	M	2625	%	0.20	1.4	7.3	9.0	4.4	7.0	1.9	1.8	1.9	8.7
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10	< 10	< 10	< 10	15	60	< 10	< 10	53
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 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	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	7.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	15	53	< 1.0	< 1.0	53
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 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	15	60	< 5.0	< 5.0	53
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 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	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 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	38	< 1.0	56
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	140	< 1.0	< 1.0	< 1.0	84	410	28	< 1.0	600

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-36396	21-36396	21-36396	21-36396	21-36396	21-36396	21-36396	21-36396	21-36396
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1301444	1301445	1301447	1301448	1301449	1301450	1301451	1301453	1301454
			Sample Location:		WS03	WS03	WS01	WS07	WS12	WS02	WS02	WS02	WS06
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	1.50	0.90	0.40	0.40	0.20	0.80	1.50	0.40
			Date Sampled:		12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	13	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	140	< 5.0	< 5.0	< 5.0	97	410	66	< 5.0	650
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	140	< 10	< 10	< 10	110	470	66	< 10	710
Dichlorodifluoromethane	N	2760	µg/kg	0.20						< 0.20	< 0.20		
Chloromethane	N	2760	µg/kg	0.20						< 0.20	< 0.20		
Vinyl Chloride	N	2760	µg/kg	0.20						< 0.20	< 0.20		
Bromomethane	N	2760	µg/kg	0.20						< 0.20	< 0.20		
Chloroethane	N	2760	µg/kg	0.20						< 0.20	< 0.20		
Trichlorofluoromethane	N	2760	µg/kg	0.20						< 0.20	< 0.20		
1,1-Dichloroethene	N	2760	µg/kg	0.20						< 0.20	< 0.20		
Trans 1,2-Dichloroethene	N	2760	µg/kg	0.20						< 0.20	< 0.20		
1,1-Dichloroethane	N	2760	µg/kg	0.20						< 0.20	< 0.20		
cis 1,2-Dichloroethene	N	2760	µg/kg	0.20						< 0.20	< 0.20		
Bromochloromethane	N	2760	µg/kg	0.50						< 0.50	< 0.50		
Trichloromethane	N	2760	µg/kg	0.20						< 0.20	< 0.20		
1,1,1-Trichloroethane	N	2760	µg/kg	0.20						< 0.20	< 0.20		
Tetrachloromethane	N	2760	µg/kg	0.20						< 0.20	< 0.20		
1,1-Dichloropropene	N	2760	µg/kg	0.20						< 0.20	< 0.20		
Benzene	N	2760	µg/kg	0.20						< 0.20	4.3		
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	9.2	< 1.0	< 1.0	< 1.0	4.4	< 1.0	< 1.0
1,2-Dichloroethane	N	2760	µg/kg	0.20						< 0.20	< 0.20		
Trichloroethene	N	2760	µg/kg	0.20						< 0.20	< 0.20		
1,2-Dichloropropane	N	2760	µg/kg	0.20						< 0.20	< 0.20		
Dibromomethane	N	2760	µg/kg	0.20						< 0.20	< 0.20		
Bromodichloromethane	N	2760	µg/kg	0.20						< 0.20	< 0.20		
cis-1,3-Dichloropropene	N	2760	µg/kg	0.20						< 0.20	< 0.20		
Toluene	N	2760	µg/kg	0.20						< 0.20	3.9		
Toluene	M	2760	µg/kg	1.0	1.2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	3.9	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	0.20						< 0.20	< 0.20		
1,1,2-Trichloroethane	N	2760	µg/kg	0.20						< 0.20	< 0.20		
Tetrachloroethene	N	2760	µg/kg	0.20						< 0.20	< 0.20		
1,3-Dichloropropane	N	2760	µg/kg	0.20						< 0.20	< 0.20		
Dibromochloromethane	N	2760	µg/kg	0.20						< 0.20	< 0.20		
1,2-Dibromoethane	N	2760	µg/kg	0.20						< 0.20	< 0.20		
Chlorobenzene	N	2760	µg/kg	0.20						< 0.20	< 0.20		
1,1,1,2-Tetrachloroethane	N	2760	µg/kg	0.20						< 0.20	< 0.20		
Ethylbenzene	N	2760	µg/kg	0.20						< 0.20	7.1		
Ethylbenzene	M	2760	µg/kg	1.0	1.5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	7.1	< 1.0	< 1.0
m & p-Xylene	N	2760	µg/kg	0.20						< 0.20	1.8		

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-36396	21-36396	21-36396	21-36396	21-36396	21-36396	21-36396	21-36396	21-36396
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1301444	1301445	1301447	1301448	1301449	1301450	1301451	1301453	1301454
			Sample Location:		WS03	WS03	WS01	WS07	WS12	WS02	WS02	WS02	WS06
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	1.50	0.90	0.40	0.40	0.20	0.80	1.50	0.40
			Date Sampled:		12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
m & p-Xylene	M	2760	µg/kg	1.0	3.8	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	3.7	< 1.0	< 1.0
o-Xylene	N	2760	µg/kg	0.20						< 0.20	1.4		
o-Xylene	M	2760	µg/kg	1.0	1.7	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.3	< 1.0	< 1.0
Styrene	N	2760	µg/kg	0.20						< 0.20	< 0.20		
Tribromomethane	N	2760	µg/kg	0.20						< 0.20	< 0.20		
Isopropylbenzene	N	2760	µg/kg	0.20						< 0.20	< 0.20		
Bromobenzene	N	2760	µg/kg	0.20						< 0.20	< 0.20		
1,2,3-Trichloropropane	N	2760	µg/kg	0.20						< 0.20	< 0.20		
N-Propylbenzene	N	2760	µg/kg	0.20						< 0.20	< 0.20		
2-Chlorotoluene	N	2760	µg/kg	0.20						< 0.20	< 0.20		
1,3,5-Trimethylbenzene	N	2760	µg/kg	0.20						< 0.20	< 0.20		
4-Chlorotoluene	N	2760	µg/kg	0.20						< 0.20	< 0.20		
Tert-Butylbenzene	N	2760	µg/kg	0.20						< 0.20	< 0.20		
1,2,4-Trimethylbenzene	N	2760	µg/kg	0.20						< 0.20	< 0.20		
Sec-Butylbenzene	N	2760	µg/kg	0.20						< 0.20	< 0.20		
1,3-Dichlorobenzene	N	2760	µg/kg	0.20						< 0.20	< 0.20		
4-Isopropyltoluene	N	2760	µg/kg	0.20						< 0.20	0.98		
1,4-Dichlorobenzene	N	2760	µg/kg	0.20						< 0.20	< 0.20		
N-Butylbenzene	N	2760	µg/kg	0.20						< 0.20	< 0.20		
1,2-Dichlorobenzene	N	2760	µg/kg	0.20						< 0.20	< 0.20		
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	0.20						< 0.20	< 0.20		
1,2,4-Trichlorobenzene	N	2760	µg/kg	0.20						< 0.20	< 0.20		
Hexachlorobutadiene	N	2760	µg/kg	0.20						< 0.20	< 0.20		
1,2,3-Trichlorobenzene	N	2760	µg/kg	0.20						< 0.20	< 0.20		
Methyl Tert-Butyl Ether	N	2760	µg/kg	0.20						< 0.20	< 0.20		
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	2790	mg/kg	0.050						< 0.050	< 0.050		
Phenol	N	2790	mg/kg	0.050						< 0.050	< 0.050		
2-Chlorophenol	N	2790	mg/kg	0.050						< 0.050	< 0.050		
Bis-(2-Chloroethyl)Ether	N	2790	mg/kg	0.050						< 0.050	< 0.050		
1,3-Dichlorobenzene	N	2790	mg/kg	0.050						< 0.050	< 0.050		
1,4-Dichlorobenzene	N	2790	mg/kg	0.050						< 0.050	< 0.050		
1,2-Dichlorobenzene	N	2790	mg/kg	0.050						< 0.050	< 0.050		
2-Methylphenol	N	2790	mg/kg	0.050						< 0.050	< 0.050		
Bis(2-Chloroisopropyl)Ether	N	2790	mg/kg	0.050						< 0.050	< 0.050		
Hexachloroethane	N	2790	mg/kg	0.050						< 0.050	< 0.050		
N-Nitrosodi-n-propylamine	N	2790	mg/kg	0.050						< 0.050	< 0.050		
4-Methylphenol	N	2790	mg/kg	0.050						< 0.050	< 0.050		
Nitrobenzene	N	2790	mg/kg	0.050						< 0.050	< 0.050		

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-36396	21-36396	21-36396	21-36396	21-36396	21-36396	21-36396	21-36396	21-36396
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1301444	1301445	1301447	1301448	1301449	1301450	1301451	1301453	1301454
			Sample Location:		WS03	WS03	WS01	WS07	WS12	WS02	WS02	WS02	WS06
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	1.50	0.90	0.40	0.40	0.20	0.80	1.50	0.40
			Date Sampled:		12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Isophorone	N	2790	mg/kg	0.050						< 0.050	< 0.050		
2-Nitrophenol	N	2790	mg/kg	0.050						< 0.050	< 0.050		
2,4-Dimethylphenol	N	2790	mg/kg	0.050						< 0.050	< 0.050		
Bis(2-Chloroethoxy)Methane	N	2790	mg/kg	0.050						< 0.050	< 0.050		
2,4-Dichlorophenol	N	2790	mg/kg	0.050						< 0.050	< 0.050		
1,2,4-Trichlorobenzene	N	2790	mg/kg	0.050						< 0.050	< 0.050		
Naphthalene	N	2790	mg/kg	0.050						0.13	0.71		
4-Chloroaniline	N	2790	mg/kg	0.050						< 0.050	< 0.050		
Hexachlorobutadiene	N	2790	mg/kg	0.050						< 0.050	< 0.050		
4-Chloro-3-Methylphenol	N	2790	mg/kg	0.050						< 0.050	< 0.050		
2-Methylnaphthalene	N	2790	mg/kg	0.050						< 0.050	0.26		
Hexachlorocyclopentadiene	N	2790	mg/kg	0.050						< 0.050	< 0.050		
2,4,6-Trichlorophenol	N	2790	mg/kg	0.050						< 0.050	< 0.050		
2,4,5-Trichlorophenol	N	2790	mg/kg	0.050						< 0.050	< 0.050		
2-Chloronaphthalene	N	2790	mg/kg	0.050						< 0.050	< 0.050		
2-Nitroaniline	N	2790	mg/kg	0.050						< 0.050	< 0.050		
Acenaphthylene	N	2790	mg/kg	0.050						0.088	0.66		
Dimethylphthalate	N	2790	mg/kg	0.050						< 0.050	< 0.050		
2,6-Dinitrotoluene	N	2790	mg/kg	0.050						< 0.050	< 0.050		
Acenaphthene	N	2790	mg/kg	0.050						< 0.050	0.49		
3-Nitroaniline	N	2790	mg/kg	0.050						< 0.050	< 0.050		
Dibenzofuran	N	2790	mg/kg	0.050						< 0.050	0.54		
4-Chlorophenylphenylether	N	2790	mg/kg	0.050						< 0.050	< 0.050		
2,4-Dinitrotoluene	N	2790	mg/kg	0.050						< 0.050	< 0.050		
Fluorene	N	2790	mg/kg	0.050						< 0.050	0.97		
Diethyl Phthalate	N	2790	mg/kg	0.050						< 0.050	< 0.050		
4-Nitroaniline	N	2790	mg/kg	0.050						< 0.050	< 0.050		
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.050						< 0.050	< 0.050		
Azobenzene	N	2790	mg/kg	0.050						< 0.050	< 0.050		
4-Bromophenylphenyl Ether	N	2790	mg/kg	0.050						< 0.050	< 0.050		
Hexachlorobenzene	N	2790	mg/kg	0.050						< 0.050	< 0.050		
Pentachlorophenol	N	2790	mg/kg	0.050						< 0.050	< 0.050		
Phenanthrene	N	2790	mg/kg	0.050						0.27	8.1		
Anthracene	N	2790	mg/kg	0.050						0.29	1.5		
Carbazole	N	2790	mg/kg	0.050						0.11	0.62		
Di-N-Butyl Phthalate	N	2790	mg/kg	0.050						< 0.050	< 0.050		
Fluoranthene	N	2790	mg/kg	0.050						2.1	11		
Pyrene	N	2790	mg/kg	0.050						1.7	12		
Butylbenzyl Phthalate	N	2790	mg/kg	0.050						< 0.050	< 0.050		

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-36396	21-36396	21-36396	21-36396	21-36396	21-36396	21-36396	21-36396	21-36396
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1301444	1301445	1301447	1301448	1301449	1301450	1301451	1301453	1301454
			Sample Location:		WS03	WS03	WS01	WS07	WS12	WS02	WS02	WS02	WS06
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	1.50	0.90	0.40	0.40	0.20	0.80	1.50	0.40
			Date Sampled:		12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Benzo[a]anthracene	N	2790	mg/kg	0.050						1.3	5.2		
Chrysene	N	2790	mg/kg	0.050						1.3	5.9		
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.050						< 0.050	< 0.050		
Di-N-Octyl Phthalate	N	2790	mg/kg	0.050						< 0.050	< 0.050		
Benzo[b]fluoranthene	N	2790	mg/kg	0.050						1.6	6.2		
Benzo[k]fluoranthene	N	2790	mg/kg	0.050						0.64	2.9		
Benzo[a]pyrene	N	2790	mg/kg	0.050						1.2	4.8		
Indeno(1,2,3-c,d)Pyrene	N	2790	mg/kg	0.050						0.69	2.8		
Dibenz(a,h)Anthracene	N	2790	mg/kg	0.050						0.25	0.80		
Benzo[g,h,i]perylene	N	2790	mg/kg	0.050						0.72	2.3		
4-Nitrophenol	N	2790	mg/kg	0.050						< 0.050	< 0.050		
Naphthalene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.53	< 0.10	1.3	0.70	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.17	< 0.10	0.37	0.34	< 0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.11	< 0.10	1.2	0.40	< 0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.24	< 0.10	1.6	0.73	< 0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	0.32	< 0.10	< 0.10	1.7	1.5	14	8.6	< 0.10	0.40
Anthracene	M	2800	mg/kg	0.10	0.12	< 0.10	< 0.10	0.35	0.48	2.8	2.3	< 0.10	0.25
Fluoranthene	M	2800	mg/kg	0.10	0.48	< 0.10	< 0.10	2.4	3.2	14	11	0.41	1.4
Pyrene	M	2800	mg/kg	0.10	0.41	< 0.10	< 0.10	2.7	2.8	13	11	0.52	2.4
Benzo[a]anthracene	M	2800	mg/kg	0.10	0.28	< 0.10	< 0.10	1.1	1.7	5.3	4.5	0.17	1.1
Chrysene	M	2800	mg/kg	0.10	0.29	< 0.10	< 0.10	1.3	1.6	5.1	4.4	0.21	1.4
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	0.49	< 0.10	< 0.10	1.4	2.1	6.7	5.2	0.48	4.6
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	0.34	< 0.10	< 0.10	0.50	0.84	2.3	2.0	0.18	1.5
Benzo[a]pyrene	M	2800	mg/kg	0.10	0.37	< 0.10	< 0.10	1.0	1.7	5.0	4.0	0.40	4.0
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	2.5	< 0.10	< 0.10	0.83	1.4	3.1	2.7	0.40	3.2
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	2.6	< 0.10	< 0.10	0.31	0.31	0.63	0.53	0.11	0.59
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	1.8	< 0.10	< 0.10	0.99	1.1	3.1	2.5	0.33	3.0
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	10	< 2.0	< 2.0	16	19	80	61	3.2	24
PCB 28	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
SVOC TIC	N	2790	mg/kg	N/A						None Detected	See Below		

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-36396	21-36396	21-36396	21-36396	21-36396	21-36396	21-36396	21-36396	21-36396
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1301444	1301445	1301447	1301448	1301449	1301450	1301451	1301453	1301454
			Sample Location:		WS03	WS03	WS01	WS07	WS12	WS02	WS02	WS02	WS06
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	1.50	0.90	0.40	0.40	0.20	0.80	1.50	0.40
			Date Sampled:		12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
(SVOC TIC) Dibenzothiophene	N	2790	mg/kg	N/A							0.71		
VOC TIC	N	2760	µg/kg	N/A						None Detected	None Detected		

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-36396
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1301455
			Sample Location:		WS06
			Sample Type:		SOIL
			Top Depth (m):		2.50
			Date Sampled:		12-Oct-2021
			Asbestos Lab:		DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected
Asbestos by Gravimetry	U	2192	%	0.001	
Total Asbestos	U	2192	%	0.001	
Moisture	N	2030	%	0.020	52
pH	M	2010		4.0	8.3
Arsenic	M	2450	mg/kg	1.0	28
Barium	M	2450	mg/kg	10	130
Cadmium	M	2450	mg/kg	0.10	0.20
Molybdenum	M	2450	mg/kg	2.0	< 2.0
Antimony	N	2450	mg/kg	2.0	2.2
Copper	M	2450	mg/kg	0.50	33
Mercury	M	2450	mg/kg	0.10	0.16
Nickel	M	2450	mg/kg	0.50	32
Lead	M	2450	mg/kg	0.50	33
Selenium	M	2450	mg/kg	0.20	0.27
Zinc	M	2450	mg/kg	0.50	63
Chromium (Trivalent)	N	2490	mg/kg	1.0	12
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
LOI	M	2610	%	0.10	15
Total Organic Carbon	M	2625	%	0.20	10
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 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	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C21-C35	M	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 TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-36396
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1301455
			Sample Location:		WS06
			Sample Type:		SOIL
			Top Depth (m):		2.50
			Date Sampled:		12-Oct-2021
			Asbestos Lab:		DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
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	
Chloromethane	N	2760	µg/kg	0.20	
Vinyl Chloride	N	2760	µg/kg	0.20	
Bromomethane	N	2760	µg/kg	0.20	
Chloroethane	N	2760	µg/kg	0.20	
Trichlorofluoromethane	N	2760	µg/kg	0.20	
1,1-Dichloroethene	N	2760	µg/kg	0.20	
Trans 1,2-Dichloroethene	N	2760	µg/kg	0.20	
1,1-Dichloroethane	N	2760	µg/kg	0.20	
cis 1,2-Dichloroethene	N	2760	µg/kg	0.20	
Bromochloromethane	N	2760	µg/kg	0.50	
Trichloromethane	N	2760	µg/kg	0.20	
1,1,1-Trichloroethane	N	2760	µg/kg	0.20	
Tetrachloromethane	N	2760	µg/kg	0.20	
1,1-Dichloropropene	N	2760	µg/kg	0.20	
Benzene	N	2760	µg/kg	0.20	
Benzene	M	2760	µg/kg	1.0	< 1.0
1,2-Dichloroethane	N	2760	µg/kg	0.20	
Trichloroethene	N	2760	µg/kg	0.20	
1,2-Dichloropropane	N	2760	µg/kg	0.20	
Dibromomethane	N	2760	µg/kg	0.20	
Bromodichloromethane	N	2760	µg/kg	0.20	
cis-1,3-Dichloropropene	N	2760	µg/kg	0.20	
Toluene	N	2760	µg/kg	0.20	
Toluene	M	2760	µg/kg	1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	0.20	
1,1,2-Trichloroethane	N	2760	µg/kg	0.20	
Tetrachloroethene	N	2760	µg/kg	0.20	
1,3-Dichloropropane	N	2760	µg/kg	0.20	
Dibromochloromethane	N	2760	µg/kg	0.20	
1,2-Dibromoethane	N	2760	µg/kg	0.20	
Chlorobenzene	N	2760	µg/kg	0.20	
1,1,1,2-Tetrachloroethane	N	2760	µg/kg	0.20	
Ethylbenzene	N	2760	µg/kg	0.20	
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0
m & p-Xylene	N	2760	µg/kg	0.20	

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-36396
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1301455
			Sample Location:		WS06
			Sample Type:		SOIL
			Top Depth (m):		2.50
			Date Sampled:		12-Oct-2021
			Asbestos Lab:		DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0
o-Xylene	N	2760	µg/kg	0.20	
o-Xylene	M	2760	µg/kg	1.0	< 1.0
Styrene	N	2760	µg/kg	0.20	
Tribromomethane	N	2760	µg/kg	0.20	
Isopropylbenzene	N	2760	µg/kg	0.20	
Bromobenzene	N	2760	µg/kg	0.20	
1,2,3-Trichloropropane	N	2760	µg/kg	0.20	
N-Propylbenzene	N	2760	µg/kg	0.20	
2-Chlorotoluene	N	2760	µg/kg	0.20	
1,3,5-Trimethylbenzene	N	2760	µg/kg	0.20	
4-Chlorotoluene	N	2760	µg/kg	0.20	
Tert-Butylbenzene	N	2760	µg/kg	0.20	
1,2,4-Trimethylbenzene	N	2760	µg/kg	0.20	
Sec-Butylbenzene	N	2760	µg/kg	0.20	
1,3-Dichlorobenzene	N	2760	µg/kg	0.20	
4-Isopropyltoluene	N	2760	µg/kg	0.20	
1,4-Dichlorobenzene	N	2760	µg/kg	0.20	
N-Butylbenzene	N	2760	µg/kg	0.20	
1,2-Dichlorobenzene	N	2760	µg/kg	0.20	
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	0.20	
1,2,4-Trichlorobenzene	N	2760	µg/kg	0.20	
Hexachlorobutadiene	N	2760	µg/kg	0.20	
1,2,3-Trichlorobenzene	N	2760	µg/kg	0.20	
Methyl Tert-Butyl Ether	N	2760	µg/kg	0.20	
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0
N-Nitrosodimethylamine	N	2790	mg/kg	0.050	
Phenol	N	2790	mg/kg	0.050	
2-Chlorophenol	N	2790	mg/kg	0.050	
Bis-(2-Chloroethyl)Ether	N	2790	mg/kg	0.050	
1,3-Dichlorobenzene	N	2790	mg/kg	0.050	
1,4-Dichlorobenzene	N	2790	mg/kg	0.050	
1,2-Dichlorobenzene	N	2790	mg/kg	0.050	
2-Methylphenol	N	2790	mg/kg	0.050	
Bis(2-Chloroisopropyl)Ether	N	2790	mg/kg	0.050	
Hexachloroethane	N	2790	mg/kg	0.050	
N-Nitrosodi-n-propylamine	N	2790	mg/kg	0.050	
4-Methylphenol	N	2790	mg/kg	0.050	
Nitrobenzene	N	2790	mg/kg	0.050	

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-36396
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1301455
			Sample Location:		WS06
			Sample Type:		SOIL
			Top Depth (m):		2.50
			Date Sampled:		12-Oct-2021
			Asbestos Lab:		DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Isophorone	N	2790	mg/kg	0.050	
2-Nitrophenol	N	2790	mg/kg	0.050	
2,4-Dimethylphenol	N	2790	mg/kg	0.050	
Bis(2-Chloroethoxy)Methane	N	2790	mg/kg	0.050	
2,4-Dichlorophenol	N	2790	mg/kg	0.050	
1,2,4-Trichlorobenzene	N	2790	mg/kg	0.050	
Naphthalene	N	2790	mg/kg	0.050	
4-Chloroaniline	N	2790	mg/kg	0.050	
Hexachlorobutadiene	N	2790	mg/kg	0.050	
4-Chloro-3-Methylphenol	N	2790	mg/kg	0.050	
2-Methylnaphthalene	N	2790	mg/kg	0.050	
Hexachlorocyclopentadiene	N	2790	mg/kg	0.050	
2,4,6-Trichlorophenol	N	2790	mg/kg	0.050	
2,4,5-Trichlorophenol	N	2790	mg/kg	0.050	
2-Chloronaphthalene	N	2790	mg/kg	0.050	
2-Nitroaniline	N	2790	mg/kg	0.050	
Acenaphthylene	N	2790	mg/kg	0.050	
Dimethylphthalate	N	2790	mg/kg	0.050	
2,6-Dinitrotoluene	N	2790	mg/kg	0.050	
Acenaphthene	N	2790	mg/kg	0.050	
3-Nitroaniline	N	2790	mg/kg	0.050	
Dibenzofuran	N	2790	mg/kg	0.050	
4-Chlorophenylphenylether	N	2790	mg/kg	0.050	
2,4-Dinitrotoluene	N	2790	mg/kg	0.050	
Fluorene	N	2790	mg/kg	0.050	
Diethyl Phthalate	N	2790	mg/kg	0.050	
4-Nitroaniline	N	2790	mg/kg	0.050	
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.050	
Azobenzene	N	2790	mg/kg	0.050	
4-Bromophenylphenyl Ether	N	2790	mg/kg	0.050	
Hexachlorobenzene	N	2790	mg/kg	0.050	
Pentachlorophenol	N	2790	mg/kg	0.050	
Phenanthrene	N	2790	mg/kg	0.050	
Anthracene	N	2790	mg/kg	0.050	
Carbazole	N	2790	mg/kg	0.050	
Di-N-Butyl Phthalate	N	2790	mg/kg	0.050	
Fluoranthene	N	2790	mg/kg	0.050	
Pyrene	N	2790	mg/kg	0.050	
Butylbenzyl Phthalate	N	2790	mg/kg	0.050	

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-36396
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1301455
			Sample Location:		WS06
			Sample Type:		SOIL
			Top Depth (m):		2.50
			Date Sampled:		12-Oct-2021
			Asbestos Lab:		DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Benzo[a]anthracene	N	2790	mg/kg	0.050	
Chrysene	N	2790	mg/kg	0.050	
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.050	
Di-N-Octyl Phthalate	N	2790	mg/kg	0.050	
Benzo[b]fluoranthene	N	2790	mg/kg	0.050	
Benzo[k]fluoranthene	N	2790	mg/kg	0.050	
Benzo[a]pyrene	N	2790	mg/kg	0.050	
Indeno(1,2,3-c,d)Pyrene	N	2790	mg/kg	0.050	
Dibenz(a,h)Anthracene	N	2790	mg/kg	0.050	
Benzo[g,h,i]perylene	N	2790	mg/kg	0.050	
4-Nitrophenol	N	2790	mg/kg	0.050	
Naphthalene	M	2800	mg/kg	0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	< 0.10
Anthracene	M	2800	mg/kg	0.10	< 0.10
Fluoranthene	M	2800	mg/kg	0.10	< 0.10
Pyrene	M	2800	mg/kg	0.10	< 0.10
Benzo[a]anthracene	M	2800	mg/kg	0.10	< 0.10
Chrysene	M	2800	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	< 0.10
Coronene	N	2800	mg/kg	0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	< 2.0
PCB 28	U	2815	mg/kg	0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	< 0.10
SVOC TIC	N	2790	mg/kg	N/A	

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-36396
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1301455
			Sample Location:		WS06
			Sample Type:		SOIL
			Top Depth (m):		2.50
			Date Sampled:		12-Oct-2021
			Asbestos Lab:		DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
(SVOC TIC) Dibenzothiophene	N	2790	mg/kg	N/A	
VOC TIC	N	2760	µg/kg	N/A	

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity 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.
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).
1460	Mercury low-level in Waters by AFS	Mercury	Atomic Fluorescence Spectrometry, with collimated UV source, wavelength 253.7 nm.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
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
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
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

Test Methods

SOP	Title	Parameters included	Method summary
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
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
640	Characterisation of Waste (Leaching C10)	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 Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	21-35236-1		
Initial Date of Issue:	18-Oct-2021		
Client	Priority Geotechnical Ltd		
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland		
Contact(s):	Colette Kelly		
Project	P21206 Tedcastles Site		
Quotation No.:	Q21-24611	**Date Received:**	11-Oct-2021
Order No.:	14093	**Date Instructed:**	12-Oct-2021
No. of Samples:	5		
Turnaround (Wkdays):	5	**Results Due:**	18-Oct-2021
Date Approved:	18-Oct-2021		
Approved By:			
Details:	Glynn Harvey, Technical Manager		

Results - Leachate

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd					**Chemtest Job No.:**	21-35236	21-35236	21-35236	21-35236	21-35236
Quotation No.: Q21-24611					**Chemtest Sample ID.:**	1295875	1295876	1295877	1295880	1295881
					Sample Location:	WS21	WS21	WS19	WS09	WS17
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.70	1.20	1.80	1.00	3.50
					Date Sampled:	29-Sep-2021	29-Sep-2021	01-Oct-2021	30-Sep-2021	01-Oct-2021
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**					
Total Dissolved Solids	N	1020	10:1	mg/l	1.0	140	780	1700	320	190
Chloride	U	1220	10:1	mg/l	1.0	< 1.0	< 1.0	< 1.0	16	5.7
Fluoride	U	1220	10:1	mg/l	0.050	2.4	3.0	2.5	4.5	0.28
Sulphate	U	1220	10:1	mg/l	1.0	47	650	17	110	55
Arsenic (Dissolved)	U	1455	10:1	mg/l	0.0002	0.0093	0.0044	0.0005	0.0063	0.0009
Barium (Dissolved)	U	1455	10:1	mg/l	0.005	0.022	0.021	0.021	0.021	< 0.005
Cadmium (Dissolved)	U	1455	10:1	mg/l	0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011
Chromium (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Copper (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0067	0.0033	0.0031	0.010	0.0011
Molybdenum (Dissolved)	U	1455	10:1	mg/l	0.0002	0.017	0.016	0.0051	0.017	0.028
Nickel (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0023	0.0053	0.0009	0.0027	0.0006
Lead (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0055	< 0.0005	0.0006	0.025	< 0.0005
Antimony (Dissolved)	U	1455	10:1	mg/l	0.0005	0.017	0.011	0.0010	0.0074	0.0005
Selenium (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0021	0.0011	0.0005	0.0009	< 0.0005
Zinc (Dissolved)	U	1455	10:1	mg/l	0.002	0.025	0.022	0.004	0.013	0.003
Mercury Low Level	U	1460	10:1	mg/l	0.000010	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Dissolved Organic Carbon	U	1610	10:1	mg/l	2.0	18	5.0	8.8	50	14
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-35236	21-35236	21-35236	21-35236	21-35236
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1295875	1295876	1295877	1295880	1295881
			Sample Location:		WS21	WS21	WS19	WS09	WS17
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.70	1.20	1.80	1.00	3.50
			Date Sampled:		29-Sep-2021	29-Sep-2021	01-Oct-2021	30-Sep-2021	01-Oct-2021
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
ACM Type	U	2192		N/A	Fibres/Clumps	Fibres/Clumps	-	-	
Asbestos Identification	U	2192		N/A	Chrysotile	Amosite Chrysotile	No Asbestos Detected	No Asbestos Detected	
Asbestos by Gravimetry	U	2192	%	0.001	0.001	0.050			
Total Asbestos	U	2192	%	0.001	0.001	0.050			
Moisture	N	2030	%	0.020	9.9	11	15	15	22
pH	M	2010		4.0	8.0	8.3	8.3	8.3	8.1
Arsenic	M	2450	mg/kg	1.0	16	18	11	12	16
Barium	M	2450	mg/kg	10	230	140	67	83	< 10
Cadmium	M	2450	mg/kg	0.10	0.96	0.65	0.22	0.64	0.10
Molybdenum	M	2450	mg/kg	2.0	< 2.0	2.4	< 2.0	< 2.0	< 2.0
Antimony	N	2450	mg/kg	2.0	10	3.1	< 2.0	< 2.0	< 2.0
Copper	M	2450	mg/kg	0.50	90	71	36	54	16
Mercury	M	2450	mg/kg	0.10	0.58	0.54	0.24	0.28	< 0.10
Nickel	M	2450	mg/kg	0.50	33	28	22	20	13
Lead	M	2450	mg/kg	0.50	260	320	88	200	37
Selenium	M	2450	mg/kg	0.20	< 0.20	0.27	< 0.20	0.24	0.24
Zinc	M	2450	mg/kg	0.50	430	230	99	130	45
Chromium (Trivalent)	N	2490	mg/kg	1.0	21	23	15	14	16
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
LOI	M	2610	%	0.10	7.2	7.7	5.8	12	12
Total Organic Carbon	M	2625	%	0.20	5.2	7.5	2.5	7.8	1.1
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	1000	890	73	65	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	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
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	140	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	1000	750	73	65	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	1000	890	73	65	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	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
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	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
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	470	1400	< 1.0	65	< 1.0

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-35236	21-35236	21-35236	21-35236	21-35236
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1295875	1295876	1295877	1295880	1295881
			Sample Location:		WS21	WS21	WS19	WS09	WS17
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.70	1.20	1.80	1.00	3.50
			Date Sampled:		29-Sep-2021	29-Sep-2021	01-Oct-2021	30-Sep-2021	01-Oct-2021
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	470	1400	< 5.0	65	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	1500	2300	73	130	< 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				2.2	
Benzene	M	2760	µg/kg	1.0	3.4	1.9	< 1.0	2.2	< 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				6.5	
Toluene	M	2760	µg/kg	1.0	4.4	6.3	2.4	6.5	1.5
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	
1,1,1,2-Tetrachloroethane	N	2760	µg/kg	0.20				< 0.20	
Ethylbenzene	N	2760	µg/kg	0.20				< 0.20	
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	2.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	N	2760	µg/kg	0.20				< 0.20	

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-35236	21-35236	21-35236	21-35236	21-35236
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1295875	1295876	1295877	1295880	1295881
			Sample Location:		WS21	WS21	WS19	WS09	WS17
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.70	1.20	1.80	1.00	3.50
			Date Sampled:		29-Sep-2021	29-Sep-2021	01-Oct-2021	30-Sep-2021	01-Oct-2021
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	4.0	< 1.0	< 1.0	< 1.0
o-Xylene	N	2760	µg/kg	0.20				< 0.20	
o-Xylene	M	2760	µg/kg	1.0	< 1.0	1.3	< 1.0	< 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	
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
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	
Hexachloroethane	N	2790	mg/kg	0.050				< 0.050	
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	

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-35236	21-35236	21-35236	21-35236	21-35236
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1295875	1295876	1295877	1295880	1295881
			Sample Location:		WS21	WS21	WS19	WS09	WS17
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.70	1.20	1.80	1.00	3.50
			Date Sampled:		29-Sep-2021	29-Sep-2021	01-Oct-2021	30-Sep-2021	01-Oct-2021
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
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				0.22	
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				0.15	
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				0.059	
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				0.11	
3-Nitroaniline	N	2790	mg/kg	0.050				< 0.050	
Dibenzofuran	N	2790	mg/kg	0.050				0.13	
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				0.19	
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				1.3	
Anthracene	N	2790	mg/kg	0.050				0.38	
Carbazole	N	2790	mg/kg	0.050				0.13	
Di-N-Butyl Phthalate	N	2790	mg/kg	0.050				< 0.050	
Fluoranthene	N	2790	mg/kg	0.050				2.1	
Pyrene	N	2790	mg/kg	0.050				1.9	
Butylbenzyl Phthalate	N	2790	mg/kg	0.050				< 0.050	

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-35236	21-35236	21-35236	21-35236	21-35236
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1295875	1295876	1295877	1295880	1295881
			Sample Location:		WS21	WS21	WS19	WS09	WS17
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.70	1.20	1.80	1.00	3.50
			Date Sampled:		29-Sep-2021	29-Sep-2021	01-Oct-2021	30-Sep-2021	01-Oct-2021
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Benzo[a]anthracene	N	2790	mg/kg	0.050				0.93	
Chrysene	N	2790	mg/kg	0.050				0.94	
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				1.4	
Benzo[k]fluoranthene	N	2790	mg/kg	0.050				0.34	
Benzo[a]pyrene	N	2790	mg/kg	0.050				0.98	
Indeno(1,2,3-c,d)Pyrene	N	2790	mg/kg	0.050				0.57	
Dibenz(a,h)Anthracene	N	2790	mg/kg	0.050				0.083	
Benzo[g,h,i]perylene	N	2790	mg/kg	0.050				0.58	
4-Nitrophenol	N	2790	mg/kg	0.050				< 0.050	
Naphthalene	M	2800	mg/kg	0.10	2.7	1.2	< 0.10	0.39	0.18
Acenaphthylene	N	2800	mg/kg	0.10	0.31	0.43	< 0.10	0.16	0.13
Acenaphthene	M	2800	mg/kg	0.10	0.43	0.16	< 0.10	0.30	0.10
Fluorene	M	2800	mg/kg	0.10	0.31	0.32	< 0.10	0.40	0.29
Phenanthrene	M	2800	mg/kg	0.10	2.9	4.0	1.3	3.0	0.68
Anthracene	M	2800	mg/kg	0.10	0.91	0.87	0.36	0.73	0.30
Fluoranthene	M	2800	mg/kg	0.10	7.3	7.9	3.3	4.2	0.57
Pyrene	M	2800	mg/kg	0.10	6.4	6.5	2.9	3.6	0.36
Benzo[a]anthracene	M	2800	mg/kg	0.10	3.5	3.6	1.8	1.9	0.21
Chrysene	M	2800	mg/kg	0.10	3.8	3.6	1.9	2.1	0.15
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	5.2	5.3	3.0	2.7	< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	1.8	1.9	1.1	0.99	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	4.0	4.0	2.2	2.1	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	2.8	2.9	1.8	1.4	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	0.77	0.68	0.37	0.37	< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	2.8	2.7	1.7	1.6	< 0.10
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	46	46	22	26	3.0
PCB 28	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
SVOC TIC	N	2790	mg/kg	N/A				None Detected	

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-35236	21-35236	21-35236	21-35236	21-35236
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1295875	1295876	1295877	1295880	1295881
			Sample Location:		WS21	WS21	WS19	WS09	WS17
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.70	1.20	1.80	1.00	3.50
			Date Sampled:		29-Sep-2021	29-Sep-2021	01-Oct-2021	30-Sep-2021	01-Oct-2021
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
VOC TIC	N	2760	µg/kg	N/A				None Detected	

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity 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.
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).
1460	Mercury low-level in Waters by AFS	Mercury	Atomic Fluorescence Spectrometry, with collimated UV source, wavelength 253.7 nm.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
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
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
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

Test Methods

SOP	Title	Parameters included	Method summary
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
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
640	Characterisation of Waste (Leaching C10)	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 Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Amended Report

Report No.:	21-35233-3		
Initial Date of Issue:	30-Nov-2021	**Date of Re-Issue:**	30-Nov-2021
Client	Priority Geotechnical Ltd		
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland		
Contact(s):	Colette Kelly		
Project	P21206 Tedcastles Site		
Quotation No.:	Q21-24611	**Date Received:**	11-Oct-2021
Order No.:	14093	**Date Instructed:**	11-Oct-2021
No. of Samples:	15		
Turnaround (Wkdays):	5	**Results Due:**	15-Oct-2021
Date Approved:	30-Nov-2021	**Subcon Results Due:**	01-Nov-2021

Approved By:

Details: Glynn Harvey, Technical Manager

Results - Leachate

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd					**Chemtest Job No.:**	21-35233	21-35233	21-35233	21-35233	21-35233	21-35233	21-35233	21-35233
Quotation No.: Q21-24611					**Chemtest Sample ID.:**	1295843	1295846	1295847	1295849	1295851	1295852	1295854	1295856
					Sample Location:	WS05	WS08	WS13A	WS14A	WS17	WS17	WS20	WS20
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.40	0.60	0.40	0.50	0.60	1.50	2.45	5.20
					Date Sampled:	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**								
Total Dissolved Solids	N	1020	10:1	mg/l	1.0	64	1400	140	280	190	270	200	330
Chloride	U	1220	10:1	mg/l	1.0	2.1	1.0	1.2	2.5	1.1	19	2.0	23
Fluoride	U	1220	10:1	mg/l	0.050	3.0	1.8	0.32	1.5	1.8	0.76	0.34	0.30
Sulphate	U	1220	10:1	mg/l	1.0	7.8	1400	14	110	62	76	65	120
Arsenic (Dissolved)	U	1455	10:1	mg/l	0.0002	0.0017	0.034	0.0006	0.0066	0.0037	0.0035	0.0041	0.0065
Barium (Dissolved)	U	1455	10:1	mg/l	0.005	< 0.005	0.005	0.016	0.016	0.022	0.068	0.012	< 0.005
Cadmium (Dissolved)	U	1455	10:1	mg/l	0.00011	< 0.00011	0.00015	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011
Chromium (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0016	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Copper (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0013	0.0017	0.0009	0.011	0.0023	< 0.0005	0.0011	0.0011
Molybdenum (Dissolved)	U	1455	10:1	mg/l	0.0002	0.0006	0.023	0.0030	0.023	0.017	0.0066	0.075	0.0094
Nickel (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	0.016	< 0.0005	0.0025	0.0017	0.0040	0.0053	0.0010
Lead (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	< 0.0005	< 0.0005	0.0010	0.0011	< 0.0005	0.0006	< 0.0005
Antimony (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	0.011	< 0.0005	0.0075	0.0058	0.0010	0.0047	0.0013
Selenium (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	0.0013	0.0009	0.0008	< 0.0005	< 0.0005	0.0009	0.0008
Zinc (Dissolved)	U	1455	10:1	mg/l	0.002	< 0.003	0.019	< 0.003	0.006	0.004	0.005	< 0.003	< 0.003
Mercury Low Level	U	1460	10:1	mg/l	0.000010	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Dissolved Organic Carbon	U	1610	10:1	mg/l	2.0	3.7	6.1	7.0	12	9.8	3.9	11	17
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	21-35233	21-35233	21-35233	21-35233	21-35233	21-35233	21-35233	21-35233
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1295843	1295846	1295847	1295849	1295851	1295852	1295854	1295856
				Sample Location:	WS05	WS08	WS13A	WS14A	WS17	WS17	WS20	WS20
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.40	0.60	0.40	0.50	0.60	1.50	2.45	5.20
				Date Sampled:	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021
				Asbestos Lab:	DURHAM	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	No Asbestos Detected	
Asbestos by Gravimetry	U	2192	%	0.001	-	-	-	-	-	-	-	
Total Asbestos	U	2192	%	0.001	-	-	-	-	-	-	-	
Moisture	N	2030	%	0.020	4.8	17	4.3	11	12	4.9	41	40
Chlortoluron	N	1830	mg/kg	1.0		< 1.0				< 1.0		
Diuron	N	1830	mg/kg	1.0		< 1.0				< 1.0		
Isoproturon	N	1830	mg/kg	1.0		< 1.0				< 1.0		
Linuron	N	1830	mg/kg	1.0		< 1.0				< 1.0		
Methabenzthiazuron	N	1830	mg/kg	1.0		< 1.0				< 1.0		
Monuron	N	1830	mg/kg	1.0		< 1.0				< 1.0		
pH	M	2010		4.0	9.4	9.1	9.4	9.7	9.0	8.8	8.7	8.7
Arsenic	M	2450	mg/kg	1.0	6.9	25	10	13	20	21	12	4.2
Barium	M	2450	mg/kg	10	43	120	41	170	160	130	30	< 10
Cadmium	M	2450	mg/kg	0.10	0.69	3.1	0.49	0.39	0.40	0.43	0.43	< 0.10
Molybdenum	M	2450	mg/kg	2.0	< 2.0	4.2	< 2.0	< 2.0	3.3	2.6	5.5	< 2.0
Antimony	N	2450	mg/kg	2.0	< 2.0	2.9	< 2.0	< 2.0	< 2.0	4.5	< 2.0	< 2.0
Copper	M	2450	mg/kg	0.50	58	110	23	160	55	450	24	8.3
Mercury	M	2450	mg/kg	0.10	0.18	0.13	< 0.10	0.38	1.2	0.12	0.12	< 0.10
Nickel	M	2450	mg/kg	0.50	17	17	13	27	34	44	110	13
Lead	M	2450	mg/kg	0.50	43	74	32	240	250	120	36	2.2
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	0.35	< 0.20	< 0.20	< 0.20	0.41	< 0.20
Zinc	M	2450	mg/kg	0.50	66	140	190	150	180	400	120	22
Chromium (Trivalent)	N	2490	mg/kg	1.0	11	240	< 1.0	22	26	43	17	5.0
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
LOI	M	2610	%	0.10	7.6	10	25	8.7	6.3	8.6	6.8	7.0
Total Organic Carbon	M	2625	%	0.20	4.8	3.7	25	3.6	3.1	4.8	8.0	1.6
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	110	380	52	210	800	130	< 10	56
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 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	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	28	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	79	< 1.0	< 1.0	100	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	110	3.5	< 1.0	78	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	110	200	49	210	590	130	< 1.0	56
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	110	380	52	210	800	130	< 5.0	56
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	21-35233	21-35233	21-35233	21-35233	21-35233	21-35233	21-35233	21-35233
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1295843	1295846	1295847	1295849	1295851	1295852	1295854	1295856
				Sample Location:	WS05	WS08	WS13A	WS14A	WS17	WS17	WS20	WS20
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.40	0.60	0.40	0.50	0.60	1.50	2.45	5.20
				Date Sampled:	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	11	11	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	53	< 1.0	42	42	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	32	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	110	< 1.0	5.3	5.4	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	400	85	110	430	620	310	< 1.0	180
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	21
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	400	220	160	440	680	360	< 5.0	200
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	510	610	220	650	1500	500	< 10	260
Dichlorodifluoromethane	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
Chloromethane	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
Vinyl Chloride	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
Bromomethane	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
Chloroethane	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
Trichlorofluoromethane	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
1,1-Dichloroethene	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
Trans 1,2-Dichloroethene	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
1,1-Dichloroethane	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
cis 1,2-Dichloroethene	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
Bromochloromethane	N	2760	µg/kg	0.50			< 0.50		< 0.50	< 0.50		
Trichloromethane	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
1,1,1-Trichloroethane	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
Tetrachloromethane	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
1,1-Dichloropropene	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
Benzene	N	2760	µg/kg	0.20			< 0.20		1.3	3.1		
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
Trichloroethene	N	2760	µg/kg	0.20			< 0.20		< 0.20	15		
1,2-Dichloropropane	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
Dibromomethane	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
Bromodichloromethane	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
cis-1,3-Dichloropropene	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
Toluene	N	2760	µg/kg	0.20			< 0.20		1.3	4.0		
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	2.0	< 1.0	< 1.0	4.8	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
1,1,2-Trichloroethane	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
Tetrachloroethene	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
1,3-Dichloropropane	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
Dibromochloromethane	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	21-35233	21-35233	21-35233	21-35233	21-35233	21-35233	21-35233	21-35233
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1295843	1295846	1295847	1295849	1295851	1295852	1295854	1295856
				Sample Location:	WS05	WS08	WS13A	WS14A	WS17	WS17	WS20	WS20
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.40	0.60	0.40	0.50	0.60	1.50	2.45	5.20
				Date Sampled:	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
1,2-Dibromoethane	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
Chlorobenzene	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
1,1,1,2-Tetrachloroethane	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
Ethylbenzene	N	2760	µg/kg	0.20			< 0.20		< 0.20	1.9		
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.9	< 1.0
m & p-Xylene	N	2760	µg/kg	0.20			< 0.20		< 0.20	3.2		
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	3.3	4.8	< 1.0
o-Xylene	N	2760	µg/kg	0.20			< 0.20		< 0.20	1.6		
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	2.6	< 1.0
Styrene	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
Tribromomethane	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
Isopropylbenzene	N	2760	µg/kg	0.20			< 0.20		1.9	< 0.20		
Bromobenzene	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
1,2,3-Trichloropropane	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
N-Propylbenzene	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
2-Chlorotoluene	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
1,3,5-Trimethylbenzene	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
4-Chlorotoluene	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
Tert-Butylbenzene	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
1,2,4-Trimethylbenzene	N	2760	µg/kg	0.20			< 0.20		6.1	1.3		
Sec-Butylbenzene	N	2760	µg/kg	0.20			< 0.20		4.2	< 0.20		
1,3-Dichlorobenzene	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
4-Isopropyltoluene	N	2760	µg/kg	0.20			< 0.20		6.0	0.39		
1,4-Dichlorobenzene	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
N-Butylbenzene	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
1,2-Dichlorobenzene	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
1,2,4-Trichlorobenzene	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
Hexachlorobutadiene	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
1,2,3-Trichlorobenzene	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
Methyl Tert-Butyl Ether	N	2760	µg/kg	0.20			< 0.20		< 0.20	< 0.20		
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
Phenol	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
2-Chlorophenol	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
Bis-(2-Chloroethyl)Ether	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
1,3-Dichlorobenzene	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
1,4-Dichlorobenzene	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
1,2-Dichlorobenzene	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	21-35233	21-35233	21-35233	21-35233	21-35233	21-35233	21-35233	21-35233
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1295843	1295846	1295847	1295849	1295851	1295852	1295854	1295856
				Sample Location:	WS05	WS08	WS13A	WS14A	WS17	WS17	WS20	WS20
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.40	0.60	0.40	0.50	0.60	1.50	2.45	5.20
				Date Sampled:	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
2-Methylphenol	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
Bis(2-Chloroisopropyl)Ether	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
Hexachloroethane	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
N-Nitrosodi-n-propylamine	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
4-Methylphenol	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
Nitrobenzene	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
Isophorone	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
2-Nitrophenol	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
2,4-Dimethylphenol	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
Bis(2-Chloroethoxy)Methane	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
2,4-Dichlorophenol	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
1,2,4-Trichlorobenzene	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
Naphthalene	N	2790	mg/kg	0.050			0.49		0.56	0.095		
4-Chloroaniline	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
Hexachlorobutadiene	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
4-Chloro-3-Methylphenol	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
2-Methylnaphthalene	N	2790	mg/kg	0.050			0.23		0.67	0.084		
Hexachlorocyclopentadiene	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
2,4,6-Trichlorophenol	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
2,4,5-Trichlorophenol	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
2-Chloronaphthalene	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
2-Nitroaniline	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
Acenaphthylene	N	2790	mg/kg	0.050			0.094		0.35	< 0.050		
Dimethylphthalate	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
2,6-Dinitrotoluene	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
Acenaphthene	N	2790	mg/kg	0.050			0.35		0.61	0.14		
3-Nitroaniline	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
Dibenzofuran	N	2790	mg/kg	0.050			0.28		0.62	0.11		
4-Chlorophenylphenylether	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
2,4-Dinitrotoluene	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
Fluorene	N	2790	mg/kg	0.050			0.46		1.1	0.12		
Diethyl Phthalate	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
4-Nitroaniline	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
Azobenzene	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
4-Bromophenylphenyl Ether	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
Hexachlorobenzene	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
Pentachlorophenol	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
Phenanthrene	N	2790	mg/kg	0.050			3.9		11	1.2		

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	21-35233	21-35233	21-35233	21-35233	21-35233	21-35233	21-35233	21-35233
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1295843	1295846	1295847	1295849	1295851	1295852	1295854	1295856
				Sample Location:	WS05	WS08	WS13A	WS14A	WS17	WS17	WS20	WS20
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.40	0.60	0.40	0.50	0.60	1.50	2.45	5.20
				Date Sampled:	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Anthracene	N	2790	mg/kg	0.050			1.2		1.5	0.23		
Carbazole	N	2790	mg/kg	0.050			0.41		0.41	0.15		
Di-N-Butyl Phthalate	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
Fluoranthene	N	2790	mg/kg	0.050			5.4		13	2.0		
Pyrene	N	2790	mg/kg	0.050			4.9		10	1.8		
Butylbenzyl Phthalate	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
Benzo[a]anthracene	N	2790	mg/kg	0.050			2.4		4.5	0.94		
Chrysene	N	2790	mg/kg	0.050			2.4		5.2	1.0		
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.050			< 0.050		< 0.050	0.96		
Di-N-Octyl Phthalate	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
Benzo[b]fluoranthene	N	2790	mg/kg	0.050			3.1		5.9	1.3		
Benzo[k]fluoranthene	N	2790	mg/kg	0.050			1.2		2.2	0.41		
Benzo[a]pyrene	N	2790	mg/kg	0.050			2.4		4.2	0.96		
Indeno(1,2,3-c,d)Pyrene	N	2790	mg/kg	0.050			1.5		2.2	0.48		
Dibenz(a,h)Anthracene	N	2790	mg/kg	0.050			0.38		0.63	0.12		
Benzo[g,h,i]perylene	N	2790	mg/kg	0.050			1.6		2.2	0.56		
4-Nitrophenol	N	2790	mg/kg	0.050			< 0.050		< 0.050	< 0.050		
Pyrethrin	N	2790	mg/kg	0.50		< 0.50				< 0.50		
Naphthalene	M	2800	mg/kg	0.10	< 0.10	0.36	< 0.10	0.51	0.78	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	0.20	< 0.10	0.11	0.25	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	< 0.10	0.18	< 0.10	0.25	0.40	< 0.10	< 0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10	0.32	< 0.10	0.38	0.51	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	1.3	1.1	1.9	2.0	2.9	2.0	0.67	< 0.10
Anthracene	M	2800	mg/kg	0.10	0.41	0.25	0.24	0.43	0.74	0.36	0.22	< 0.10
Fluoranthene	M	2800	mg/kg	0.10	2.7	2.2	0.55	2.6	5.2	4.6	1.2	< 0.10
Pyrene	M	2800	mg/kg	0.10	2.3	2.5	0.50	2.3	4.5	4.1	0.85	< 0.10
Benzo[a]anthracene	M	2800	mg/kg	0.10	1.2	1.2	0.35	1.1	2.4	2.4	0.64	< 0.10
Chrysene	M	2800	mg/kg	0.10	1.3	1.3	0.42	1.1	2.4	2.5	0.44	< 0.10
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	1.9	2.0	0.47	1.7	3.3	4.0	0.72	< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	0.50	0.76	0.11	0.57	1.2	1.2	0.23	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	1.5	1.5	0.33	1.4	2.8	3.1	0.59	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	0.91	1.3	< 0.10	1.0	1.9	2.1	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	0.22	0.45	< 0.10	0.24	0.44	0.45	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	1.1	1.1	< 0.10	0.92	1.5	2.0	< 0.10	< 0.10
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	15	17	4.9	17	31	29	5.6	< 2.0
PCB 28	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	21-35233	21-35233	21-35233	21-35233	21-35233	21-35233	21-35233	21-35233
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1295843	1295846	1295847	1295849	1295851	1295852	1295854	1295856
				Sample Location:	WS05	WS08	WS13A	WS14A	WS17	WS17	WS20	WS20
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.40	0.60	0.40	0.50	0.60	1.50	2.45	5.20
				Date Sampled:	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
PCB 118	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Atraton	N	2830	mg/kg	0.20		< 0.20				< 0.20		
Prometon	N	2830	mg/kg	0.20		< 0.20				< 0.20		
Simazine	N	2830	mg/kg	0.20		< 0.20				< 0.20		
Atrazine	N	2830	mg/kg	0.20		< 0.20				< 0.20		
Propazine	N	2830	mg/kg	0.20		< 0.20				< 0.20		
Terbuthylazine	N	2830	mg/kg	0.20		< 0.20				< 0.20		
Secbumeton	N	2830	mg/kg	0.20		< 0.20				< 0.20		
Simetryn	N	2830	mg/kg	0.20		< 0.20				< 0.20		
Ametryn	N	2830	mg/kg	0.20		< 0.20				< 0.20		
Prometryn	N	2830	mg/kg	0.20		< 0.20				< 0.20		
Terbutryn	N	2830	mg/kg	0.20		< 0.20				< 0.20		
2,4-D	SN		mg/kg	0.50		< 0.50				< 0.50		
Dichlorprop	SN		mg/kg	0.50		< 0.50				< 0.50		
MCPA	SN		mg/kg	0.50		< 0.50				< 0.50		
MCPB	SN		mg/kg	0.50		< 0.50				< 0.50		
Mecoprop	SN		mg/kg	0.50		< 0.50				< 0.50		
2,4,5-T	SN		mg/kg	0.50		< 0.50				< 0.50		
Cyfluthrin	N	2860	mg/kg	0.50		< 0.50				< 0.50		
Cypermethrin	N	2860	mg/kg	0.50		< 0.50				< 0.50		
Deltamethrin	N	2860	mg/kg	0.50		< 0.50				< 0.50		
Permethrin	N	2790	mg/kg	0.50		< 0.50				< 0.50		
Resmethrin	N	2860	mg/kg	0.50		< 0.50				< 0.50		
Tetramethrin	N	2860	mg/kg	0.50		< 0.50				< 0.50		
Carbetamide (Subcon)	SN		mg/kg	0.1000000		< 0.1000				< 0.1000		
Chlorbufam (Subcon)	SN		mg/kg	0.1000000		< 0.1000				< 0.1000		
Chlorpropham (Subcon)	SN		mg/kg	0.1000000		< 0.1000				< 0.1000		
Ethiofencarb (Subcon)	SN		mg/kg	0.1000000		< 0.1000				< 0.1000		
Phenmedipham (Subcon)	SN		mg/kg	0.1000000		< 0.1000				< 0.1000		

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-35233	21-35233	21-35233	21-35233	21-35233	21-35233	21-35233	21-35233
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1295843	1295846	1295847	1295849	1295851	1295852	1295854	1295856
			Sample Location:		WS05	WS08	WS13A	WS14A	WS17	WS17	WS20	WS20
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.40	0.60	0.40	0.50	0.60	1.50	2.45	5.20
			Date Sampled:		30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021	30-Sep-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Pirimicarb (Subcon)	SN		mg/kg	0.1000000		< 0.1000				< 0.1000		
Propham (Subcon)	SN		mg/kg	0.1000000		< 0.1000				< 0.1000		
SVOC TIC	N	2790	mg/kg	N/A			See Below		None Detected	None Detected		
(SVOC TIC) Dibenzothiophene	N	2790	mg/kg	N/A			4.21					
VOC TIC	N	2760	µg/kg	N/A			None Detected		None Detected	None Detected		

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity 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.
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).
1460	Mercury low-level in Waters by AFS	Mercury	Atomic Fluorescence Spectrometry, with collimated UV source, wavelength 253.7 nm.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1830	Organonitrogen (O-N) Pesticides in Waters by GC-MS	Organonitrogen pesticide representative suite including Triazines etc, plus client specific determinands	Solvent 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
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
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

Test Methods

SOP	Title	Parameters included	Method summary
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
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2830	Organonitrogen (O-N) Pesticides in Soils by GC-MS	Organonitrogen pesticide representative suite including Triazines etc, plus client specific determinands	Dichloromethane extraction / GC-MS
2860	SVOC Low-Level	SVOC Low-Level	GC-MS
640	Characterisation of Waste (Leaching C10)	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 Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	21-35232-1		
Initial Date of Issue:	22-Oct-2021		
Client	Priority Geotechnical Ltd		
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland		
Contact(s):	Colette Kelly		
Project	P21206 Tedcastle Site		
Quotation No.:	Q21-24611	**Date Received:**	11-Oct-2021
Order No.:	14093	**Date Instructed:**	18-Oct-2021
No. of Samples:	4		
Turnaround (Wkdays):	5	**Results Due:**	22-Oct-2021
Date Approved:	22-Oct-2021		
Approved By:			
Details:	Glynn Harvey, Technical Manager		

Results - Leachate

Project: P21206 Tedcastle Site

Client: Priority Geotechnical Ltd					**Chemtest Job No.:**	21-35232	21-35232	21-35232	21-35232
Quotation No.: Q21-24611					**Chemtest Sample ID.:**	1295833	1295835	1295839	1295841
					Sample Location:	WS09	WS14	WS04	WS15
					Sample Type:	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	2.4	1.35	3.7	2.7
					Date Sampled:	06-Oct-2021	06-Oct-2021	05-Oct-2021	05-Oct-2021
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**				
Total Dissolved Solids	N	1020	10:1	mg/l	1.0	130	330	160	160
Chloride	U	1220	10:1	mg/l	1.0	5.7	1.5	1.3	< 1.0
Fluoride	U	1220	10:1	mg/l	0.050	3.6	2.0	0.19	0.32
Sulphate	U	1220	10:1	mg/l	1.0	4.0	140	28	58
Arsenic (Dissolved)	U	1455	10:1	mg/l	0.0002	0.033	0.0045	0.0061	0.012
Barium (Dissolved)	U	1455	10:1	mg/l	0.005	0.020	0.032	< 0.005	0.048
Cadmium (Dissolved)	U	1455	10:1	mg/l	0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011
Chromium (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Copper (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0015	0.0026	0.0014	0.0009
Molybdenum (Dissolved)	U	1455	10:1	mg/l	0.0002	0.0095	0.032	0.018	0.018
Nickel (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0033	0.0035	0.0015	0.0007
Lead (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	0.0015	< 0.0005	0.0006
Antimony (Dissolved)	U	1455	10:1	mg/l	0.0005	0.038	0.011	0.0014	0.039
Selenium (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0023	0.0011	0.0011	< 0.0005
Zinc (Dissolved)	U	1455	10:1	mg/l	0.002	< 0.003	0.004	< 0.003	0.007
Mercury Low Level	U	1460	10:1	mg/l	0.000010	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Dissolved Organic Carbon	U	1610	10:1	mg/l	2.0	4.8	8.9	19	4.2
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030	< 0.030	< 0.030

Results - Soil

Project: P21206 Tedcastle Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-35232	21-35232	21-35232	21-35232
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1295833	1295835	1295839	1295841
			Sample Location:		WS09	WS14	WS04	WS15
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		2.4	1.35	3.7	2.7
			Date Sampled:		06-Oct-2021	06-Oct-2021	05-Oct-2021	05-Oct-2021
			Asbestos Lab:		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
Moisture	N	2030	%	0.020	5.8	0.31	4.4	12
pH	M	2010		4.0	8.5	8.6	8.6	8.3
Arsenic	M	2450	mg/kg	1.0	78	74	16	51
Barium	M	2450	mg/kg	10	190	270	19	420
Cadmium	M	2450	mg/kg	0.10	0.43	0.45	0.20	1.8
Molybdenum	M	2450	mg/kg	2.0	2.5	8.4	2.8	3.6
Antimony	N	2450	mg/kg	2.0	4.1	5.9	< 2.0	7.0
Copper	M	2450	mg/kg	0.50	56	95	33	300
Mercury	M	2450	mg/kg	0.10	< 0.10	0.74	< 0.10	0.22
Nickel	M	2450	mg/kg	0.50	72	170	20	45
Lead	M	2450	mg/kg	0.50	34	140	15	340
Selenium	M	2450	mg/kg	0.20	< 0.20	4.4	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	75	200	80	< 0.50
Chromium (Trivalent)	N	2490	mg/kg	1.0	26	47	21	25
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
LOI	M	2610	%	0.10	23	16	4.8	17
Total Organic Carbon	M	2625	%	0.20	16	12	1.8	12
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10	< 10	< 10	< 10
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	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	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 TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	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
Aromatic TPH >C21-C35	M	2680	mg/kg	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
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0

Results - Soil

Project: P21206 Tedcastle Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-35232	21-35232	21-35232	21-35232
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1295833	1295835	1295839	1295841
			Sample Location:		WS09	WS14	WS04	WS15
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		2.4	1.35	3.7	2.7
			Date Sampled:		06-Oct-2021	06-Oct-2021	05-Oct-2021	05-Oct-2021
			Asbestos Lab:		NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	< 10
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	M	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	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	< 0.10	0.37	< 0.10	< 0.10
Anthracene	M	2800	mg/kg	0.10	< 0.10	0.12	< 0.10	< 0.10
Fluoranthene	M	2800	mg/kg	0.10	< 0.10	0.53	< 0.10	0.48
Pyrene	M	2800	mg/kg	0.10	< 0.10	0.44	< 0.10	0.46
Benzo[a]anthracene	M	2800	mg/kg	0.10	< 0.10	0.11	< 0.10	< 0.10
Chrysene	M	2800	mg/kg	0.10	< 0.10	0.14	< 0.10	< 0.10
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	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	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
PCB 28	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity 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.
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).
1460	Mercury low-level in Waters by AFS	Mercury	Atomic Fluorescence Spectrometry, with collimated UV source, wavelength 253.7 nm.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
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
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
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.

Test Methods

SOP	Title	Parameters included	Method summary
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
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
640	Characterisation of Waste (Leaching C10)	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 Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	21-34348-1		
Initial Date of Issue:	21-Oct-2021		
Client	Priority Geotechnical Ltd		
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland		
Contact(s):	Colette Kelly		
Project	P21206 Tedcastles Site		
Quotation No.:	Q21-24611	**Date Received:**	04-Oct-2021
Order No.:	14093	**Date Instructed:**	06-Oct-2021
No. of Samples:	13		
Turnaround (Wkdays):	5	**Results Due:**	12-Oct-2021
Date Approved:	21-Oct-2021	**Subcon Results Due:**	20-Oct-2021

Approved By:

Details: Glynn Harvey, Technical Manager

Bulk Identification Certificate

Client: Priority Geotechnical Ltd
Site Address:
Date Sampled: 28-Sep-2021
Date Received: 04-Oct-2021

Your Ref.:
Project: P21206 Tedcastles Site
Job Number: 21-34348
No Samples:
Date Reported: 21-Oct-2021

Sample No.	Sample ID	Sample Ref.	Description	Top (m)	Bottom (m)	SOP	Accred.	Laboratory	Material	Result
1291212			TP02	2.30		2185	U	DURHAM	Cement	Chrysotile

The in-house procedure SOP2185 is in accordance with the requirements of Appendix 2 of the Analyst Guide (HSG 248).
The results relate only to items tested as supplied by the client.
Comments and interpretations are beyond the scope of UKAS accreditation.
Samples associated with asbestos in building surveys are retained for six months (HSG 264 refers)

Bulk Identification Certificate

Client: Priority Geotechnical Ltd
Site Address:
Date Sampled: 29-Sep-2021
Date Received: 04-Oct-2021

Your Ref.:
Project: P21206 Tedcastles Site
Job Number: 21-34348
No Samples:
Date Reported: 21-Oct-2021

Sample No.	Sample ID	Sample Ref.	Description	Top (m)	Bottom (m)	SOP	Accred.	Laboratory	Material	Result
1291213			TP04	1.40		2185	U	DURHAM	Cement	No Asbestos Detected

The in-house procedure SOP2185 is in accordance with the requirements of Appendix 2 of the Analyst Guide (HSG 248).
The results relate only to items tested as supplied by the client.
Comments and interpretations are beyond the scope of UKAS accreditation.
Samples associated with asbestos in building surveys are retained for six months (HSG 264 refers)

Results - Leachate

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd					**Chemtest Job No.:**	21-34348	21-34348	21-34348	21-34348	21-34348	21-34348	21-34348	21-34348	21-34348	21-34348
Quotation No.: Q21-24611					**Chemtest Sample ID.:**	1291193	1291194	1291196	1291200	1291201	1291202	1291203	1291204	1291205	1291207
					Sample Location:	TP04	TP04	WS04	WS15	WS19	WS20	WS22	TP06	TP06	WS23
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.50	1.40	0.50	0.50	0.50	0.60	0.50	0.50	1.50	1.40
					Date Sampled:	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**										
Total Dissolved Solids	N	1020	10:1	mg/l	1.0	140	160	100	120	78	64	120	120	110	98
Chloride	U	1220	10:1	mg/l	1.0	1.3	< 1.0	< 1.0	< 1.0	< 1.0	1.1	< 1.0	1.7	< 1.0	< 1.0
Fluoride	U	1220	10:1	mg/l	0.050	0.24	0.36	1.0	0.23	0.23	0.16	0.24	0.18	0.21	0.22
Sulphate	U	1220	10:1	mg/l	1.0	27	61	22	28	7.2	12	25	22	11	15
Arsenic (Dissolved)	U	1455	10:1	mg/l	0.0002	0.0079	0.0045	0.0036	0.0031	0.0017	0.0046	0.0019	0.010	0.012	0.0032
Barium (Dissolved)	U	1455	10:1	mg/l	0.005	0.013	0.020	0.031	0.013	0.008	< 0.005	0.016	0.015	0.008	0.018
Cadmium (Dissolved)	U	1455	10:1	mg/l	0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011
Chromium (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	< 0.0005	< 0.0005	0.0024	< 0.0005	0.0018	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Copper (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0039	0.0030	0.0043	0.0030	0.0022	0.0050	0.0036	0.0024	0.0034	0.0031
Molybdenum (Dissolved)	U	1455	10:1	mg/l	0.0002	0.0093	0.0095	0.0092	0.0069	0.0022	0.0033	0.011	0.022	0.023	0.0054
Nickel (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0012	0.0013	0.0010	0.0006	< 0.0005	< 0.0005	0.0009	0.0011	0.0015	< 0.0005
Lead (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0015	0.0013	0.0077	< 0.0005	0.0005	< 0.0005	< 0.0005	0.0025	0.0021	0.0011
Antimony (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0078	0.0065	0.021	0.0015	0.0010	0.0006	0.0026	0.0079	0.0084	0.0032
Selenium (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	0.0005	0.0006	0.0010	< 0.0005	0.0006	0.0006	0.0006	0.0007	< 0.0005
Zinc (Dissolved)	U	1455	10:1	mg/l	0.002	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
Mercury Low Level	U	1460	10:1	mg/l	0.000010	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Dissolved Organic Carbon	U	1610	10:1	mg/l	2.0	11	9.8	4.5	3.9	4.5	4.7	6.0	6.0	7.2	4.0
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030

Results - Leachate

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**		21-34348
Quotation No.: Q21-24611				**Chemtest Sample ID.:**		1291209
				Sample Location:		WS22A
				Sample Type:		SOIL
				Top Depth (m):		1.90
				Date Sampled:		29-Sep-2021
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
Total Dissolved Solids	N	1020	10:1	mg/l	1.0	110
Chloride	U	1220	10:1	mg/l	1.0	1.1
Fluoride	U	1220	10:1	mg/l	0.050	0.33
Sulphate	U	1220	10:1	mg/l	1.0	29
Arsenic (Dissolved)	U	1455	10:1	mg/l	0.0002	0.0013
Barium (Dissolved)	U	1455	10:1	mg/l	0.005	0.012
Cadmium (Dissolved)	U	1455	10:1	mg/l	0.00011	< 0.00011
Chromium (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005
Copper (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0006
Molybdenum (Dissolved)	U	1455	10:1	mg/l	0.0002	0.0069
Nickel (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0006
Lead (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005
Antimony (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0023
Selenium (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0009
Zinc (Dissolved)	U	1455	10:1	mg/l	0.002	< 0.003
Mercury Low Level	U	1460	10:1	mg/l	0.000010	< 0.00001
Dissolved Organic Carbon	U	1610	10:1	mg/l	2.0	3.9
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	21-34348	21-34348	21-34348	21-34348	21-34348	21-34348	21-34348	21-34348	21-34348
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1291193	1291194	1291196	1291200	1291201	1291202	1291203	1291204	1291205
				Sample Location:	TP04	TP04	WS04	WS15	WS19	WS20	WS22	TP06	TP06
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.50	1.40	0.50	0.50	0.50	0.60	0.50	0.50	1.50
				Date Sampled:	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192		N/A	-	Fibres/Clumps	-	-	Fibres/Clumps	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	Amosite	No Asbestos Detected	No Asbestos Detected	Chrysotile	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Asbestos by Gravimetry	U	2192	%	0.001	-	<0.001	-	-	<0.001	-	-	-	-
Total Asbestos	U	2192	%	0.001	-	<0.001	-	-	<0.001	-	-	-	-
Moisture	N	2030	%	0.020	8.7	10	11	13	8.8	9.2	7.0	10	14
Chlortoluron	N	1830	mg/kg	1.0									
Diuron	N	1830	mg/kg	1.0									
Isoproturon	N	1830	mg/kg	1.0									
Linuron	N	1830	mg/kg	1.0									
Methabenzthiazuron	N	1830	mg/kg	1.0									
Monuron	N	1830	mg/kg	1.0									
pH	M	2010		4.0	8.5	8.1	8.0	9.2	11.7	11.4	10.2	9.2	9.2
Arsenic	M	2450	mg/kg	1.0	11	14	18	8.8	14	6.8	12	18	21
Barium	M	2450	mg/kg	10	130	150	290	110	110	61	88	160	190
Cadmium	M	2450	mg/kg	0.10	0.26	0.43	2.2	0.32	0.47	< 0.10	0.17	0.38	0.38
Molybdenum	M	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Antimony	N	2450	mg/kg	2.0	< 2.0	< 2.0	9.2	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Copper	M	2450	mg/kg	0.50	71	100	310	59	130	51	53	55	74
Mercury	M	2450	mg/kg	0.10	0.28	0.74	0.94	0.47	0.35	0.22	0.16	0.74	0.96
Nickel	M	2450	mg/kg	0.50	27	27	38	28	35	20	20	30	34
Lead	M	2450	mg/kg	0.50	160	240	450	96	190	100	54	230	230
Selenium	M	2450	mg/kg	0.20	0.23	0.29	0.73	0.27	0.29	< 0.20	< 0.20	0.27	0.36
Zinc	M	2450	mg/kg	0.50	150	240	410	220	1000	110	110	170	170
Chromium (Trivalent)	N	2490	mg/kg	1.0	16	16	36	19	20	13	15	17	28
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
LOI	M	2610	%	0.10	8.8	9.1	6.8	6.7	12	6.9	4.1	7.2	6.8
Total Organic Carbon	M	2625	%	0.20	7.1	7.4	5.4	5.2	5.8	4.2	1.3	3.4	5.4
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	6100	3700	< 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	< 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	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	25	6.6	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	220	130	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	990	570	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	1600	920	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	3200	2000	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	130	130	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	6100	3700	< 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	< 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	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	37	24	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	21-34348	21-34348	21-34348	21-34348	21-34348	21-34348	21-34348	21-34348	21-34348
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1291193	1291194	1291196	1291200	1291201	1291202	1291203	1291204	1291205
				Sample Location:	TP04	TP04	WS04	WS15	WS19	WS20	WS22	TP06	TP06
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.50	1.40	0.50	0.50	0.50	0.60	0.50	0.50	1.50
				Date Sampled:	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	270	170	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	650	380	7.1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	2800	1700	40	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	150	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	3900	2300	48	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	10000	6000	48	< 10	< 10	< 10	< 10	< 10	< 10
Dichlorodifluoromethane	N	2760	µg/kg	0.20	< 0.20	< 0.20							
Chloromethane	N	2760	µg/kg	0.20	< 0.20	< 0.20							
Vinyl Chloride	N	2760	µg/kg	0.20	< 0.20	< 0.20							
Bromomethane	N	2760	µg/kg	0.20	< 0.20	< 0.20							
Chloroethane	N	2760	µg/kg	0.20	< 0.20	< 0.20							
Trichlorofluoromethane	N	2760	µg/kg	0.20	< 0.20	< 0.20							
1,1-Dichloroethene	N	2760	µg/kg	0.20	< 0.20	< 0.20							
Trans 1,2-Dichloroethene	N	2760	µg/kg	0.20	< 0.20	< 0.20							
1,1-Dichloroethane	N	2760	µg/kg	0.20	< 0.20	< 0.20							
cis 1,2-Dichloroethene	N	2760	µg/kg	0.20	< 0.20	< 0.20							
Bromochloromethane	N	2760	µg/kg	0.50	< 0.50	< 0.50							
Trichloromethane	N	2760	µg/kg	0.20	< 0.20	< 0.20							
1,1,1-Trichloroethane	N	2760	µg/kg	0.20	< 0.20	< 0.20							
Tetrachloromethane	N	2760	µg/kg	0.20	< 0.20	< 0.20							
1,1-Dichloropropene	N	2760	µg/kg	0.20	< 0.20	< 0.20							
Benzene	N	2760	µg/kg	0.20	< 0.20	2.6							
Benzene	M	2760	µg/kg	1.0	< 1.0	2.6	3.8	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	N	2760	µg/kg	0.20	< 0.20	< 0.20							
Trichloroethene	N	2760	µg/kg	0.20	< 0.20	< 0.20							
1,2-Dichloropropane	N	2760	µg/kg	0.20	< 0.20	< 0.20							
Dibromomethane	N	2760	µg/kg	0.20	< 0.20	< 0.20							
Bromodichloromethane	N	2760	µg/kg	0.20	< 0.20	< 0.20							
cis-1,3-Dichloropropene	N	2760	µg/kg	0.20	< 0.20	< 0.20							
Toluene	N	2760	µg/kg	0.20	< 0.20	< 0.20							
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	2.9	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	0.20	< 0.20	< 0.20							
1,1,2-Trichloroethane	N	2760	µg/kg	0.20	< 0.20	< 0.20							
Tetrachloroethene	N	2760	µg/kg	0.20	< 0.20	< 0.20							
1,3-Dichloropropane	N	2760	µg/kg	0.20	< 0.20	< 0.20							
Dibromochloromethane	N	2760	µg/kg	0.20	< 0.20	< 0.20							
1,2-Dibromoethane	N	2760	µg/kg	0.20	< 0.20	< 0.20							
Chlorobenzene	N	2760	µg/kg	0.20	< 0.20	< 0.20							
1,1,1,2-Tetrachloroethane	N	2760	µg/kg	0.20	< 0.20	< 0.20							
Ethylbenzene	N	2760	µg/kg	0.20	< 0.20	< 0.20							
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	N	2760	µg/kg	0.20	< 0.20	< 0.20							

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	21-34348	21-34348	21-34348	21-34348	21-34348	21-34348	21-34348	21-34348	21-34348
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1291193	1291194	1291196	1291200	1291201	1291202	1291203	1291204	1291205
				Sample Location:	TP04	TP04	WS04	WS15	WS19	WS20	WS22	TP06	TP06
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.50	1.40	0.50	0.50	0.50	0.60	0.50	0.50	1.50
				Date Sampled:	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	N	2760	µg/kg	0.20	< 0.20	< 0.20							
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	N	2760	µg/kg	0.20	< 0.20	< 0.20							
Tribromomethane	N	2760	µg/kg	0.20	< 0.20	< 0.20							
Isopropylbenzene	N	2760	µg/kg	0.20	< 0.20	< 0.20							
Bromobenzene	N	2760	µg/kg	0.20	< 0.20	< 0.20							
1,2,3-Trichloropropane	N	2760	µg/kg	0.20	< 0.20	< 0.20							
N-Propylbenzene	N	2760	µg/kg	0.20	< 0.20	< 0.20							
2-Chlorotoluene	N	2760	µg/kg	0.20	< 0.20	< 0.20							
1,3,5-Trimethylbenzene	N	2760	µg/kg	0.20	< 0.20	9.8							
4-Chlorotoluene	N	2760	µg/kg	0.20	< 0.20	< 0.20							
Tert-Butylbenzene	N	2760	µg/kg	0.20	< 0.20	< 0.20							
1,2,4-Trimethylbenzene	N	2760	µg/kg	0.20	25	27							
Sec-Butylbenzene	N	2760	µg/kg	0.20	< 0.20	< 0.20							
1,3-Dichlorobenzene	N	2760	µg/kg	0.20	< 0.20	< 0.20							
4-Isopropyltoluene	N	2760	µg/kg	0.20	< 0.20	< 0.20							
1,4-Dichlorobenzene	N	2760	µg/kg	0.20	< 0.20	< 0.20							
N-Butylbenzene	N	2760	µg/kg	0.20	< 0.20	< 0.20							
1,2-Dichlorobenzene	N	2760	µg/kg	0.20	< 0.20	< 0.20							
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	0.20	< 0.20	< 0.20							
1,2,4-Trichlorobenzene	N	2760	µg/kg	0.20	< 0.20	< 0.20							
Hexachlorobutadiene	N	2760	µg/kg	0.20	< 0.20	< 0.20							
1,2,3-Trichlorobenzene	N	2760	µg/kg	0.20	< 0.20	< 0.20							
Methyl Tert-Butyl Ether	N	2760	µg/kg	0.20	< 0.20	< 0.20							
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	2790	mg/kg	0.050	< 0.050	< 0.050							
Phenol	N	2790	mg/kg	0.050	< 0.050	< 0.050							
2-Chlorophenol	N	2790	mg/kg	0.050	< 0.050	< 0.050							
Bis-(2-Chloroethyl)Ether	N	2790	mg/kg	0.050	< 0.050	< 0.050							
1,3-Dichlorobenzene	N	2790	mg/kg	0.050	< 0.050	< 0.050							
1,4-Dichlorobenzene	N	2790	mg/kg	0.050	< 0.050	< 0.050							
1,2-Dichlorobenzene	N	2790	mg/kg	0.050	< 0.050	< 0.050							
2-Methylphenol	N	2790	mg/kg	0.050	< 0.050	< 0.050							
Bis(2-Chloroisopropyl)Ether	N	2790	mg/kg	0.050	< 0.050	< 0.050							
Hexachloroethane	N	2790	mg/kg	0.050	< 0.050	< 0.050							
N-Nitrosodi-n-propylamine	N	2790	mg/kg	0.050	< 0.050	< 0.050							
4-Methylphenol	N	2790	mg/kg	0.050	< 0.050	< 0.050							
Nitrobenzene	N	2790	mg/kg	0.050	< 0.050	< 0.050							
Isophorone	N	2790	mg/kg	0.050	< 0.050	< 0.050							
2-Nitrophenol	N	2790	mg/kg	0.050	< 0.050	< 0.050							
2,4-Dimethylphenol	N	2790	mg/kg	0.050	< 0.050	< 0.050							

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	21-34348	21-34348	21-34348	21-34348	21-34348	21-34348	21-34348	21-34348	21-34348
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1291193	1291194	1291196	1291200	1291201	1291202	1291203	1291204	1291205
				Sample Location:	TP04	TP04	WS04	WS15	WS19	WS20	WS22	TP06	TP06
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.50	1.40	0.50	0.50	0.50	0.60	0.50	0.50	1.50
				Date Sampled:	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Bis(2-Chloroethoxy)Methane	N	2790	mg/kg	0.050	< 0.050	< 0.050							
2,4-Dichlorophenol	N	2790	mg/kg	0.050	< 0.050	< 0.050							
1,2,4-Trichlorobenzene	N	2790	mg/kg	0.050	< 0.050	< 0.050							
Naphthalene	N	2790	mg/kg	0.050	0.49	0.46							
4-Chloroaniline	N	2790	mg/kg	0.050	< 0.050	< 0.050							
Hexachlorobutadiene	N	2790	mg/kg	0.050	< 0.050	< 0.050							
4-Chloro-3-Methylphenol	N	2790	mg/kg	0.050	< 0.050	< 0.050							
2-Methylnaphthalene	N	2790	mg/kg	0.050	0.58	0.96							
Hexachlorocyclopentadiene	N	2790	mg/kg	0.050	< 0.050	< 0.050							
2,4,6-Trichlorophenol	N	2790	mg/kg	0.050	< 0.050	< 0.050							
2,4,5-Trichlorophenol	N	2790	mg/kg	0.050	< 0.050	< 0.050							
2-Chloronaphthalene	N	2790	mg/kg	0.050	< 0.050	< 0.050							
2-Nitroaniline	N	2790	mg/kg	0.050	< 0.050	< 0.050							
Acenaphthylene	N	2790	mg/kg	0.050	0.16	< 0.050							
Dimethylphthalate	N	2790	mg/kg	0.050	< 0.050	< 0.050							
2,6-Dinitrotoluene	N	2790	mg/kg	0.050	< 0.050	< 0.050							
Acenaphthene	N	2790	mg/kg	0.050	1.0	0.94							
3-Nitroaniline	N	2790	mg/kg	0.050	< 0.050	< 0.050							
Dibenzofuran	N	2790	mg/kg	0.050	0.49	0.45							
4-Chlorophenylphenylether	N	2790	mg/kg	0.050	< 0.050	< 0.050							
2,4-Dinitrotoluene	N	2790	mg/kg	0.050	< 0.050	< 0.050							
Fluorene	N	2790	mg/kg	0.050	0.84	0.80							
Diethyl Phthalate	N	2790	mg/kg	0.050	< 0.050	< 0.050							
4-Nitroaniline	N	2790	mg/kg	0.050	< 0.050	< 0.050							
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.050	< 0.050	< 0.050							
Azobenzene	N	2790	mg/kg	0.050	< 0.050	< 0.050							
4-Bromophenylphenyl Ether	N	2790	mg/kg	0.050	< 0.050	< 0.050							
Hexachlorobenzene	N	2790	mg/kg	0.050	< 0.050	< 0.050							
Pentachlorophenol	N	2790	mg/kg	0.050	< 0.050	< 0.050							
Phenanthrene	N	2790	mg/kg	0.050	4.8	4.9							
Anthracene	N	2790	mg/kg	0.050	1.8	1.5							
Carbazole	N	2790	mg/kg	0.050	0.39	0.40							
Di-N-Butyl Phthalate	N	2790	mg/kg	0.050	< 0.050	< 0.050							
Fluoranthene	N	2790	mg/kg	0.050	7.8	6.9							
Pyrene	N	2790	mg/kg	0.050	7.8	7.0							
Butylbenzyl Phthalate	N	2790	mg/kg	0.050	< 0.050	< 0.050							
Benzo[a]anthracene	N	2790	mg/kg	0.050	4.1	3.3							
Chrysene	N	2790	mg/kg	0.050	4.3	3.5							
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.050	0.54	0.70							
Di-N-Octyl Phthalate	N	2790	mg/kg	0.050	< 0.050	< 0.050							
Benzo[b]fluoranthene	N	2790	mg/kg	0.050	5.9	4.0							
Benzo[k]fluoranthene	N	2790	mg/kg	0.050	1.8	1.3							

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	21-34348	21-34348	21-34348	21-34348	21-34348	21-34348	21-34348	21-34348	21-34348
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1291193	1291194	1291196	1291200	1291201	1291202	1291203	1291204	1291205
				Sample Location:	TP04	TP04	WS04	WS15	WS19	WS20	WS22	TP06	TP06
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.50	1.40	0.50	0.50	0.50	0.60	0.50	0.50	1.50
				Date Sampled:	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Benzo[a]pyrene	N	2790	mg/kg	0.050	4.2	3.1							
Indeno(1,2,3-c,d)Pyrene	N	2790	mg/kg	0.050	2.5	2.0							
Dibenz(a,h)Anthracene	N	2790	mg/kg	0.050	0.82	0.46							
Benzo[g,h,i]perylene	N	2790	mg/kg	0.050	2.7	2.1							
4-Nitrophenol	N	2790	mg/kg	0.050	< 0.050	< 0.050							
Pyrethrin	N	2790	mg/kg	0.50									
Naphthalene	M	2800	mg/kg	0.10	0.62	0.72	0.99	< 0.10	0.67	0.25	< 0.10	0.22	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	0.13	0.19	0.30	< 0.10	0.50	0.12	< 0.10	0.16	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	1.1	0.84	1.4	< 0.10	< 0.10	0.13	< 0.10	0.14	< 0.10
Fluorene	M	2800	mg/kg	0.10	1.2	0.82	1.1	< 0.10	0.33	0.13	< 0.10	0.29	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	8.2	5.2	11	1.4	3.5	2.0	< 0.10	1.2	1.1
Anthracene	M	2800	mg/kg	0.10	2.1	1.5	2.8	0.40	2.8	0.77	< 0.10	0.33	0.16
Fluoranthene	M	2800	mg/kg	0.10	15	11	19	3.1	8.6	4.3	1.2	2.4	1.2
Pyrene	M	2800	mg/kg	0.10	13	9.8	16	2.5	7.0	3.5	0.93	2.0	0.92
Benzo[a]anthracene	M	2800	mg/kg	0.10	7.8	5.2	9.2	1.7	5.1	2.0	< 0.10	1.0	0.59
Chrysene	M	2800	mg/kg	0.10	7.2	5.4	8.5	1.4	5.1	1.9	< 0.10	1.1	0.72
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	11	7.7	12	2.3	6.6	2.6	< 0.10	1.5	0.90
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	3.7	2.4	4.3	0.89	2.4	0.83	< 0.10	0.75	0.27
Benzo[a]pyrene	M	2800	mg/kg	0.10	9.0	6.6	10	2.1	5.4	2.1	< 0.10	1.4	0.57
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	6.2	3.8	6.3	1.2	3.4	1.3	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	1.4	0.78	1.3	0.30	0.86	0.30	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	5.1	3.8	5.3	1.1	2.8	1.2	< 0.10	< 0.10	< 0.10
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	93	66	110	18	55	23	2.1	13	6.4
PCB 28	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Atraton	N	2830	mg/kg	0.20									
Prometon	N	2830	mg/kg	0.20									
Simazine	N	2830	mg/kg	0.20									
Atrazine	N	2830	mg/kg	0.20									
Propazine	N	2830	mg/kg	0.20									
Terbuthylazine	N	2830	mg/kg	0.20									
Secbumeton	N	2830	mg/kg	0.20									
Simetryn	N	2830	mg/kg	0.20									
Ametryn	N	2830	mg/kg	0.20									
Prometryn	N	2830	mg/kg	0.20									

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	21-34348	21-34348	21-34348	21-34348	21-34348	21-34348	21-34348	21-34348	21-34348
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1291193	1291194	1291196	1291200	1291201	1291202	1291203	1291204	1291205
				Sample Location:	TP04	TP04	WS04	WS15	WS19	WS20	WS22	TP06	TP06
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.50	1.40	0.50	0.50	0.50	0.60	0.50	0.50	1.50
				Date Sampled:	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Terbutryn	N	2830	mg/kg	0.20									
2,4-D	SN		mg/kg	0.50									
Dichlorprop	SN		mg/kg	0.50									
MCPA	SN		mg/kg	0.50									
MCPB	SN		mg/kg	0.50									
Mecoprop	SN		mg/kg	0.50									
2,4,5-T	SN		mg/kg	0.50									
Cyfluthrin	N	2860	mg/kg	0.50									
Cypermethrin	N	2860	mg/kg	0.50									
Deltamethrin	N	2860	mg/kg	0.50									
Permethrin	N	2790	mg/kg	0.50									
Resmethrin	N	2860	mg/kg	0.50									
Tetramethrin	N	2860	mg/kg	0.50									
Carbetamide (Subcon)	SN		mg/kg	0.1000000									
Chlorbufam (Subcon)	SN		mg/kg	0.1000000									
Chlorpropham (Subcon)	SN		mg/kg	0.1000000									
Ethiofencarb (Subcon)	SN		mg/kg	0.1000000									
Phenmedipham (Subcon)	SN		mg/kg	0.1000000									
Pirimicarb (Subcon)	SN		mg/kg	0.1000000									
Propham (Subcon)	SN		mg/kg	0.1000000									
SVOC TIC	N	2790	mg/kg	N/A	None Detected	None Detected							
VOC TIC	N	2760	µg/kg	N/A	None Detected	None Detected							

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34348	21-34348
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1291207	1291209
			Sample Location:		WS23	WS22A
			Sample Type:		SOIL	SOIL
			Top Depth (m):		1.40	1.90
			Date Sampled:		29-Sep-2021	29-Sep-2021
			Asbestos Lab:		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
Asbestos by Gravimetry	U	2192	%	0.001	-	-
Total Asbestos	U	2192	%	0.001	-	-
Moisture	N	2030	%	0.020	17	14
Chlortoluron	N	1830	mg/kg	1.0		< 1.0
Diuron	N	1830	mg/kg	1.0		< 1.0
Isoproturon	N	1830	mg/kg	1.0		< 1.0
Linuron	N	1830	mg/kg	1.0		< 1.0
Methabenzthiazuron	N	1830	mg/kg	1.0		< 1.0
Monuron	N	1830	mg/kg	1.0		< 1.0
pH	M	2010		4.0	8.8	8.6
Arsenic	M	2450	mg/kg	1.0	13	9.5
Barium	M	2450	mg/kg	10	69	78
Cadmium	M	2450	mg/kg	0.10	0.30	0.20
Molybdenum	M	2450	mg/kg	2.0	< 2.0	< 2.0
Antimony	N	2450	mg/kg	2.0	< 2.0	< 2.0
Copper	M	2450	mg/kg	0.50	34	57
Mercury	M	2450	mg/kg	0.10	0.55	0.21
Nickel	M	2450	mg/kg	0.50	15	26
Lead	M	2450	mg/kg	0.50	180	170
Selenium	M	2450	mg/kg	0.20	< 0.20	0.33
Zinc	M	2450	mg/kg	0.50	95	120
Chromium (Trivalent)	N	2490	mg/kg	1.0	9.3	21
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
LOI	M	2610	%	0.10	7.2	5.1
Total Organic Carbon	M	2625	%	0.20	3.8	2.3
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	21-34348	21-34348
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1291207	1291209
				Sample Location:	WS23	WS22A
				Sample Type:	SOIL	SOIL
				Top Depth (m):	1.40	1.90
				Date Sampled:	29-Sep-2021	29-Sep-2021
				Asbestos Lab:	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 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	M	2760	µg/kg	1.0	< 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	M	2760	µg/kg	1.0	< 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
1,1,1,2-Tetrachloroethane	N	2760	µg/kg	0.20		< 0.20
Ethylbenzene	N	2760	µg/kg	0.20		< 0.20
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
m & p-Xylene	N	2760	µg/kg	0.20		< 0.20

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	21-34348	21-34348
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1291207	1291209
				Sample Location:	WS23	WS22A
				Sample Type:	SOIL	SOIL
				Top Depth (m):	1.40	1.90
				Date Sampled:	29-Sep-2021	29-Sep-2021
				Asbestos Lab:	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0
o-Xylene	N	2760	µg/kg	0.20		< 0.20
o-Xylene	M	2760	µg/kg	1.0	< 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
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0
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
Hexachloroethane	N	2790	mg/kg	0.050		< 0.050
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

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34348	21-34348
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1291207	1291209
			Sample Location:		WS23	WS22A
			Sample Type:		SOIL	SOIL
			Top Depth (m):		1.40	1.90
			Date Sampled:		29-Sep-2021	29-Sep-2021
			Asbestos Lab:		DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
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		< 0.050
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		0.13
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		0.28
Anthracene	N	2790	mg/kg	0.050		0.11
Carbazole	N	2790	mg/kg	0.050		< 0.050
Di-N-Butyl Phthalate	N	2790	mg/kg	0.050		< 0.050
Fluoranthene	N	2790	mg/kg	0.050		0.60
Pyrene	N	2790	mg/kg	0.050		0.51
Butylbenzyl Phthalate	N	2790	mg/kg	0.050		< 0.050
Benzo[a]anthracene	N	2790	mg/kg	0.050		0.30
Chrysene	N	2790	mg/kg	0.050		0.35
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		0.38
Benzo[k]fluoranthene	N	2790	mg/kg	0.050		0.13

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34348	21-34348
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1291207	1291209
			Sample Location:		WS23	WS22A
			Sample Type:		SOIL	SOIL
			Top Depth (m):		1.40	1.90
			Date Sampled:		29-Sep-2021	29-Sep-2021
			Asbestos Lab:		DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Benzo[a]pyrene	N	2790	mg/kg	0.050		0.30
Indeno(1,2,3-c,d)Pyrene	N	2790	mg/kg	0.050		0.31
Dibenz(a,h)Anthracene	N	2790	mg/kg	0.050		< 0.050
Benzo[g,h,i]perylene	N	2790	mg/kg	0.050		0.15
4-Nitrophenol	N	2790	mg/kg	0.050		< 0.050
Pyrethrin	N	2790	mg/kg	0.50		< 0.50
Naphthalene	M	2800	mg/kg	0.10	0.29	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	0.22	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	0.19	< 0.10
Fluorene	M	2800	mg/kg	0.10	0.33	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	2.9	< 0.10
Anthracene	M	2800	mg/kg	0.10	0.71	< 0.10
Fluoranthene	M	2800	mg/kg	0.10	5.8	0.57
Pyrene	M	2800	mg/kg	0.10	4.6	0.53
Benzo[a]anthracene	M	2800	mg/kg	0.10	2.8	0.26
Chrysene	M	2800	mg/kg	0.10	2.8	0.32
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	3.6	< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	1.5	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	3.0	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	1.9	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	0.44	< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	1.7	< 0.10
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	33	< 2.0
PCB 28	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	< 0.10	< 0.10
Atraton	N	2830	mg/kg	0.20		< 0.20
Prometon	N	2830	mg/kg	0.20		< 0.20
Simazine	N	2830	mg/kg	0.20		< 0.20
Atrazine	N	2830	mg/kg	0.20		< 0.20
Propazine	N	2830	mg/kg	0.20		< 0.20
Terbuthylazine	N	2830	mg/kg	0.20		< 0.20
Secbumeton	N	2830	mg/kg	0.20		< 0.20
Simetryn	N	2830	mg/kg	0.20		< 0.20
Ametryn	N	2830	mg/kg	0.20		< 0.20
Prometryn	N	2830	mg/kg	0.20		< 0.20

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**	21-34348	21-34348
Quotation No.: Q21-24611			**Chemtest Sample ID.:**	1291207	1291209
			Sample Location:	WS23	WS22A
			Sample Type:	SOIL	SOIL
			Top Depth (m):	1.40	1.90
			Date Sampled:	29-Sep-2021	29-Sep-2021
			Asbestos Lab:	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Terbutryn	N	2830	mg/kg	0.20		< 0.20
2,4-D	SN		mg/kg	0.50		< 0.50
Dichlorprop	SN		mg/kg	0.50		< 0.50
MCPA	SN		mg/kg	0.50		< 0.50
MCPB	SN		mg/kg	0.50		< 0.50
Mecoprop	SN		mg/kg	0.50		< 0.50
2,4,5-T	SN		mg/kg	0.50		< 0.50
Cyfluthrin	N	2860	mg/kg	0.50		< 0.50
Cypermethrin	N	2860	mg/kg	0.50		< 0.50
Deltamethrin	N	2860	mg/kg	0.50		< 0.50
Permethrin	N	2790	mg/kg	0.50		< 0.50
Resmethrin	N	2860	mg/kg	0.50		< 0.50
Tetramethrin	N	2860	mg/kg	0.50		< 0.50
Carbetamide (Subcon)	SN		mg/kg	0.1000000		< 0.1000
Chlorbufam (Subcon)	SN		mg/kg	0.1000000		< 0.1000
Chlorpropham (Subcon)	SN		mg/kg	0.1000000		< 0.1000
Ethiofencarb (Subcon)	SN		mg/kg	0.1000000		< 0.1000
Phenmedipham (Subcon)	SN		mg/kg	0.1000000		< 0.1000
Pirimicarb (Subcon)	SN		mg/kg	0.1000000		< 0.1000
Propham (Subcon)	SN		mg/kg	0.1000000		< 0.1000
SVOC TIC	N	2790	mg/kg	N/A		None Detected
VOC TIC	N	2760	µg/kg	N/A		None Detected

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity 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.
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).
1460	Mercury low-level in Waters by AFS	Mercury	Atomic Fluorescence Spectrometry, with collimated UV source, wavelength 253.7 nm.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1830	Organonitrogen (O-N) Pesticides in Waters by GC-MS	Organonitrogen pesticide representative suite including Triazines etc, plus client specific determinands	Solvent 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
2185	Asbestos	Asbestos	Polarised light microscopy
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
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

Test Methods

SOP	Title	Parameters included	Method summary
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
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2830	Organonitrogen (O-N) Pesticides in Soils by GC-MS	Organonitrogen pesticide representative suite including Triazines etc, plus client specific determinands	Dichloromethane extraction / GC-MS
2860	SVOC Low-Level	SVOC Low-Level	GC-MS
640	Characterisation of Waste (Leaching C10)	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 Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	21-34338-1		
Initial Date of Issue:	11-Oct-2021		
Client	Priority Geotechnical Ltd		
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland		
Contact(s):	Colette Kelly		
Project	P21206 Tedcastles Site		
Quotation No.:	Q21-24611	**Date Received:**	04-Oct-2021
Order No.:	14093	**Date Instructed:**	05-Oct-2021
No. of Samples:	11		
Turnaround (Wkdays):	5	**Results Due:**	11-Oct-2021
Date Approved:	11-Oct-2021		
Approved By:			
Details:	Glynn Harvey, Technical Manager		

Results - Leachate

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd					**Chemtest Job No.:**	21-34338	21-34338	21-34338	21-34338	21-34338	21-34338	21-34338	21-34338
Quotation No.: Q21-24611					**Chemtest Sample ID.:**	1291130	1291132	1291134	1291135	1291136	1291138	1291139	1291140
					Sample Location:	WSBH06B	TP01	TP01	TP03	TP03	TP05	TP05	TP02
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	2.5	1.4	2.9	0.8	1.6	1.0	1.9	0.5
					Date Sampled:	28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**								
Total Dissolved Solids	N	1020	10:1	mg/l	1.0	910	190	210	230	85	85	140	98
Chloride	U	1220	10:1	mg/l	1.0	270	16	12	11	< 1.0	3.3	1.6	2.3
Fluoride	U	1220	10:1	mg/l	0.050	1.2	0.38	0.18	3.4	0.74	0.21	0.28	0.41
Sulphate	U	1220	10:1	mg/l	1.0	240	35	41	91	9.8	17	43	22
Arsenic (Dissolved)	U	1455	10:1	mg/l	0.0002	0.0052	0.0072	0.0061	0.0097	0.0036	0.0060	0.0040	0.0076
Barium (Dissolved)	U	1455	10:1	mg/l	0.005	0.022	0.010	0.008	0.010	0.033	0.007	0.012	< 0.005
Cadmium (Dissolved)	U	1455	10:1	mg/l	0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011
Chromium (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	0.0006	0.0007	< 0.0005	0.0015	0.0010	< 0.0005	0.0017
Copper (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0010	0.019	0.0061	0.0049	0.0085	0.0051	0.0043	0.0060
Molybdenum (Dissolved)	U	1455	10:1	mg/l	0.0002	0.0087	0.012	0.019	0.014	0.0042	0.0077	0.0045	0.0059
Nickel (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0006	0.0032	0.0018	0.0022	0.0007	0.0006	0.0010	0.0006
Lead (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	0.0087	0.0020	0.0013	0.0043	0.0049	0.0012	0.0010
Antimony (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0027	0.016	0.0022	0.0099	0.0087	0.0050	0.0063	0.0030
Selenium (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	< 0.0005	0.0007	< 0.0005	0.0011	< 0.0005	< 0.0005	0.0011
Zinc (Dissolved)	U	1455	10:1	mg/l	0.002	0.006	0.011	0.005	0.005	0.006	0.006	0.004	0.004
Mercury Low Level	U	1460	10:1	mg/l	0.000010	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Dissolved Organic Carbon	U	1610	10:1	mg/l	2.0	12	8.5	16	6.2	4.3	3.6	5.9	4.0
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030

Results - Leachate

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd					**Chemtest Job No.:**	21-34338	21-34338	21-34338
Quotation No.: Q21-24611					**Chemtest Sample ID.:**	1291141	1291143	1291144
					Sample Location:	TP02	WS23	WS27
					Sample Type:	SOIL	SOIL	SOIL
					Top Depth (m):	1.5	0.8	0.5
					Date Sampled:	28-Sep-2021	28-Sep-2021	28-Sep-2021
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**			
Total Dissolved Solids	N	1020	10:1	mg/l	1.0	59	44	52
Chloride	U	1220	10:1	mg/l	1.0	< 1.0	< 1.0	< 1.0
Fluoride	U	1220	10:1	mg/l	0.050	0.21	0.13	0.16
Sulphate	U	1220	10:1	mg/l	1.0	1.1	< 1.0	2.3
Arsenic (Dissolved)	U	1455	10:1	mg/l	0.0002	0.0034	0.0053	0.0040
Barium (Dissolved)	U	1455	10:1	mg/l	0.005	0.011	< 0.005	0.008
Cadmium (Dissolved)	U	1455	10:1	mg/l	0.00011	< 0.00011	< 0.00011	< 0.00011
Chromium (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	0.0007	0.0013
Copper (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0028	0.0023	0.0024
Molybdenum (Dissolved)	U	1455	10:1	mg/l	0.0002	0.0010	0.0009	0.0013
Nickel (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	< 0.0005	< 0.0005
Lead (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0037	0.0025	0.0036
Antimony (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0009	0.0006	0.0012
Selenium (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	< 0.0005	< 0.0005
Zinc (Dissolved)	U	1455	10:1	mg/l	0.002	0.004	0.004	0.005
Mercury Low Level	U	1460	10:1	mg/l	0.000010	< 0.00001	< 0.00001	< 0.00001
Dissolved Organic Carbon	U	1610	10:1	mg/l	2.0	3.6	3.7	3.9
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030	< 0.030

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34338	21-34338	21-34338	21-34338	21-34338	21-34338	21-34338	21-34338
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1291130	1291132	1291134	1291135	1291136	1291138	1291139	1291140
			Sample Location:		WSBH06B	TP01	TP01	TP03	TP03	TP05	TP05	TP02
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		2.5	1.4	2.9	0.8	1.6	1.0	1.9	0.5
			Date Sampled:		28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
ACM Type	U	2192		N/A	-	Fibres/Clumps	-	Fibres/Clumps	Fibres/Clumps	Fibres/Clumps	-	Fibres/Clumps
Asbestos Identification	U	2192		N/A	No Asbestos Detected	Chrysotile	No Asbestos Detected	Amosite	Amosite	Amosite	No Asbestos Detected	Chrysotile
Asbestos by Gravimetry	U	2192	%	0.001	-	0.001	-	<0.001	0.002	0.002	-	<0.001
Total Asbestos	U	2192	%	0.001	-	0.001	-	<0.001	0.002	0.002	-	<0.001
Moisture	N	2030	%	0.020	51	9.6	17	9.1	49	9.3	12	8.5
pH	M	2010		4.0	8.9	8.4	8.7	8.7	8.8	8.8	8.8	8.6
Arsenic	M	2450	mg/kg	1.0	12	27	6.9	16	3.4	19	10	11
Barium	M	2450	mg/kg	10	41	190	11	320	13	260	72	61
Cadmium	M	2450	mg/kg	0.10	< 0.10	0.45	< 0.10	0.27	< 0.10	0.39	< 0.10	0.20
Molybdenum	M	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Antimony	N	2450	mg/kg	2.0	< 2.0	6.2	< 2.0	2.3	< 2.0	8.3	< 2.0	2.2
Copper	M	2450	mg/kg	0.50	61	200	7.7	100	8.3	170	110	55
Mercury	M	2450	mg/kg	0.10	0.12	1.1	< 0.10	0.47	< 0.10	0.66	0.18	0.39
Nickel	M	2450	mg/kg	0.50	13	29	7.9	26	120	27	21	17
Lead	M	2450	mg/kg	0.50	40	370	8.6	110	6.4	260	240	75
Selenium	M	2450	mg/kg	0.20	0.63	0.25	0.22	< 0.20	0.27	0.55	< 0.20	0.34
Zinc	M	2450	mg/kg	0.50	49	200	17	160	9.7	200	90	59
Chromium (Trivalent)	N	2490	mg/kg	1.0	12	23	8.1	50	36	17	12	11
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
LOI	M	2610	%	0.10	9.6	8.3	1.3	6.4	59	10	4.2	7.0
Total Organic Carbon	M	2625	%	0.20	5.8	6.9	0.96	3.4	41	11	2.2	4.8
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10	< 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	< 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	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 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	< 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	< 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	< 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	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 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	71	< 1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	99	< 1.0	140	< 1.0	< 1.0

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34338	21-34338	21-34338	21-34338	21-34338	21-34338	21-34338	21-34338
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1291130	1291132	1291134	1291135	1291136	1291138	1291139	1291140
			Sample Location:		WSBH06B	TP01	TP01	TP03	TP03	TP05	TP05	TP02
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		2.5	1.4	2.9	0.8	1.6	1.0	1.9	0.5
			Date Sampled:		28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 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	99	< 5.0	210	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	99	< 10	210	< 10	< 10
Dichlorodifluoromethane	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
Chloromethane	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
Vinyl Chloride	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
Bromomethane	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
Chloroethane	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
Trichlorofluoromethane	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
1,1-Dichloroethene	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
Trans 1,2-Dichloroethene	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
1,1-Dichloroethane	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
cis 1,2-Dichloroethene	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
Bromochloromethane	N	2760	µg/kg	0.50		< 0.50		< 0.50		< 0.50		
Trichloromethane	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
1,1,1-Trichloroethane	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
Tetrachloromethane	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
1,1-Dichloropropene	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
Benzene	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
Trichloroethene	N	2760	µg/kg	0.20		< 0.20		< 0.20		130		
1,2-Dichloropropane	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
Dibromomethane	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
Bromodichloromethane	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
cis-1,3-Dichloropropene	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
Toluene	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
1,1,2-Trichloroethane	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
Tetrachloroethene	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
1,3-Dichloropropane	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
Dibromochloromethane	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
1,2-Dibromoethane	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
Chlorobenzene	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
1,1,1,2-Tetrachloroethane	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
Ethylbenzene	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34338	21-34338	21-34338	21-34338	21-34338	21-34338	21-34338	21-34338
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1291130	1291132	1291134	1291135	1291136	1291138	1291139	1291140
			Sample Location:		WSBH06B	TP01	TP01	TP03	TP03	TP05	TP05	TP02
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		2.5	1.4	2.9	0.8	1.6	1.0	1.9	0.5
			Date Sampled:		28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
Tribromomethane	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
Isopropylbenzene	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
Bromobenzene	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
1,2,3-Trichloropropane	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
N-Propylbenzene	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
2-Chlorotoluene	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
1,3,5-Trimethylbenzene	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
4-Chlorotoluene	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
Tert-Butylbenzene	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
1,2,4-Trimethylbenzene	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
Sec-Butylbenzene	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
1,3-Dichlorobenzene	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
4-Isopropyltoluene	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
1,4-Dichlorobenzene	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
N-Butylbenzene	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
1,2-Dichlorobenzene	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
1,2,4-Trichlorobenzene	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
Hexachlorobutadiene	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
1,2,3-Trichlorobenzene	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
Methyl Tert-Butyl Ether	N	2760	µg/kg	0.20		< 0.20		< 0.20		< 0.20		
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
Phenol	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
2-Chlorophenol	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
Bis-(2-Chloroethyl)Ether	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
1,3-Dichlorobenzene	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
1,4-Dichlorobenzene	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
1,2-Dichlorobenzene	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
2-Methylphenol	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
Bis(2-Chloroisopropyl)Ether	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
Hexachloroethane	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
N-Nitrosodi-n-propylamine	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
4-Methylphenol	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
Nitrobenzene	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34338	21-34338	21-34338	21-34338	21-34338	21-34338	21-34338	21-34338
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1291130	1291132	1291134	1291135	1291136	1291138	1291139	1291140
			Sample Location:		WSBH06B	TP01	TP01	TP03	TP03	TP05	TP05	TP02
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		2.5	1.4	2.9	0.8	1.6	1.0	1.9	0.5
			Date Sampled:		28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Isophorone	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
2-Nitrophenol	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
2,4-Dimethylphenol	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
Bis(2-Chloroethoxy)Methane	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
2,4-Dichlorophenol	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
1,2,4-Trichlorobenzene	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
Naphthalene	N	2790	mg/kg	0.050		1.5		0.32		0.67		
4-Chloroaniline	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
Hexachlorobutadiene	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
4-Chloro-3-Methylphenol	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
2-Methylnaphthalene	N	2790	mg/kg	0.050		< 0.050		0.15		0.28		
Hexachlorocyclopentadiene	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
2,4,6-Trichlorophenol	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
2,4,5-Trichlorophenol	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
2-Chloronaphthalene	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
2-Nitroaniline	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
Acenaphthylene	N	2790	mg/kg	0.050		0.13		0.099		< 0.050		
Dimethylphthalate	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
2,6-Dinitrotoluene	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
Acenaphthene	N	2790	mg/kg	0.050		0.71		0.26		0.94		
3-Nitroaniline	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
Dibenzofuran	N	2790	mg/kg	0.050		0.53		0.21		0.99		
4-Chlorophenylphenylether	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
2,4-Dinitrotoluene	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
Fluorene	N	2790	mg/kg	0.050		0.69		0.26		1.4		
Diethyl Phthalate	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
4-Nitroaniline	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
Azobenzene	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
4-Bromophenylphenyl Ether	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
Hexachlorobenzene	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
Pentachlorophenol	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
Phenanthrene	N	2790	mg/kg	0.050		3.6		1.7		12		
Anthracene	N	2790	mg/kg	0.050		0.99		0.45		3.3		
Carbazole	N	2790	mg/kg	0.050		0.35		0.17		1.1		
Di-N-Butyl Phthalate	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
Fluoranthene	N	2790	mg/kg	0.050		3.8		2.4		19		
Pyrene	N	2790	mg/kg	0.050		3.7		2.1		16		
Butylbenzyl Phthalate	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34338	21-34338	21-34338	21-34338	21-34338	21-34338	21-34338	21-34338
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1291130	1291132	1291134	1291135	1291136	1291138	1291139	1291140
			Sample Location:		WSBH06B	TP01	TP01	TP03	TP03	TP05	TP05	TP02
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		2.5	1.4	2.9	0.8	1.6	1.0	1.9	0.5
			Date Sampled:		28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Benzo[a]anthracene	N	2790	mg/kg	0.050		1.9		1.2		8.0		
Chrysene	N	2790	mg/kg	0.050		2.1		1.3		8.7		
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
Di-N-Octyl Phthalate	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
Benzo[b]fluoranthene	N	2790	mg/kg	0.050		2.4		1.4		11		
Benzo[k]fluoranthene	N	2790	mg/kg	0.050		0.85		0.42		4.2		
Benzo[a]pyrene	N	2790	mg/kg	0.050		1.8		1.1		9.0		
Indeno(1,2,3-c,d)Pyrene	N	2790	mg/kg	0.050		1.2		0.75		4.3		
Dibenz(a,h)Anthracene	N	2790	mg/kg	0.050		0.14		0.23		1.4		
Benzo[g,h,i]perylene	N	2790	mg/kg	0.050		1.1		0.72		5.0		
4-Nitrophenol	N	2790	mg/kg	0.050		< 0.050		< 0.050		< 0.050		
Naphthalene	M	2800	mg/kg	0.10	< 0.10	4.2	< 0.10	0.54	< 0.10	1.5	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	0.46	< 0.10	0.14	< 0.10	0.73	< 0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	< 0.10	2.2	< 0.10	0.34	< 0.10	1.2	< 0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10	2.3	< 0.10	0.41	< 0.10	1.4	< 0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	0.51	18	< 0.10	2.2	< 0.10	14	0.85	0.45
Anthracene	M	2800	mg/kg	0.10	0.15	3.6	< 0.10	0.49	< 0.10	3.0	0.23	< 0.10
Fluoranthene	M	2800	mg/kg	0.10	0.66	22	0.17	3.2	< 0.10	21	1.4	0.57
Pyrene	M	2800	mg/kg	0.10	0.57	19	0.11	2.6	< 0.10	18	1.3	0.52
Benzo[a]anthracene	M	2800	mg/kg	0.10	0.31	11	< 0.10	1.2	< 0.10	8.3	0.60	0.31
Chrysene	M	2800	mg/kg	0.10	0.53	10	< 0.10	1.2	< 0.10	8.3	0.69	0.28
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	0.45	13	< 0.10	1.7	< 0.10	11	0.98	0.51
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	0.22	4.6	< 0.10	0.62	< 0.10	3.7	0.31	0.12
Benzo[a]pyrene	M	2800	mg/kg	0.10	0.34	10	< 0.10	1.4	< 0.10	8.6	0.78	0.34
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	< 0.10	6.6	< 0.10	1.0	< 0.10	5.5	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	1.3	< 0.10	0.19	< 0.10	1.0	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	< 0.10	5.7	< 0.10	0.90	< 0.10	5.5	< 0.10	< 0.10
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	3.7	130	< 2.0	18	< 2.0	110	7.1	3.1
PCB 28	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
SVOC TIC	N	2790	mg/kg	N/A		See Below		None Detected		None Detected		

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34338	21-34338	21-34338	21-34338	21-34338	21-34338	21-34338	21-34338
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1291130	1291132	1291134	1291135	1291136	1291138	1291139	1291140
			Sample Location:		WSBH06B	TP01	TP01	TP03	TP03	TP05	TP05	TP02
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		2.5	1.4	2.9	0.8	1.6	1.0	1.9	0.5
			Date Sampled:		28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
(SVOC TIC) Dibenzothiophene	N	2790	mg/kg	N/A		1.73						
VOC TIC	N	2760	µg/kg	N/A		None Detected		None Detected		None Detected		

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34338	21-34338	21-34338
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1291141	1291143	1291144
			Sample Location:		TP02	WS23	WS27
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		1.5	0.8	0.5
			Date Sampled:		28-Sep-2021	28-Sep-2021	28-Sep-2021
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
ACM Type	U	2192		N/A	-	Fibres/Clumps	Fibres/Clumps
Asbestos Identification	U	2192		N/A	No Asbestos Detected	Chrysotile	Chrysotile
Asbestos by Gravimetry	U	2192	%	0.001	-	0.007	<0.001
Total Asbestos	U	2192	%	0.001	-	0.007	<0.001
Moisture	N	2030	%	0.020	10	13	20
pH	M	2010		4.0	8.2	9.1	9.2
Arsenic	M	2450	mg/kg	1.0	18	19	10
Barium	M	2450	mg/kg	10	140	150	70
Cadmium	M	2450	mg/kg	0.10	0.68	0.50	0.24
Molybdenum	M	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0
Antimony	N	2450	mg/kg	2.0	5.6	2.5	< 2.0
Copper	M	2450	mg/kg	0.50	94	70	50
Mercury	M	2450	mg/kg	0.10	1.1	1.4	0.33
Nickel	M	2450	mg/kg	0.50	27	21	16
Lead	M	2450	mg/kg	0.50	390	570	220
Selenium	M	2450	mg/kg	0.20	0.26	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	240	190	89
Chromium (Trivalent)	N	2490	mg/kg	1.0	19	12	12
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
LOI	M	2610	%	0.10	5.6	4.8	4.5
Total Organic Carbon	M	2625	%	0.20	3.4	2.7	5.4
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10	< 10	< 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	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	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 TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	21
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	48

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34338	21-34338	21-34338
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1291141	1291143	1291144
			Sample Location:		TP02	WS23	WS27
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		1.5	0.8	0.5
			Date Sampled:		28-Sep-2021	28-Sep-2021	28-Sep-2021
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
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	< 5.0	< 5.0	69
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	69
Dichlorodifluoromethane	N	2760	µg/kg	0.20			
Chloromethane	N	2760	µg/kg	0.20			
Vinyl Chloride	N	2760	µg/kg	0.20			
Bromomethane	N	2760	µg/kg	0.20			
Chloroethane	N	2760	µg/kg	0.20			
Trichlorofluoromethane	N	2760	µg/kg	0.20			
1,1-Dichloroethene	N	2760	µg/kg	0.20			
Trans 1,2-Dichloroethene	N	2760	µg/kg	0.20			
1,1-Dichloroethane	N	2760	µg/kg	0.20			
cis 1,2-Dichloroethene	N	2760	µg/kg	0.20			
Bromochloromethane	N	2760	µg/kg	0.50			
Trichloromethane	N	2760	µg/kg	0.20			
1,1,1-Trichloroethane	N	2760	µg/kg	0.20			
Tetrachloromethane	N	2760	µg/kg	0.20			
1,1-Dichloropropene	N	2760	µg/kg	0.20			
Benzene	N	2760	µg/kg	0.20			
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	N	2760	µg/kg	0.20			
Trichloroethene	N	2760	µg/kg	0.20			
1,2-Dichloropropane	N	2760	µg/kg	0.20			
Dibromomethane	N	2760	µg/kg	0.20			
Bromodichloromethane	N	2760	µg/kg	0.20			
cis-1,3-Dichloropropene	N	2760	µg/kg	0.20			
Toluene	N	2760	µg/kg	0.20			
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	0.20			
1,1,2-Trichloroethane	N	2760	µg/kg	0.20			
Tetrachloroethene	N	2760	µg/kg	0.20			
1,3-Dichloropropane	N	2760	µg/kg	0.20			
Dibromochloromethane	N	2760	µg/kg	0.20			
1,2-Dibromoethane	N	2760	µg/kg	0.20			
Chlorobenzene	N	2760	µg/kg	0.20			
1,1,1,2-Tetrachloroethane	N	2760	µg/kg	0.20			
Ethylbenzene	N	2760	µg/kg	0.20			
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	N	2760	µg/kg	0.20			

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34338	21-34338	21-34338
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1291141	1291143	1291144
			Sample Location:		TP02	WS23	WS27
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		1.5	0.8	0.5
			Date Sampled:		28-Sep-2021	28-Sep-2021	28-Sep-2021
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	N	2760	µg/kg	0.20			
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Styrene	N	2760	µg/kg	0.20			
Tribromomethane	N	2760	µg/kg	0.20			
Isopropylbenzene	N	2760	µg/kg	0.20			
Bromobenzene	N	2760	µg/kg	0.20			
1,2,3-Trichloropropane	N	2760	µg/kg	0.20			
N-Propylbenzene	N	2760	µg/kg	0.20			
2-Chlorotoluene	N	2760	µg/kg	0.20			
1,3,5-Trimethylbenzene	N	2760	µg/kg	0.20			
4-Chlorotoluene	N	2760	µg/kg	0.20			
Tert-Butylbenzene	N	2760	µg/kg	0.20			
1,2,4-Trimethylbenzene	N	2760	µg/kg	0.20			
Sec-Butylbenzene	N	2760	µg/kg	0.20			
1,3-Dichlorobenzene	N	2760	µg/kg	0.20			
4-Isopropyltoluene	N	2760	µg/kg	0.20			
1,4-Dichlorobenzene	N	2760	µg/kg	0.20			
N-Butylbenzene	N	2760	µg/kg	0.20			
1,2-Dichlorobenzene	N	2760	µg/kg	0.20			
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	0.20			
1,2,4-Trichlorobenzene	N	2760	µg/kg	0.20			
Hexachlorobutadiene	N	2760	µg/kg	0.20			
1,2,3-Trichlorobenzene	N	2760	µg/kg	0.20			
Methyl Tert-Butyl Ether	N	2760	µg/kg	0.20			
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	2790	mg/kg	0.050			
Phenol	N	2790	mg/kg	0.050			
2-Chlorophenol	N	2790	mg/kg	0.050			
Bis-(2-Chloroethyl)Ether	N	2790	mg/kg	0.050			
1,3-Dichlorobenzene	N	2790	mg/kg	0.050			
1,4-Dichlorobenzene	N	2790	mg/kg	0.050			
1,2-Dichlorobenzene	N	2790	mg/kg	0.050			
2-Methylphenol	N	2790	mg/kg	0.050			
Bis(2-Chloroisopropyl)Ether	N	2790	mg/kg	0.050			
Hexachloroethane	N	2790	mg/kg	0.050			
N-Nitrosodi-n-propylamine	N	2790	mg/kg	0.050			
4-Methylphenol	N	2790	mg/kg	0.050			
Nitrobenzene	N	2790	mg/kg	0.050			

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34338	21-34338	21-34338
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1291141	1291143	1291144
			Sample Location:		TP02	WS23	WS27
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		1.5	0.8	0.5
			Date Sampled:		28-Sep-2021	28-Sep-2021	28-Sep-2021
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Isophorone	N	2790	mg/kg	0.050			
2-Nitrophenol	N	2790	mg/kg	0.050			
2,4-Dimethylphenol	N	2790	mg/kg	0.050			
Bis(2-Chloroethoxy)Methane	N	2790	mg/kg	0.050			
2,4-Dichlorophenol	N	2790	mg/kg	0.050			
1,2,4-Trichlorobenzene	N	2790	mg/kg	0.050			
Naphthalene	N	2790	mg/kg	0.050			
4-Chloroaniline	N	2790	mg/kg	0.050			
Hexachlorobutadiene	N	2790	mg/kg	0.050			
4-Chloro-3-Methylphenol	N	2790	mg/kg	0.050			
2-Methylnaphthalene	N	2790	mg/kg	0.050			
Hexachlorocyclopentadiene	N	2790	mg/kg	0.050			
2,4,6-Trichlorophenol	N	2790	mg/kg	0.050			
2,4,5-Trichlorophenol	N	2790	mg/kg	0.050			
2-Chloronaphthalene	N	2790	mg/kg	0.050			
2-Nitroaniline	N	2790	mg/kg	0.050			
Acenaphthylene	N	2790	mg/kg	0.050			
Dimethylphthalate	N	2790	mg/kg	0.050			
2,6-Dinitrotoluene	N	2790	mg/kg	0.050			
Acenaphthene	N	2790	mg/kg	0.050			
3-Nitroaniline	N	2790	mg/kg	0.050			
Dibenzofuran	N	2790	mg/kg	0.050			
4-Chlorophenylphenylether	N	2790	mg/kg	0.050			
2,4-Dinitrotoluene	N	2790	mg/kg	0.050			
Fluorene	N	2790	mg/kg	0.050			
Diethyl Phthalate	N	2790	mg/kg	0.050			
4-Nitroaniline	N	2790	mg/kg	0.050			
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.050			
Azobenzene	N	2790	mg/kg	0.050			
4-Bromophenylphenyl Ether	N	2790	mg/kg	0.050			
Hexachlorobenzene	N	2790	mg/kg	0.050			
Pentachlorophenol	N	2790	mg/kg	0.050			
Phenanthrene	N	2790	mg/kg	0.050			
Anthracene	N	2790	mg/kg	0.050			
Carbazole	N	2790	mg/kg	0.050			
Di-N-Butyl Phthalate	N	2790	mg/kg	0.050			
Fluoranthene	N	2790	mg/kg	0.050			
Pyrene	N	2790	mg/kg	0.050			
Butylbenzyl Phthalate	N	2790	mg/kg	0.050			

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34338	21-34338	21-34338
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1291141	1291143	1291144
			Sample Location:		TP02	WS23	WS27
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		1.5	0.8	0.5
			Date Sampled:		28-Sep-2021	28-Sep-2021	28-Sep-2021
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Benzo[a]anthracene	N	2790	mg/kg	0.050			
Chrysene	N	2790	mg/kg	0.050			
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.050			
Di-N-Octyl Phthalate	N	2790	mg/kg	0.050			
Benzo[b]fluoranthene	N	2790	mg/kg	0.050			
Benzo[k]fluoranthene	N	2790	mg/kg	0.050			
Benzo[a]pyrene	N	2790	mg/kg	0.050			
Indeno(1,2,3-c,d)Pyrene	N	2790	mg/kg	0.050			
Dibenz(a,h)Anthracene	N	2790	mg/kg	0.050			
Benzo[g,h,i]perylene	N	2790	mg/kg	0.050			
4-Nitrophenol	N	2790	mg/kg	0.050			
Naphthalene	M	2800	mg/kg	0.10	0.75	< 0.10	0.90
Acenaphthylene	N	2800	mg/kg	0.10	0.22	< 0.10	0.24
Acenaphthene	M	2800	mg/kg	0.10	0.18	< 0.10	1.0
Fluorene	M	2800	mg/kg	0.10	0.23	< 0.10	0.93
Phenanthrene	M	2800	mg/kg	0.10	4.7	1.0	10
Anthracene	M	2800	mg/kg	0.10	0.33	0.16	1.9
Fluoranthene	M	2800	mg/kg	0.10	6.7	1.8	14
Pyrene	M	2800	mg/kg	0.10	5.3	1.5	11
Benzo[a]anthracene	M	2800	mg/kg	0.10	2.2	0.90	5.8
Chrysene	M	2800	mg/kg	0.10	3.0	0.99	5.5
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	4.3	1.4	7.7
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	1.2	0.67	2.5
Benzo[a]pyrene	M	2800	mg/kg	0.10	3.0	1.1	5.4
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	2.1	0.69	3.7
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	0.33	0.24	0.67
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	2.0	0.82	3.4
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	37	11	75
PCB 28	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	< 0.10	< 0.10	< 0.10
SVOC TIC	N	2790	mg/kg	N/A			

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34338	21-34338	21-34338
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1291141	1291143	1291144
			Sample Location:		TP02	WS23	WS27
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		1.5	0.8	0.5
			Date Sampled:		28-Sep-2021	28-Sep-2021	28-Sep-2021
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
(SVOC TIC) Dibenzothiophene	N	2790	mg/kg	N/A			
VOC TIC	N	2760	µg/kg	N/A			

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity 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.
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).
1460	Mercury low-level in Waters by AFS	Mercury	Atomic Fluorescence Spectrometry, with collimated UV source, wavelength 253.7 nm.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
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
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
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

Test Methods

SOP	Title	Parameters included	Method summary
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
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
640	Characterisation of Waste (Leaching C10)	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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Email: info@chemtest.com

Final Report

Report No.:	21-34189-1		
Initial Date of Issue:	09-Oct-2021		
Client	Priority Geotechnical Ltd		
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland		
Contact(s):	Colette Kelly		
Project	P210206 Tedcastles Site		
Quotation No.:	Q21-24611	**Date Received:**	01-Oct-2021
Order No.:	14093	**Date Instructed:**	05-Oct-2021
No. of Samples:	6		
Turnaround (Wkdays):	5	**Results Due:**	11-Oct-2021
Date Approved:	09-Oct-2021		
Approved By:			
Details:	Glynn Harvey, Technical Manager		

Results - Leachate

Project: P210206 Tedcastles Site

Client: Priority Geotechnical Ltd					**Chemtest Job No.:**	21-34189	21-34189	21-34189	21-34189	21-34189	21-34189
Quotation No.: Q21-24611					**Chemtest Sample ID.:**	1290299	1290301	1290302	1290303	1290304	1290307
					Sample Location:	WSBH26	WSBH02	WSBH02	WSBH24	WSBH04	WSBH06A
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.50	3.80	4.70	0.50	1.35	0.50
					Date Sampled:	27-Sep-2021	27-Sep-2021	27-Sep-2021	27-Sep-2021	27-Sep-2021	27-Sep-2021
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**						
Total Dissolved Solids	N	1020	10:1	mg/l	1.0	110	380	100	57	230	44
Chloride	U	1220	10:1	mg/l	1.0	< 1.0	5.3	2.8	< 1.0	1.8	< 1.0
Fluoride	U	1220	10:1	mg/l	0.050	0.099	0.46	0.15	0.17	0.32	0.13
Sulphate	U	1220	10:1	mg/l	1.0	< 1.0	140	35	6.8	90	3.8
Arsenic (Dissolved)	U	1455	10:1	mg/l	0.0002	0.0010	0.0007	0.0007	0.0030	0.0032	0.0023
Barium (Dissolved)	U	1455	10:1	mg/l	0.005	0.009	< 0.005	< 0.005	0.008	0.019	< 0.005
Cadmium (Dissolved)	U	1455	10:1	mg/l	0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011
Chromium (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	< 0.0005	0.0005	0.0020	< 0.0005	0.0011
Copper (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0012	0.0007	0.0017	0.0036	0.0007	0.0013
Molybdenum (Dissolved)	U	1455	10:1	mg/l	0.0002	0.0004	0.0069	0.0005	0.0010	0.025	0.0009
Nickel (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	0.0006	0.0006	< 0.0005	0.0005	< 0.0005
Lead (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	< 0.0005	< 0.0005	0.0034	< 0.0005	< 0.0005
Antimony (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	0.0007	< 0.0005	0.0028	0.0015	< 0.0005
Selenium (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0005	< 0.0005
Zinc (Dissolved)	U	1455	10:1	mg/l	0.002	< 0.003	0.004	0.005	0.004	0.004	0.003
Mercury Low Level	U	1460	10:1	mg/l	0.000010	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Dissolved Organic Carbon	U	1610	10:1	mg/l	2.0	2.8	9.2	3.7	4.3	6.5	4.3
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030

Results - Soil

Project: P210206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34189	21-34189	21-34189	21-34189	21-34189	21-34189
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1290299	1290301	1290302	1290303	1290304	1290307
			Sample Location:		WSBH26	WSBH02	WSBH02	WSBH24	WSBH04	WSBH06A
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	3.80	4.70	0.50	1.35	0.50
			Date Sampled:		27-Sep-2021	27-Sep-2021	27-Sep-2021	27-Sep-2021	27-Sep-2021	27-Sep-2021
			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
Asbestos by Gravimetry	U	2192	%	0.001	-	-	-	-	-	-
Total Asbestos	U	2192	%	0.001	-	-	-	-	-	-
Moisture	N	2030	%	0.020	5.5	18	11	7.1	33	7.5
pH	M	2010		4.0	7.9	7.8	8.0	8.0	8.0	8.1
Arsenic	M	2450	mg/kg	1.0	2.3	3.8	< 1.0	9.9	6.8	30
Barium	M	2450	mg/kg	10	63	< 10	< 10	140	55	100
Cadmium	M	2450	mg/kg	0.10	0.34	< 0.10	< 0.10	0.16	0.11	1.5
Molybdenum	M	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	2.3
Antimony	N	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0	3.8	< 2.0	< 2.0
Copper	M	2450	mg/kg	0.50	50	38	23	80	41	36
Mercury	M	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.47	0.31	< 0.10
Nickel	M	2450	mg/kg	0.50	43	23	23	37	23	45
Lead	M	2450	mg/kg	0.50	22	9.5	4.0	280	87	34
Selenium	M	2450	mg/kg	0.20	< 0.20	0.26	0.20	< 0.20	0.60	0.60
Zinc	M	2450	mg/kg	0.50	100	53	42	200	130	96
Chromium (Trivalent)	N	2490	mg/kg	1.0	22	20	11	20	20	23
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
LOI	M	2610	%	0.10	1.1	2.6	0.86	3.1	3.9	0.92
Total Organic Carbon	M	2625	%	0.20	< 0.20	0.80	< 0.20	1.3	1.5	< 0.20
Mineral Oil (TPH Calculation)	N	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	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	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	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	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	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Results - Soil

Project: P210206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34189	21-34189	21-34189	21-34189	21-34189	21-34189
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1290299	1290301	1290302	1290303	1290304	1290307
			Sample Location:		WSBH26	WSBH02	WSBH02	WSBH24	WSBH04	WSBH06A
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	3.80	4.70	0.50	1.35	0.50
			Date Sampled:		27-Sep-2021	27-Sep-2021	27-Sep-2021	27-Sep-2021	27-Sep-2021	27-Sep-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
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
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	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 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	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 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					
1,1,1,2-Tetrachloroethane	N	2760	µg/kg	0.20	< 0.20					
Ethylbenzene	N	2760	µg/kg	0.20	< 0.20					
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	N	2760	µg/kg	0.20	< 0.20					

Results - Soil

Project: P210206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34189	21-34189	21-34189	21-34189	21-34189	21-34189
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1290299	1290301	1290302	1290303	1290304	1290307
			Sample Location:		WSBH26	WSBH02	WSBH02	WSBH24	WSBH04	WSBH06A
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	3.80	4.70	0.50	1.35	0.50
			Date Sampled:		27-Sep-2021	27-Sep-2021	27-Sep-2021	27-Sep-2021	27-Sep-2021	27-Sep-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	N	2760	µg/kg	0.20	< 0.20					
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 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					
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
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					
Hexachloroethane	N	2790	mg/kg	0.050	< 0.050					
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					

Results - Soil

Project: P210206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34189	21-34189	21-34189	21-34189	21-34189	21-34189
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1290299	1290301	1290302	1290303	1290304	1290307
			Sample Location:		WSBH26	WSBH02	WSBH02	WSBH24	WSBH04	WSBH06A
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	3.80	4.70	0.50	1.35	0.50
			Date Sampled:		27-Sep-2021	27-Sep-2021	27-Sep-2021	27-Sep-2021	27-Sep-2021	27-Sep-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
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	< 0.050					
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	< 0.050					
Anthracene	N	2790	mg/kg	0.050	< 0.050					
Carbazole	N	2790	mg/kg	0.050	< 0.050					
Di-N-Butyl Phthalate	N	2790	mg/kg	0.050	< 0.050					
Fluoranthene	N	2790	mg/kg	0.050	< 0.050					
Pyrene	N	2790	mg/kg	0.050	< 0.050					
Butylbenzyl Phthalate	N	2790	mg/kg	0.050	< 0.050					

Results - Soil

Project: P210206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34189	21-34189	21-34189	21-34189	21-34189	21-34189
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1290299	1290301	1290302	1290303	1290304	1290307
			Sample Location:		WSBH26	WSBH02	WSBH02	WSBH24	WSBH04	WSBH06A
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	3.80	4.70	0.50	1.35	0.50
			Date Sampled:		27-Sep-2021	27-Sep-2021	27-Sep-2021	27-Sep-2021	27-Sep-2021	27-Sep-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Benzo[a]anthracene	N	2790	mg/kg	0.050	< 0.050					
Chrysene	N	2790	mg/kg	0.050	< 0.050					
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	< 0.050					
Benzo[k]fluoranthene	N	2790	mg/kg	0.050	< 0.050					
Benzo[a]pyrene	N	2790	mg/kg	0.050	< 0.050					
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	< 0.050					
4-Nitrophenol	N	2790	mg/kg	0.050	< 0.050					
Naphthalene	M	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	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.38	< 0.10
Anthracene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.24	< 0.10
Fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.90	0.53	< 0.10
Pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.81	0.55	< 0.10
Benzo[a]anthracene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.44	0.29	< 0.10
Chrysene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.46	0.40	< 0.10
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.66	0.46	< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.31	0.28	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.50	0.31	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	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	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0	4.1	3.4	< 2.0
PCB 28	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
SVOC TIC	N	2790	mg/kg	N/A	None Detected					

Results - Soil

Project: P210206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34189	21-34189	21-34189	21-34189	21-34189	21-34189
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1290299	1290301	1290302	1290303	1290304	1290307
			Sample Location:		WSBH26	WSBH02	WSBH02	WSBH24	WSBH04	WSBH06A
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	3.80	4.70	0.50	1.35	0.50
			Date Sampled:		27-Sep-2021	27-Sep-2021	27-Sep-2021	27-Sep-2021	27-Sep-2021	27-Sep-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
VOC TIC	N	2760	µg/kg	N/A	None Detected					

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity 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.
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).
1460	Mercury low-level in Waters by AFS	Mercury	Atomic Fluorescence Spectrometry, with collimated UV source, wavelength 253.7 nm.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
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
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
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

Test Methods

SOP	Title	Parameters included	Method summary
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
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
640	Characterisation of Waste (Leaching C10)	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 Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	21-34187-1		
Initial Date of Issue:	08-Oct-2021		
Client	Priority Geotechnical Ltd		
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland		
Contact(s):	Colette Kelly		
Project	P21206 Tedcastles Site		
Quotation No.:	Q21-24611	**Date Received:**	01-Oct-2021
Order No.:	14093	**Date Instructed:**	04-Oct-2021
No. of Samples:	14		
Turnaround (Wkdays):	5	**Results Due:**	08-Oct-2021
Date Approved:	08-Oct-2021		
Approved By:			
Details:	Glynn Harvey, Technical Manager		

Results - Leachate

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd					**Chemtest Job No.:**	21-34187	21-34187	21-34187	21-34187	21-34187	21-34187	21-34187	21-34187
Quotation No.: Q21-24611					**Chemtest Sample ID.:**	1290279	1290280	1290281	1290282	1290283	1290284	1290285	1290287
					Sample Location:	WSBH02	WSBH03	WSBH03	WSBH03	WSBH03	WSBH03	WSBH04	WSBH05
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.5	1.4	2.7	3.6	4.15	5.5	0.6	1.1
					Date Sampled:	24-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021	24-Sep-2021	24-Sep-2021
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**								
Total Dissolved Solids	N	1020	10:1	mg/l	1.0	120	310	290	290	330	120	91	200
Chloride	U	1220	10:1	mg/l	1.0	< 1.0	58	14	49	28	17	1.9	< 1.0
Fluoride	U	1220	10:1	mg/l	0.050	0.36	0.16	4.8	0.94	0.80	0.11	1.1	0.25
Sulphate	U	1220	10:1	mg/l	1.0	37	61	110	50	120	34	17	83
Arsenic (Dissolved)	U	1455	10:1	mg/l	0.0002	0.0028	0.0036	0.0009	0.0018	0.0007	0.0007	0.0017	0.0062
Barium (Dissolved)	U	1455	10:1	mg/l	0.005	0.010	0.032	0.011	< 0.005	< 0.005	< 0.005	0.049	0.022
Cadmium (Dissolved)	U	1455	10:1	mg/l	0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011
Chromium (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0006	0.0005	< 0.0005
Copper (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0033	0.0033	0.0015	0.0022	0.0010	0.0014	0.0026	0.0053
Molybdenum (Dissolved)	U	1455	10:1	mg/l	0.0002	0.0082	0.024	0.0098	0.016	0.0085	0.0020	0.0042	0.0046
Nickel (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0011	0.0010	0.0005	0.0041	< 0.0005	0.0006	0.0009	0.0018
Lead (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0006	0.0018	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0025	0.0014
Antimony (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0031	0.0086	0.0058	0.0011	0.0006	0.0005	0.0031	0.0085
Selenium (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	0.0009	< 0.0005	0.0006	< 0.0005	< 0.0005	0.0012	< 0.0005
Zinc (Dissolved)	U	1455	10:1	mg/l	0.002	0.005	0.004	0.004	0.003	0.004	0.005	0.020	0.005
Mercury Low Level	U	1460	10:1	mg/l	0.000010	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Dissolved Organic Carbon	U	1610	10:1	mg/l	2.0	4.1	5.4	4.6	9.5	5.6	6.4	4.8	7.4
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030

Results - Leachate

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd					**Chemtest Job No.:**	21-34187	21-34187	21-34187	21-34187	21-34187	21-34187
Quotation No.: Q21-24611					**Chemtest Sample ID.:**	1290289	1290290	1290291	1290292	1290293	1290296
					Sample Location:	WSBH05	WSBH05	WSBH06	WSBH07	WSBH07	WSBH07
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	2.4	4.7	0.9	0.5	1.9	4.6
					Date Sampled:	24-Sep-2021	24-Sep-2021	24-Sep-2021	24-Sep-2021	24-Sep-2021	24-Sep-2021
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**						
Total Dissolved Solids	N	1020	10:1	mg/l	1.0	190	350	46	56	340	35
Chloride	U	1220	10:1	mg/l	1.0	1.7	44	< 1.0	1.5	16	77
Fluoride	U	1220	10:1	mg/l	0.050	0.47	0.21	0.11	0.14	1.0	0.13
Sulphate	U	1220	10:1	mg/l	1.0	19	110	2.1	4.4	120	74
Arsenic (Dissolved)	U	1455	10:1	mg/l	0.0002	0.0029	0.0011	0.0015	0.0037	0.0070	0.0008
Barium (Dissolved)	U	1455	10:1	mg/l	0.005	0.010	< 0.005	< 0.005	< 0.005	0.017	0.007
Cadmium (Dissolved)	U	1455	10:1	mg/l	0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011
Chromium (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	< 0.0005	0.0006	0.0006	< 0.0005	< 0.0005
Copper (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0066	0.0014	0.0017	0.0030	0.0010	0.0009
Molybdenum (Dissolved)	U	1455	10:1	mg/l	0.0002	0.015	0.0060	0.0005	0.0012	0.011	0.0026
Nickel (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0019	0.0008	< 0.0005	< 0.0005	0.0007	< 0.0005
Lead (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0021	< 0.0005	0.0006	0.0011	0.0011	< 0.0005
Antimony (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0017	0.0010	< 0.0005	0.0008	0.0022	< 0.0005
Selenium (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0006	0.0008	< 0.0005	< 0.0005	0.0005	< 0.0005
Zinc (Dissolved)	U	1455	10:1	mg/l	0.002	0.005	0.013	0.003	0.003	0.004	0.003
Mercury Low Level	U	1460	10:1	mg/l	0.000010	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Dissolved Organic Carbon	U	1610	10:1	mg/l	2.0	12	11	6.3	2.5	9.3	5.6
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34187	21-34187	21-34187	21-34187	21-34187	21-34187	21-34187	21-34187	21-34187
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1290279	1290280	1290281	1290282	1290283	1290284	1290285	1290287	1290289
			Sample Location:		WSBH02	WSBH03	WSBH03	WSBH03	WSBH03	WSBH03	WSBH04	WSBH05	WSBH05
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.5	1.4	2.7	3.6	4.15	5.5	0.6	1.1	2.4
			Date Sampled:		24-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021	24-Sep-2021	24-Sep-2021	24-Sep-2021
			Asbestos Lab:		DURHAM	DURHAM	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	No Asbestos Detected	No Asbestos Detected
Asbestos by Gravimetry	U	2192	%	0.001	-	-	-	-	-		-	-	-
Total Asbestos	U	2192	%	0.001	-	-	-	-	-		-	-	-
Moisture	N	2030	%	0.020	9.8	14	23	24	28	12	13	13	19
pH	M	2010		4.0	8.1	8.1	8.1	8.3	8.3	8.2	8.1	8.3	8.0
Arsenic	M	2450	mg/kg	1.0	9.4	10	4.4	4.2	1.1	1.3	9.7	6.4	4.1
Barium	M	2450	mg/kg	10	90	89	17	< 10	< 10	< 10	200	75	18
Cadmium	M	2450	mg/kg	0.10	0.48	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.42	< 0.10	< 0.10
Molybdenum	M	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	2.9	< 2.0	< 2.0
Antimony	N	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	2.5	< 2.0	< 2.0
Copper	M	2450	mg/kg	0.50	84	55	8.7	7.8	3.0	3.0	67	28	14
Mercury	M	2450	mg/kg	0.10	0.35	0.73	0.12	0.17	< 0.10	< 0.10	0.14	0.36	0.19
Nickel	M	2450	mg/kg	0.50	30	19	13	14	14	14	31	19	18
Lead	M	2450	mg/kg	0.50	110	160	33	16	1.7	1.5	170	87	39
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	0.95	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	110	120	40	32	25	25	460	100	40
Chromium (Trivalent)	N	2490	mg/kg	1.0	16	11	13	15	9.3	9.2	12	12	16
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
LOI	M	2610	%	0.10	2.6	4.3	0.65	0.78	2.5	4.3	7.5	2.0	0.21
Total Organic Carbon	M	2625	%	0.20	2.2	5.3	2.1	0.80	1.3	0.30	24	2.8	1.1
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10	< 10	< 10	< 10	< 10	< 10	50	120	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 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	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	50	120	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 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	50	120	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 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	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 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	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	220	9.0	13

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34187	21-34187	21-34187	21-34187	21-34187	21-34187	21-34187	21-34187	21-34187
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1290279	1290280	1290281	1290282	1290283	1290284	1290285	1290287	1290289
			Sample Location:		WSBH02	WSBH03	WSBH03	WSBH03	WSBH03	WSBH03	WSBH04	WSBH05	WSBH05
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.5	1.4	2.7	3.6	4.15	5.5	0.6	1.1	2.4
			Date Sampled:		24-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021	24-Sep-2021	24-Sep-2021	24-Sep-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM		DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 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	220	9.0	13
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	< 10	< 10	< 10	270	130	13
Dichlorodifluoromethane	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
Chloromethane	N	2760	µg/kg	0.20	< 0.20	< 0.20	0.70				< 0.20	0.32	
Vinyl Chloride	N	2760	µg/kg	0.20	< 0.20	< 0.20	0.67				< 0.20	0.23	
Bromomethane	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
Chloroethane	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
Trichlorofluoromethane	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
1,1-Dichloroethene	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
Trans 1,2-Dichloroethene	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
1,1-Dichloroethane	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
cis 1,2-Dichloroethene	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
Bromochloromethane	N	2760	µg/kg	0.50	< 0.50	< 0.50	< 0.50				< 0.50	< 0.50	
Trichloromethane	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
1,1,1-Trichloroethane	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
Tetrachloromethane	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
1,1-Dichloropropene	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
Benzene	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	1.8	
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
Trichloroethene	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				21	< 0.20	
1,2-Dichloropropane	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
Dibromomethane	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
Bromodichloromethane	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
cis-1,3-Dichloropropene	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
Toluene	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				1.8	2.2	
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.9	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
1,1,2-Trichloroethane	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
Tetrachloroethene	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
1,3-Dichloropropane	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
Dibromochloromethane	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
1,2-Dibromoethane	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
Chlorobenzene	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
1,1,1,2-Tetrachloroethane	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
Ethylbenzene	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				1.8	1.3	
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.8	< 1.0
m & p-Xylene	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				2.2	2.1	

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34187	21-34187	21-34187	21-34187	21-34187	21-34187	21-34187	21-34187	21-34187
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1290279	1290280	1290281	1290282	1290283	1290284	1290285	1290287	1290289
			Sample Location:		WSBH02	WSBH03	WSBH03	WSBH03	WSBH03	WSBH03	WSBH04	WSBH05	WSBH05
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.5	1.4	2.7	3.6	4.15	5.5	0.6	1.1	2.4
			Date Sampled:		24-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021	24-Sep-2021	24-Sep-2021	24-Sep-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM		DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	4.4	< 1.0
o-Xylene	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				2.6	2.0	
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	2.6	< 1.0
Styrene	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
Tribromomethane	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
Isopropylbenzene	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				2.2	< 0.20	
Bromobenzene	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				5.2	< 0.20	
1,2,3-Trichloropropane	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
N-Propylbenzene	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				4.0	4.2	
2-Chlorotoluene	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
1,3,5-Trimethylbenzene	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	3.9	
4-Chlorotoluene	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				3.7	< 0.20	
Tert-Butylbenzene	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				2.3	< 0.20	
1,2,4-Trimethylbenzene	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				3.4	6.3	
Sec-Butylbenzene	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				2.8	3.1	
1,3-Dichlorobenzene	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
4-Isopropyltoluene	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				3.7	< 0.20	
1,4-Dichlorobenzene	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
N-Butylbenzene	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				3.6	< 0.20	
1,2-Dichlorobenzene	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	30	
1,2,4-Trichlorobenzene	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
Hexachlorobutadiene	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				1.8	< 0.20	
1,2,3-Trichlorobenzene	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				24	< 0.20	
Methyl Tert-Butyl Ether	N	2760	µg/kg	0.20	< 0.20	< 0.20	< 0.20				< 0.20	< 0.20	
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
Phenol	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
2-Chlorophenol	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
Bis-(2-Chloroethyl)Ether	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
1,3-Dichlorobenzene	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
1,4-Dichlorobenzene	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
1,2-Dichlorobenzene	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
2-Methylphenol	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
Bis(2-Chloroisopropyl)Ether	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
Hexachloroethane	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
N-Nitrosodi-n-propylamine	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
4-Methylphenol	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
Nitrobenzene	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34187	21-34187	21-34187	21-34187	21-34187	21-34187	21-34187	21-34187	21-34187
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1290279	1290280	1290281	1290282	1290283	1290284	1290285	1290287	1290289
			Sample Location:		WSBH02	WSBH03	WSBH03	WSBH03	WSBH03	WSBH03	WSBH04	WSBH05	WSBH05
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.5	1.4	2.7	3.6	4.15	5.5	0.6	1.1	2.4
			Date Sampled:		24-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021	24-Sep-2021	24-Sep-2021	24-Sep-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM		DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Isophorone	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
2-Nitrophenol	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
2,4-Dimethylphenol	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
Bis(2-Chloroethoxy)Methane	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
2,4-Dichlorophenol	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
1,2,4-Trichlorobenzene	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
Naphthalene	N	2790	mg/kg	0.050	0.078	< 0.050	< 0.050				< 0.050	0.26	
4-Chloroaniline	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
Hexachlorobutadiene	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
4-Chloro-3-Methylphenol	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
2-Methylnaphthalene	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	0.28	
Hexachlorocyclopentadiene	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
2,4,6-Trichlorophenol	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
2,4,5-Trichlorophenol	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
2-Chloronaphthalene	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
2-Nitroaniline	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
Acenaphthylene	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
Dimethylphthalate	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
2,6-Dinitrotoluene	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
Acenaphthene	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	0.24	
3-Nitroaniline	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
Dibenzofuran	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	0.16	
4-Chlorophenylphenylether	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
2,4-Dinitrotoluene	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
Fluorene	N	2790	mg/kg	0.050	< 0.050	0.26	< 0.050				< 0.050	0.26	
Diethyl Phthalate	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
4-Nitroaniline	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
Azobenzene	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
4-Bromophenylphenyl Ether	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
Hexachlorobenzene	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
Pentachlorophenol	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
Phenanthrene	N	2790	mg/kg	0.050	0.73	1.7	0.16				0.50	1.9	
Anthracene	N	2790	mg/kg	0.050	0.17	0.56	0.077				0.16	0.46	
Carbazole	N	2790	mg/kg	0.050	< 0.050	0.13	< 0.050				0.069	0.14	
Di-N-Butyl Phthalate	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
Fluoranthene	N	2790	mg/kg	0.050	0.93	3.9	0.37				1.2	2.5	
Pyrene	N	2790	mg/kg	0.050	0.75	3.6	0.37				1.2	2.3	
Butylbenzyl Phthalate	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34187	21-34187	21-34187	21-34187	21-34187	21-34187	21-34187	21-34187	21-34187
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1290279	1290280	1290281	1290282	1290283	1290284	1290285	1290287	1290289
			Sample Location:		WSBH02	WSBH03	WSBH03	WSBH03	WSBH03	WSBH03	WSBH04	WSBH05	WSBH05
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.5	1.4	2.7	3.6	4.15	5.5	0.6	1.1	2.4
			Date Sampled:		24-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021	24-Sep-2021	24-Sep-2021	24-Sep-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM		DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Benzo[a]anthracene	N	2790	mg/kg	0.050	0.46	2.4	0.22				0.88	1.2	
Chrysene	N	2790	mg/kg	0.050	0.44	2.5	0.22				0.89	1.2	
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
Di-N-Octyl Phthalate	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
Benzo[b]fluoranthene	N	2790	mg/kg	0.050	0.47	3.1	0.19				1.2	1.2	
Benzo[k]fluoranthene	N	2790	mg/kg	0.050	0.14	1.0	0.065				0.39	0.41	
Benzo[a]pyrene	N	2790	mg/kg	0.050	0.32	2.2	0.13				0.77	0.66	
Indeno(1,2,3-c,d)Pyrene	N	2790	mg/kg	0.050	< 0.050	1.4	< 0.050				0.62	0.55	
Dibenz(a,h)Anthracene	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				0.21	0.11	
Benzo[g,h,i]perylene	N	2790	mg/kg	0.050	< 0.050	1.4	< 0.050				0.50	0.52	
4-Nitrophenol	N	2790	mg/kg	0.050	< 0.050	< 0.050	< 0.050				< 0.050	< 0.050	
Naphthalene	M	2800	mg/kg	0.10	< 0.10	0.83	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	0.36	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	< 0.10	0.40	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10	0.51	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	1.0	3.3	1.4	< 0.10	< 0.10	< 0.10	0.89	1.0	< 0.10
Anthracene	M	2800	mg/kg	0.10	0.31	1.0	0.16	< 0.10	0.11	< 0.10	0.21	0.30	< 0.10
Fluoranthene	M	2800	mg/kg	0.10	1.3	6.4	2.5	< 0.10	0.18	< 0.10	2.0	1.9	0.37
Pyrene	M	2800	mg/kg	0.10	1.1	5.3	2.0	< 0.10	0.13	< 0.10	1.8	1.7	0.32
Benzo[a]anthracene	M	2800	mg/kg	0.10	0.43	3.4	0.91	< 0.10	0.16	< 0.10	1.1	0.94	0.23
Chrysene	M	2800	mg/kg	0.10	0.58	3.5	1.1	< 0.10	0.15	< 0.10	1.1	1.0	0.24
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	0.68	5.4	1.6	< 0.10	0.19	< 0.10	1.6	1.3	0.30
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	0.33	2.2	0.64	< 0.10	0.17	< 0.10	0.58	0.46	0.12
Benzo[a]pyrene	M	2800	mg/kg	0.10	0.62	4.6	1.2	< 0.10	0.23	< 0.10	1.2	0.96	0.19
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	< 0.10	3.0	0.85	< 0.10	0.24	< 0.10	0.94	0.68	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	0.75	0.18	< 0.10	0.14	< 0.10	0.26	0.15	< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	< 0.10	3.0	0.78	< 0.10	0.20	< 0.10	0.75	0.66	< 0.10
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	6.4	44	13	< 2.0	< 2.0	< 2.0	12	11	< 2.0
PCB 28	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
SVOC TIC	N	2790	mg/kg	N/A	None Detected	None Detected	None Detected				None Detected	None Detected	

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34187	21-34187	21-34187	21-34187	21-34187	21-34187	21-34187	21-34187	21-34187
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1290279	1290280	1290281	1290282	1290283	1290284	1290285	1290287	1290289
			Sample Location:		WSBH02	WSBH03	WSBH03	WSBH03	WSBH03	WSBH03	WSBH04	WSBH05	WSBH05
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.5	1.4	2.7	3.6	4.15	5.5	0.6	1.1	2.4
			Date Sampled:		24-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021	24-Sep-2021	24-Sep-2021	24-Sep-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM		DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
VOC TIC	N	2760	µg/kg	N/A	None Detected	None Detected	None Detected				None Detected	None Detected	

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34187	21-34187	21-34187	21-34187	21-34187
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1290290	1290291	1290292	1290293	1290296
			Sample Location:		WSBH05	WSBH06	WSBH07	WSBH07	WSBH07
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		4.7	0.9	0.5	1.9	4.6
			Date Sampled:		24-Sep-2021	24-Sep-2021	24-Sep-2021	24-Sep-2021	24-Sep-2021
			Asbestos Lab:		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	
Asbestos by Gravimetry	U	2192	%	0.001	-	-	-	-	
Total Asbestos	U	2192	%	0.001	-	-	-	-	
Moisture	N	2030	%	0.020	30	4.8	11	36	28
pH	M	2010		4.0	8.6	8.8	9.1	8.0	8.0
Arsenic	M	2450	mg/kg	1.0	2.6	1.2	7.4	10	3.7
Barium	M	2450	mg/kg	10	< 10	26	33	33	12
Cadmium	M	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Molybdenum	M	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Antimony	N	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Copper	M	2450	mg/kg	0.50	2.9	11	35	20	6.2
Mercury	M	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.12	< 0.10
Nickel	M	2450	mg/kg	0.50	11	18	12	14	14
Lead	M	2450	mg/kg	0.50	4.6	5.9	110	48	11
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20	0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	24	41	40	49	31
Chromium (Trivalent)	N	2490	mg/kg	1.0	12	9.5	8.7	13	13
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
LOI	M	2610	%	0.10	< 0.10	5.3	0.33	0.48	0.81
Total Organic Carbon	M	2625	%	0.20	1.9	0.20	0.60	4.4	1.4
Mineral Oil (TPH Calculation)	N	2670	mg/kg	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
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	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
Total Aliphatic Hydrocarbons	N	2680	mg/kg	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
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	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
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34187	21-34187	21-34187	21-34187	21-34187
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1290290	1290291	1290292	1290293	1290296
			Sample Location:		WSBH05	WSBH06	WSBH07	WSBH07	WSBH07
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		4.7	0.9	0.5	1.9	4.6
			Date Sampled:		24-Sep-2021	24-Sep-2021	24-Sep-2021	24-Sep-2021	24-Sep-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Aromatic TPH >C35-C44	N	2680	mg/kg	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
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	< 10	< 10
Dichlorodifluoromethane	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
Chloromethane	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
Vinyl Chloride	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
Bromomethane	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
Chloroethane	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
Trichlorofluoromethane	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
1,1-Dichloroethene	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
Trans 1,2-Dichloroethene	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
1,1-Dichloroethane	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
cis 1,2-Dichloroethene	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
Bromochloromethane	N	2760	µg/kg	0.50		< 0.50	< 0.50	< 0.50	
Trichloromethane	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
1,1,1-Trichloroethane	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
Tetrachloromethane	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
1,1-Dichloropropene	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
Benzene	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
Trichloroethene	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
1,2-Dichloropropane	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
Dibromomethane	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
Bromodichloromethane	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
cis-1,3-Dichloropropene	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
Toluene	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
1,1,2-Trichloroethane	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
Tetrachloroethene	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
1,3-Dichloropropane	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
Dibromochloromethane	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
1,2-Dibromoethane	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
Chlorobenzene	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
1,1,1,2-Tetrachloroethane	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
Ethylbenzene	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34187	21-34187	21-34187	21-34187	21-34187
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1290290	1290291	1290292	1290293	1290296
			Sample Location:		WSBH05	WSBH06	WSBH07	WSBH07	WSBH07
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		4.7	0.9	0.5	1.9	4.6
			Date Sampled:		24-Sep-2021	24-Sep-2021	24-Sep-2021	24-Sep-2021	24-Sep-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
Tribromomethane	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
Isopropylbenzene	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
Bromobenzene	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
1,2,3-Trichloropropane	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
N-Propylbenzene	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
2-Chlorotoluene	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
1,3,5-Trimethylbenzene	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
4-Chlorotoluene	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
Tert-Butylbenzene	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
1,2,4-Trimethylbenzene	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
Sec-Butylbenzene	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
1,3-Dichlorobenzene	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
4-Isopropyltoluene	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
1,4-Dichlorobenzene	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
N-Butylbenzene	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
1,2-Dichlorobenzene	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
1,2-Dibromo-3-Chloropropane	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
1,2,4-Trichlorobenzene	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
Hexachlorobutadiene	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
1,2,3-Trichlorobenzene	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
Methyl Tert-Butyl Ether	N	2760	µg/kg	0.20		< 0.20	< 0.20	< 0.20	
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
Phenol	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
2-Chlorophenol	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
Bis-(2-Chloroethyl)Ether	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
1,3-Dichlorobenzene	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
1,4-Dichlorobenzene	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
1,2-Dichlorobenzene	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
2-Methylphenol	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
Bis(2-Chloroisopropyl)Ether	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
Hexachloroethane	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
N-Nitrosodi-n-propylamine	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
4-Methylphenol	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
Nitrobenzene	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34187	21-34187	21-34187	21-34187	21-34187
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1290290	1290291	1290292	1290293	1290296
			Sample Location:		WSBH05	WSBH06	WSBH07	WSBH07	WSBH07
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		4.7	0.9	0.5	1.9	4.6
			Date Sampled:		24-Sep-2021	24-Sep-2021	24-Sep-2021	24-Sep-2021	24-Sep-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Isophorone	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
2-Nitrophenol	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
2,4-Dimethylphenol	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
Bis(2-Chloroethoxy)Methane	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
2,4-Dichlorophenol	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
1,2,4-Trichlorobenzene	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
Naphthalene	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
4-Chloroaniline	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
Hexachlorobutadiene	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
4-Chloro-3-Methylphenol	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
2-Methylnaphthalene	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
Hexachlorocyclopentadiene	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
2,4,6-Trichlorophenol	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
2,4,5-Trichlorophenol	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
2-Chloronaphthalene	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
2-Nitroaniline	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
Acenaphthylene	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
Dimethylphthalate	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
2,6-Dinitrotoluene	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
Acenaphthene	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
3-Nitroaniline	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
Dibenzofuran	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
4-Chlorophenylphenylether	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
2,4-Dinitrotoluene	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
Fluorene	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
Diethyl Phthalate	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
4-Nitroaniline	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
Azobenzene	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
4-Bromophenylphenyl Ether	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
Hexachlorobenzene	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
Pentachlorophenol	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
Phenanthrene	N	2790	mg/kg	0.050		< 0.050	< 0.050	0.12	
Anthracene	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
Carbazole	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
Di-N-Butyl Phthalate	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
Fluoranthene	N	2790	mg/kg	0.050		< 0.050	< 0.050	0.17	
Pyrene	N	2790	mg/kg	0.050		< 0.050	< 0.050	0.17	
Butylbenzyl Phthalate	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34187	21-34187	21-34187	21-34187	21-34187
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1290290	1290291	1290292	1290293	1290296
			Sample Location:		WSBH05	WSBH06	WSBH07	WSBH07	WSBH07
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		4.7	0.9	0.5	1.9	4.6
			Date Sampled:		24-Sep-2021	24-Sep-2021	24-Sep-2021	24-Sep-2021	24-Sep-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Benzo[a]anthracene	N	2790	mg/kg	0.050		< 0.050	< 0.050	0.12	
Chrysene	N	2790	mg/kg	0.050		< 0.050	< 0.050	0.12	
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
Di-N-Octyl Phthalate	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
Benzo[b]fluoranthene	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
Benzo[k]fluoranthene	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
Benzo[a]pyrene	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
Indeno(1,2,3-c,d)Pyrene	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
Dibenz(a,h)Anthracene	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
Benzo[g,h,i]perylene	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
4-Nitrophenol	N	2790	mg/kg	0.050		< 0.050	< 0.050	< 0.050	
Naphthalene	M	2800	mg/kg	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
Acenaphthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	0.37	0.42	< 0.10
Pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	0.34	0.39	< 0.10
Benzo[a]anthracene	M	2800	mg/kg	0.10	< 0.10	< 0.10	0.18	0.20	< 0.10
Chrysene	M	2800	mg/kg	0.10	< 0.10	< 0.10	0.17	0.22	< 0.10
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	0.28	0.27	< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	0.11	0.10	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	0.19	0.16	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	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
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
PCB 28	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
SVOC TIC	N	2790	mg/kg	N/A		None Detected	None Detected	None Detected	

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34187	21-34187	21-34187	21-34187	21-34187
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1290290	1290291	1290292	1290293	1290296
			Sample Location:		WSBH05	WSBH06	WSBH07	WSBH07	WSBH07
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		4.7	0.9	0.5	1.9	4.6
			Date Sampled:		24-Sep-2021	24-Sep-2021	24-Sep-2021	24-Sep-2021	24-Sep-2021
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
VOC TIC	N	2760	µg/kg	N/A		None Detected	None Detected	None Detected	

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity 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.
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).
1460	Mercury low-level in Waters by AFS	Mercury	Atomic Fluorescence Spectrometry, with collimated UV source, wavelength 253.7 nm.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
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
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
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

Test Methods

SOP	Title	Parameters included	Method summary
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
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
640	Characterisation of Waste (Leaching C10)	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 Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	21-34171-1		
Initial Date of Issue:	08-Oct-2021		
Client	Priority Geotechnical Ltd		
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland		
Contact(s):	Colette Kelly		
Project	P21206 Tedcastles Site		
Quotation No.:	Q21-24611	**Date Received:**	01-Oct-2021
Order No.:	14093	**Date Instructed:**	04-Oct-2021
No. of Samples:	3		
Turnaround (Wkdays):	5	**Results Due:**	08-Oct-2021
Date Approved:	08-Oct-2021		
Approved By:			
Details:	Glynn Harvey, Technical Manager		

Results - Leachate

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd					**Chemtest Job No.:**	21-34171	21-34171	21-34171
Quotation No.: Q21-24611					**Chemtest Sample ID.:**	1290224	1290225	1290226
					Sample Location:	WSBH01	WSBH01	WSBH01
					Sample Type:	SOIL	SOIL	SOIL
					Top Depth (m):	0.10	0.70	1.70
					Date Sampled:	22-Sep-2021	22-Sep-2021	22-Sep-2021
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**			
Total Dissolved Solids	N	1020	10:1	mg/l	1.0	190	91	110
Chloride	U	1220	10:1	mg/l	1.0	1.8	< 1.0	2.4
Fluoride	U	1220	10:1	mg/l	0.050	0.46	0.96	0.59
Sulphate	U	1220	10:1	mg/l	1.0	2.3	12	32
Arsenic (Dissolved)	U	1455	10:1	mg/l	0.0002	0.0004	0.0013	0.0050
Barium (Dissolved)	U	1455	10:1	mg/l	0.005	0.015	0.018	0.066
Cadmium (Dissolved)	U	1455	10:1	mg/l	0.00011	< 0.00011	< 0.00011	< 0.00011
Chromium (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	0.0018	< 0.0005
Copper (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0018	0.0017	0.0011
Molybdenum (Dissolved)	U	1455	10:1	mg/l	0.0002	0.0046	0.017	0.0069
Nickel (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	0.0032	< 0.0005
Lead (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	< 0.0005	< 0.0005
Antimony (Dissolved)	U	1455	10:1	mg/l	0.0005	0.0006	0.0013	0.0014
Selenium (Dissolved)	U	1455	10:1	mg/l	0.0005	< 0.0005	0.0010	0.0027
Zinc (Dissolved)	U	1455	10:1	mg/l	0.002	0.003	0.004	< 0.003
Mercury Low Level	U	1460	10:1	mg/l	0.000010	< 0.00001	< 0.00001	< 0.00001
Dissolved Organic Carbon	U	1610	10:1	mg/l	2.0	3.6	2.3	< 2.0
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030	< 0.030

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34171	21-34171	21-34171
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1290224	1290225	1290226
			Sample Location:		WSBH01	WSBH01	WSBH01
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.10	0.70	1.70
			Date Sampled:		22-Sep-2021	22-Sep-2021	22-Sep-2021
			Asbestos Lab:		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
Asbestos by Gravimetry	U	2192	%	0.001	-	-	-
Total Asbestos	U	2192	%	0.001	-	-	-
Moisture	N	2030	%	0.020	13	6.3	19
pH	M	2010		4.0	8.3	8.1	9.0
Arsenic	M	2450	mg/kg	1.0	11	110	41
Barium	M	2450	mg/kg	10	93	280	470
Cadmium	M	2450	mg/kg	0.10	0.74	< 0.10	< 0.10
Molybdenum	M	2450	mg/kg	2.0	< 2.0	85	6.7
Antimony	N	2450	mg/kg	2.0	< 2.0	7.5	< 2.0
Copper	M	2450	mg/kg	0.50	36	420	120
Mercury	M	2450	mg/kg	0.10	0.13	4.6	0.17
Nickel	M	2450	mg/kg	0.50	20	6700	180
Lead	M	2450	mg/kg	0.50	56	3000	61
Selenium	M	2450	mg/kg	0.20	< 0.20	1.8	0.23
Zinc	M	2450	mg/kg	0.50	190	430	75
Chromium (Trivalent)	N	2490	mg/kg	1.0	15	1300	50
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
LOI	M	2610	%	0.10	15	3.7	2.4
Total Organic Carbon	M	2625	%	0.20	18	3.5	1.2
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10	< 10	< 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	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	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 TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34171	21-34171	21-34171
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1290224	1290225	1290226
			Sample Location:		WSBH01	WSBH01	WSBH01
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.10	0.70	1.70
			Date Sampled:		22-Sep-2021	22-Sep-2021	22-Sep-2021
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
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	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 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	M	2760	µg/kg	1.0	< 1.0	< 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	M	2760	µg/kg	1.0	< 1.0	< 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	
1,1,1,2-Tetrachloroethane	N	2760	µg/kg	0.20		< 0.20	
Ethylbenzene	N	2760	µg/kg	0.20		< 0.20	
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	N	2760	µg/kg	0.20		< 0.20	

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34171	21-34171	21-34171
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1290224	1290225	1290226
			Sample Location:		WSBH01	WSBH01	WSBH01
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.10	0.70	1.70
			Date Sampled:		22-Sep-2021	22-Sep-2021	22-Sep-2021
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	N	2760	µg/kg	0.20		< 0.20	
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 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	
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
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	
Hexachloroethane	N	2790	mg/kg	0.050		< 0.050	
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	

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34171	21-34171	21-34171
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1290224	1290225	1290226
			Sample Location:		WSBH01	WSBH01	WSBH01
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.10	0.70	1.70
			Date Sampled:		22-Sep-2021	22-Sep-2021	22-Sep-2021
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
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		< 0.050	
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		0.60	
Anthracene	N	2790	mg/kg	0.050		< 0.050	
Carbazole	N	2790	mg/kg	0.050		< 0.050	
Di-N-Butyl Phthalate	N	2790	mg/kg	0.050		< 0.050	
Fluoranthene	N	2790	mg/kg	0.050		0.94	
Pyrene	N	2790	mg/kg	0.050		0.77	
Butylbenzyl Phthalate	N	2790	mg/kg	0.050		< 0.050	

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34171	21-34171	21-34171
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1290224	1290225	1290226
			Sample Location:		WSBH01	WSBH01	WSBH01
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.10	0.70	1.70
			Date Sampled:		22-Sep-2021	22-Sep-2021	22-Sep-2021
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Benzo[a]anthracene	N	2790	mg/kg	0.050		0.59	
Chrysene	N	2790	mg/kg	0.050		0.52	
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		0.53	
Benzo[k]fluoranthene	N	2790	mg/kg	0.050		0.21	
Benzo[a]pyrene	N	2790	mg/kg	0.050		0.50	
Indeno(1,2,3-c,d)Pyrene	N	2790	mg/kg	0.050		0.32	
Dibenz(a,h)Anthracene	N	2790	mg/kg	0.050		< 0.050	
Benzo[g,h,i]perylene	N	2790	mg/kg	0.050		0.29	
4-Nitrophenol	N	2790	mg/kg	0.050		< 0.050	
Naphthalene	M	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	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	< 0.10	0.42	< 0.10
Anthracene	M	2800	mg/kg	0.10	< 0.10	0.11	< 0.10
Fluoranthene	M	2800	mg/kg	0.10	0.45	0.77	< 0.10
Pyrene	M	2800	mg/kg	0.10	0.41	0.62	< 0.10
Benzo[a]anthracene	M	2800	mg/kg	0.10	< 0.10	0.53	< 0.10
Chrysene	M	2800	mg/kg	0.10	< 0.10	0.40	< 0.10
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	< 0.10	0.58	< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	< 0.10	0.23	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	< 0.10	0.40	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	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	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	< 2.0	4.1	< 2.0
PCB 28	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	< 0.10	< 0.10	< 0.10
SVOC TIC	N	2790	mg/kg	N/A		None Detected	

Results - Soil

Project: P21206 Tedcastles Site

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-34171	21-34171	21-34171
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1290224	1290225	1290226
			Sample Location:		WSBH01	WSBH01	WSBH01
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.10	0.70	1.70
			Date Sampled:		22-Sep-2021	22-Sep-2021	22-Sep-2021
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
VOC TIC	N	2760	µg/kg	N/A		None Detected	

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity 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.
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).
1460	Mercury low-level in Waters by AFS	Mercury	Atomic Fluorescence Spectrometry, with collimated UV source, wavelength 253.7 nm.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
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
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
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

Test Methods

SOP	Title	Parameters included	Method summary
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
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
640	Characterisation of Waste (Leaching C10)	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 Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Amended Report

Report No.:	22-02916-6		
Initial Date of Issue:	18-Feb-2022	**Date of Re-Issue:**	23-Feb-2022
Client	Priority Geotechnical Ltd		
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland		
Contact(s):	Colette Kelly		
Project	P2120 Ted Castle Site		
Quotation No.:	Q21-24611	**Date Received:**	27-Jan-2022
Order No.:	14093	**Date Instructed:**	27-Jan-2022
No. of Samples:	9		
Turnaround (Wkdays):	20	**Results Due:**	23-Feb-2022
Date Approved:	21-Feb-2022		

Approved By:

Details: Stuart Henderson, Technical Manager

Results - Water

Project: P2120 Ted Castle Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	22-02916	22-02916	22-02916	22-02916	22-02916	22-02916	22-02916	22-02916
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1360156	1360157	1360158	1360159	1360160	1360161	1360162	1360163
				Sample Location:	SW01	SW02	SW03	SW07	SW08	SW04	SW06	WS27
				Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
				Date Sampled:	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
PFAS Top Assay Waters	SN		ng/l	1.00			See Attached					
Diesel Present	N	1670		N/A					False			
Tetramethyl Lead	N	1760	µg/l	1.0000000					< 1.000			
pH	U	1010		N/A	7.2	7.8	7.5	8.2	8.4	8.4	8.3	8.4
Electrical Conductivity	U	1020	µS/cm	1.0	4200	4600	40000	7900	6900	4100	7100	1800
Total Suspended Solids with Hot Water	N	1030	mg/l	5.0	41	44	230	52	56	160	120	48
Total Dissolved Solids	N	1020	mg/l	1.0	2700	3000	26000	5200	4500	2700	4600	1200
Biochemical Oxygen Demand	N	1090	mg O2/l	4.0	< 4.0	< 4.0	< 4.0	5.0	< 4.0	< 4.0	< 4.0	< 4.0
Chemical Oxygen Demand	U	1100	mg O2/l	10	23	28	140	26	25	23	130	15
Dissolved Oxygen	N	1150	mg O2/l	0.50	9.5	9.5	9.4	9.3	9.3	9.3	9.2	9.2
Redox Potential	N	1170	mV	N/A	170	170	210	200	200	190	210	200
Alkalinity (Total)	U	1220	mg/l	10	56	51	55	230	220	150	170	420
Chloride	U	1220	mg/l	1.0	1300	1500	17000	2200	2100	1100	2300	260
Ammoniacal Nitrogen	U	1220	mg/l	0.050	0.23	0.35	0.78	1.5	1.2	12	11	1.4
Nitrate	U	1220	mg/l	0.50	12	9.9	< 0.50	13	11	50	34	1.3
Phosphate	U	1220	mg/l	0.200	< 0.20	< 0.20	< 0.20	0.32	0.29	2.4	2.8	< 0.20
Sulphate	U	1220	mg/l	1.0	180	210	2200	340	320	200	360	18
Total Calcium	N	1455	mg/l	5.0	47	48	320	140	130	94	120	140
Total Potassium	N	1455	mg/l	0.50	25	28	290	42	43	35	57	11
Total Magnesium	N	1455	mg/l	0.50	82	91	930	130	140	63	150	21
Total Sodium	N	1455	mg/l	0.50	620	750	7500	1000	1100	500	1200	130
Arsenic (Dissolved)	U	1455	µg/l	0.20	2.2	1.4	3.0	4.8	2.8	5.2	4.0	2.2
Barium (Dissolved)	U	1455	µg/l	5.00	98	110	100	100	120	100	130	400
Cadmium (Dissolved)	U	1455	µg/l	0.11	0.33	0.17	0.20	0.23	< 0.11	0.24	< 0.11	0.19
Copper (Dissolved)	U	1455	µg/l	0.50	1.7	0.97	0.58	3.4	5.8	3.3	< 0.50	1.5
Iron (Dissolved)	N	1455	µg/l	5.0	45	32	< 5.0	33	66	7.8	12	140
Mercury (Dissolved)	U	1455	µg/l	0.05	< 0.05	< 0.05	< 0.05	0.13	< 0.05	< 0.05	< 0.05	< 0.05
Manganese (Dissolved)	U	1455	µg/l	0.50	48	45	45	80	97	140	160	14000
Molybdenum (Dissolved)	U	1455	µg/l	0.20	1.6	1.1	7.9	4.5	2.9	2.9	2.5	5.0
Nickel (Dissolved)	U	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50	4.1	1.9	3.1	2.0	5.9
Lead (Dissolved)	U	1455	µg/l	0.50	0.90	< 0.50	< 0.50	4.8	2.4	< 0.50	< 0.50	1.8
Antimony (Dissolved)	U	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50	3.3	1.4	1.6	1.3	1.8
Selenium (Dissolved)	U	1455	µg/l	0.50	7.2	2.2	6.1	5.8	4.4	2.3	0.51	1.2
Zinc (Dissolved)	U	1455	µg/l	2.5	18	< 2.5	< 2.5	470	180	53	16	210
Chromium (Trivalent)	N	1490	mg/l	0.020	8.7	6.7	15	11	9.0	5.7	18	2.7
Low-Level Chromium (Hexavalent)	U	1495	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Water

Project: P2120 Ted Castle Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	22-02916	22-02916	22-02916	22-02916	22-02916	22-02916	22-02916	22-02916
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1360156	1360157	1360158	1360159	1360160	1360161	1360162	1360163
				Sample Location:	SW01	SW02	SW03	SW07	SW08	SW04	SW06	WS27
				Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
				Date Sampled:	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	110	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	120	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	390	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	390	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10	< 10	< 10	510	< 10	< 10	< 10	< 10
Tetraethyl Lead	N	1730	µg/l	1.0					< 1.0			
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Trichloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	10	8.5	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Bromodichloromethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Results - Water

Project: P2120 Ted Castle Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	22-02916	22-02916	22-02916	22-02916	22-02916	22-02916	22-02916	22-02916
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1360156	1360157	1360158	1360159	1360160	1360161	1360162	1360163
				Sample Location:	SW01	SW02	SW03	SW07	SW08	SW04	SW06	WS27
				Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
				Date Sampled:	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Results - Water

Project: P2120 Ted Castle Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	22-02916	22-02916	22-02916	22-02916	22-02916	22-02916	22-02916	22-02916
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1360156	1360157	1360158	1360159	1360160	1360161	1360162	1360163
				Sample Location:	SW01	SW02	SW03	SW07	SW08	SW04	SW06	WS27
				Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
				Date Sampled:	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Results - Water

Project: P2120 Ted Castle Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	22-02916	22-02916	22-02916	22-02916	22-02916	22-02916	22-02916	22-02916
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1360156	1360157	1360158	1360159	1360160	1360161	1360162	1360163
				Sample Location:	SW01	SW02	SW03	SW07	SW08	SW04	SW06	WS27
				Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
				Date Sampled:	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Results - Water

Project: P2120 Ted Castle Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	22-02916
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1360164
				Sample Location:	WS23
				Sample Type:	WATER
				Date Sampled:	25-Jan-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
PFAS Top Assay Waters	SN		ng/l	1.00	
Diesel Present	N	1670		N/A	
Tetramethyl Lead	N	1760	µg/l	1.0000000	
pH	U	1010		N/A	8.3
Electrical Conductivity	U	1020	µS/cm	1.0	940
Total Suspended Solids with Hot Water	N	1030	mg/l	5.0	110
Total Dissolved Solids	N	1020	mg/l	1.0	610
Biochemical Oxygen Demand	N	1090	mg O2/l	4.0	< 4.0
Chemical Oxygen Demand	U	1100	mg O2/l	10	15
Dissolved Oxygen	N	1150	mg O2/l	0.50	9.1
Redox Potential	N	1170	mV	N/A	200
Alkalinity (Total)	U	1220	mg/l	10	420
Chloride	U	1220	mg/l	1.0	59
Ammoniacal Nitrogen	U	1220	mg/l	0.050	2.2
Nitrate	U	1220	mg/l	0.50	< 0.50
Phosphate	U	1220	mg/l	0.200	< 0.20
Sulphate	U	1220	mg/l	1.0	60
Total Calcium	N	1455	mg/l	5.0	120
Total Potassium	N	1455	mg/l	0.50	7.6
Total Magnesium	N	1455	mg/l	0.50	12
Total Sodium	N	1455	mg/l	0.50	70
Arsenic (Dissolved)	U	1455	µg/l	0.20	1.8
Barium (Dissolved)	U	1455	µg/l	5.00	170
Cadmium (Dissolved)	U	1455	µg/l	0.11	0.13
Copper (Dissolved)	U	1455	µg/l	0.50	0.94
Iron (Dissolved)	N	1455	µg/l	5.0	< 5.0
Mercury (Dissolved)	U	1455	µg/l	0.05	< 0.05
Manganese (Dissolved)	U	1455	µg/l	0.50	1500
Molybdenum (Dissolved)	U	1455	µg/l	0.20	8.1
Nickel (Dissolved)	U	1455	µg/l	0.50	4.5
Lead (Dissolved)	U	1455	µg/l	0.50	0.70
Antimony (Dissolved)	U	1455	µg/l	0.50	0.72
Selenium (Dissolved)	U	1455	µg/l	0.50	1.4
Zinc (Dissolved)	U	1455	µg/l	2.5	56
Chromium (Trivalent)	N	1490	mg/l	0.020	7.8
Low-Level Chromium (Hexavalent)	U	1495	µg/l	0.10	< 0.10
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

Results - Water

Project: P2120 Ted Castle Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	22-02916
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1360164
				Sample Location:	WS23
				Sample Type:	WATER
				Date Sampled:	25-Jan-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	600
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	600
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 TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	600
Tetraethyl Lead	N	1730	µg/l	1.0	
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

Results - Water

Project: P2120 Ted Castle Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	22-02916
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1360164
				Sample Location:	WS23
				Sample Type:	WATER
				Date Sampled:	25-Jan-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
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
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

Results - Water

Project: P2120 Ted Castle Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	22-02916
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1360164
				Sample Location:	WS23
				Sample Type:	WATER
				Date Sampled:	25-Jan-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
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-Chloroaniline	N	1790	µg/l	0.50	< 0.50
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

Results - Water

Project: P2120 Ted Castle Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	22-02916
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1360164
				Sample Location:	WS23
				Sample Type:	WATER
				Date Sampled:	25-Jan-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
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
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1030	Total Suspended Solids	Total suspended solids	Filtration of a mixed sample through a standard glass fibre filter and determination of the mass of residue retained dried at 105°C.
1090	Biochemical Oxygen Demand	Biochemical Oxygen demand (BOD)	Colorimetric determination of dissolved oxygen in seeded sample after 5 days incubation at 20°C.
1100	Chemical Oxygen Demand	Chemical Oxygen demand (COD)	Dichromate oxidation of organic matter in sample followed by colorimetric determination of residual Cr[VI].
1150	Dissolved Oxygen	Dissolved Oxygen (DO)	Electrometric determination (on site preferred), using oxygen sensitive membrane electrode.
1170	Redox Potential	Redox Potential	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.
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.
1495	Low Level Hexavalent Chromium in Waters	Chromium [VI]	Colorimetric determination of hexavalent chromium expressed as Cr (VI) µg/l in water, using Ion Chromatography and UV-visible spectrophotometry.
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
1730	Organo-Leads	Organo-Leads	Solvent extraction / GCMS 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

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

Amended Report

Report No.:	22-02916-3		
Initial Date of Issue:	18-Feb-2022	**Date of Re-Issue:**	18-Feb-2022
Client	Priority Geotechnical Ltd		
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland		
Contact(s):	Colette Kelly		
Project	P2120 Ted Castle Site		
Quotation No.:	Q21-24611	**Date Received:**	27-Jan-2022
Order No.:	14093	**Date Instructed:**	27-Jan-2022
No. of Samples:	9		
Turnaround (Wkdays):	10	**Results Due:**	09-Feb-2022
Date Approved:	18-Feb-2022		

Approved By:

Details: Stuart Henderson, Technical Manager

Results - Water

Project: P2120 Ted Castle Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	22-02916	22-02916	22-02916	22-02916	22-02916	22-02916	22-02916	22-02916
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1360156	1360157	1360158	1360159	1360160	1360161	1360162	1360163
				Sample Location:	SW01	SW02	SW03	SW07	SW08	SW04	SW06	WS27
				Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
				Date Sampled:	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
PFAS Top Assay Waters	SN		ng/l	1.00			See Attached					
Diesel Present	N	1670		N/A					False			
Tetramethyl Lead	N	1760	µg/l	1.0000000					< 1.000			
pH	U	1010		N/A	7.2	7.8	7.5	8.2	8.4	8.4	8.3	8.4
Electrical Conductivity	U	1020	µS/cm	1.0	4200	4600	40000	7900	6900	4100	7100	1800
Total Suspended Solids with Hot Water	N	1030	mg/l	5.0	41	44	230	52	56	160	120	48
Total Dissolved Solids	N	1020	mg/l	1.0	2700	3000	26000	5200	4500	2700	4600	1200
Biochemical Oxygen Demand	N	1090	mg O2/l	4.0	< 4.0	< 4.0	< 4.0	5.0	< 4.0	< 4.0	< 4.0	< 4.0
Chemical Oxygen Demand	U	1100	mg O2/l	10	23	28	140	26	25	23	130	15
Dissolved Oxygen	N	1150	mg O2/l	0.50	9.5	9.5	9.4	9.3	9.3	9.3	9.2	9.2
Redox Potential	N	1170	mV	N/A	170	170	210	200	200	190	210	200
Alkalinity (Total)	U	1220	mg/l	10	56	51	55	230	220	150	170	420
Chloride	U	1220	mg/l	1.0	1300	1500	17000	2200	2100	1100	2300	260
Ammoniacal Nitrogen	U	1220	mg/l	0.050	0.23	0.35	0.78	1.5	1.2	12	11	1.4
Nitrate	U	1220	mg/l	0.50	12	9.9	< 0.50	13	11	50	34	1.3
Phosphate	U	1220	mg/l	0.200	< 0.20	< 0.20	< 0.20	0.32	0.29	2.4	2.8	< 0.20
Sulphate	U	1220	mg/l	1.0	180	210	2200	340	320	200	360	18
Total Calcium	N	1455	mg/l	5.0	47	48	320	140	130	94	120	140
Total Potassium	N	1455	mg/l	0.50	25	28	290	42	43	35	57	11
Total Magnesium	N	1455	mg/l	0.50	82	91	930	130	140	63	150	21
Total Sodium	N	1455	mg/l	0.50	620	750	7500	1000	1100	500	1200	130
Arsenic (Dissolved)	U	1455	µg/l	0.20	2.2	1.4	3.0	4.8	2.8	5.2	4.0	2.2
Barium (Dissolved)	U	1455	µg/l	5.00	98	110	100	100	120	100	130	400
Cadmium (Dissolved)	U	1455	µg/l	0.11	0.33	0.17	0.20	0.23	< 0.11	0.24	< 0.11	0.19
Copper (Dissolved)	U	1455	µg/l	0.50	1.7	0.97	0.58	3.4	5.8	3.3	< 0.50	1.5
Iron (Dissolved)	N	1455	µg/l	5.0	45	32	< 5.0	33	66	7.8	12	140
Mercury (Dissolved)	U	1455	µg/l	0.05	< 0.05	< 0.05	< 0.05	0.13	< 0.05	< 0.05	< 0.05	< 0.05
Manganese (Dissolved)	U	1455	µg/l	0.50	48	45	45	80	97	140	160	14000
Molybdenum (Dissolved)	U	1455	µg/l	0.20	1.6	1.1	7.9	4.5	2.9	2.9	2.5	5.0
Nickel (Dissolved)	U	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50	4.1	1.9	3.1	2.0	5.9
Lead (Dissolved)	U	1455	µg/l	0.50	0.90	< 0.50	< 0.50	4.8	2.4	< 0.50	< 0.50	1.8
Antimony (Dissolved)	U	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50	3.3	1.4	1.6	1.3	1.8
Selenium (Dissolved)	U	1455	µg/l	0.50	7.2	2.2	6.1	5.8	4.4	2.3	0.51	1.2
Zinc (Dissolved)	U	1455	µg/l	2.5	18	< 2.5	< 2.5	470	180	53	16	210
Chromium (Trivalent)	N	1490	mg/l	0.020	8.7	6.7	15	11	9.0	5.7	18	2.7
Low-Level Chromium (Hexavalent)	U	1495	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10

Results - Water

Project: P2120 Ted Castle Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	22-02916	22-02916	22-02916	22-02916	22-02916	22-02916	22-02916	22-02916
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1360156	1360157	1360158	1360159	1360160	1360161	1360162	1360163
				Sample Location:	SW01	SW02	SW03	SW07	SW08	SW04	SW06	WS27
				Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
				Date Sampled:	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	110		< 0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	120		< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	390		< 0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	390		< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10	< 10	< 10	510		< 10	< 10	< 10
Tetraethyl Lead	N	1730	µg/l	1.0					< 1.0			
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Trichloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	10	8.5	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Bromodichloromethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Results - Water

Project: P2120 Ted Castle Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	22-02916	22-02916	22-02916	22-02916	22-02916	22-02916	22-02916	22-02916
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1360156	1360157	1360158	1360159	1360160	1360161	1360162	1360163
				Sample Location:	SW01	SW02	SW03	SW07	SW08	SW04	SW06	WS27
				Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
				Date Sampled:	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Results - Water

Project: P2120 Ted Castle Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	22-02916	22-02916	22-02916	22-02916	22-02916	22-02916	22-02916	22-02916
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1360156	1360157	1360158	1360159	1360160	1360161	1360162	1360163
				Sample Location:	SW01	SW02	SW03	SW07	SW08	SW04	SW06	WS27
				Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
				Date Sampled:	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Results - Water

Project: P2120 Ted Castle Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	22-02916	22-02916	22-02916	22-02916	22-02916	22-02916	22-02916	22-02916
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1360156	1360157	1360158	1360159	1360160	1360161	1360162	1360163
				Sample Location:	SW01	SW02	SW03	SW07	SW08	SW04	SW06	WS27
				Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
				Date Sampled:	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022	25-Jan-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Results - Water

Project: P2120 Ted Castle Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	22-02916
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1360164
				Sample Location:	WS23
				Sample Type:	WATER
				Date Sampled:	25-Jan-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
PFAS Top Assay Waters	SN		ng/l	1.00	
Diesel Present	N	1670		N/A	
Tetramethyl Lead	N	1760	µg/l	1.0000000	
pH	U	1010		N/A	8.3
Electrical Conductivity	U	1020	µS/cm	1.0	940
Total Suspended Solids with Hot Water	N	1030	mg/l	5.0	110
Total Dissolved Solids	N	1020	mg/l	1.0	610
Biochemical Oxygen Demand	N	1090	mg O2/l	4.0	< 4.0
Chemical Oxygen Demand	U	1100	mg O2/l	10	15
Dissolved Oxygen	N	1150	mg O2/l	0.50	9.1
Redox Potential	N	1170	mV	N/A	200
Alkalinity (Total)	U	1220	mg/l	10	420
Chloride	U	1220	mg/l	1.0	59
Ammoniacal Nitrogen	U	1220	mg/l	0.050	2.2
Nitrate	U	1220	mg/l	0.50	< 0.50
Phosphate	U	1220	mg/l	0.200	< 0.20
Sulphate	U	1220	mg/l	1.0	60
Total Calcium	N	1455	mg/l	5.0	120
Total Potassium	N	1455	mg/l	0.50	7.6
Total Magnesium	N	1455	mg/l	0.50	12
Total Sodium	N	1455	mg/l	0.50	70
Arsenic (Dissolved)	U	1455	µg/l	0.20	1.8
Barium (Dissolved)	U	1455	µg/l	5.00	170
Cadmium (Dissolved)	U	1455	µg/l	0.11	0.13
Copper (Dissolved)	U	1455	µg/l	0.50	0.94
Iron (Dissolved)	N	1455	µg/l	5.0	< 5.0
Mercury (Dissolved)	U	1455	µg/l	0.05	< 0.05
Manganese (Dissolved)	U	1455	µg/l	0.50	1500
Molybdenum (Dissolved)	U	1455	µg/l	0.20	8.1
Nickel (Dissolved)	U	1455	µg/l	0.50	4.5
Lead (Dissolved)	U	1455	µg/l	0.50	0.70
Antimony (Dissolved)	U	1455	µg/l	0.50	0.72
Selenium (Dissolved)	U	1455	µg/l	0.50	1.4
Zinc (Dissolved)	U	1455	µg/l	2.5	56
Chromium (Trivalent)	N	1490	mg/l	0.020	7.8
Low-Level Chromium (Hexavalent)	U	1495	µg/l	0.10	< 0.10
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

Results - Water

Project: P2120 Ted Castle Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	22-02916
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1360164
				Sample Location:	WS23
				Sample Type:	WATER
				Date Sampled:	25-Jan-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	600
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	600
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 TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	600
Tetraethyl Lead	N	1730	µg/l	1.0	
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

Results - Water

Project: P2120 Ted Castle Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	22-02916
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1360164
				Sample Location:	WS23
				Sample Type:	WATER
				Date Sampled:	25-Jan-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
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
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

Results - Water

Project: P2120 Ted Castle Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	22-02916
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1360164
				Sample Location:	WS23
				Sample Type:	WATER
				Date Sampled:	25-Jan-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
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-Chloroaniline	N	1790	µg/l	0.50	< 0.50
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

Results - Water

Project: P2120 Ted Castle Site

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	22-02916
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1360164
				Sample Location:	WS23
				Sample Type:	WATER
				Date Sampled:	25-Jan-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
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
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1030	Total Suspended Solids	Total suspended solids	Filtration of a mixed sample through a standard glass fibre filter and determination of the mass of residue retained dried at 105°C.
1090	Biochemical Oxygen Demand	Biochemical Oxygen demand (BOD)	Colorimetric determination of dissolved oxygen in seeded sample after 5 days incubation at 20°C.
1100	Chemical Oxygen Demand	Chemical Oxygen demand (COD)	Dichromate oxidation of organic matter in sample followed by colorimetric determination of residual Cr[VI].
1150	Dissolved Oxygen	Dissolved Oxygen (DO)	Electrometric determination (on site preferred), using oxygen sensitive membrane electrode.
1170	Redox Potential	Redox Potential	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.
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.
1495	Low Level Hexavalent Chromium in Waters	Chromium [VI]	Colorimetric determination of hexavalent chromium expressed as Cr (VI) µg/l in water, using Ion Chromatography and UV-visible spectrophotometry.
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
1730	Organo-Leads	Organo-Leads	Solvent extraction / GCMS 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

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

Amended Report

Report No.:	22-02739-3		
Initial Date of Issue:	18-Feb-2022	**Date of Re-Issue:**	18-Feb-2022
Client	Priority Geotechnical Ltd		
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland		
Contact(s):	Colette Kelly		
Project	P21206 Ted Castles		
Quotation No.:	Q21-24611	**Date Received:**	26-Jan-2022
Order No.:	14093	**Date Instructed:**	26-Jan-2022
No. of Samples:	13		
Turnaround (Wkdays):	5	**Results Due:**	01-Feb-2022
Date Approved:	18-Feb-2022	**Subcon Results Due:**	16-Feb-2022

Approved By:

Details: Stuart Henderson, Technical Manager

Results - Water

Project: P21206 Ted Castles

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	22-02739	22-02739	22-02739	22-02739	22-02739	22-02739	22-02739	22-02739
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1359228	1359229	1359230	1359231	1359232	1359233	1359234	1359235
				Sample Location:	WSBH01	WS24	WSBH03	WSBH02	SW09	SW05	WS17	WS20
				Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
				Date Sampled:	24-Jan-2022	24-Jan-2022	24-Jan-2022	24-Jan-2022	24-Jan-2022	24-Jan-2022	24-Jan-2022	24-Jan-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
PFAS Top Assay Waters	SN		ng/l	1.00						See Attached		
Tetramethyl Lead	N	1760	µg/l	1.0000000						< 1.000	< 1.000	
pH	U	1010		N/A	8.5	8.0	8.0	8.1	7.9	7.3	7.6	7.8
Electrical Conductivity	U	1020	µS/cm	1.0	1000	1300	4100	1700	1600	1900	2000	5400
Total Suspended Solids with Hot Water	N	1030	mg/l	5.0	85	38	30	< 5.0	< 5.0	96	100	66
Total Dissolved Solids	N	1020	mg/l	1.0	670	860	2600	1100	1000	1200	1300	3500
Biochemical Oxygen Demand	N	1090	mg O2/l	4.0	4.0	< 4.0	4.0	5.0	7.0	6.0	6.0	14
Chemical Oxygen Demand	U	1100	mg O2/l	10	< 10	21	110	76	52	15	19	29
Dissolved Oxygen	N	1150	mg O2/l	0.50	8.3	8.4	8.5	8.6	8.7	8.7	8.8	8.8
Redox Potential	N	1170	mV	N/A	110	120	96	77	83	120	85	94
Alkalinity (Total)	U	1220	mg/l	10	430	430	1400	930	200	210	540	1100
Chloride	U	1220	mg/l	1.0	88	220	1100	24	21	7000	86	1600
Ammoniacal Nitrogen	U	1220	mg/l	0.050	4.1	1.2	5.3	6.5	1.1	1.6	9.3	0.31
Nitrate	U	1220	mg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phosphate	U	1220	mg/l	0.200	1.1	< 0.20	11	12	< 0.20	1.2	< 0.20	4.4
Sulphate	U	1220	mg/l	1.0	53	32	< 1.0	< 1.0	4.4	940	72	< 1.0
Total Calcium	N	1455	mg/l	5.0	15	70	85	23	44	200	99	64
Total Potassium	N	1455	mg/l	0.50	13	13	37	36	0.90	120	25	24
Total Magnesium	N	1455	mg/l	0.50	29	24	86	42	13	380	30	67
Total Sodium	N	1455	mg/l	0.50	120	160	840	260	11	3800	52	1000
Arsenic (Dissolved)	U	1455	µg/l	0.20	3.9	0.96	1.1	1.6	0.80	1.4	3.4	1.4
Barium (Dissolved)	U	1455	µg/l	5.00	53	18	20	37	< 5.0	160	130	47
Cadmium (Dissolved)	U	1455	µg/l	0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11
Copper (Dissolved)	U	1455	µg/l	0.50	4.7	1.2	4.6	1.8	0.89	< 0.50	0.84	2.3
Iron (Dissolved)	N	1455	µg/l	5.0	< 5.0	13	170	1300	230	24	18	740
Mercury (Dissolved)	U	1455	µg/l	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Manganese (Dissolved)	U	1455	µg/l	0.50	72	390	170	1300	6.5	180	670	210
Molybdenum (Dissolved)	U	1455	µg/l	0.20	10	2.9	0.26	< 0.20	3.1	3.0	2.0	0.83
Nickel (Dissolved)	U	1455	µg/l	0.50	3.3	1.5	3.5	6.1	1.1	1.7	1.4	23
Lead (Dissolved)	U	1455	µg/l	0.50	< 0.50	< 0.50	0.80	0.84	0.89	< 0.50	< 0.50	1.2
Antimony (Dissolved)	U	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.50	< 0.50	< 0.50
Selenium (Dissolved)	U	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50	1.7	< 0.50	0.70	< 0.50	< 0.50
Zinc (Dissolved)	U	1455	µg/l	2.5	10	5.4	31	24	4.6	19	3.0	21
Chromium (Trivalent)	N	1490	mg/l	0.020	< 0.020	< 0.020	3.0	2.0	< 0.020	0.71	< 0.020	3.1
Low-Level Chromium (Hexavalent)	U	1495	µg/l	0.10	6.4	6.7	0.21	< 0.10	6.4	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Water

Project: P21206 Ted Castles

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	22-02739	22-02739	22-02739	22-02739	22-02739	22-02739	22-02739	22-02739
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1359228	1359229	1359230	1359231	1359232	1359233	1359234	1359235
				Sample Location:	WSBH01	WS24	WSBH03	WSBH02	SW09	SW05	WS17	WS20
				Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
				Date Sampled:	24-Jan-2022	24-Jan-2022	24-Jan-2022	24-Jan-2022	24-Jan-2022	24-Jan-2022	24-Jan-2022	24-Jan-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Tetraethyl Lead	N	1730	µg/l	1.0						< 1.0	< 1.0	
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Trichloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Bromodichloromethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Results - Water

Project: P21206 Ted Castles

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	22-02739	22-02739	22-02739	22-02739	22-02739	22-02739	22-02739	22-02739
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1359228	1359229	1359230	1359231	1359232	1359233	1359234	1359235
				Sample Location:	WSBH01	WS24	WSBH03	WSBH02	SW09	SW05	WS17	WS20
				Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
				Date Sampled:	24-Jan-2022	24-Jan-2022	24-Jan-2022	24-Jan-2022	24-Jan-2022	24-Jan-2022	24-Jan-2022	24-Jan-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Results - Water

Project: P21206 Ted Castles

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	22-02739	22-02739	22-02739	22-02739	22-02739	22-02739	22-02739	22-02739
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1359228	1359229	1359230	1359231	1359232	1359233	1359234	1359235
				Sample Location:	WSBH01	WS24	WSBH03	WSBH02	SW09	SW05	WS17	WS20
				Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
				Date Sampled:	24-Jan-2022	24-Jan-2022	24-Jan-2022	24-Jan-2022	24-Jan-2022	24-Jan-2022	24-Jan-2022	24-Jan-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
4-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Results - Water

Project: P21206 Ted Castles

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	22-02739	22-02739	22-02739	22-02739	22-02739	22-02739	22-02739	22-02739
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1359228	1359229	1359230	1359231	1359232	1359233	1359234	1359235
				Sample Location:	WSBH01	WS24	WSBH03	WSBH02	SW09	SW05	WS17	WS20
				Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
				Date Sampled:	24-Jan-2022	24-Jan-2022	24-Jan-2022	24-Jan-2022	24-Jan-2022	24-Jan-2022	24-Jan-2022	24-Jan-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Results - Water

Project: P21206 Ted Castles

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	22-02739	22-02739	22-02739
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1359236	1359237	1359238
				Sample Location:	WS08	WS15	WSBH04
				Sample Type:	WATER	WATER	WATER
				Date Sampled:	24-Jan-2022	24-Jan-2022	24-Jan-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
PFAS Top Assay Waters	SN		ng/l	1.00			
Tetramethyl Lead	N	1760	µg/l	1.0000000	< 1.000		
pH	U	1010		N/A	8.0	7.6	7.4
Electrical Conductivity	U	1020	µS/cm	1.0	360	1300	830
Total Suspended Solids with Hot Water	N	1030	mg/l	5.0	320	93	47
Total Dissolved Solids	N	1020	mg/l	1.0	230	830	540
Biochemical Oxygen Demand	N	1090	mg O2/l	4.0	5.0	< 4.0	< 4.0
Chemical Oxygen Demand	U	1100	mg O2/l	10	25	< 10	11
Dissolved Oxygen	N	1150	mg O2/l	0.50	8.8	8.9	8.9
Redox Potential	N	1170	mV	N/A	71	94	97
Alkalinity (Total)	U	1220	mg/l	10	180	470	480
Chloride	U	1220	mg/l	1.0	36	23	26
Ammoniacal Nitrogen	U	1220	mg/l	0.050	0.37	0.86	0.52
Nitrate	U	1220	mg/l	0.50	< 0.50	3.0	< 0.50
Phosphate	U	1220	mg/l	0.200	< 0.20	< 0.20	< 0.20
Sulphate	U	1220	mg/l	1.0	< 1.0	490	55
Total Calcium	N	1455	mg/l	5.0	43	280	120
Total Potassium	N	1455	mg/l	0.50	1.3	13	8.3
Total Magnesium	N	1455	mg/l	0.50	4.4	18	15
Total Sodium	N	1455	mg/l	0.50	15	15	17
Arsenic (Dissolved)	U	1455	µg/l	0.20	2.7	0.93	1.4
Barium (Dissolved)	U	1455	µg/l	5.00	70	71	95
Cadmium (Dissolved)	U	1455	µg/l	0.11	< 0.11	< 0.11	< 0.11
Copper (Dissolved)	U	1455	µg/l	0.50	< 0.50	3.1	0.92
Iron (Dissolved)	N	1455	µg/l	5.0	230	18	8.9
Mercury (Dissolved)	U	1455	µg/l	0.05	< 0.05	< 0.05	< 0.05
Manganese (Dissolved)	U	1455	µg/l	0.50	400	2700	700
Molybdenum (Dissolved)	U	1455	µg/l	0.20	7.0	8.2	3.3
Nickel (Dissolved)	U	1455	µg/l	0.50	1.7	5.3	3.9
Lead (Dissolved)	U	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50
Antimony (Dissolved)	U	1455	µg/l	0.50	< 0.50	0.56	1.1
Selenium (Dissolved)	U	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50
Zinc (Dissolved)	U	1455	µg/l	2.5	< 2.5	110	18
Chromium (Trivalent)	N	1490	mg/l	0.020	< 0.020	< 0.020	< 0.020
Low-Level Chromium (Hexavalent)	U	1495	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10

Results - Water

Project: P21206 Ted Castles

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	22-02739	22-02739	22-02739
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1359236	1359237	1359238
				Sample Location:	WS08	WS15	WSBH04
				Sample Type:	WATER	WATER	WATER
				Date Sampled:	24-Jan-2022	24-Jan-2022	24-Jan-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10	< 10	< 10
Tetraethyl Lead	N	1730	µg/l	1.0	< 1.0		
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	1760	µg/l	5	< 5	< 5	< 5
Chloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5	< 5	< 5	< 5
Trichloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10	< 10	< 10
Bromodichloromethane	U	1760	µg/l	5	< 5	< 5	< 5
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10	< 10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0

Results - Water

Project: P21206 Ted Castles

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	22-02739	22-02739	22-02739
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1359236	1359237	1359238
				Sample Location:	WS08	WS15	WSBH04
				Sample Type:	WATER	WATER	WATER
				Date Sampled:	24-Jan-2022	24-Jan-2022	24-Jan-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10	< 10	< 10
1,2-Dibromoethane	U	1760	µg/l	5	< 5	< 5	< 5
Chlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50	< 50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50

Results - Water

Project: P21206 Ted Castles

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	22-02739	22-02739	22-02739
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1359236	1359237	1359238
				Sample Location:	WS08	WS15	WSBH04
				Sample Type:	WATER	WATER	WATER
				Date Sampled:	24-Jan-2022	24-Jan-2022	24-Jan-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
4-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50

Results - Water

Project: P21206 Ted Castles

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	22-02739	22-02739	22-02739
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1359236	1359237	1359238
				Sample Location:	WS08	WS15	WSBH04
				Sample Type:	WATER	WATER	WATER
				Date Sampled:	24-Jan-2022	24-Jan-2022	24-Jan-2022
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1030	Total Suspended Solids	Total suspended solids	Filtration of a mixed sample through a standard glass fibre filter and determination of the mass of residue retained dried at 105°C.
1090	Biochemical Oxygen Demand	Biochemical Oxygen demand (BOD)	Colorimetric determination of dissolved oxygen in seeded sample after 5 days incubation at 20°C.
1100	Chemical Oxygen Demand	Chemical Oxygen demand (COD)	Dichromate oxidation of organic matter in sample followed by colorimetric determination of residual Cr[VI].
1150	Dissolved Oxygen	Dissolved Oxygen (DO)	Electrometric determination (on site preferred), using oxygen sensitive membrane electrode.
1170	Redox Potential	Redox Potential	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.
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.
1495	Low Level Hexavalent Chromium in Waters	Chromium [VI]	Colorimetric determination of hexavalent chromium expressed as Cr (VI) µg/l in water, using Ion Chromatography and UV-visible spectrophotometry.
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
1730	Organo-Leads	Organo-Leads	Solvent extraction / GCMS 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

Report Information

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

2183

Final Report

Report No.:	21-44757-1		
Initial Date of Issue:	22-Dec-2021		
Client	Priority Geotechnical Ltd		
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland		
Contact(s):	Colette Kelly		
Project	P21206 Tedcastles		
Quotation No.:	Q21-24611	**Date Received:**	17-Dec-2021
Order No.:	14093	**Date Instructed:**	17-Dec-2021
No. of Samples:	2		
Turnaround (Wkdays):	5	**Results Due:**	23-Dec-2021
Date Approved:	22-Dec-2021		

Approved By:

Details: Glynn Harvey, Technical Manager

Results - Water

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-44757	21-44757
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1342825	1342826
			Sample Location:		WS22	WSBH05
			Sample Type:		WATER	WATER
			Date Sampled:		16-Dec-2021	16-Dec-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Biochemical Oxygen Demand	N	1090	mg O2/l	4.0	< 4.0	< 4.0
Chemical Oxygen Demand	U	1100	mg O2/l	10	18	26

Test Methods

SOP	Title	Parameters included	Method summary
1090	Biochemical Oxygen Demand	Biochemical Oxygen demand (BOD)	Colorimetric determination of dissolved oxygen in seeded sample after 5 days incubation at 20°C.
1100	Chemical Oxygen Demand	Chemical Oxygen demand (COD)	Dichromate oxidation of organic matter in sample followed by colorimetric determination of residual Cr[VI].

Report Information

Key

U	UKAS accredited
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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 Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

2183

Final Report

Report No.:	21-43947-1		
Initial Date of Issue:	17-Dec-2021		
Client	Priority Geotechnical Ltd		
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland		
Contact(s):	Colette Kelly		
Project	P21206 Tedcastles		
Quotation No.:	Q21-24611	**Date Received:**	13-Dec-2021
Order No.:	14093	**Date Instructed:**	13-Dec-2021
No. of Samples:	20		
Turnaround (Wkdays):	5	**Results Due:**	17-Dec-2021
Date Approved:	17-Dec-2021		

Approved By:

Details: Glynn Harvey, Technical Manager

Results - Water

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-43947	21-43947	21-43947	21-43947	21-43947	21-43947	21-43947	21-43947	21-43947
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1338973	1338974	1338975	1338976	1338977	1338978	1338979	1338980	1338981
Order No.: 14093			Client Sample Ref.:		SW01	SW02	SW03	SW07	SW08	SW04	SW06	WSBH01	WS24
			Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
			Date Sampled:		06-Dec-2021	06-Dec-2021	06-Dec-2021	06-Dec-2021	06-Dec-2021	06-Dec-2021	06-Dec-2021	06-Dec-2021	06-Dec-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Biochemical Oxygen Demand	N	1090	mg O2/l	4.0	[B] < 4.0	[B] 5.7	[B] 5.7	[B] 5.7	[B] < 4.0	[B] 6.8	[B] < 4.0	[B] < 4.0	[B] < 4.0
Chemical Oxygen Demand	U	1100	mg O2/l	10	[B] 96	[B] 100	[B] 130	[B] 81	[B] 120	[B] 100	[B] 83	[B] 77	[B] 110

Results - Water

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-43947	21-43947	21-43947	21-43947	21-43947	21-43947	21-43947	21-43947	21-43947
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1338982	1338983	1338984	1338985	1338986	1338987	1338988	1338989	1338990
Order No.: 14093			Client Sample Ref.:		WS27	WSBH03	WSBH02	SW09	SW05	WS17	WS20	WS08	WS15
			Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
			Date Sampled:		06-Dec-2021	06-Dec-2021	06-Dec-2021	06-Dec-2021	06-Dec-2021	06-Dec-2021	06-Dec-2021	07-Dec-2021	07-Dec-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Biochemical Oxygen Demand	N	1090	mg O2/l	4.0	[B] < 4.0	[B] < 4.0	[B] 11	[B] 18	[B] 4.6	[B] 8.0	[B] < 4.0	[B] 4.6	[B] < 4.0
Chemical Oxygen Demand	U	1100	mg O2/l	10	[B] 61	[B] 150	[B] 130	[B] 150	[B] 140	[B] 96	[B] 280	[B] 140	[B] 110

Results - Water

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-43947	21-43947
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1338991	1338993
Order No.: 14093			Client Sample Ref.:		WS23	WSBH04
			Sample Type:		WATER	WATER
			Date Sampled:		07-Dec-2021	07-Dec-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Biochemical Oxygen Demand	N	1090	mg O2/l	4.0	[B] < 4.0	[B] < 4.0
Chemical Oxygen Demand	U	1100	mg O2/l	10	[B] 91	[B] 94

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:
1338973	SW01			06-Dec-2021	B	Coloured Winchester 1000ml
1338973	SW01			06-Dec-2021	B	Plastic Bottle 1000ml
1338974	SW02			06-Dec-2021	B	Coloured Winchester 1000ml
1338974	SW02			06-Dec-2021	B	Plastic Bottle 1000ml
1338975	SW03			06-Dec-2021	B	Coloured Winchester 1000ml
1338975	SW03			06-Dec-2021	B	Plastic Bottle 1000ml
1338976	SW07			06-Dec-2021	B	Coloured Winchester 1000ml
1338976	SW07			06-Dec-2021	B	Plastic Bottle 1000ml
1338977	SW08			06-Dec-2021	B	Coloured Winchester 1000ml
1338977	SW08			06-Dec-2021	B	Plastic Bottle 1000ml
1338978	SW04			06-Dec-2021	B	Coloured Winchester 1000ml
1338978	SW04			06-Dec-2021	B	Plastic Bottle 1000ml
1338979	SW06			06-Dec-2021	B	Coloured Winchester 1000ml
1338979	SW06			06-Dec-2021	B	Plastic Bottle 1000ml
1338980	WSBH01			06-Dec-2021	B	Coloured Winchester 1000ml
1338980	WSBH01			06-Dec-2021	B	Plastic Bottle 1000ml
1338981	WS24			06-Dec-2021	B	Coloured Winchester 1000ml
1338981	WS24			06-Dec-2021	B	Plastic Bottle 1000ml
1338982	WS27			06-Dec-2021	B	Coloured Winchester 1000ml

Deviations

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Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1338982	WS27			06-Dec-2021	B	Plastic Bottle 1000ml
1338983	WSBH03			06-Dec-2021	B	Coloured Winchester 1000ml
1338983	WSBH03			06-Dec-2021	B	Plastic Bottle 1000ml
1338984	WSBH02			06-Dec-2021	B	Coloured Winchester 1000ml
1338984	WSBH02			06-Dec-2021	B	Plastic Bottle 1000ml
1338985	SW09			06-Dec-2021	B	Coloured Winchester 1000ml
1338985	SW09			06-Dec-2021	B	Plastic Bottle 1000ml
1338986	SW05			06-Dec-2021	B	Coloured Winchester 1000ml
1338986	SW05			06-Dec-2021	B	Plastic Bottle 1000ml
1338987	WS17			06-Dec-2021	B	Coloured Winchester 1000ml
1338987	WS17			06-Dec-2021	B	Plastic Bottle 1000ml
1338988	WS20			06-Dec-2021	B	Coloured Winchester 1000ml
1338988	WS20			06-Dec-2021	B	Plastic Bottle 1000ml
1338989	WS08			07-Dec-2021	B	Coloured Winchester 1000ml
1338989	WS08			07-Dec-2021	B	EPA Vial 40ml
1338989	WS08			07-Dec-2021	B	Plastic Bottle 1000ml
1338990	WS15			07-Dec-2021	B	Coloured Winchester 1000ml
1338990	WS15			07-Dec-2021	B	Plastic Bottle 1000ml
1338991	WS23			07-Dec-2021	B	Coloured Winchester 1000ml

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:
1338991	WS23			07-Dec-2021	B	EPA Vial 40ml
1338991	WS23			07-Dec-2021	B	Plastic Bottle 1000ml
1338993	WSBH04			07-Dec-2021	B	Coloured Winchester 1000ml
1338993	WSBH04			07-Dec-2021	B	EPA Vial 40ml
1338993	WSBH04			07-Dec-2021	B	Plastic Bottle 1000ml

Test Methods

SOP	Title	Parameters included	Method summary
1090	Biochemical Oxygen Demand	Biochemical Oxygen demand (BOD)	Colorimetric determination of dissolved oxygen in seeded sample after 5 days incubation at 20°C.
1100	Chemical Oxygen Demand	Chemical Oxygen demand (COD)	Dichromate oxidation of organic matter in sample followed by colorimetric determination of residual Cr[VI].

Report Information

Key

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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
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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
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customerservices@chemtest.com

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

2183

Final Report

Report No.:	21-42105-1		
Initial Date of Issue:	09-Dec-2021		
Client	Priority Geotechnical Ltd		
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland		
Contact(s):	Colette Kelly		
Project	P210206 Tedcastles		
Quotation No.:	Q21-24611	**Date Received:**	30-Nov-2021
Order No.:		**Date Instructed:**	30-Nov-2021
No. of Samples:	17		
Turnaround (Wkdays):	6	**Results Due:**	07-Dec-2021
Date Approved:	09-Dec-2021		
Approved By:			
Details:	Glynn Harvey, Technical Manager		

Results - Water

Project: P210206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-42105	21-42105	21-42105	21-42105	21-42105	21-42105	21-42105	21-42105
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1330238	1330239	1330240	1330241	1330242	1330243	1330244	1330245
			Sample Location:		WS02	WS08	WS10	WS15	WS17	WS20	WS23	WS24
			Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
			Date Sampled:		22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
pH	U	1010		N/A	8.4	8.5	8.3	8.1	8.3	8.7	8.6	8.6
Electrical Conductivity	U	1020	µS/cm	1.0	1600	460	800	1300	920	8900	1400	1500
Total Suspended Solids with Hot Water	N	1030	mg/l	5.0	38	< 5.0	69	200	78	73	75	59
Total Dissolved Solids	N	1020	mg/l	1.0	1000	300	520	860	600	5800	880	980
Biochemical Oxygen Demand	N	1090	mg O2/l	4.0	[B] < 4.0	[B] < 4.0	[B] < 4.0	[B] < 4.0	[B] 6.0	[B] 5.0	[B] < 4.0	[B] 6.0
Chemical Oxygen Demand	U	1100	mg O2/l	10	[B] 13	[B] 130	[B] 18	[B] 28	[B] < 10	[B] 270	[B] 16	[B] 16
Dissolved Oxygen	N	1150	mg O2/l	0.50	6.0	6.3	6.3	6.4	630	6.3	6.3	6.3
Redox Potential	N	1170	mV	N/A	190	160	160	150	150	95	96	100
Alkalinity (Total)	U	1220	mg/l	10	210	200	250	380	460	1700	470	460
Chloride	U	1220	mg/l	1.0	25	32	8.2	16	19	2300	140	310
Ammoniacal Nitrogen	U	1220	mg/l	0.050	0.93	0.43	1.6	4.1	11	7.0	4.5	2.9
Nitrate	U	1220	mg/l	0.50	1.1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phosphate	U	1220	mg/l	0.200	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	12	0.20	< 0.20
Sulphate	U	1220	mg/l	1.0	680	14	210	480	99	< 1.0	54	13
Total Calcium	N	1455	mg/l	5.0	330	61	150	270	100	100	99	76
Total Potassium	N	1455	mg/l	0.50	4.0	1.6	11	17	26	41	9.3	14
Total Magnesium	N	1455	mg/l	0.50	17	5.9	12	20	27	120	13	28
Total Sodium	N	1455	mg/l	0.50	12	29	12	24	40	1800	110	200
Arsenic (Dissolved)	U	1455	µg/l	0.20	0.76	2.6	1.2	2.4	1.3	3.5	1.2	0.95
Barium (Dissolved)	U	1455	µg/l	5.00	50	50	57	130	87	63	100	26
Cadmium (Dissolved)	U	1455	µg/l	0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11
Copper (Dissolved)	U	1455	µg/l	0.50	2.4	0.55	6.2	1.6	1.1	2.2	3.7	3.0
Iron (Dissolved)	N	1455	µg/l	5.0	270	25	< 5.0	17	8.4	1200	< 5.0	8.0
Mercury (Dissolved)	U	1455	µg/l	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Manganese (Dissolved)	U	1455	µg/l	0.50	1700	500	2400	2300	690	340	1700	400
Molybdenum (Dissolved)	U	1455	µg/l	0.20	4.7	11	11	16	2.3	2.5	12	3.2
Nickel (Dissolved)	U	1455	µg/l	0.50	5.6	2.7	6.8	9.6	0.99	7.3	4.0	1.5
Lead (Dissolved)	U	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	5.4	< 0.50	< 0.50
Antimony (Dissolved)	U	1455	µg/l	0.50	0.58	< 0.50	0.97	2.2	< 0.50	1.0	< 0.50	< 0.50
Selenium (Dissolved)	U	1455	µg/l	0.50	< 0.50	1.2	0.53	5.3	< 0.50	3.1	< 0.50	< 0.50
Zinc (Dissolved)	U	1455	µg/l	2.5	< 2.5	< 2.5	64	29	< 2.5	< 2.5	2.7	4.0
Chromium (Trivalent)	N	1490	mg/l	0.020	[B] < 0.020	[B] < 0.020	[B] < 0.020	[B] < 0.020	[B] < 0.020	[B] 13	[B] < 0.020	[B] 6.6
Low-Level Chromium (Hexavalent)	U	1495	µg/l	0.10	[B] 0.24	[B] < 0.10	[B] < 0.10	[B] 0.40	[B] 0.12	[B] 0.15	[B] < 0.10	[B] 2.5
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Water

Project: P210206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-42105	21-42105	21-42105	21-42105	21-42105	21-42105	21-42105	21-42105
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1330238	1330239	1330240	1330241	1330242	1330243	1330244	1330245
			Sample Location:		WS02	WS08	WS10	WS15	WS17	WS20	WS23	WS24
			Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
			Date Sampled:		22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Trichloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Bromodichloromethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Results - Water

Project: P210206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-42105	21-42105	21-42105	21-42105	21-42105	21-42105	21-42105	21-42105
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1330238	1330239	1330240	1330241	1330242	1330243	1330244	1330245
			Sample Location:		WS02	WS08	WS10	WS15	WS17	WS20	WS23	WS24
			Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
			Date Sampled:		22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Results - Water

Project: P210206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-42105	21-42105	21-42105	21-42105	21-42105	21-42105	21-42105	21-42105
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1330238	1330239	1330240	1330241	1330242	1330243	1330244	1330245
			Sample Location:		WS02	WS08	WS10	WS15	WS17	WS20	WS23	WS24
			Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
			Date Sampled:		22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Results - Water

Project: P210206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-42105	21-42105	21-42105	21-42105	21-42105	21-42105	21-42105	21-42105
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1330238	1330239	1330240	1330241	1330242	1330243	1330244	1330245
			Sample Location:		WS02	WS08	WS10	WS15	WS17	WS20	WS23	WS24
			Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
			Date Sampled:		22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Results - Water

Project: P210206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-42105	21-42105	21-42105	21-42105	21-42105	21-42105	21-42105	21-42105
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1330246	1330247	1330248	1330249	1330250	1330251	1330252	1330253
			Sample Location:		WS27	WSBH02	WSBH04	WSBH05	SW09	SW01	SW05	WSBH01
			Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
			Date Sampled:		22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	23-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
pH	U	1010		N/A	8.5	8.7	8.5	8.4	8.4	7.9	8.1	8.6
Electrical Conductivity	U	1020	µS/cm	1.0	1100	1500	870	820	540	10000	36000	990
Total Suspended Solids with Hot Water	N	1030	mg/l	5.0	35	77	550	260	120	200	380	26
Total Dissolved Solids	N	1020	mg/l	1.0	690	960	570	530	350	6500	23000	640
Biochemical Oxygen Demand	N	1090	mg O2/l	4.0	[B] < 4.0	[B] 4.0	[B] < 4.0	[B] 5.0	[B] < 4.0	[B] < 4.0	[B] < 4.0	[B] 4.0
Chemical Oxygen Demand	U	1100	mg O2/l	10	[B] < 10	[B] 72	[B] 10	[B] 290	[B] 87	[B] 29	[B] 78	[B] < 10
Dissolved Oxygen	N	1150	mg O2/l	0.50	6.3	6.4	6.4	6.4	6.4	6.4	6.6	6.7
Redox Potential	N	1170	mV	N/A	110	100	120	130	110	130	120	150
Alkalinity (Total)	U	1220	mg/l	10	510	700	480	1900	350	89	120	390
Chloride	U	1220	mg/l	1.0	120	130	31	2400	44	2900	12000	94
Ammoniacal Nitrogen	U	1220	mg/l	0.050	3.3	5.4	1.2	7.0	0.68	0.50	1.4	2.6
Nitrate	U	1220	mg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	3.5	< 0.50	< 0.50
Phosphate	U	1220	mg/l	0.200	< 0.20	9.8	0.21	14	0.29	< 0.20	1.2	1.0
Sulphate	U	1220	mg/l	1.0	9.2	< 1.0	51	< 1.0	7.9	420	1800	50
Total Calcium	N	1455	mg/l	5.0	130	24	120	110	61	83	260	17
Total Potassium	N	1455	mg/l	0.50	9.1	36	12	41	1.7	61	230	15
Total Magnesium	N	1455	mg/l	0.50	19	42	21	130	24	200	730	28
Total Sodium	N	1455	mg/l	0.50	71	260	36	1800	19	1700	6900	150
Arsenic (Dissolved)	U	1455	µg/l	0.20	0.66	3.3	1.9	3.1	1.7	0.54	1.9	4.3
Barium (Dissolved)	U	1455	µg/l	5.00	220	43	120	55	14	13	45	84
Cadmium (Dissolved)	U	1455	µg/l	0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11
Copper (Dissolved)	U	1455	µg/l	0.50	1.5	< 0.50	2.1	1.3	1.3	1.9	1.3	1.6
Iron (Dissolved)	N	1455	µg/l	5.0	< 5.0	1400	7.3	1300	380	29	6.4	7.6
Mercury (Dissolved)	U	1455	µg/l	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Manganese (Dissolved)	U	1455	µg/l	0.50	11000	1300	1300	360	87	33	71	48
Molybdenum (Dissolved)	U	1455	µg/l	0.20	3.4	2.0	7.7	1.8	3.2	1.6	5.8	12
Nickel (Dissolved)	U	1455	µg/l	0.50	3.5	4.3	6.9	4.4	1.5	< 0.50	0.86	1.9
Lead (Dissolved)	U	1455	µg/l	0.50	< 0.50	5.4	< 0.50	5.4	1.3	< 0.50	< 0.50	< 0.50
Antimony (Dissolved)	U	1455	µg/l	0.50	< 0.50	< 0.50	1.3	0.64	0.62	< 0.50	0.68	0.55
Selenium (Dissolved)	U	1455	µg/l	0.50	< 0.50	2.0	< 0.50	5.3	< 0.50	< 0.50	2.0	< 0.50
Zinc (Dissolved)	U	1455	µg/l	2.5	< 2.5	< 2.5	19	< 2.5	< 2.5	< 2.5	15	< 2.5
Chromium (Trivalent)	N	1490	mg/l	0.020	[B] < 0.020	[B] 7.1	[B] < 0.020	[B] 14	[B] 2.1	[B] 6.5	[B] 3.8	[B] 7.3
Low-Level Chromium (Hexavalent)	U	1495	µg/l	0.10	[B] 0.17	[B] 0.90	[B] 0.19	[B] 0.11	[B] < 0.10	[B] 3.0	[B] < 0.10	[B] 1.9
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Water

Project: P210206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-42105	21-42105	21-42105	21-42105	21-42105	21-42105	21-42105	21-42105
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1330246	1330247	1330248	1330249	1330250	1330251	1330252	1330253
			Sample Location:		WS27	WSBH02	WSBH04	WSBH05	SW09	SW01	SW05	WSBH01
			Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
			Date Sampled:		22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	23-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Trichloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Bromodichloromethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Results - Water

Project: P210206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-42105	21-42105	21-42105	21-42105	21-42105	21-42105	21-42105	21-42105
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1330246	1330247	1330248	1330249	1330250	1330251	1330252	1330253
			Sample Location:		WS27	WSBH02	WSBH04	WSBH05	SW09	SW01	SW05	WSBH01
			Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
			Date Sampled:		22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	23-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Results - Water

Project: P210206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-42105	21-42105	21-42105	21-42105	21-42105	21-42105	21-42105	21-42105
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1330246	1330247	1330248	1330249	1330250	1330251	1330252	1330253
			Sample Location:		WS27	WSBH02	WSBH04	WSBH05	SW09	SW01	SW05	WSBH01
			Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
			Date Sampled:		22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	23-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Results - Water

Project: P210206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-42105	21-42105	21-42105	21-42105	21-42105	21-42105	21-42105	21-42105
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1330246	1330247	1330248	1330249	1330250	1330251	1330252	1330253
			Sample Location:		WS27	WSBH02	WSBH04	WSBH05	SW09	SW01	SW05	WSBH01
			Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
			Date Sampled:		22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	22-Nov-2021	23-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Results - Water

Project: P210206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-42105
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1330254
			Sample Location:		WSBH03
			Sample Type:		WATER
			Date Sampled:		23-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
pH	U	1010		N/A	8.7
Electrical Conductivity	U	1020	µS/cm	1.0	4100
Total Suspended Solids with Hot Water	N	1030	mg/l	5.0	47
Total Dissolved Solids	N	1020	mg/l	1.0	2700
Biochemical Oxygen Demand	N	1090	mg O2/l	4.0	[B] 13
Chemical Oxygen Demand	U	1100	mg O2/l	10	[B] 130
Dissolved Oxygen	N	1150	mg O2/l	0.50	6.6
Redox Potential	N	1170	mV	N/A	130
Alkalinity (Total)	U	1220	mg/l	10	1300
Chloride	U	1220	mg/l	1.0	820
Ammoniacal Nitrogen	U	1220	mg/l	0.050	4.3
Nitrate	U	1220	mg/l	0.50	< 0.50
Phosphate	U	1220	mg/l	0.200	9.3
Sulphate	U	1220	mg/l	1.0	< 1.0
Total Calcium	N	1455	mg/l	5.0	61
Total Potassium	N	1455	mg/l	0.50	28
Total Magnesium	N	1455	mg/l	0.50	62
Total Sodium	N	1455	mg/l	0.50	710
Arsenic (Dissolved)	U	1455	µg/l	0.20	2.4
Barium (Dissolved)	U	1455	µg/l	5.00	22
Cadmium (Dissolved)	U	1455	µg/l	0.11	0.30
Copper (Dissolved)	U	1455	µg/l	0.50	3.5
Iron (Dissolved)	N	1455	µg/l	5.0	870
Mercury (Dissolved)	U	1455	µg/l	0.05	< 0.05
Manganese (Dissolved)	U	1455	µg/l	0.50	160
Molybdenum (Dissolved)	U	1455	µg/l	0.20	2.5
Nickel (Dissolved)	U	1455	µg/l	0.50	5.1
Lead (Dissolved)	U	1455	µg/l	0.50	3.4
Antimony (Dissolved)	U	1455	µg/l	0.50	2.0
Selenium (Dissolved)	U	1455	µg/l	0.50	5.1
Zinc (Dissolved)	U	1455	µg/l	2.5	16
Chromium (Trivalent)	N	1490	mg/l	0.020	[B] 12
Low-Level Chromium (Hexavalent)	U	1495	µg/l	0.10	[B] 0.20
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

Results - Water

Project: P210206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-42105
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1330254
			Sample Location:		WSBH03
			Sample Type:		WATER
			Date Sampled:		23-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
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 TPH >C21-C35	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10
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

Results - Water

Project: P210206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-42105
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1330254
			Sample Location:		WSBH03
			Sample Type:		WATER
			Date Sampled:		23-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
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
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

Results - Water

Project: P210206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-42105
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1330254
			Sample Location:		WSBH03
			Sample Type:		WATER
			Date Sampled:		23-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
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-Chloroaniline	N	1790	µg/l	0.50	< 0.50
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

Results - Water

Project: P210206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-42105
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1330254
			Sample Location:		WSBH03
			Sample Type:		WATER
			Date Sampled:		23-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
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
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50

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:
1330238			WS02	22-Nov-2021	B	Coloured Winchester 1000ml
1330238			WS02	22-Nov-2021	B	Coloured Winchester 500ml
1330238			WS02	22-Nov-2021	B	EPA Vial 40ml
1330238			WS02	22-Nov-2021	B	Plastic Bottle 1000ml
1330239			WS08	22-Nov-2021	B	Coloured Winchester 1000ml
1330239			WS08	22-Nov-2021	B	Coloured Winchester 500ml
1330239			WS08	22-Nov-2021	B	EPA Vial 40ml
1330239			WS08	22-Nov-2021	B	Plastic Bottle 1000ml
1330240			WS10	22-Nov-2021	B	Coloured Winchester 1000ml
1330240			WS10	22-Nov-2021	B	Coloured Winchester 500ml
1330240			WS10	22-Nov-2021	B	EPA Vial 40ml
1330240			WS10	22-Nov-2021	B	Plastic Bottle 1000ml
1330241			WS15	22-Nov-2021	B	Coloured Winchester 1000ml
1330241			WS15	22-Nov-2021	B	Coloured Winchester 500ml
1330241			WS15	22-Nov-2021	B	EPA Vial 40ml
1330241			WS15	22-Nov-2021	B	Plastic Bottle 1000ml
1330242			WS17	22-Nov-2021	B	Coloured Winchester 1000ml
1330242			WS17	22-Nov-2021	B	Coloured Winchester 500ml
1330242			WS17	22-Nov-2021	B	EPA Vial 40ml
1330242			WS17	22-Nov-2021	B	Plastic Bottle 1000ml

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:
1330243			WS20	22-Nov-2021	B	Coloured Winchester 1000ml
1330243			WS20	22-Nov-2021	B	Coloured Winchester 500ml
1330243			WS20	22-Nov-2021	B	EPA Vial 40ml
1330243			WS20	22-Nov-2021	B	Plastic Bottle 1000ml
1330244			WS23	22-Nov-2021	B	Coloured Winchester 1000ml
1330244			WS23	22-Nov-2021	B	Coloured Winchester 500ml
1330244			WS23	22-Nov-2021	B	EPA Vial 40ml
1330244			WS23	22-Nov-2021	B	Plastic Bottle 1000ml
1330245			WS24	22-Nov-2021	B	Coloured Winchester 1000ml
1330245			WS24	22-Nov-2021	B	Coloured Winchester 500ml
1330245			WS24	22-Nov-2021	B	EPA Vial 40ml
1330245			WS24	22-Nov-2021	B	Plastic Bottle 1000ml
1330246			WS27	22-Nov-2021	B	Coloured Winchester 1000ml
1330246			WS27	22-Nov-2021	B	Coloured Winchester 500ml
1330246			WS27	22-Nov-2021	B	EPA Vial 40ml
1330246			WS27	22-Nov-2021	B	Plastic Bottle 1000ml
1330247			WSBH02	22-Nov-2021	B	Coloured Winchester 1000ml
1330247			WSBH02	22-Nov-2021	B	Coloured Winchester 500ml
1330247			WSBH02	22-Nov-2021	B	EPA Vial 40ml
1330247			WSBH02	22-Nov-2021	B	Plastic Bottle 1000ml

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:
1330248			WSBH04	22-Nov-2021	B	Coloured Winchester 1000ml
1330248			WSBH04	22-Nov-2021	B	Coloured Winchester 500ml
1330248			WSBH04	22-Nov-2021	B	EPA Vial 40ml
1330248			WSBH04	22-Nov-2021	B	Plastic Bottle 1000ml
1330249			WSBH05	22-Nov-2021	B	Coloured Winchester 1000ml
1330249			WSBH05	22-Nov-2021	B	Coloured Winchester 500ml
1330249			WSBH05	22-Nov-2021	B	EPA Vial 40ml
1330249			WSBH05	22-Nov-2021	B	Plastic Bottle 1000ml
1330250			SW09	22-Nov-2021	B	Coloured Winchester 1000ml
1330250			SW09	22-Nov-2021	B	Coloured Winchester 500ml
1330250			SW09	22-Nov-2021	B	EPA Vial 40ml
1330250			SW09	22-Nov-2021	B	Plastic Bottle 1000ml
1330251			SW01	22-Nov-2021	B	Coloured Winchester 1000ml
1330251			SW01	22-Nov-2021	B	Coloured Winchester 500ml
1330251			SW01	22-Nov-2021	B	EPA Vial 40ml
1330251			SW01	22-Nov-2021	B	Plastic Bottle 1000ml
1330252			SW05	22-Nov-2021	B	Coloured Winchester 1000ml
1330252			SW05	22-Nov-2021	B	Coloured Winchester 500ml
1330252			SW05	22-Nov-2021	B	EPA Vial 40ml
1330252			SW05	22-Nov-2021	B	Plastic Bottle 1000ml

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:
1330253			WSBH01	23-Nov-2021	B	Coloured Winchester 1000ml
1330253			WSBH01	23-Nov-2021	B	Coloured Winchester 500ml
1330253			WSBH01	23-Nov-2021	B	EPA Vial 40ml
1330253			WSBH01	23-Nov-2021	B	Plastic Bottle 1000ml
1330254			WSBH03	23-Nov-2021	B	Coloured Winchester 1000ml
1330254			WSBH03	23-Nov-2021	B	Coloured Winchester 500ml
1330254			WSBH03	23-Nov-2021	B	EPA Vial 40ml
1330254			WSBH03	23-Nov-2021	B	Plastic Bottle 1000ml

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1030	Total Suspended Solids	Total suspended solids	Filtration of a mixed sample through a standard glass fibre filter and determination of the mass of residue retained dried at 105°C.
1090	Biochemical Oxygen Demand	Biochemical Oxygen demand (BOD)	Colorimetric determination of dissolved oxygen in seeded sample after 5 days incubation at 20°C.
1100	Chemical Oxygen Demand	Chemical Oxygen demand (COD)	Dichromate oxidation of organic matter in sample followed by colorimetric determination of residual Cr[VI].
1150	Dissolved Oxygen	Dissolved Oxygen (DO)	Electrometric determination (on site preferred), using oxygen sensitive membrane electrode.
1170	Redox Potential	Redox Potential	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.
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.
1495	Low Level Hexavalent Chromium in Waters	Chromium [VI]	Colorimetric determination of hexavalent chromium expressed as Cr (VI) µg/l in water, using Ion Chromatography and UV-visible spectrophotometry.
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

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

Amended Report

Report No.:	21-41343-4		
Initial Date of Issue:	01-Dec-2021	**Date of Re-Issue:**	24-Jan-2022
Client	Priority Geotechnical Ltd		
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland		
Contact(s):	Colette Kelly		
Project	P21206 Tedcastles		
Quotation No.:	Q21-24611	**Date Received:**	24-Nov-2021
Order No.:	14093	**Date Instructed:**	03-Dec-2021
No. of Samples:	6		
Turnaround (Wkdays):	10	**Results Due:**	16-Dec-2021
Date Approved:	24-Jan-2022	**Subcon Results Due:**	24-Dec-2021

Approved By:

Details: Stuart Henderson, Technical Manager

Results - Water

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	21-41343	21-41343	21-41343	21-41343	21-41343	21-41343
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1326768	1326769	1326770	1326771	1326772	1326773
				Sample Location:	SW02	SW03	SW04	SW06	SW07	SW08
				Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER
				Date Sampled:	21-Nov-2021	21-Nov-2021	21-Nov-2021	21-Nov-2021	21-Nov-2021	21-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Tetramethyl Lead	N	1760	µg/l	1.0000000		< 1.000				< 1.000
pH	U	1010		N/A	7.9	8.0	8.4	8.5	8.8	8.8
Electrical Conductivity	U	1020	µS/cm	1.0	9600	40000	5100	8500	3000	1200
Total Suspended Solids with Hot Water	N	1030	mg/l	5.0	64	520	270	150	250	56
Total Dissolved Solids	N	1020	mg/l	1.0	6200	26000	3300	5500	2000	780
Biochemical Oxygen Demand	N	1090	mg O2/l	4.0	[B] < 4.0	[B] < 4.0	[B] < 4.0	[B] < 4.0	[B] < 4.0	[B] < 4.0
Chemical Oxygen Demand	U	1100	mg O2/l	10	[B] 34	[B] 210	[B] 18	[B] 27	[B] 82	[B] 20
Dissolved Oxygen	N	1150	mg O2/l	0.50	8.0	8.1	8.2	8.2	8.3	8.4
Redox Potential	N	1170	mV	N/A	240	240	220	220	190	180
Alkalinity (Total)	U	1220	mg/l	10	80	93	150	200	210	340
Chloride	U	1220	mg/l	1.0	3400	17000	1700	2600	7200	1600
Ammoniacal Nitrogen	U	1220	mg/l	0.050	0.30	0.93	4.0	3.0	0.93	0.51
Nitrate	U	1220	mg/l	0.50	3.4	< 0.50	69	13	1.0	13
Phosphate	U	1220	mg/l	0.200	< 0.20	0.35	1.2	1.4	0.38	0.42
Sulphate	U	1220	mg/l	1.0	470	2300	300	470	940	260
Total Calcium	N	1455	mg/l	5.0	87	350	110	140	220	150
Total Potassium	N	1455	mg/l	0.50	63	310	46	61	130	33
Total Magnesium	N	1455	mg/l	0.50	210	980	110	170	400	99
Total Sodium	N	1455	mg/l	0.50	1800	8800	890	1500	3600	790
Arsenic (Dissolved)	U	1455	µg/l	0.20	0.59	1.7	3.7	3.2	1.1	0.72
Barium (Dissolved)	U	1455	µg/l	5.00	14	19	38	65	14	13
Cadmium (Dissolved)	U	1455	µg/l	0.11	< 0.11	0.13	< 0.11	< 0.11	< 0.11	< 0.11
Copper (Dissolved)	U	1455	µg/l	0.50	2.5	2.1	1.2	0.68	1.3	2.0
Iron (Dissolved)	N	1455	µg/l	5.0	34	< 5.0	9.8	23	< 5.0	< 5.0
Mercury (Dissolved)	U	1455	µg/l	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Manganese (Dissolved)	U	1455	µg/l	0.50	41	17	150	190	42	120
Molybdenum (Dissolved)	U	1455	µg/l	0.20	5.5	9.1	3.8	3.4	3.8	1.4
Nickel (Dissolved)	U	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Lead (Dissolved)	U	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Antimony (Dissolved)	U	1455	µg/l	0.50	< 0.50	< 0.50	1.7	1.6	< 0.50	< 0.50
Selenium (Dissolved)	U	1455	µg/l	0.50	0.77	1.5	1.1	0.83	1.7	1.3
Zinc (Dissolved)	U	1455	µg/l	2.5	2.6	37	40	35	18	12
Chromium (Trivalent)	N	1490	mg/l	0.020	[B] 7.0	[B] 5.2	[B] 1.7	[B] < 0.020	[B] 2.6	[B] 2.2
Low-Level Chromium (Hexavalent)	U	1495	µg/l	0.10	[B] 0.78	[B] 0.14	[B] 0.30	[B] < 0.10	[B] 0.16	[B] 0.91
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Water

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	21-41343	21-41343	21-41343	21-41343	21-41343	21-41343
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1326768	1326769	1326770	1326771	1326772	1326773
				Sample Location:	SW02	SW03	SW04	SW06	SW07	SW08
				Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER
				Date Sampled:	21-Nov-2021	21-Nov-2021	21-Nov-2021	21-Nov-2021	21-Nov-2021	21-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
Tetraethyl Lead	N	1730	µg/l	1.0		< 1.0				< 1.0
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5
Chloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5
Trichloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
Bromodichloromethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0

Results - Water

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	21-41343	21-41343	21-41343	21-41343	21-41343	21-41343
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1326768	1326769	1326770	1326771	1326772	1326773
				Sample Location:	SW02	SW03	SW04	SW06	SW07	SW08
				Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER
				Date Sampled:	21-Nov-2021	21-Nov-2021	21-Nov-2021	21-Nov-2021	21-Nov-2021	21-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Dibromochloromethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5
Chlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Results - Water

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	21-41343	21-41343	21-41343	21-41343	21-41343	21-41343
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1326768	1326769	1326770	1326771	1326772	1326773
				Sample Location:	SW02	SW03	SW04	SW06	SW07	SW08
				Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER
				Date Sampled:	21-Nov-2021	21-Nov-2021	21-Nov-2021	21-Nov-2021	21-Nov-2021	21-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Nitrobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Results - Water

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	21-41343	21-41343	21-41343	21-41343	21-41343	21-41343
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1326768	1326769	1326770	1326771	1326772	1326773
				Sample Location:	SW02	SW03	SW04	SW06	SW07	SW08
				Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER
				Date Sampled:	21-Nov-2021	21-Nov-2021	21-Nov-2021	21-Nov-2021	21-Nov-2021	21-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Chrysene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

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:
1326768			SW02	21-Nov-2021	B	Coloured Winchester 1000ml
1326768			SW02	21-Nov-2021	B	Coloured Winchester 500ml
1326768			SW02	21-Nov-2021	B	EPA Vial 40ml
1326768			SW02	21-Nov-2021	B	Plastic Bottle 1000ml
1326769			SW03	21-Nov-2021	B	Coloured Winchester 1000ml
1326769			SW03	21-Nov-2021	B	Coloured Winchester 500ml
1326769			SW03	21-Nov-2021	B	EPA Vial 40ml
1326769			SW03	21-Nov-2021	B	Plastic Bottle 1000ml
1326770			SW04	21-Nov-2021	B	Coloured Winchester 1000ml
1326770			SW04	21-Nov-2021	B	Coloured Winchester 500ml
1326770			SW04	21-Nov-2021	B	EPA Vial 40ml
1326770			SW04	21-Nov-2021	B	Plastic Bottle 1000ml
1326771			SW06	21-Nov-2021	B	Coloured Winchester 1000ml
1326771			SW06	21-Nov-2021	B	Coloured Winchester 500ml
1326771			SW06	21-Nov-2021	B	EPA Vial 40ml
1326771			SW06	21-Nov-2021	B	Plastic Bottle 1000ml
1326772			SW07	21-Nov-2021	B	Coloured Winchester 1000ml
1326772			SW07	21-Nov-2021	B	Coloured Winchester 500ml
1326772			SW07	21-Nov-2021	B	EPA Vial 40ml
1326772			SW07	21-Nov-2021	B	Plastic Bottle 1000ml

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:
1326773			SW08	21-Nov-2021	B	Coloured Winchester 1000ml
1326773			SW08	21-Nov-2021	B	Coloured Winchester 500ml
1326773			SW08	21-Nov-2021	B	EPA Vial 40ml
1326773			SW08	21-Nov-2021	B	Plastic Bottle 1000ml

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1030	Total Suspended Solids	Total suspended solids	Filtration of a mixed sample through a standard glass fibre filter and determination of the mass of residue retained dried at 105°C.
1090	Biochemical Oxygen Demand	Biochemical Oxygen demand (BOD)	Colorimetric determination of dissolved oxygen in seeded sample after 5 days incubation at 20°C.
1100	Chemical Oxygen Demand	Chemical Oxygen demand (COD)	Dichromate oxidation of organic matter in sample followed by colorimetric determination of residual Cr[VI].
1150	Dissolved Oxygen	Dissolved Oxygen (DO)	Electrometric determination (on site preferred), using oxygen sensitive membrane electrode.
1170	Redox Potential	Redox Potential	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.
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.
1495	Low Level Hexavalent Chromium in Waters	Chromium [VI]	Colorimetric determination of hexavalent chromium expressed as Cr (VI) µg/l in water, using Ion Chromatography and UV-visible spectrophotometry.
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
1730	Organo-Leads	Organo-Leads	Solvent extraction / GCMS 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

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

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Final Report

Report No.:	21-39563-1		
Initial Date of Issue:	06-Dec-2021		
Client	Priority Geotechnical Ltd		
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland		
Contact(s):	Colette Kelly		
Project	P21206 Tedcastles		
Quotation No.:	Q21-24611	**Date Received:**	11-Nov-2021
Order No.:	14093	**Date Instructed:**	15-Nov-2021
No. of Samples:	14		
Turnaround (Wkdays):	10	**Results Due:**	26-Nov-2021
Date Approved:	06-Dec-2021		

Approved By:

Details: Glynn Harvey, Technical Manager

Results - Water

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-39563	21-39563	21-39563	21-39563	21-39563	21-39563	21-39563	21-39563
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1317644	1317645	1317646	1317647	1317648	1317649	1317650	1317651
			Sample Location:		WSBH02	WSBH04	WSBH05	WS10	WS15	WS17	WS20	WS22
			Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
			Date Sampled:		08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
pH	U	1010		N/A	8.0	7.6	7.6	7.6	7.7	7.6	7.9	7.9
Electrical Conductivity	U	1020	µS/cm	1.0	1300	860	810	790	1100	980	8600	6700
Total Suspended Solids with Hot Water	N	1030	mg/l	5.0	170	150	890	50	1300	620	180	120
Total Dissolved Solids	N	1020	mg/l	1.0	850	560	530	510	720	640	5600	4400
Biochemical Oxygen Demand	N	1090	mg O2/l	4.0	[B] < 4.0	[B] < 4.0	[B] < 4.0	[B] < 4.0	[B] < 4.0	[B] < 4.0	[B] 5.0	[B] < 4.0
Chemical Oxygen Demand	U	1100	mg O2/l	10	[B] 60	[B] < 10	[B] 26	[B] 15	[B] 26	[B] 12	[B] 280	[B] 10
Dissolved Oxygen	N	1150	mg O2/l	0.50	6.7	6.7	6.7	6.7	6.8	6.8	6.8	6.8
Redox Potential	N	1170	mV	N/A	85	74	83	80	83	67	65	97
Alkalinity (Total)	U	1220	mg/l	10	740	510	450	240	430	480	1900	430
Chloride	U	1220	mg/l	1.0	130	38	14	7.4	17	25	2800	49
Ammoniacal Nitrogen	U	1220	mg/l	0.050	0.46	0.78	0.44	0.63	1.6	7.8	3.1	1.9
Nitrate	U	1220	mg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phosphate	U	1220	mg/l	0.200	7.9	0.21	< 0.20	< 0.20	< 0.20	< 0.20	14	< 0.20
Sulphate	U	1220	mg/l	1.0	< 1.0	49	58	230	300	110	< 1.0	52
Total Calcium	N	1455	mg/l	5.0	21	110	150	140	220	98	93	110
Total Potassium	N	1455	mg/l	0.50	33	12	7.1	9.8	16	26	36	5.1
Total Magnesium	N	1455	mg/l	0.50	39	19	7.9	12	18	28	110	9.4
Total Sodium	N	1455	mg/l	0.50	230	51	15	11	15	52	1600	14
Arsenic (Dissolved)	U	1455	µg/l	0.20	1.8	1.0	1.7	1.0	1.8	1.8	1.5	0.52
Barium (Dissolved)	U	1455	µg/l	5.00	24	120	96	61	91	100	55	110
Cadmium (Dissolved)	U	1455	µg/l	0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11
Copper (Dissolved)	U	1455	µg/l	0.50	2.4	4.9	3.7	3.4	2.1	< 0.50	120	1.9
Iron (Dissolved)	N	1455	µg/l	5.0	980	26	12	5.1	33	230	1900	15
Mercury (Dissolved)	U	1455	µg/l	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Manganese (Dissolved)	U	1455	µg/l	0.50	1200	1000	1300	1600	2400	700	300	1300
Molybdenum (Dissolved)	U	1455	µg/l	0.20	2.5	8.8	7.8	10	12	3.1	3.2	5.0
Nickel (Dissolved)	U	1455	µg/l	0.50	5.5	7.8	7.4	7.3	5.0	1.1	4.2	14
Lead (Dissolved)	U	1455	µg/l	0.50	1.4	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	3.9	< 0.50
Antimony (Dissolved)	U	1455	µg/l	0.50	0.53	1.2	0.79	2.4	0.67	< 0.50	1.2	< 0.50
Selenium (Dissolved)	U	1455	µg/l	0.50	0.72	< 0.50	< 0.50	0.53	< 0.50	< 0.50	< 0.50	< 0.50
Zinc (Dissolved)	U	1455	µg/l	2.5	15	28	5.4	75	16	4.2	72	3.9
Chromium (Trivalent)	N	1490	mg/l	0.020	[B] 8.8	[B] < 0.020	[B] < 0.020	[B] < 0.020	[B] < 0.020	[B] < 0.020	[B] 12	[B] < 0.020
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

Results - Water

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-39563	21-39563	21-39563	21-39563	21-39563	21-39563	21-39563	21-39563
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1317644	1317645	1317646	1317647	1317648	1317649	1317650	1317651
			Sample Location:		WSBH02	WSBH04	WSBH05	WS10	WS15	WS17	WS20	WS22
			Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
			Date Sampled:		08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Trichloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Bromodichloromethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0

Results - Water

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-39563	21-39563	21-39563	21-39563	21-39563	21-39563	21-39563	21-39563
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1317644	1317645	1317646	1317647	1317648	1317649	1317650	1317651
			Sample Location:		WSBH02	WSBH04	WSBH05	WS10	WS15	WS17	WS20	WS22
			Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
			Date Sampled:		08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Results - Water

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-39563	21-39563	21-39563	21-39563	21-39563	21-39563	21-39563	21-39563
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1317644	1317645	1317646	1317647	1317648	1317649	1317650	1317651
			Sample Location:		WSBH02	WSBH04	WSBH05	WS10	WS15	WS17	WS20	WS22
			Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
			Date Sampled:		08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Results - Water

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-39563	21-39563	21-39563	21-39563	21-39563	21-39563	21-39563	21-39563
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1317644	1317645	1317646	1317647	1317648	1317649	1317650	1317651
			Sample Location:		WSBH02	WSBH04	WSBH05	WS10	WS15	WS17	WS20	WS22
			Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
			Date Sampled:		08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Results - Water

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-39563	21-39563	21-39563	21-39563	21-39563	21-39563
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1317652	1317653	1317654	1317655	1317656	1317657
			Sample Location:		WS24	WS25	WS29	WS02	WSBH03	WSBH01
			Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER
			Date Sampled:		08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
pH	U	1010		N/A	8.0	7.9	7.8	7.6	8.0	8.5
Electrical Conductivity	U	1020	µS/cm	1.0	1300	1600	1200	2100	4100	1200
Total Suspended Solids with Hot Water	N	1030	mg/l	5.0	120	210	8.0	920	110	130
Total Dissolved Solids	N	1020	mg/l	1.0	850	1000	780	1400	2700	780
Biochemical Oxygen Demand	N	1090	mg O2/l	4.0	[B] < 4.0	[B] < 4.0	[B] < 4.0	[B] < 4.0	[B] < 4.0	[B] < 4.0
Chemical Oxygen Demand	U	1100	mg O2/l	10	[B] 15	[B] 37	[B] 12	[B] 15	[B] 37	[B] 10
Dissolved Oxygen	N	1150	mg O2/l	0.50	6.9	6.9	6.9	6.9	6.8	6.9
Redox Potential	N	1170	mV	N/A	140	110	83	67	50	120
Alkalinity (Total)	U	1220	mg/l	10	440	490	520	230	1800	500
Chloride	U	1220	mg/l	1.0	75	340	150	17	850	92
Ammoniacal Nitrogen	U	1220	mg/l	0.050	1.3	0.86	0.86	1.5	0.47	1.1
Nitrate	U	1220	mg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phosphate	U	1220	mg/l	0.200	< 0.20	< 0.20	< 0.20	< 0.20	9.7	1.2
Sulphate	U	1220	mg/l	1.0	56	13	10	1300	22	62
Total Calcium	N	1455	mg/l	5.0	100	82	130	520	72	15
Total Potassium	N	1455	mg/l	0.50	7.5	15	9.4	5.6	33	15
Total Magnesium	N	1455	mg/l	0.50	12	30	19	20	69	25
Total Sodium	N	1455	mg/l	0.50	90	210	77	15	750	150
Arsenic (Dissolved)	U	1455	µg/l	0.20	1.5	1.1	0.88	0.75	0.64	4.2
Barium (Dissolved)	U	1455	µg/l	5.00	110	27	210	76	18	77
Cadmium (Dissolved)	U	1455	µg/l	0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11
Copper (Dissolved)	U	1455	µg/l	0.50	4.8	4.7	1.3	2.3	3.0	2.2
Iron (Dissolved)	N	1455	µg/l	5.0	6.8	19	< 5.0	300	370	8.6
Mercury (Dissolved)	U	1455	µg/l	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Manganese (Dissolved)	U	1455	µg/l	0.50	1300	430	11000	3600	160	57
Molybdenum (Dissolved)	U	1455	µg/l	0.20	13	3.3	3.1	3.1	0.47	14
Nickel (Dissolved)	U	1455	µg/l	0.50	4.3	1.4	3.0	9.7	1.5	2.5
Lead (Dissolved)	U	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	1.6	< 0.50
Antimony (Dissolved)	U	1455	µg/l	0.50	1.4	< 0.50	< 0.50	1.1	< 0.50	< 0.50
Selenium (Dissolved)	U	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.62	< 0.50
Zinc (Dissolved)	U	1455	µg/l	2.5	5.4	7.7	< 2.5	5.1	6.0	4.1
Chromium (Trivalent)	N	1490	mg/l	0.020	[B] < 0.020	[B] 0.59	[B] < 0.020	[B] < 0.020	[B] 15	[B] 7.9
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

Results - Water

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-39563	21-39563	21-39563	21-39563	21-39563	21-39563
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1317652	1317653	1317654	1317655	1317656	1317657
			Sample Location:		WS24	WS25	WS29	WS02	WSBH03	WSBH01
			Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER
			Date Sampled:		08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5
Chloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5
Trichloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
Bromodichloromethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5
Chlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0

Results - Water

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-39563	21-39563	21-39563	21-39563	21-39563	21-39563
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1317652	1317653	1317654	1317655	1317656	1317657
			Sample Location:		WS24	WS25	WS29	WS02	WSBH03	WSBH01
			Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER
			Date Sampled:		08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Results - Water

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-39563	21-39563	21-39563	21-39563	21-39563	21-39563
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1317652	1317653	1317654	1317655	1317656	1317657
			Sample Location:		WS24	WS25	WS29	WS02	WSBH03	WSBH01
			Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER
			Date Sampled:		08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Results - Water

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		21-39563	21-39563	21-39563	21-39563	21-39563	21-39563
Quotation No.: Q21-24611			**Chemtest Sample ID.:**		1317652	1317653	1317654	1317655	1317656	1317657
			Sample Location:		WS24	WS25	WS29	WS02	WSBH03	WSBH01
			Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER
			Date Sampled:		08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

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:
1317644			WSBH02	08-Nov-2021	B	Coloured Winchester 1000ml
1317644			WSBH02	08-Nov-2021	B	EPA Vial 40ml
1317644			WSBH02	08-Nov-2021	B	Plastic Bottle 1000ml
1317645			WSBH04	08-Nov-2021	B	Coloured Winchester 1000ml
1317645			WSBH04	08-Nov-2021	B	EPA Vial 40ml
1317645			WSBH04	08-Nov-2021	B	Plastic Bottle 1000ml
1317646			WSBH05	08-Nov-2021	B	Coloured Winchester 1000ml
1317646			WSBH05	08-Nov-2021	B	EPA Vial 40ml
1317646			WSBH05	08-Nov-2021	B	Plastic Bottle 1000ml
1317647			WS10	08-Nov-2021	B	Coloured Winchester 1000ml
1317647			WS10	08-Nov-2021	B	EPA Vial 40ml
1317647			WS10	08-Nov-2021	B	Plastic Bottle 1000ml
1317648			WS15	08-Nov-2021	B	Coloured Winchester 1000ml
1317648			WS15	08-Nov-2021	B	EPA Vial 40ml
1317648			WS15	08-Nov-2021	B	Plastic Bottle 1000ml
1317649			WS17	08-Nov-2021	B	Coloured Winchester 1000ml
1317649			WS17	08-Nov-2021	B	EPA Vial 40ml
1317649			WS17	08-Nov-2021	B	Plastic Bottle 1000ml
1317650			WS20	08-Nov-2021	B	Coloured Winchester 1000ml
1317650			WS20	08-Nov-2021	B	EPA Vial 40ml
1317650			WS20	08-Nov-2021	B	Plastic Bottle 1000ml

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:
1317651			WS22	08-Nov-2021	B	Coloured Winchester 1000ml
1317651			WS22	08-Nov-2021	B	EPA Vial 40ml
1317651			WS22	08-Nov-2021	B	Plastic Bottle 1000ml
1317652			WS24	08-Nov-2021	B	Coloured Winchester 1000ml
1317652			WS24	08-Nov-2021	B	EPA Vial 40ml
1317652			WS24	08-Nov-2021	B	Plastic Bottle 1000ml
1317653			WS25	08-Nov-2021	B	Coloured Winchester 1000ml
1317653			WS25	08-Nov-2021	B	EPA Vial 40ml
1317653			WS25	08-Nov-2021	B	Plastic Bottle 1000ml
1317654			WS29	08-Nov-2021	B	Coloured Winchester 1000ml
1317654			WS29	08-Nov-2021	B	EPA Vial 40ml
1317654			WS29	08-Nov-2021	B	Plastic Bottle 1000ml
1317655			WS02	08-Nov-2021	B	Coloured Winchester 1000ml
1317655			WS02	08-Nov-2021	B	EPA Vial 40ml
1317655			WS02	08-Nov-2021	B	Plastic Bottle 1000ml
1317656			WSBH03	08-Nov-2021	B	Coloured Winchester 1000ml
1317656			WSBH03	08-Nov-2021	B	EPA Vial 40ml
1317656			WSBH03	08-Nov-2021	B	Plastic Bottle 1000ml
1317657			WSBH01	08-Nov-2021	B	Coloured Winchester 1000ml
1317657			WSBH01	08-Nov-2021	B	EPA Vial 40ml
1317657			WSBH01	08-Nov-2021	B	Plastic Bottle 1000ml

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1030	Total Suspended Solids	Total suspended solids	Filtration of a mixed sample through a standard glass fibre filter and determination of the mass of residue retained dried at 105°C.
1090	Biochemical Oxygen Demand	Biochemical Oxygen demand (BOD)	Colorimetric determination of dissolved oxygen in seeded sample after 5 days incubation at 20°C.
1100	Chemical Oxygen Demand	Chemical Oxygen demand (COD)	Dichromate oxidation of organic matter in sample followed by colorimetric determination of residual Cr[VI].
1150	Dissolved Oxygen	Dissolved Oxygen (DO)	Electrometric determination (on site preferred), using oxygen sensitive membrane electrode.
1170	Redox Potential	Redox Potential	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.
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.
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

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

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Final Report

Report No.:	21-39559-1		
Initial Date of Issue:	25-Nov-2021		
Client	Priority Geotechnical Ltd		
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland		
Contact(s):	Colette Kelly		
Project	P21206 Tedcastles		
Quotation No.:	Q21-24611	**Date Received:**	11-Nov-2021
Order No.:	14093	**Date Instructed:**	12-Nov-2021
No. of Samples:	10		
Turnaround (Wkdays):	10	**Results Due:**	25-Nov-2021
Date Approved:	25-Nov-2021		

Approved By:

Details: Glynn Harvey, Technical Manager

Results - Water

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	21-39559	21-39559	21-39559	21-39559	21-39559	21-39559	21-39559	21-39559
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1317625	1317626	1317627	1317628	1317629	1317630	1317631	1317632
				Sample Location:	SW07	SW08	SW02	SW03	SW05	SW01	SW04	SW06
				Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
				Date Sampled:	09-Nov-2021	09-Nov-2021	09-Nov-2021	09-Nov-2021	09-Nov-2021	09-Nov-2021	09-Nov-2021	09-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Tetramethyl Lead	N	1760	µg/l	1.0000000				< 1.000				
pH	U	1010		N/A	7.9	7.9	7.5	6.6	7.4	7.8	7.4	7.6
Electrical Conductivity	U	1020	µS/cm	1.0	3200	1300	7000	40000	37000	11000	14000	8200
Total Suspended Solids with Hot Water	N	1030	mg/l	5.0	32	38	81	260	240	76	73	100
Total Dissolved Solids	N	1020	mg/l	1.0	2100	850	4600	26000	24000	7200	9100	5300
Chemical Oxygen Demand	U	1100	mg O2/l	10	< 10	< 10	19	30	140	23	52	21
Dissolved Oxygen	N	1150	mg O2/l	0.50	8.7	8.7	8.7	8.8	8.7	8.8	8.9	8.9
Redox Potential	N	1170	mV	N/A	47	11	25	26	33	1.9	78	72
Alkalinity (Total)	U	1220	mg/l	10	250	290	68	68	83	67	160	160
Chloride	U	1220	mg/l	1.0	520	180	2100	15000	14000	2900	3000	2300
Ammoniacal Nitrogen	U	1220	mg/l	0.050	2.0	1.9	0.12	1.2	1.1	0.22	5.1	5.2
Nitrate	U	1220	mg/l	0.50	39	39	6.6	< 0.50	< 0.50	4.2	15	22
Phosphate	U	1220	mg/l	0.200	0.50	0.47	< 0.20	< 0.20	0.49	< 0.20	1.6	1.6
Sulphate	U	1220	mg/l	1.0	100	53	300	2100	1900	410	470	380
Total Calcium	N	1455	mg/l	5.0	120	120	61	340	310	73	180	140
Total Potassium	N	1455	mg/l	0.50	15	8.4	42	300	280	53	100	57
Total Magnesium	N	1455	mg/l	0.50	39	16	140	980	890	170	310	160
Total Sodium	N	1455	mg/l	0.50	270	80	1100	8800	7300	1400	2500	1300
Arsenic (Dissolved)	U	1455	µg/l	0.20	1.1	0.81	0.52	1.4	3.8	1.1	3.6	4.1
Barium (Dissolved)	U	1455	µg/l	5.00	13	12	15	9.2	30	16	60	57
Cadmium (Dissolved)	U	1455	µg/l	0.11	< 0.11	< 0.11	< 0.11	< 0.11	0.16	< 0.11	< 0.11	< 0.11
Copper (Dissolved)	U	1455	µg/l	0.50	3.2	1.6	2.0	0.65	2.4	2.9	2.4	1.5
Iron (Dissolved)	N	1455	µg/l	5.0	21	< 5.0	61	8.3	34	53	9.5	< 5.0
Mercury (Dissolved)	U	1455	µg/l	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Manganese (Dissolved)	U	1455	µg/l	0.50	18	6.0	72	63	68	80	220	170
Molybdenum (Dissolved)	U	1455	µg/l	0.20	1.4	0.60	1.2	6.8	9.5	1.9	2.8	1.7
Nickel (Dissolved)	U	1455	µg/l	0.50	1.7	0.60	0.57	0.50	1.0	0.61	3.8	4.1
Lead (Dissolved)	U	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Antimony (Dissolved)	U	1455	µg/l	0.50	0.84	0.79	< 0.50	< 0.50	1.9	< 0.50	1.3	1.5
Selenium (Dissolved)	U	1455	µg/l	0.50	1.6	1.1	0.58	0.85	6.5	1.5	< 0.50	< 0.50
Zinc (Dissolved)	U	1455	µg/l	2.5	21	13	4.3	6.3	49	6.7	62	3.2
Chromium (Trivalent)	N	1490	mg/l	0.020	6.9	6.4	6.6	< 0.020	7.7	7.7	1.3	4.2
Low-Level Chromium (Hexavalent)	U	1495	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Water

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	21-39559	21-39559	21-39559	21-39559	21-39559	21-39559	21-39559	21-39559
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1317625	1317626	1317627	1317628	1317629	1317630	1317631	1317632
				Sample Location:	SW07	SW08	SW02	SW03	SW05	SW01	SW04	SW06
				Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
				Date Sampled:	09-Nov-2021	09-Nov-2021	09-Nov-2021	09-Nov-2021	09-Nov-2021	09-Nov-2021	09-Nov-2021	09-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Tetraethyl Lead	N	1730	µg/l	1.0				< 1.0				
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Trichloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	6.0	5.3
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Bromodichloromethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Results - Water

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	21-39559	21-39559	21-39559	21-39559	21-39559	21-39559	21-39559	21-39559
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1317625	1317626	1317627	1317628	1317629	1317630	1317631	1317632
				Sample Location:	SW07	SW08	SW02	SW03	SW05	SW01	SW04	SW06
				Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
				Date Sampled:	09-Nov-2021	09-Nov-2021	09-Nov-2021	09-Nov-2021	09-Nov-2021	09-Nov-2021	09-Nov-2021	09-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
1,2-Dibromoethane	U	1760	µg/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Results - Water

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	21-39559	21-39559	21-39559	21-39559	21-39559	21-39559	21-39559	21-39559
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1317625	1317626	1317627	1317628	1317629	1317630	1317631	1317632
				Sample Location:	SW07	SW08	SW02	SW03	SW05	SW01	SW04	SW06
				Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
				Date Sampled:	09-Nov-2021	09-Nov-2021	09-Nov-2021	09-Nov-2021	09-Nov-2021	09-Nov-2021	09-Nov-2021	09-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Isophorone	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Results - Water

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	21-39559	21-39559	21-39559	21-39559	21-39559	21-39559	21-39559	21-39559
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1317625	1317626	1317627	1317628	1317629	1317630	1317631	1317632
				Sample Location:	SW07	SW08	SW02	SW03	SW05	SW01	SW04	SW06
				Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
				Date Sampled:	09-Nov-2021	09-Nov-2021	09-Nov-2021	09-Nov-2021	09-Nov-2021	09-Nov-2021	09-Nov-2021	09-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Results - Water

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	21-39559	21-39559
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1317633	1317634
				Sample Location:	SW09	WS08
				Sample Type:	WATER	WATER
				Date Sampled:	09-Nov-2021	09-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Tetramethyl Lead	N	1760	µg/l	1.0000000	< 1.000	< 1.000
pH	U	1010		N/A	7.4	7.6
Electrical Conductivity	U	1020	µS/cm	1.0	2600	580
Total Suspended Solids with Hot Water	N	1030	mg/l	5.0	14	650
Total Dissolved Solids	N	1020	mg/l	1.0	1700	380
Chemical Oxygen Demand	U	1100	mg O2/l	10	72	76
Dissolved Oxygen	N	1150	mg O2/l	0.50	8.9	8.9
Redox Potential	N	1170	mV	N/A	91	91
Alkalinity (Total)	U	1220	mg/l	10	220	230
Chloride	U	1220	mg/l	1.0	52	28
Ammoniacal Nitrogen	U	1220	mg/l	0.050	0.23	< 0.050
Nitrate	U	1220	mg/l	0.50	< 0.50	< 0.50
Phosphate	U	1220	mg/l	0.200	< 0.20	< 0.20
Sulphate	U	1220	mg/l	1.0	16	17
Total Calcium	N	1455	mg/l	5.0	53	61
Total Potassium	N	1455	mg/l	0.50	1.7	2.2
Total Magnesium	N	1455	mg/l	0.50	19	13
Total Sodium	N	1455	mg/l	0.50	33	23
Arsenic (Dissolved)	U	1455	µg/l	0.20	1.9	3.7
Barium (Dissolved)	U	1455	µg/l	5.00	15	50
Cadmium (Dissolved)	U	1455	µg/l	0.11	< 0.11	< 0.11
Copper (Dissolved)	U	1455	µg/l	0.50	1.4	0.69
Iron (Dissolved)	N	1455	µg/l	5.0	380	22
Mercury (Dissolved)	U	1455	µg/l	0.05	< 0.05	< 0.05
Manganese (Dissolved)	U	1455	µg/l	0.50	73	510
Molybdenum (Dissolved)	U	1455	µg/l	0.20	5.0	14
Nickel (Dissolved)	U	1455	µg/l	0.50	1.5	2.6
Lead (Dissolved)	U	1455	µg/l	0.50	1.1	< 0.50
Antimony (Dissolved)	U	1455	µg/l	0.50	< 0.50	0.52
Selenium (Dissolved)	U	1455	µg/l	0.50	< 0.50	0.70
Zinc (Dissolved)	U	1455	µg/l	2.5	4.8	< 2.5
Chromium (Trivalent)	N	1490	mg/l	0.020	< 0.020	< 0.020
Low-Level Chromium (Hexavalent)	U	1495	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10

Results - Water

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	21-39559	21-39559
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1317633	1317634
				Sample Location:	SW09	WS08
				Sample Type:	WATER	WATER
				Date Sampled:	09-Nov-2021	09-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10	< 10
Tetraethyl Lead	N	1730	µg/l	1.0	< 1.0	< 1.0
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0	< 1.0
Bromomethane	U	1760	µg/l	5	< 5	< 5
Chloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5	< 5	< 5
Trichloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10	< 10
Bromodichloromethane	U	1760	µg/l	5	< 5	< 5
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10	< 10

Results - Water

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	21-39559	21-39559
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1317633	1317634
				Sample Location:	SW09	WS08
				Sample Type:	WATER	WATER
				Date Sampled:	09-Nov-2021	09-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
1,2-Dibromoethane	U	1760	µg/l	5	< 5	< 5
Chlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50

Results - Water

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	21-39559	21-39559
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1317633	1317634
				Sample Location:	SW09	WS08
				Sample Type:	WATER	WATER
				Date Sampled:	09-Nov-2021	09-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Isophorone	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50	< 0.50

Results - Water

Project: P21206 Tedcastles

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	21-39559	21-39559
Quotation No.: Q21-24611				**Chemtest Sample ID.:**	1317633	1317634
				Sample Location:	SW09	WS08
				Sample Type:	WATER	WATER
				Date Sampled:	09-Nov-2021	09-Nov-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1030	Total Suspended Solids	Total suspended solids	Filtration of a mixed sample through a standard glass fibre filter and determination of the mass of residue retained dried at 105°C.
1100	Chemical Oxygen Demand	Chemical Oxygen demand (COD)	Dichromate oxidation of organic matter in sample followed by colorimetric determination of residual Cr[VI].
1150	Dissolved Oxygen	Dissolved Oxygen (DO)	Electrometric determination (on site preferred), using oxygen sensitive membrane electrode.
1170	Redox Potential	Redox Potential	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.
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.
1495	Low Level Hexavalent Chromium in Waters	Chromium [VI]	Colorimetric determination of hexavalent chromium expressed as Cr (VI) µg/l in water, using Ion Chromatography and UV-visible spectrophotometry.
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
1730	Organo-Leads	Organo-Leads	Solvent extraction / GCMS 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

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

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Chemtest
Willie Snaith Rd
Newmarket
Suffolk
CB8 7SQ

Attention: Subcontracting Lab

CERTIFICATE OF ANALYSIS

Date of report Generation:	17 February 2022
Customer:	Chemtest
Sample Delivery Group (SDG):	220201-75
Your Reference:	
Location:	21938
Report No:	633935
Order Number:	UK0611500479

We received 1 sample on Tuesday February 01, 2022 and 1 of these samples were scheduled for analysis which was completed on Thursday February 17, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25740949	1360158			25/01/2022

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 220201-75 **Report Number:** 633935 **Superseded Report:**
Client Ref.: **Location:** 21938

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

	Lab Sample No(s)		25740949
	Customer Sample Reference		1360158
	AGS Reference		
	Depth (m)		
	Container		1lplastic (ALE221)
	Sample Type		UNL
PFAS (Post Ox.) Liquids	All	NDPs: 0 Tests: 1	X
PFAS Liquids	All	NDPs: 0 Tests: 1	X

Validated

CERTIFICATE OF ANALYSIS

SDG: 220201-75 **Report Number:** 633935 **Superseded Report:**
Client Ref.: **Location:** 21938

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.	1360158
Depth (m)	.
Sample Type	Unspecified Liquid (UNL)
Date Sampled	25/01/2022
Sample Time	.
Date Received	01/02/2022
SDG Ref	220201-75
Lab Sample No.(s)	25740949
AGS Reference	

Component	LOD/Units	Method	
PFBA (375-22-4)	<2 ng/l	TM337	<2
PFPA (2706-90-3)	<1 ng/l	TM337	<1
PFHxA (307-24-4)	<1 ng/l	TM337	<1
PFBS (375-73-5)	<1 ng/l	TM337	<1
PFHpA (375-85-9)	<1 ng/l	TM337	<1
6:2 FTS (27619-97-2)	<1 ng/l	TM337	<1
PFOA (335-67-1)	<0.65 ng/l	TM337	<0.65
PFHxS (355-46-4)	<1 ng/l	TM337	<1
PFNA (375-95-1)	<1 ng/l	TM337	<1
PFHpS (375-92-8)	<1 ng/l	TM337	<1
PFDA (335-76-2)	<1 ng/l	TM337	<1
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	<0.65
Branched PFOS	<0.65 ng/l	TM337	<0.65
PFUnA (2058-94-8)	<1 ng/l	TM337	<1
PFDoA (307-55-1)	<1 ng/l	TM337	<1
PFOSA (754-91-6)	<2 ng/l	TM337	<2
PFDS (335-77-3)	<1 ng/l	TM337	<1
PFPeS (2706-91-4)	<1 ng/l	TM337	<1
Total PFOS	<0.65 ng/l	TM337	<0.65
PFBA (Post Ox.) (375-22-4)	<4 ng/l	TM405	<4
PFPA (Post Ox.) (2706-90-3)	<2 ng/l	TM405	<2
PFHxA (Post Ox.) (307-24-4)	<2 ng/l	TM405	<2
PFBS (Post Ox.) (375-73-5)	<2 ng/l	TM405	<2
PFHpA (Post Ox.) (375-85-9)	<2 ng/l	TM405	<2
6:2 FTS (Post Ox.) (27619-97-2)	<2 ng/l	TM405	<2
PFOA (Post Ox.) (335-67-1)	<2 ng/l	TM405	<2
PFHxS (Post Ox.) (355-46-4)	<2 ng/l	TM405	<2
PFNA (Post Ox.) (375-95-1)	<2 ng/l	TM405	<2
PFHpS (Post Ox.) (375-92-8)	<2 ng/l	TM405	<2
PFDA (Post Ox.) (335-76-2)	<2 ng/l	TM405	<2
Linear PFOS (Post Ox.) (1763-23-1)	<2 ng/l	TM405	<2
Branched PFOS (Post Ox.)	<2 ng/l	TM405	<2
PFUnA (Post Ox.) (2058-94-8)	<2 ng/l	TM405	<2

11:37:00 17/02/2022

Validated

CERTIFICATE OF ANALYSIS

SDG: 220201-75 **Report Number:** 633935 **Superseded Report:**
Client Ref.: **Location:** 21938

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			1360158
Depth (m)			.
Sample Type			Unspecified Liquid (UNL)
Date Sampled			25/01/2022
Sample Time			.
Date Received			01/02/2022
SDG Ref			220201-75
Lab Sample No.(s)			25740949
AGS Reference			
Component	**LOD/Units**	**Method**	
PFDoA (Post Ox.) (307-55-1)	<2 ng/l	TM405	<2
PFOSA (Post Ox.) (754-91-6)	<4 ng/l	TM405	<4
PFDS (Post Ox.) (335-77-3)	<2 ng/l	TM405	<2
PFPeS (Post Ox.) (2706-91-4)	<2 ng/l	TM405	<2
Total PFOS (Post Ox.)	<2 ng/l	TM405	<2

11:37:00 17/02/2022

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS In Clean Water Matrices	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids in clean water matrices
TM405	PFAS (TOP Assay)	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids - Total Oxidizable Precursor Assay

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

Test Completion Dates

Lab Sample No(s)	25740949
Customer Sample Ref.	1360158
AGS Ref.	
Depth	
Type	Unspecified Liq
PFAS (Post Ox.) Liquids	17-Feb-2022
PFAS Liquids	15-Feb-2022

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
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Tel: (01244) 528700
Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Chemtest
Willie Snaith Rd
Newmarket
Suffolk
CB8 7SQ

Attention: Subcontracting Lab

CERTIFICATE OF ANALYSIS

Date of report Generation:	17 February 2022
Customer:	Chemtest
Sample Delivery Group (SDG):	220201-75
Your Reference:	
Location:	21938
Report No:	633935
Order Number:	UK0611500479

We received 1 sample on Tuesday February 01, 2022 and 1 of these samples were scheduled for analysis which was completed on Thursday February 17, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25740949	1360158			25/01/2022

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 220201-75 **Report Number:** 633935 **Superseded Report:**
Client Ref.: **Location:** 21938

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

	Lab Sample No(s)		25740949
	Customer Sample Reference		1360158
	AGS Reference		
	Depth (m)		
	Container		1lplastic (ALE221)
	Sample Type		UNL
PFAS (Post Ox.) Liquids	All	NDPs: 0 Tests: 1	X
PFAS Liquids	All	NDPs: 0 Tests: 1	X

Validated

CERTIFICATE OF ANALYSIS

SDG: 220201-75 **Report Number:** 633935 **Superseded Report:**
Client Ref.: **Location:** 21938

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.	1360158
Depth (m)	.
Sample Type	Unspecified Liquid (UNL)
Date Sampled	25/01/2022
Sample Time	.
Date Received	01/02/2022
SDG Ref	220201-75
Lab Sample No.(s)	25740949
AGS Reference	

Component	LOD/Units	Method	
PFBA (375-22-4)	<2 ng/l	TM337	<2
PFPA (2706-90-3)	<1 ng/l	TM337	<1
PFHxA (307-24-4)	<1 ng/l	TM337	<1
PFBS (375-73-5)	<1 ng/l	TM337	<1
PFHpA (375-85-9)	<1 ng/l	TM337	<1
6:2 FTS (27619-97-2)	<1 ng/l	TM337	<1
PFOA (335-67-1)	<0.65 ng/l	TM337	<0.65
PFHxS (355-46-4)	<1 ng/l	TM337	<1
PFNA (375-95-1)	<1 ng/l	TM337	<1
PFHpS (375-92-8)	<1 ng/l	TM337	<1
PFDA (335-76-2)	<1 ng/l	TM337	<1
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	<0.65
Branched PFOS	<0.65 ng/l	TM337	<0.65
PFUnA (2058-94-8)	<1 ng/l	TM337	<1
PFDoA (307-55-1)	<1 ng/l	TM337	<1
PFOSA (754-91-6)	<2 ng/l	TM337	<2
PFDS (335-77-3)	<1 ng/l	TM337	<1
PFPeS (2706-91-4)	<1 ng/l	TM337	<1
Total PFOS	<0.65 ng/l	TM337	<0.65
PFBA (Post Ox.) (375-22-4)	<4 ng/l	TM405	<4
PFPA (Post Ox.) (2706-90-3)	<2 ng/l	TM405	<2
PFHxA (Post Ox.) (307-24-4)	<2 ng/l	TM405	<2
PFBS (Post Ox.) (375-73-5)	<2 ng/l	TM405	<2
PFHpA (Post Ox.) (375-85-9)	<2 ng/l	TM405	<2
6:2 FTS (Post Ox.) (27619-97-2)	<2 ng/l	TM405	<2
PFOA (Post Ox.) (335-67-1)	<2 ng/l	TM405	<2
PFHxS (Post Ox.) (355-46-4)	<2 ng/l	TM405	<2
PFNA (Post Ox.) (375-95-1)	<2 ng/l	TM405	<2
PFHpS (Post Ox.) (375-92-8)	<2 ng/l	TM405	<2
PFDA (Post Ox.) (335-76-2)	<2 ng/l	TM405	<2
Linear PFOS (Post Ox.) (1763-23-1)	<2 ng/l	TM405	<2
Branched PFOS (Post Ox.)	<2 ng/l	TM405	<2
PFUnA (Post Ox.) (2058-94-8)	<2 ng/l	TM405	<2

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Validated

CERTIFICATE OF ANALYSIS

SDG: 220201-75 **Report Number:** 633935 **Superseded Report:**
Client Ref.: **Location:** 21938

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			1360158
Depth (m)			.
Sample Type			Unspecified Liquid (UNL)
Date Sampled			25/01/2022
Sample Time			.
Date Received			01/02/2022
SDG Ref			220201-75
Lab Sample No.(s)			25740949
AGS Reference			
Component	**LOD/Units**	**Method**	
PFDoA (Post Ox.) (307-55-1)	<2 ng/l	TM405	<2
PFOSA (Post Ox.) (754-91-6)	<4 ng/l	TM405	<4
PFDS (Post Ox.) (335-77-3)	<2 ng/l	TM405	<2
PFPeS (Post Ox.) (2706-91-4)	<2 ng/l	TM405	<2
Total PFOS (Post Ox.)	<2 ng/l	TM405	<2

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Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS In Clean Water Matrices	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids in clean water matrices
TM405	PFAS (TOP Assay)	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids - Total Oxidizable Precursor Assay

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

Test Completion Dates

Lab Sample No(s)	25740949
Customer Sample Ref.	1360158
AGS Ref.	
Depth	
Type	Unspecified Liq
PFAS (Post Ox.) Liquids	17-Feb-2022
PFAS Liquids	15-Feb-2022

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
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Website: www.alsenvironmental.co.uk

Chemtest
Willie Snaith Rd
Newmarket
Suffolk
CB8 7SQ

Attention: Subcontracting Lab

CERTIFICATE OF ANALYSIS

Date of report Generation:	17 February 2022
Customer:	Chemtest
Sample Delivery Group (SDG):	220131-10
Your Reference:	22-02739
Location:	Not Specified
Report No:	633936
Order Number:	UK0611500479

We received 1 sample on Monday January 31, 2022 and 1 of these samples were scheduled for analysis which was completed on Thursday February 17, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25733612	1359233			24/01/2022

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 220131-10
Client Ref.: 22-02739
Report Number: 633936
Location: Not Specified
Superseded Report:

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

	Lab Sample No(s)		25733612
	Customer Sample Reference		1359233
	AGS Reference		
	Depth (m)		
	Container		1lplastic (ALE221)
	Sample Type		UNL
PFAS (Post Ox.) Liquids	All	NDPs: 0 Tests: 1	X
PFAS Liquids	All	NDPs: 0 Tests: 1	X

Validated

CERTIFICATE OF ANALYSIS

SDG: 220131-10 **Report Number:** 633936 **Superseded Report:**
Client Ref.: 22-02739 **Location:** Not Specified

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.	1359233					
Depth (m)	.					
Sample Type	Unspecified Liquid (UNL)					
Date Sampled	24/01/2022					
Sample Time	.					
Date Received	31/01/2022					
SDG Ref	220131-10					
Lab Sample No.(s)	25733612					
AGS Reference						

Component	LOD/Units	Method						
PFBA (375-22-4)	<2 ng/l	TM337	<3.5					
PFPA (2706-90-3)	<1 ng/l	TM337	<3.5					
PFHxA (307-24-4)	<1 ng/l	TM337	1.64					
PFBS (375-73-5)	<1 ng/l	TM337	<1					
PFHpA (375-85-9)	<1 ng/l	TM337	2.82					
6:2 FTS (27619-97-2)	<1 ng/l	TM337	<1					
PFOA (335-67-1)	<0.65 ng/l	TM337	2.47					
PFHxS (355-46-4)	<1 ng/l	TM337	1.88					
PFNA (375-95-1)	<1 ng/l	TM337	<1					
PFHpS (375-92-8)	<1 ng/l	TM337	<1					
PFDA (335-76-2)	<1 ng/l	TM337	<1					
Linear PFOS (1763-23-1)	<0.65 ng/l	TM337	3.32					
Branched PFOS	<0.65 ng/l	TM337	2.27					
PFUnA (2058-94-8)	<1 ng/l	TM337	<1					
PFDoA (307-55-1)	<1 ng/l	TM337	<1					
PFOSA (754-91-6)	<2 ng/l	TM337	<2					
PFDS (335-77-3)	<1 ng/l	TM337	<1					
PFPeS (2706-91-4)	<1 ng/l	TM337	<1					
Total PFOS	<0.65 ng/l	TM337	5.59					
PFBA (Post Ox.) (375-22-4)	<4 ng/l	TM405	<4					
PFPA (Post Ox.) (2706-90-3)	<2 ng/l	TM405	<2					
PFHxA (Post Ox.) (307-24-4)	<2 ng/l	TM405	3.34					
PFBS (Post Ox.) (375-73-5)	<2 ng/l	TM405	<2					
PFHpA (Post Ox.) (375-85-9)	<2 ng/l	TM405	2.33					
6:2 FTS (Post Ox.) (27619-97-2)	<2 ng/l	TM405	<2					
PFOA (Post Ox.) (335-67-1)	<2 ng/l	TM405	2.3					
PFHxS (Post Ox.) (355-46-4)	<2 ng/l	TM405	<2					
PFNA (Post Ox.) (375-95-1)	<2 ng/l	TM405	<2					
PFHpS (Post Ox.) (375-92-8)	<2 ng/l	TM405	<2					
PFDA (Post Ox.) (335-76-2)	<2 ng/l	TM405	<2					
Linear PFOS (Post Ox.) (1763-23-1)	<2 ng/l	TM405	2.88					
Branched PFOS (Post Ox.)	<2 ng/l	TM405	2.3					
PFUnA (Post Ox.) (2058-94-8)	<2 ng/l	TM405	<2					

Validated

CERTIFICATE OF ANALYSIS

SDG: 220131-10 **Report Number:** 633936 **Superseded Report:**
Client Ref.: 22-02739 **Location:** Not Specified

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.	1359233
Depth (m)	.
Sample Type	Unspecified Liquid (UNL)
Date Sampled	24/01/2022
Sample Time	.
Date Received	31/01/2022
SDG Ref	220131-10
Lab Sample No.(s)	25733612
AGS Reference	

Component	LOD/Units	Method	
PFDoA (Post Ox.) (307-55-1)	<2 ng/l	TM405	<2
PFOSA (Post Ox.) (754-91-6)	<4 ng/l	TM405	<4
PFDS (Post Ox.) (335-77-3)	<2 ng/l	TM405	<2
PFPeS (Post Ox.) (2706-91-4)	<2 ng/l	TM405	<2
Total PFOS (Post Ox.)	<2 ng/l	TM405	5.18

11:38:01 17/02/2022

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS In Clean Water Matrices	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids in clean water matrices
TM405	PFAS (TOP Assay)	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids - Total Oxidizable Precursor Assay

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

Test Completion Dates

Lab Sample No(s)	25733612
Customer Sample Ref.	1359233
AGS Ref.	
Depth	
Type	Unspecified Liq
PFAS (Post Ox.) Liquids	17-Feb-2022
PFAS Liquids	10-Feb-2022

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Certificate of Analysis

Report No.:	**21-15388-1**
Issue No.:	**1**
Date of Issue	**20/10/2021**
Customer Details:	Chemtest Ltd, Depot Road, Newmarket, CB8 0AL
Customer Contact:	Jason Hines
Customer Order No.:	21393
Customer Reference:	21-34348
Quotation Reference:	210630/04
Description:	1 soil sample
Date Received:	07/10/2021
Date Started:	08/10/2021
Date Completed:	20/10/2021
Test Methods:	Details available on request (refer to SOP code against relevant result/s)
Notes:	None

Approved By: **Matthew Hickson, Laboratory Manager**

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service.
This certificate shall not be reproduced except in full without the prior written approval of the laboratory.
Observations and interpretations are outside of the scope of UKAS accreditation.
Results reported herein relate only to the items supplied to the laboratory for testing.
Results on an Interim Report are not dry-weight corrected.
Where the laboratory is not responsible for the sampling, results apply to the sample(s) as they were received.
The laboratory shall not be responsible for any information that is supplied by the customer that may affect the validity of results.

RPS Environmental Management Limited trading as RPS Mountainheath. Registered in England No. 01756175.

Results Summary

Report No.: 21-15388-1

Customer Reference: 21-34348

Customer Order No: 21393

Customer Sample No	**1291209**
Customer Sample ID	WS22A
RPS Sample No	475237
Sample Type	**SOIL**
Sampling Date	29/09/2021

Determinand	CAS No	Codes	SOP	Units	RL	
dry solids (at 105øC)		N	397	% w/w		80.7
2,4,5-T (2,4,5-trichlorophenoxyacetic acid)	93-76-5	N	in house	mg/kg DW	0.1	< 0.10
dichlorprop (2,4-DP)	120-36-5	N	in house	mg/kg DW	0.1	< 0.10
2,4-D (2,4-dichlorophenoxyacetic acid)	94-75-7	N	in house	mg/kg DW	0.1	< 0.10
carbetamide	16118-49-3	N	in house	mg/kg DW	0.1	< 0.10
chlorbufam	1967-16-4	N	in house	mg/kg DW	0.1	< 0.10
chlorpropham	101-21-3	N	in house	mg/kg DW	0.1	< 0.10
ethiofencarb	29973-13-5	N	in house	mg/kg DW	0.1	< 0.10
MCPA (4-chloro-o-tolyloxyacetic acid)	94-74-6	N	in house	mg/kg DW	0.1	< 0.10
MCPB	94-81-5	N	in house	mg/kg DW	0.1	< 0.10
mecoprop (MCPP)	93-65-2	N	in house	mg/kg DW	0.1	< 0.10
phenmedipham	13684-63-4	N	in house	mg/kg DW	0.1	< 0.10
pirimicarb	23103-98-2	N	in house	mg/kg DW	0.1	< 0.10
propham	122-42-9	N	in house	mg/kg DW	0.1	< 0.10

Deviating Samples

Report No.: 21-15388-1

Customer Reference: 21-34348

Customer Order No: 21393

Our policy on Deviating Samples has been implemented in accordance with UKAS Policy on Deviating Samples (TPS63).
RPS is not responsible for the integrity of samples as received, unless RPS personnel performed the sampling. Samples submitted may be declared to be deviating.
Where applicable the analysis method remains UKAS accredited, however results reported for a deviating sample may be compromised.
Where no sampling date was supplied, samples have been declared to be deviating. If the date can be supplied, results may be reissued if assessed not deviating.
Where the sample container used was unsuitable or broken, the sample is flagged as deviating and re-sampling/re-submisson may be required.

RPS No.	Customer No.	Customer ID	Date Sampled	Containers Received	Deviating	Reason for Deviation
475237	1291209		29/09/2021	500ml plastic container	**Yes**	Temperature of samples exceeded in transit/storage

Report No.: 21-15388-1

Key Code	Description
U	UKAS Accredited Test - UKAS accreditation is only implied if the report carries the UKAS logo
F	UKAS Flexible Scope Test
M	MCERTS Accredited Test - MCERTS accreditation is only implied if the report carries the MCERTS logo
N	Not Accredited Test
O	Marine Management Organisation (MMO) Validated
S	Subcontracted to approved laboratory
US	Subcontracted to approved laboratory UKAS Accredited for the test
MS	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
SI	Subcontracted to internal RPS Group laboratory
USI	Subcontracted to internal RPS Group laboratory UKAS Accredited for the test
MSI	Subcontracted to internal RPS Group laboratory MCERTS/UKAS Accredited for the test
I/S (in results)	Insufficient Sample
U/S (in results)	Unsuitable Sample
S/C (in results)	See Comments
ND (in results)	Not Detected
AD (in units)	Results are expressed on an air-dried basis at 30 °C
DW (in units)	Results are expressed on a dry weight basis at 105 °C

Sample Type	Sample Retention and Disposal Period
Foodstuff	1 month (if frozen) from the issue date of this report
Waters	2 weeks from the issue date of this report
Other Liquids	1 month from the issue date of this report
Solids / Soils	1 month from the issue date of this report
Sediments	1 month from the issue date of this report

Note: Sample retention may be subject to agreement with the customer for particular projects

Where the dry solids value of a sample is low (<50%), reporting limits are automatically raised for all determinants analysed on an as-received basis.

Soil Typing	Description
Type 1	Clay - Brown
Type 2	Clay - Grey/Black
Type 3	Sand
Type 4	Top Soil (Standard)
Type 5	Top Soil (High Peat)
Type 6	Made Ground (>50% Clay)
Type 7	Made Ground (>50% Sand)
Type 8	Made Ground (>50% Top Soil)
Type X	Other

Certificate Notes	Description
Note 1	This test report shall not be reproduced except in full, without written approval of the Laboratory.
Note 2	Unless otherwise stated, results are not corrected for analytical recoveries.
Note 3	All samples were received in good condition unless otherwise stated. Results provided by the Laboratory are based on samples submitted by clients. Once submitted, samples requiring analysis are stored at 5 ± 3°C. The Laboratory cannot be held responsible for the storage, condition or preservation of samples prior to arrival.
Note 4	Samples were taken by the customer and, unless otherwise stated, sampling locations were not supplied.
Note 5	Soil descriptions are given in order to provide a log of sample matrices submitted and are not intended as full geological descriptions.
Note 6	Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

Note for results expressed on an air-dried basis: Results for soil samples are reported based on the dry weight of soil which has been air-dried in open, shallow trays at temperatures below 30 °C and subsequently ground and seived to pass through a nominal 710 µm aperture sieve. Prior to any grinding, any material which is retained on a sieve of mesh size 4.75mm is discarded. In most cases, analysis is carried out directly on these prepared soils.

Note: Where the following information is included in this certificate, it has usually been supplied by the customer: Customer Sample ID, Sample Location, Sample Depth, Sampling Date and Sampling Time. The laboratory shall not be responsible for any information that is supplied by the customer that may affect the validity of results.

Appendix 13.4

Soil GQRA

Soil GQRA

				Sample Location:	WSBH01	WSBH01	WSBH01	WSBH03	WSBH03	WSBH03	WSBH03	WSBH03
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.1	0.7	1.7	1.4	2.7	3.6	4.15	5.5
				Date Sampled:	22-Sep-2021	22-Sep-2021	22-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021
Determinand	**Units**	**LOD**	**Screening Value**	**Source**								
ACM Type		N/A			-	-	-	-	-	-	-	-
Asbestos Identification		N/A			No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	-
Asbestos by Gravimetry	%	0.001			-	-	-	-	-	-	-	-
Total Asbestos	%	0.001			-	-	-	-	-	-	-	-
Moisture	%	0.02			13	6.3	19	14	23	24	28	12
pH		4			8.3	8.1	9.0	8.1	8.1	8.3	8.3	8.2
Arsenic	mg/kg	1	79	C4SL/S4UL	11	110	41	10	4	4	1	1
Barium	mg/kg	10	1500	US EPA 2021	93	280	470	89	17	< 10	< 10	< 10
Cadmium	mg/kg	0.1	106	AGAC	1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Molybdenum	mg/kg	2	39	US EPA 2021	< 2.0	85	7	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Antimony	mg/kg	2	1070	AGAC	< 2.0	8	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Copper	mg/kg	0.5	12000	AGAC/S4UL	36	420	120	55	9	8	3	3
Mercury	mg/kg	0.1	120	AGAC (inorganic)	0	5	0	1	0	0	< 0.10	< 0.10
Nickel	mg/kg	0.5	231	AGAC	20	6700	180	19	13	14	14	14
Lead	mg/kg	0.5	630	C4SL	56	3000	61	160	33	16	2	2
Selenium	mg/kg	0.2	1140	AGAC	< 0.20	2	0	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Zinc	mg/kg	0.5	80500	AGAC	190	430	75	120	40	32	25	25
Chromium (Trivalent)	mg/kg	1	1539	AGAC	15	1300	50	11	13	15	9	9
Chromium (Hexavalent)	mg/kg	0.5	7.7	AGAC/S4UL	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
LOI	%	0.1			15	4	1	1	1	1	3	4
Total Organic Carbon	%	0.2			18	4	1	5	2	1	1	0.3
Mineral Oil (TPH Calculation)	mg/kg	10			< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Diesel Present												
Total TPH >C6-C40												
Aliphatic TPH >C5-C6	mg/kg	1	575000	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	mg/kg	1	597000	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	mg/kg	1	12500	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	mg/kg	1	12600	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	mg/kg	1	12600	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	mg/kg	1	251000	AGAC (Ali >C16-35)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	mg/kg	1	251000	AGAC (Ali >C16-35)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	mg/kg	1	251000	AGAC (Ali >C16-35)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	mg/kg	5			< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	mg/kg	1	72	AGAC/S4UL (benzene)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	mg/kg	1	55800	AGAC (toluene)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	mg/kg	1	5020	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	mg/kg	1	5040	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	mg/kg	1	5050	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	mg/kg	1	3770	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	mg/kg	1	3770	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	mg/kg	1	3770	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	mg/kg	5			< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	mg/kg	10			< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Dichlorodifluoromethane	µg/kg	0.2				< 0.20		< 0.20	< 0.20			
Tetraethyl Lead	µg/kg	10										
Tetramethyl Lead	µg/kg	10										
Chloromethane	µg/kg	0.2	543000	AGAC		< 0.20		< 0.20	0.7			
Vinyl Chloride	µg/kg	0.2	3490	AGAC/S4UL		< 0.20		< 0.20	0.7			
Bromomethane	µg/kg	0.2				< 0.20		< 0.20	< 0.20			
Chloroethane	µg/kg	0.2	601000000	AGAC		< 0.20		< 0.20	< 0.20			
Trichlorofluoromethane	µg/kg	0.2				< 0.20		< 0.20	< 0.20			
1,1-Dichloroethene	µg/kg	0.2	10200000	AGAC		< 0.20		< 0.20	< 0.20			
Trans 1,2-Dichloroethene	µg/kg	0.2	3866000	AGAC		< 0.20		< 0.20	< 0.20			
1,1-Dichloroethane	µg/kg	0.2	45900000	AGAC		< 0.20		< 0.20	< 0.20			
cis 1,2-Dichloroethene	µg/kg	0.2	1320000	AGAC		< 0.20		< 0.20	< 0.20			
Bromochloromethane	µg/kg	0.5				< 0.50		< 0.50	< 0.50			
Trichloromethane	µg/kg	0.2				< 0.20		< 0.20	< 0.20			
1,1,1-Trichloroethane	µg/kg	0.2	137000000	AGAC		< 0.20		< 0.20	< 0.20			
Tetrachloromethane	µg/kg	0.2				< 0.20		< 0.20	< 0.20			
1,1-Dichloropropene	µg/kg	0.2				< 0.20		< 0.20	< 0.20			
Benzene	µg/kg	0.2	72000	AGAC/S4UL		< 0.20		< 0.20	< 0.20			

				Sample Location:	WSBH01	WSBH01	WSBH01	WSBH03	WSBH03	WSBH03	WSBH03	WSBH03
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.1	0.7	1.7	1.4	2.7	3.6	4.15	5.5
				Date Sampled:	22-Sep-2021	22-Sep-2021	22-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021
Determinand	**Units**	**LOD**	**Screening Value**	**Source**								
Benzene	µg/kg	1	72000	AGAC/S4UL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/kg	0.2	28900	AGAC/S4UL		< 0.20		< 0.20	< 0.20			
Trichloroethene	µg/kg	0.2	119000	AGAC		< 0.20		< 0.20	< 0.20			
1,2-Dichloropropane	µg/kg	0.2	1720000	AGAC		< 0.20		< 0.20	< 0.20			
Dibromomethane	µg/kg	0.2				< 0.20		< 0.20	< 0.20			
Bromodichloromethane	µg/kg	0.2	72500	AGAC		< 0.20		< 0.20	< 0.20			
cis-1,3-Dichloropropene	µg/kg	0.2				< 0.20		< 0.20	< 0.20			
Toluene	µg/kg	0.2	55800000	AGAC		< 0.20		< 0.20	< 0.20			
Toluene	µg/kg	1	55800000	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	µg/kg	0.2				< 0.20		< 0.20	< 0.20			
1,1,2-Trichloroethane	µg/kg	0.2	985000	AGAC		< 0.20		< 0.20	< 0.20			
Tetrachloroethene	µg/kg	0.2	1390000	AGAC		< 0.20		< 0.20	< 0.20			
1,3-Dichloropropane	µg/kg	0.2				< 0.20		< 0.20	< 0.20			
Dibromochloromethane	µg/kg	0.2				< 0.20		< 0.20	< 0.20			
1,2-Dibromoethane	µg/kg	0.2				< 0.20		< 0.20	< 0.20			
Chlorobenzene	µg/kg	0.2	11450000	AGAC		< 0.20		< 0.20	< 0.20			
1,1,1,2-Tetrachloroethane	µg/kg	0.2	1410000	AGAC		< 0.20		< 0.20	< 0.20			
Ethylbenzene	µg/kg	0.2	23900000	AGAC		< 0.20		< 0.20	< 0.20			
Ethylbenzene	µg/kg	1	23900000	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	µg/kg	0.2	40700000	AGAC (p-xylene)		< 0.20		< 0.20	< 0.20			
m & p-Xylene	µg/kg	1	40700000	AGAC (p-xylene)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/kg	0.2	41000000	AGAC/S4UL		< 0.20		< 0.20	< 0.20			
o-Xylene	µg/kg	1	41000000	AGAC/S4UL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/kg	0.2	3016000	AGAC		< 0.20		< 0.20	< 0.20			
Tribromomethane	µg/kg	0.2				< 0.20		< 0.20	< 0.20			
Isopropylbenzene	µg/kg	0.2	24500000	AGAC		< 0.20		< 0.20	< 0.20			
Bromobenzene	µg/kg	0.2	5217000	AGAC		< 0.20		< 0.20	< 0.20			
1,2,3-Trichloropropane	µg/kg	0.2				< 0.20		< 0.20	< 0.20			
N-Propylbenzene	µg/kg	0.2	24900000	AGAC		< 0.20		< 0.20	< 0.20			
2-Chlorotoluene	µg/kg	0.2				< 0.20		< 0.20	< 0.20			
1,3,5-Trimethylbenzene	µg/kg	0.2				< 0.20		< 0.20	< 0.20			
4-Chlorotoluene	µg/kg	0.2				< 0.20		< 0.20	< 0.20			
Tert-Butylbenzene	µg/kg	0.2				< 0.20		< 0.20	< 0.20			
1,2,4-Trimethylbenzene	µg/kg	0.2	248000	AGAC		< 0.20		< 0.20	< 0.20			
Sec-Butylbenzene	µg/kg	0.2				< 0.20		< 0.20	< 0.20			
1,3-Dichlorobenzene	µg/kg	0.2	247000	AGAC		< 0.20		< 0.20	< 0.20			
4-Isopropyltoluene	µg/kg	0.2				< 0.20		< 0.20	< 0.20			
1,4-Dichlorobenzene	µg/kg	0.2	17200000	AGAC		< 0.20		< 0.20	< 0.20			
N-Butylbenzene	µg/kg	0.2				< 0.20		< 0.20	< 0.20			
1,2-Dichlorobenzene	µg/kg	0.2	89000000	AGAC		< 0.20		< 0.20	< 0.20			
1,2-Dibromo-3-Chloropropane	µg/kg	0.2				< 0.20		< 0.20	< 0.20			
1,2,4-Trichlorobenzene	µg/kg	0.2	14900000	AGAC		< 0.20		< 0.20	< 0.20			
Hexachlorobutadiene	µg/kg	0.2	25200	AGAC/S4UL		< 0.20		< 0.20	< 0.20			
1,2,3-Trichlorobenzene	µg/kg	0.2	1780000	AGAC		< 0.20		< 0.20	< 0.20			
Methyl Tert-Butyl Ether	µg/kg	0.2	74600000	AGAC		< 0.20		< 0.20	< 0.20			
Methyl Tert-Butyl Ether	µg/kg	1	74600000	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	mg/kg	0.05				< 0.050		< 0.050	< 0.050			
Phenol	mg/kg	0.05	440	S4UL (direct contact)		< 0.050		< 0.050	< 0.050			
2-Chlorophenol	mg/kg	0.05	597	AGAC		< 0.050		< 0.050	< 0.050			
Bis-(2-Chloroethyl)Ether	mg/kg	0.05				< 0.050		< 0.050	< 0.050			
1,3-Dichlorobenzene	mg/kg	0.05	247	AGAC		< 0.050		< 0.050	< 0.050			
1,4-Dichlorobenzene	mg/kg	0.05	17200	AGAC		< 0.050		< 0.050	< 0.050			
1,2-Dichlorobenzene	mg/kg	0.05	89000	AGAC		< 0.050		< 0.050	< 0.050			
2-Methylphenol	mg/kg	0.05	25080	AGAC		< 0.050		< 0.050	< 0.050			
Bis(2-Chloroisopropyl)Ether	mg/kg	0.05				< 0.050		< 0.050	< 0.050			
Hexachloroethane	mg/kg	0.05	124	AGAC		< 0.050		< 0.050	< 0.050			
N-Nitrosodi-n-propylamine	mg/kg	0.05				< 0.050		< 0.050	< 0.050			
4-Methylphenol	mg/kg	0.05	25080	AGAC		< 0.050		< 0.050	< 0.050			
Nitrobenzene	mg/kg	0.05				< 0.050		< 0.050	< 0.050			
Isophorone	mg/kg	0.05				< 0.050		< 0.050	< 0.050			
2-Nitrophenol	mg/kg	0.05				< 0.050		< 0.050	< 0.050			
2,4-Dimethylphenol	mg/kg	0.05	5020	AGAC		< 0.050		< 0.050	< 0.050			

				Sample Location:	WSBH01	WSBH01	WSBH01	WSBH03	WSBH03	WSBH03	WSBH03	WSBH03
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.1	0.7	1.7	1.4	2.7	3.6	4.15	5.5
				Date Sampled:	22-Sep-2021	22-Sep-2021	22-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021
Determinand	**Units**	**LOD**	**Screening Value**	**Source**								
Bis(2-Chloroethoxy)Methane	mg/kg	0.05				< 0.050		< 0.050	< 0.050			
2,4-Dichlorophenol	mg/kg	0.05	597	AGAC		< 0.050		< 0.050	< 0.050			
1,2,4-Trichlorobenzene	mg/kg	0.05	14900	AGAC		< 0.050		< 0.050	< 0.050			
Naphthalene	mg/kg	0.05	4890	AGAC		< 0.050		< 0.050	< 0.050			
4-Chloroaniline	mg/kg	0.05				< 0.050		< 0.050	< 0.050			
Hexachlorobutadiene	mg/kg	0.05				< 0.050		< 0.050	< 0.050			
4-Chloro-3-Methylphenol	mg/kg	0.05				< 0.050		< 0.050	< 0.050			
2-Methylnaphthalene	mg/kg	0.05				< 0.050		< 0.050	< 0.050			
Hexachlorocyclopentadiene	mg/kg	0.05				< 0.050		< 0.050	< 0.050			
2,4,6-Trichlorophenol	mg/kg	0.05	598	AGAC		< 0.050		< 0.050	< 0.050			
2,4,5-Trichlorophenol	mg/kg	0.05	620	S4UL		< 0.050		< 0.050	< 0.050			
2-Chloronaphthalene	mg/kg	0.05	7490	AGAC		< 0.050		< 0.050	< 0.050			
2-Nitroaniline	mg/kg	0.05				< 0.050		< 0.050	< 0.050			
Acenaphthylene	mg/kg	0.05	14800	AGAC		< 0.050		< 0.050	< 0.050			
Dimethylphthalate	mg/kg	0.05				< 0.050		< 0.050	< 0.050			
2,6-Dinitrotoluene	mg/kg	0.05	251	AGAC		< 0.050		< 0.050	< 0.050			
Acenaphthene	mg/kg	0.05	14800	AGAC		< 0.050		< 0.050	< 0.050			
3-Nitroaniline	mg/kg	0.05				< 0.050		< 0.050	< 0.050			
Dibenzofuran	mg/kg	0.05	7.8	US EPA 2021		< 0.050		< 0.050	< 0.050			
4-Chlorophenylphenylether	mg/kg	0.05				< 0.050		< 0.050	< 0.050			
2,4-Dinitrotoluene	mg/kg	0.05	501	AGAC		< 0.050		< 0.050	< 0.050			
Fluorene	mg/kg	0.05	9870	AGAC		< 0.050		0	< 0.050			
Diethyl Phthalate	mg/kg	0.05	49400	AGAC		< 0.050		< 0.050	< 0.050			
4-Nitroaniline	mg/kg	0.05				< 0.050		< 0.050	< 0.050			
2-Methyl-4,6-Dinitrophenol	mg/kg	0.05				< 0.050		< 0.050	< 0.050			
Azobenzene	mg/kg	0.05				< 0.050		< 0.050	< 0.050			
4-Bromophenylphenyl Ether	mg/kg	0.05				< 0.050		< 0.050	< 0.050			
Hexachlorobenzene	mg/kg	0.05	15.6	AGAC/S4UL		< 0.050		< 0.050	< 0.050			
Pentachlorophenol	mg/kg	0.05	59.8	AGAC/S4UL		< 0.050		< 0.050	< 0.050			
Phenanthrene	mg/kg	0.05	3070	AGAC		1		2	0			
Anthracene	mg/kg	0.05	74100	AGAC		< 0.050		1	0			
Carbazole	mg/kg	0.05				< 0.050		0.13	< 0.050			
Di-N-Butyl Phthalate	mg/kg	0.05	1300	AGAC		< 0.050		< 0.050	< 0.050			
Fluoranthene	mg/kg	0.05	3080	AGAC		1		4	0			
Pyrene	mg/kg	0.05	7410	AGAC		1		4	0			
Butylbenzyl Phthalate	mg/kg	0.05	126000	AGAC		< 0.050		< 0.050	< 0.050			
Benzo[a]anthracene	mg/kg	0.05	28.5	AGAC/S4UL		1		2	0			
Chrysene	mg/kg	0.05	57	AGAC		1		3	0			
Bis(2-Ethylhexyl)Phthalate	mg/kg	0.05	9688	AGAC		< 0.050		< 0.050	< 0.050			
Di-N-Octyl Phthalate	mg/kg	0.05	10700	AGAC		< 0.050		< 0.050	< 0.050			
Benzo[b]fluoranthene	mg/kg	0.05	7.23	AGAC/S4UL		1		3	0			
Benzo[k]fluoranthene	mg/kg	0.05	191	AGAC		0		1	0			
Benzo[a]pyrene	mg/kg	0.05	5.74	AGAC/S4UL		1		2	0			
Indeno(1,2,3-c,d)Pyrene	mg/kg	0.05	82	AGAC/S4UL		0		1	< 0.050			
Dibenz(a,h)Anthracene	mg/kg	0.05	0.574	AGAC/S4UL		< 0.050		< 0.050	< 0.050			
Benzo[g,h,i]perylene	mg/kg	0.05	637	AGAC		0		1	< 0.050			
4-Nitrophenol	mg/kg	0.05				< 0.050		< 0.050	< 0.050			
Pyrethrin												
Naphthalene	mg/kg	0.1	4890	AGAC	< 0.10	< 0.10	< 0.10	1	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	mg/kg	0.1	14800	AGAC	< 0.10	< 0.10	< 0.10	0	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	14800	AGAC	< 0.10	< 0.10	< 0.10	0	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	9870	AGAC	< 0.10	< 0.10	< 0.10	1	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	3070	AGAC	< 0.10	0	< 0.10	3	1	< 0.10	< 0.10	< 0.10
Anthracene	mg/kg	0.1	74100	AGAC	< 0.10	0	< 0.10	1	0	< 0.10	0.11	< 0.10
Fluoranthene	mg/kg	0.1	3080	AGAC	0	1	< 0.10	6	3	< 0.10	0.18	< 0.10
Pyrene	mg/kg	0.1	28.6	AGAC/S4UL	0	1	< 0.10	5	2	< 0.10	0.13	< 0.10
Benzo[a]anthracene	mg/kg	0.1	7410	AGAC	< 0.10	1	< 0.10	3	1	< 0.10	0.16	< 0.10
Chrysene	mg/kg	0.1	57.2	AGAC/S4UL	< 0.10	0	< 0.10	4	1	< 0.10	0.15	< 0.10
Benzo[b]fluoranthene	mg/kg	0.1	7.23	AGAC/S4UL	< 0.10	1	< 0.10	5	2	< 0.10	0.19	< 0.10
Benzo[k]fluoranthene	mg/kg	0.1	191	AGAC	< 0.10	0	< 0.10	2	1	< 0.10	0.17	< 0.10
Benzo[a]pyrene	mg/kg	0.1	5.74	AGAC/S4UL	< 0.10	0	< 0.10	5	1	< 0.10	0.23	< 0.10
Indeno(1,2,3-c,d)Pyrene	mg/kg	0.1	82	AGAC/S4UL	< 0.10	< 0.10	< 0.10	3	1	< 0.10	0.24	< 0.10

				Sample Location:	WSBH01	WSBH01	WSBH01	WSBH03	WSBH03	WSBH03	WSBH03	WSBH03
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.1	0.7	1.7	1.4	2.7	3.6	4.15	5.5
				Date Sampled:	22-Sep-2021	22-Sep-2021	22-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021	23-Sep-2021
Determinand	**Units**	**LOD**	**Screening Value**	**Source**								
Dibenz(a,h)Anthracene	mg/kg	0.1	0.574	AGAC/S4UL	< 0.10	< 0.10	< 0.10	0.8	0	< 0.10	0.14	< 0.10
Benzo[g,h,i]perylene	mg/kg	0.1	637	AGAC	< 0.10	< 0.10	< 0.10	3	1	< 0.10	0.20	< 0.10
Coronene	mg/kg	0.1			< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	mg/kg	2			< 2.0	4	< 2.0	44	13	< 2.0	< 2.0	< 2.0
PCB 28	mg/kg	0.01			< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 52	mg/kg	0.01			< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 90+101	mg/kg	0.01			< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 118	mg/kg	0.01	0.171	Median UK urban background concentration	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 153	mg/kg	0.01			< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 138	mg/kg	0.01			< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 180	mg/kg	0.01	240	SGV	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	mg/kg	0.1			< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Atraton	mg/kg	0.2										
Prometon	mg/kg	0.2										
Simazine	mg/kg	0.2										
Atrazine	mg/kg	0.2	1200	S4UL								
Propazine	mg/kg	0.2										
Terbuthylazine	mg/kg	0.2										
Secbumeton	mg/kg	0.2										
Simetryn	mg/kg	0.2										
Ametryn	mg/kg	0.2										
Prometryn	mg/kg	0.2										
Terbutryn	mg/kg	0.2										
2,4-D	mg/kg	0.5										
Dichlorprop	mg/kg	0.5										
MCPA	mg/kg	0.5										
MCPB	mg/kg	0.5										
Mecoprop	mg/kg	0.5										
2,4,5-T	mg/kg	0.5										
Cyfluthrin	mg/kg	0.5										
Cypermethrin	mg/kg	0.5										
Deltamethrin	mg/kg	0.5										
Permethrin	mg/kg	0.5										
Resmethrin	mg/kg	0.5										
Tetramethrin	mg/kg	0.5										
Carbetamide (Subcon)	mg/kg	0.1										
Chlorbufam (Subcon)	mg/kg	0.1										
Chlorpropham (Subcon)	mg/kg	0.1										
Ethiofencarb (Subcon)	mg/kg	0.1										
Phenmedipham (Subcon)	mg/kg	0.1										
Pirimicarb (Subcon)	mg/kg	0.1										
Propham (Subcon)	mg/kg	0.1										
SVOC TIC	mg/kg	N/A				None Detected		None Detected	None Detected			
(SVOC TIC) Dibenzothiophene	mg/kg	N/A										
VOC TIC	µg/kg	N/A				None Detected		None Detected	None Detected			

				Sample Location:	WSBH04	WSBH04	WSBH05	WSBH05	WSBH05	TP01	TP01	TP02
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.6	1.35	1.1	2.4	4.7	1.4	2.9	0.5
				Date Sampled:	24-Sep-2021	27-Sep-2021	24-Sep-2021	24-Sep-2021	24-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021
Determinand	**Units**	**LOD**	**Screening Value**	**Source**								
ACM Type		N/A			-	-	-	-	-	Fibres/Clumps	-	Fibres/Clumps
Asbestos Identification		N/A			No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	Chrysotile	No Asbestos Detected	Chrysotile
Asbestos by Gravimetry	%	0.001			-	-	-	-	-	0.001	-	<0.001
Total Asbestos	%	0.001			-	-	-	-	-	0.001	-	<0.001
Moisture	%	0.02			13	33	13	19	30	9.6	17	8.5
pH		4			8.1	8.0	8.3	8.0	8.6	8.4	8.7	8.6
Arsenic	mg/kg	1	79	C4SL/S4UL	10	7	6	4	3	27	7	11
Barium	mg/kg	10	1500	US EPA 2021	200	55	75	18	<10	190	11	61
Cadmium	mg/kg	0.1	106	AGAC	0	0	<0.10	<0.10	<0.10	0	<0.10	0
Molybdenum	mg/kg	2	39	US EPA 2021	3	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Antimony	mg/kg	2	1070	AGAC	3	<2.0	<2.0	<2.0	<2.0	6	<2.0	2
Copper	mg/kg	0.5	12000	AGAC/S4UL	67	41	28	14	3	200	8	55
Mercury	mg/kg	0.1	120	AGAC (inorganic)	0	0	0	0	<0.10	1	<0.10	0
Nickel	mg/kg	0.5	231	AGAC	31	23	19	18	11	29	8	17
Lead	mg/kg	0.5	630	C4SL	170	87	87	39	5	370	9	75
Selenium	mg/kg	0.2	1140	AGAC	1	1	<0.20	<0.20	<0.20	0	0	0
Zinc	mg/kg	0.5	80500	AGAC	460	130	100	40	24	200	17	59
Chromium (Trivalent)	mg/kg	1	1539	AGAC	12	20	12	16	12	23	8	11
Chromium (Hexavalent)	mg/kg	0.5	7.7	AGAC/S4UL	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
LOI	%	0.1			8	4	2	0	<0.10	8	1	7
Total Organic Carbon	%	0.2			24	2	3	1	2	7	1	5
Mineral Oil (TPH Calculation)	mg/kg	10			50	<10	120	<10	<10	<10	<10	<10
Diesel Present												
Total TPH >C6-C40												
Aliphatic TPH >C5-C6	mg/kg	1	575000	AGAC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aliphatic TPH >C6-C8	mg/kg	1	597000	AGAC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aliphatic TPH >C8-C10	mg/kg	1	12500	AGAC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aliphatic TPH >C10-C12	mg/kg	1	12600	AGAC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aliphatic TPH >C12-C16	mg/kg	1	12600	AGAC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aliphatic TPH >C16-C21	mg/kg	1	251000	AGAC (Ali >C16-35)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aliphatic TPH >C21-C35	mg/kg	1	251000	AGAC (Ali >C16-35)	50	<1.0	120	<1.0	<1.0	<1.0	<1.0	<1.0
Aliphatic TPH >C35-C44	mg/kg	1	251000	AGAC (Ali >C16-35)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Aliphatic Hydrocarbons	mg/kg	5			50	<5.0	120	<5.0	<5.0	<5.0	<5.0	<5.0
Aromatic TPH >C5-C7	mg/kg	1	72	AGAC/S4UL (benzene)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aromatic TPH >C7-C8	mg/kg	1	55800	AGAC (toluene)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aromatic TPH >C8-C10	mg/kg	1	5020	AGAC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aromatic TPH >C10-C12	mg/kg	1	5040	AGAC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aromatic TPH >C12-C16	mg/kg	1	5050	AGAC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aromatic TPH >C16-C21	mg/kg	1	3770	AGAC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aromatic TPH >C21-C35	mg/kg	1	3770	AGAC	220	<1.0	9	13	<1.0	<1.0	<1.0	<1.0
Aromatic TPH >C35-C44	mg/kg	1	3770	AGAC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Aromatic Hydrocarbons	mg/kg	5			220	<5.0	9	13	<5.0	<5.0	<5.0	<5.0
Total Petroleum Hydrocarbons	mg/kg	10			270	<10	130	13	<10	<10	<10	<10
Dichlorodifluoromethane	µg/kg	0.2			<0.20		<0.20			<0.20		
Tetraethyl Lead	µg/kg	10										
Tetramethyl Lead	µg/kg	10										
Chloromethane	µg/kg	0.2	543000	AGAC	<0.20		0.3			<0.20		
Vinyl Chloride	µg/kg	0.2	3490	AGAC/S4UL	<0.20		0.2			<0.20		
Bromomethane	µg/kg	0.2			<0.20		<0.20			<0.20		
Chloroethane	µg/kg	0.2	601000000	AGAC	<0.20		<0.20			<0.20		
Trichlorofluoromethane	µg/kg	0.2			<0.20		<0.20			<0.20		
1,1-Dichloroethene	µg/kg	0.2	10200000	AGAC	<0.20		<0.20			<0.20		
Trans 1,2-Dichloroethene	µg/kg	0.2	3866000	AGAC	<0.20		<0.20			<0.20		
1,1-Dichloroethane	µg/kg	0.2	45900000	AGAC	<0.20		<0.20			<0.20		
cis 1,2-Dichloroethene	µg/kg	0.2	1320000	AGAC	<0.20		<0.20			<0.20		
Bromochloromethane	µg/kg	0.5			<0.50		<0.50			<0.50		
Trichloromethane	µg/kg	0.2			<0.20		<0.20			<0.20		
1,1,1-Trichloroethane	µg/kg	0.2	137000000	AGAC	<0.20		<0.20			<0.20		
Tetrachloromethane	µg/kg	0.2			<0.20		<0.20			<0.20		
1,1-Dichloropropene	µg/kg	0.2			<0.20		<0.20			<0.20		
Benzene	µg/kg	0.2	72000	AGAC/S4UL	<0.20		2			<0.20		

				Sample Location:	WSBH04	WSBH04	WSBH05	WSBH05	WSBH05	TP01	TP01	TP02
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.6	1.35	1.1	2.4	4.7	1.4	2.9	0.5
				Date Sampled:	24-Sep-2021	27-Sep-2021	24-Sep-2021	24-Sep-2021	24-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021
Determinand	**Units**	**LOD**	**Screening Value**	**Source**								
Benzene	µg/kg	1	72000	AGAC/S4UL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/kg	0.2	28900	AGAC/S4UL	< 0.20		< 0.20			< 0.20		
Trichloroethene	µg/kg	0.2	119000	AGAC	21		< 0.20			< 0.20		
1,2-Dichloropropane	µg/kg	0.2	1720000	AGAC	< 0.20		< 0.20			< 0.20		
Dibromomethane	µg/kg	0.2			< 0.20		< 0.20			< 0.20		
Bromodichloromethane	µg/kg	0.2	72500	AGAC	< 0.20		< 0.20			< 0.20		
cis-1,3-Dichloropropene	µg/kg	0.2			< 0.20		< 0.20			< 0.20		
Toluene	µg/kg	0.2	55800000	AGAC	2		2			< 0.20		
Toluene	µg/kg	1	55800000	AGAC	< 1.0	< 1.0	2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	µg/kg	0.2			< 0.20		< 0.20			< 0.20		
1,1,2-Trichloroethane	µg/kg	0.2	985000	AGAC	< 0.20		< 0.20			< 0.20		
Tetrachloroethene	µg/kg	0.2	1390000	AGAC	< 0.20		< 0.20			< 0.20		
1,3-Dichloropropane	µg/kg	0.2			< 0.20		< 0.20			< 0.20		
Dibromochloromethane	µg/kg	0.2			< 0.20		< 0.20			< 0.20		
1,2-Dibromoethane	µg/kg	0.2			< 0.20		< 0.20			< 0.20		
Chlorobenzene	µg/kg	0.2	11450000	AGAC	< 0.20		< 0.20			< 0.20		
1,1,1,2-Tetrachloroethane	µg/kg	0.2	1410000	AGAC	< 0.20		< 0.20			< 0.20		
Ethylbenzene	µg/kg	0.2	23900000	AGAC	2		1			< 0.20		
Ethylbenzene	µg/kg	1	23900000	AGAC	< 1.0	< 1.0	2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	µg/kg	0.2	40700000	AGAC (p-xylene)	2		2			< 0.20		
m & p-Xylene	µg/kg	1	40700000	AGAC (p-xylene)	< 1.0	< 1.0	4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/kg	0.2	41000000	AGAC/S4UL	3		2			< 0.20		
o-Xylene	µg/kg	1	41000000	AGAC/S4UL	< 1.0	< 1.0	3	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/kg	0.2	3016000	AGAC	< 0.20		< 0.20			< 0.20		
Tribromomethane	µg/kg	0.2			< 0.20		< 0.20			< 0.20		
Isopropylbenzene	µg/kg	0.2	24500000	AGAC	2		< 0.20			< 0.20		
Bromobenzene	µg/kg	0.2	5217000	AGAC	5		< 0.20			< 0.20		
1,2,3-Trichloropropane	µg/kg	0.2			< 0.20		< 0.20			< 0.20		
N-Propylbenzene	µg/kg	0.2	24900000	AGAC	4		4			< 0.20		
2-Chlorotoluene	µg/kg	0.2			< 0.20		< 0.20			< 0.20		
1,3,5-Trimethylbenzene	µg/kg	0.2			< 0.20		4			< 0.20		
4-Chlorotoluene	µg/kg	0.2			4		< 0.20			< 0.20		
Tert-Butylbenzene	µg/kg	0.2			2		< 0.20			< 0.20		
1,2,4-Trimethylbenzene	µg/kg	0.2	248000	AGAC	3		6			< 0.20		
Sec-Butylbenzene	µg/kg	0.2			3		3			< 0.20		
1,3-Dichlorobenzene	µg/kg	0.2	247000	AGAC	< 0.20		< 0.20			< 0.20		
4-Isopropyltoluene	µg/kg	0.2			4		< 0.20			< 0.20		
1,4-Dichlorobenzene	µg/kg	0.2	17200000	AGAC	< 0.20		< 0.20			< 0.20		
N-Butylbenzene	µg/kg	0.2			4		< 0.20			< 0.20		
1,2-Dichlorobenzene	µg/kg	0.2	89000000	AGAC	< 0.20		< 0.20			< 0.20		
1,2-Dibromo-3-Chloropropane	µg/kg	0.2			< 0.20		30			< 0.20		
1,2,4-Trichlorobenzene	µg/kg	0.2	14900000	AGAC	< 0.20		< 0.20			< 0.20		
Hexachlorobutadiene	µg/kg	0.2	25200	AGAC/S4UL	2		< 0.20			< 0.20		
1,2,3-Trichlorobenzene	µg/kg	0.2	1780000	AGAC	24		< 0.20			< 0.20		
Methyl Tert-Butyl Ether	µg/kg	0.2	74600000	AGAC	< 0.20		< 0.20			< 0.20		
Methyl Tert-Butyl Ether	µg/kg	1	74600000	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	mg/kg	0.05			< 0.050		< 0.050			< 0.050		
Phenol	mg/kg	0.05	440	S4UL (direct contact)	< 0.050		< 0.050			< 0.050		
2-Chlorophenol	mg/kg	0.05	597	AGAC	< 0.050		< 0.050			< 0.050		
Bis-(2-Chloroethyl)Ether	mg/kg	0.05			< 0.050		< 0.050			< 0.050		
1,3-Dichlorobenzene	mg/kg	0.05	247	AGAC	< 0.050		< 0.050			< 0.050		
1,4-Dichlorobenzene	mg/kg	0.05	17200	AGAC	< 0.050		< 0.050			< 0.050		
1,2-Dichlorobenzene	mg/kg	0.05	89000	AGAC	< 0.050		< 0.050			< 0.050		
2-Methylphenol	mg/kg	0.05	25080	AGAC	< 0.050		< 0.050			< 0.050		
Bis(2-Chloroisopropyl)Ether	mg/kg	0.05			< 0.050		< 0.050			< 0.050		
Hexachloroethane	mg/kg	0.05	124	AGAC	< 0.050		< 0.050			< 0.050		
N-Nitrosodi-n-propylamine	mg/kg	0.05			< 0.050		< 0.050			< 0.050		
4-Methylphenol	mg/kg	0.05	25080	AGAC	< 0.050		< 0.050			< 0.050		
Nitrobenzene	mg/kg	0.05			< 0.050		< 0.050			< 0.050		
Isophorone	mg/kg	0.05			< 0.050		< 0.050			< 0.050		
2-Nitrophenol	mg/kg	0.05			< 0.050		< 0.050			< 0.050		
2,4-Dimethylphenol	mg/kg	0.05	5020	AGAC	< 0.050		< 0.050			< 0.050		

				Sample Location:	WSBH04	WSBH04	WSBH05	WSBH05	WSBH05	TP01	TP01	TP02
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.6	1.35	1.1	2.4	4.7	1.4	2.9	0.5
				Date Sampled:	24-Sep-2021	27-Sep-2021	24-Sep-2021	24-Sep-2021	24-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021
Determinand	**Units**	**LOD**	**Screening Value**	**Source**								
Bis(2-Chloroethoxy)Methane	mg/kg	0.05			< 0.050		< 0.050			< 0.050		
2,4-Dichlorophenol	mg/kg	0.05	597	AGAC	< 0.050		< 0.050			< 0.050		
1,2,4-Trichlorobenzene	mg/kg	0.05	14900	AGAC	< 0.050		< 0.050			< 0.050		
Naphthalene	mg/kg	0.05	4890	AGAC	< 0.050		0			2		
4-Chloroaniline	mg/kg	0.05			< 0.050		< 0.050			< 0.050		
Hexachlorobutadiene	mg/kg	0.05			< 0.050		< 0.050			< 0.050		
4-Chloro-3-Methylphenol	mg/kg	0.05			< 0.050		< 0.050			< 0.050		
2-Methylnaphthalene	mg/kg	0.05			< 0.050		0			< 0.050		
Hexachlorocyclopentadiene	mg/kg	0.05			< 0.050		< 0.050			< 0.050		
2,4,6-Trichlorophenol	mg/kg	0.05	598	AGAC	< 0.050		< 0.050			< 0.050		
2,4,5-Trichlorophenol	mg/kg	0.05	620	S4UL	< 0.050		< 0.050			< 0.050		
2-Chloronaphthalene	mg/kg	0.05	7490	AGAC	< 0.050		< 0.050			< 0.050		
2-Nitroaniline	mg/kg	0.05			< 0.050		< 0.050			< 0.050		
Acenaphthylene	mg/kg	0.05	14800	AGAC	< 0.050		< 0.050			0		
Dimethylphthalate	mg/kg	0.05			< 0.050		< 0.050			< 0.050		
2,6-Dinitrotoluene	mg/kg	0.05	251	AGAC	< 0.050		< 0.050			< 0.050		
Acenaphthene	mg/kg	0.05	14800	AGAC	< 0.050		0			1		
3-Nitroaniline	mg/kg	0.05			< 0.050		< 0.050			< 0.050		
Dibenzofuran	mg/kg	0.05	7.8	US EPA 2021	< 0.050		0.2			0.5		
4-Chlorophenylphenylether	mg/kg	0.05			< 0.050		< 0.050			< 0.050		
2,4-Dinitrotoluene	mg/kg	0.05	501	AGAC	< 0.050		< 0.050			< 0.050		
Fluorene	mg/kg	0.05	9870	AGAC	< 0.050		0			1		
Diethyl Phthalate	mg/kg	0.05	49400	AGAC	< 0.050		< 0.050			< 0.050		
4-Nitroaniline	mg/kg	0.05			< 0.050		< 0.050			< 0.050		
2-Methyl-4,6-Dinitrophenol	mg/kg	0.05			< 0.050		< 0.050			< 0.050		
Azobenzene	mg/kg	0.05			< 0.050		< 0.050			< 0.050		
4-Bromophenylphenyl Ether	mg/kg	0.05			< 0.050		< 0.050			< 0.050		
Hexachlorobenzene	mg/kg	0.05	15.6	AGAC/S4UL	< 0.050		< 0.050			< 0.050		
Pentachlorophenol	mg/kg	0.05	59.8	AGAC/S4UL	< 0.050		< 0.050			< 0.050		
Phenanthrene	mg/kg	0.05	3070	AGAC	1		2			4		
Anthracene	mg/kg	0.05	74100	AGAC	0		0			1		
Carbazole	mg/kg	0.05			0.07		0.14			0.35		
Di-N-Butyl Phthalate	mg/kg	0.05	1300	AGAC	< 0.050		< 0.050			< 0.050		
Fluoranthene	mg/kg	0.05	3080	AGAC	1		3			4		
Pyrene	mg/kg	0.05	7410	AGAC	1		2			4		
Butylbenzyl Phthalate	mg/kg	0.05	126000	AGAC	< 0.050		< 0.050			< 0.050		
Benzo[a]anthracene	mg/kg	0.05	28.5	AGAC/S4UL	1		1			2		
Chrysene	mg/kg	0.05	57	AGAC	1		1			2		
Bis(2-Ethylhexyl)Phthalate	mg/kg	0.05	9688	AGAC	< 0.050		< 0.050			< 0.050		
Di-N-Octyl Phthalate	mg/kg	0.05	10700	AGAC	< 0.050		< 0.050			< 0.050		
Benzo[b]fluoranthene	mg/kg	0.05	7.23	AGAC/S4UL	1		1			2		
Benzo[k]fluoranthene	mg/kg	0.05	191	AGAC	0		0			1		
Benzo[a]pyrene	mg/kg	0.05	5.74	AGAC/S4UL	1		1			2		
Indeno(1,2,3-c,d)Pyrene	mg/kg	0.05	82	AGAC/S4UL	1		1			1		
Dibenz(a,h)Anthracene	mg/kg	0.05	0.574	AGAC/S4UL	0		0			0.14		
Benzo[g,h,i]perylene	mg/kg	0.05	637	AGAC	1		1			1		
4-Nitrophenol	mg/kg	0.05			< 0.050		< 0.050			< 0.050		
Pyrethrin												
Naphthalene	mg/kg	0.1	4890	AGAC	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	4	< 0.10	< 0.10
Acenaphthylene	mg/kg	0.1	14800	AGAC	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	14800	AGAC	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	2	< 0.10	< 0.10
Fluorene	mg/kg	0.1	9870	AGAC	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	2	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	3070	AGAC	1	0	1.0	< 0.10	< 0.10	18	< 0.10	0
Anthracene	mg/kg	0.1	74100	AGAC	0.21	0.24	0.3	< 0.10	< 0.10	4	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	3080	AGAC	2.00	0.53	1.9	0.4	< 0.10	22	0	1
Pyrene	mg/kg	0.1	28.6	AGAC/S4UL	1.80	0.55	1.7	0.3	< 0.10	19	0	1
Benzo[a]anthracene	mg/kg	0.1	7410	AGAC	1.10	0.29	0.9	0.2	< 0.10	11	< 0.10	0
Chrysene	mg/kg	0.1	57.2	AGAC/S4UL	1.10	0.40	1.0	0.2	< 0.10	10	< 0.10	0
Benzo[b]fluoranthene	mg/kg	0.1	7.23	AGAC/S4UL	1.60	0.46	1.3	0.3	< 0.10	13	< 0.10	1
Benzo[k]fluoranthene	mg/kg	0.1	191	AGAC	0.58	0.28	0.5	0.1	< 0.10	5	< 0.10	0
Benzo[a]pyrene	mg/kg	0.1	5.74	AGAC/S4UL	1.20	0.31	1.0	0.2	< 0.10	10	< 0.10	0
Indeno(1,2,3-c,d)Pyrene	mg/kg	0.1	82	AGAC/S4UL	0.94	< 0.10	0.7	< 0.10	< 0.10	7	< 0.10	< 0.10

				Sample Location:	WSBH04	WSBH04	WSBH05	WSBH05	WSBH05	TP01	TP01	TP02
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.6	1.35	1.1	2.4	4.7	1.4	2.9	0.5
				Date Sampled:	24-Sep-2021	27-Sep-2021	24-Sep-2021	24-Sep-2021	24-Sep-2021	28-Sep-2021	28-Sep-2021	28-Sep-2021
Determinand	**Units**	**LOD**	**Screening Value**	**Source**								
Dibenz(a,h)Anthracene	mg/kg	0.1	0.574	AGAC/S4UL	0.26	< 0.10	0.2	< 0.10	< 0.10	1	< 0.10	< 0.10
Benzo[g,h,i]perylene	mg/kg	0.1	637	AGAC	0.75	< 0.10	0.7	< 0.10	< 0.10	6	< 0.10	< 0.10
Coronene	mg/kg	0.1			< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	mg/kg	2			12	3	11	< 2.0	< 2.0	130	< 2.0	3
PCB 28	mg/kg	0.01			< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 52	mg/kg	0.01			< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 90+101	mg/kg	0.01			< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 118	mg/kg	0.01	0.171	Median UK urban background concentration	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 153	mg/kg	0.01			< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 138	mg/kg	0.01			< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 180	mg/kg	0.01	240	SGV	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	mg/kg	0.1			< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Atraton	mg/kg	0.2										
Prometon	mg/kg	0.2										
Simazine	mg/kg	0.2										
Atrazine	mg/kg	0.2	1200	S4UL								
Propazine	mg/kg	0.2										
Terbuthylazine	mg/kg	0.2										
Secbumeton	mg/kg	0.2										
Simetryn	mg/kg	0.2										
Ametryn	mg/kg	0.2										
Prometryn	mg/kg	0.2										
Terbutryn	mg/kg	0.2										
2,4-D	mg/kg	0.5										
Dichlorprop	mg/kg	0.5										
MCPA	mg/kg	0.5										
MCPB	mg/kg	0.5										
Mecoprop	mg/kg	0.5										
2,4,5-T	mg/kg	0.5										
Cyfluthrin	mg/kg	0.5										
Cypermethrin	mg/kg	0.5										
Deltamethrin	mg/kg	0.5										
Permethrin	mg/kg	0.5										
Resmethrin	mg/kg	0.5										
Tetramethrin	mg/kg	0.5										
Carbetamide (Subcon)	mg/kg	0.1										
Chlorbufam (Subcon)	mg/kg	0.1										
Chlorpropham (Subcon)	mg/kg	0.1										
Ethiofencarb (Subcon)	mg/kg	0.1										
Phenmedipham (Subcon)	mg/kg	0.1										
Pirimicarb (Subcon)	mg/kg	0.1										
Propham (Subcon)	mg/kg	0.1										
SVOC TIC	mg/kg	N/A			None Detected		None Detected			See Below		
(SVOC TIC) Dibenzothiophene	mg/kg	N/A								2		
VOC TIC	µg/kg	N/A			None Detected		None Detected			None Detected		

				Sample Location:	TP02	TP04	TP04	WS01	WS02	WS02	WS02	WS03
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	1.5	0.5	1.4	0.9	0.2	0.8	1.5	0.5
				Date Sampled:	28-Sep-2021	29-Sep-2021	29-Sep-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021
Determinand	**Units**	**LOD**	**Screening Value**	**Source**								
ACM Type		N/A			-	-	Fibres/Clumps	-	Fibres/Clumps	Fibres/Clumps	-	-
Asbestos Identification		N/A			No Asbestos Detected	No Asbestos Detected	Amosite	No Asbestos Detected	Chrysotile	Chrysotile	No Asbestos Detected	No Asbestos Detected
Asbestos by Gravimetry	%	0.001			-	-	<0.001		0.001	0.002		
Total Asbestos	%	0.001			-	-	<0.001		0.001	0.002		
Moisture	%	0.02			10	8.7	10	33	8.9	12	31	5.7
pH		4			8.2	8.5	8.1	8.2	8.0	8.0	8.8	8.8
Arsenic	mg/kg	1	79	C4SL/S4UL	18	11	14	17	15	16	27	9
Barium	mg/kg	10	1500	US EPA 2021	140	130	150	1400	370	91	140	76
Cadmium	mg/kg	0.1	106	AGAC	1	0	0	<0.10	1	0	0	0
Molybdenum	mg/kg	2	39	US EPA 2021	< 2.0	< 2.0	< 2.0	6	< 2.0	3	3	< 2.0
Antimony	mg/kg	2	1070	AGAC	6	< 2.0	< 2.0	44	3	3	3	5
Copper	mg/kg	0.5	12000	AGAC/S4UL	94	71	100	240	40	41	64	65
Mercury	mg/kg	0.1	120	AGAC (inorganic)	1	0	1	0	0	0	< 0.10	0
Nickel	mg/kg	0.5	231	AGAC	27	27	27	42	21	18	46	40
Lead	mg/kg	0.5	630	C4SL	390	160	240	830	120	120	32	64
Selenium	mg/kg	0.2	1140	AGAC	0	0	0	2	< 0.20	< 0.20	< 0.20	< 0.20
Zinc	mg/kg	0.5	80500	AGAC	240	150	240	< 0.50	200	120	63	140
Chromium (Trivalent)	mg/kg	1	1539	AGAC	19	16	16	17	14	17	11	12
Chromium (Hexavalent)	mg/kg	0.5	7.7	AGAC/S4UL	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
LOI	%	0.1			6	9	9	21	5	5	11	2
Total Organic Carbon	%	0.2			3	7	7	9	2	2	2	1
Mineral Oil (TPH Calculation)	mg/kg	10			< 10	6100	3700	< 10	60	< 10	< 10	< 10
Diesel Present												
Total TPH >C6-C40												
Aliphatic TPH >C5-C6	mg/kg	1	575000	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	mg/kg	1	597000	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	mg/kg	1	12500	AGAC	< 1.0	25	7	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	mg/kg	1	12600	AGAC	< 1.0	220	130	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	mg/kg	1	12600	AGAC	< 1.0	990	570	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	mg/kg	1	251000	AGAC (Ali >C16-35)	< 1.0	1600	920	< 1.0	7	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	mg/kg	1	251000	AGAC (Ali >C16-35)	< 1.0	3200	2000	< 1.0	53	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	mg/kg	1	251000	AGAC (Ali >C16-35)	< 1.0	130	130	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	mg/kg	5			< 5.0	6100	3700	< 5.0	60	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	mg/kg	1	72	AGAC/S4UL (benzene)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	mg/kg	1	55800	AGAC (toluene)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	mg/kg	1	5020	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	mg/kg	1	5040	AGAC	< 1.0	37	24	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	mg/kg	1	5050	AGAC	< 1.0	270	170	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	mg/kg	1	3770	AGAC	< 1.0	650	380	< 1.0	< 1.0	38	< 1.0	< 1.0
Aromatic TPH >C21-C35	mg/kg	1	3770	AGAC	< 1.0	2800	1700	< 1.0	410	28	< 1.0	140
Aromatic TPH >C35-C44	mg/kg	1	3770	AGAC	< 1.0	150	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	mg/kg	5			< 5.0	3900	2300	< 5.0	410	66	< 5.0	140
Total Petroleum Hydrocarbons	mg/kg	10			< 10	10000	6000	< 10	470	66	< 10	140
Dichlorodifluoromethane	µg/kg	0.2				< 0.20	< 0.20		< 0.20	< 0.20		
Tetraethyl Lead	µg/kg	10										
Tetramethyl Lead	µg/kg	10										
Chloromethane	µg/kg	0.2	543000	AGAC		< 0.20	< 0.20		< 0.20	< 0.20		
Vinyl Chloride	µg/kg	0.2	3490	AGAC/S4UL		< 0.20	< 0.20		< 0.20	< 0.20		
Bromomethane	µg/kg	0.2				< 0.20	< 0.20		< 0.20	< 0.20		
Chloroethane	µg/kg	0.2	601000000	AGAC		< 0.20	< 0.20		< 0.20	< 0.20		
Trichlorofluoromethane	µg/kg	0.2				< 0.20	< 0.20		< 0.20	< 0.20		
1,1-Dichloroethene	µg/kg	0.2	10200000	AGAC		< 0.20	< 0.20		< 0.20	< 0.20		
Trans 1,2-Dichloroethene	µg/kg	0.2	3866000	AGAC		< 0.20	< 0.20		< 0.20	< 0.20		
1,1-Dichloroethane	µg/kg	0.2	45900000	AGAC		< 0.20	< 0.20		< 0.20	< 0.20		
cis 1,2-Dichloroethene	µg/kg	0.2	1320000	AGAC		< 0.20	< 0.20		< 0.20	< 0.20		
Bromochloromethane	µg/kg	0.5				< 0.50	< 0.50		< 0.50	< 0.50		
Trichloromethane	µg/kg	0.2				< 0.20	< 0.20		< 0.20	< 0.20		
1,1,1-Trichloroethane	µg/kg	0.2	137000000	AGAC		< 0.20	< 0.20		< 0.20	< 0.20		
Tetrachloromethane	µg/kg	0.2				< 0.20	< 0.20		< 0.20	< 0.20		
1,1-Dichloropropene	µg/kg	0.2				< 0.20	< 0.20		< 0.20	< 0.20		
Benzene	µg/kg	0.2	72000	AGAC/S4UL		< 0.20	3		< 0.20	4		

				Sample Location:	TP02	TP04	TP04	WS01	WS02	WS02	WS02	WS03
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	1.5	0.5	1.4	0.9	0.2	0.8	1.5	0.5
				Date Sampled:	28-Sep-2021	29-Sep-2021	29-Sep-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021
Determinand	**Units**	**LOD**	**Screening Value**	**Source**								
Benzene	µg/kg	1	72000	AGAC/S4UL	< 1.0	< 1.0	3	9	< 1.0	4	< 1.0	< 1.0
1,2-Dichloroethane	µg/kg	0.2	28900	AGAC/S4UL		< 0.20	< 0.20		< 0.20	< 0.20		
Trichloroethene	µg/kg	0.2	119000	AGAC		< 0.20	< 0.20		< 0.20	< 0.20		
1,2-Dichloropropane	µg/kg	0.2	1720000	AGAC		< 0.20	< 0.20		< 0.20	< 0.20		
Dibromomethane	µg/kg	0.2				< 0.20	< 0.20		< 0.20	< 0.20		
Bromodichloromethane	µg/kg	0.2	72500	AGAC		< 0.20	< 0.20		< 0.20	< 0.20		
cis-1,3-Dichloropropene	µg/kg	0.2				< 0.20	< 0.20		< 0.20	< 0.20		
Toluene	µg/kg	0.2	55800000	AGAC		< 0.20	< 0.20		< 0.20	4		
Toluene	µg/kg	1	55800000	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	4	< 1.0	1
Trans-1,3-Dichloropropene	µg/kg	0.2				< 0.20	< 0.20		< 0.20	< 0.20		
1,1,2-Trichloroethane	µg/kg	0.2	985000	AGAC		< 0.20	< 0.20		< 0.20	< 0.20		
Tetrachloroethene	µg/kg	0.2	1390000	AGAC		< 0.20	< 0.20		< 0.20	< 0.20		
1,3-Dichloropropane	µg/kg	0.2				< 0.20	< 0.20		< 0.20	< 0.20		
Dibromochloromethane	µg/kg	0.2				< 0.20	< 0.20		< 0.20	< 0.20		
1,2-Dibromoethane	µg/kg	0.2				< 0.20	< 0.20		< 0.20	< 0.20		
Chlorobenzene	µg/kg	0.2	11450000	AGAC		< 0.20	< 0.20		< 0.20	< 0.20		
1,1,1,2-Tetrachloroethane	µg/kg	0.2	1410000	AGAC		< 0.20	< 0.20		< 0.20	< 0.20		
Ethylbenzene	µg/kg	0.2	23900000	AGAC		< 0.20	< 0.20		< 0.20	7		
Ethylbenzene	µg/kg	1	23900000	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	7	< 1.0	2
m & p-Xylene	µg/kg	0.2	40700000	AGAC (p-xylene)		< 0.20	< 0.20		< 0.20	2		
m & p-Xylene	µg/kg	1	40700000	AGAC (p-xylene)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	4	< 1.0	4
o-Xylene	µg/kg	0.2	41000000	AGAC/S4UL		< 0.20	< 0.20		< 0.20	1		
o-Xylene	µg/kg	1	41000000	AGAC/S4UL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1	< 1.0	2
Styrene	µg/kg	0.2	3016000	AGAC		< 0.20	< 0.20		< 0.20	< 0.20		
Tribromomethane	µg/kg	0.2				< 0.20	< 0.20		< 0.20	< 0.20		
Isopropylbenzene	µg/kg	0.2	24500000	AGAC		< 0.20	< 0.20		< 0.20	< 0.20		
Bromobenzene	µg/kg	0.2	5217000	AGAC		< 0.20	< 0.20		< 0.20	< 0.20		
1,2,3-Trichloropropane	µg/kg	0.2				< 0.20	< 0.20		< 0.20	< 0.20		
N-Propylbenzene	µg/kg	0.2	24900000	AGAC		< 0.20	< 0.20		< 0.20	< 0.20		
2-Chlorotoluene	µg/kg	0.2				< 0.20	< 0.20		< 0.20	< 0.20		
1,3,5-Trimethylbenzene	µg/kg	0.2				< 0.20	10		< 0.20	< 0.20		
4-Chlorotoluene	µg/kg	0.2				< 0.20	< 0.20		< 0.20	< 0.20		
Tert-Butylbenzene	µg/kg	0.2				< 0.20	< 0.20		< 0.20	< 0.20		
1,2,4-Trimethylbenzene	µg/kg	0.2	248000	AGAC		25	27		< 0.20	< 0.20		
Sec-Butylbenzene	µg/kg	0.2				< 0.20	< 0.20		< 0.20	< 0.20		
1,3-Dichlorobenzene	µg/kg	0.2	247000	AGAC		< 0.20	< 0.20		< 0.20	< 0.20		
4-Isopropyltoluene	µg/kg	0.2				< 0.20	< 0.20		< 0.20	1		
1,4-Dichlorobenzene	µg/kg	0.2	17200000	AGAC		< 0.20	< 0.20		< 0.20	< 0.20		
N-Butylbenzene	µg/kg	0.2				< 0.20	< 0.20		< 0.20	< 0.20		
1,2-Dichlorobenzene	µg/kg	0.2	89000000	AGAC		< 0.20	< 0.20		< 0.20	< 0.20		
1,2-Dibromo-3-Chloropropane	µg/kg	0.2				< 0.20	< 0.20		< 0.20	< 0.20		
1,2,4-Trichlorobenzene	µg/kg	0.2	14900000	AGAC		< 0.20	< 0.20		< 0.20	< 0.20		
Hexachlorobutadiene	µg/kg	0.2	25200	AGAC/S4UL		< 0.20	< 0.20		< 0.20	< 0.20		
1,2,3-Trichlorobenzene	µg/kg	0.2	1780000	AGAC		< 0.20	< 0.20		< 0.20	< 0.20		
Methyl Tert-Butyl Ether	µg/kg	0.2	74600000	AGAC		< 0.20	< 0.20		< 0.20	< 0.20		
Methyl Tert-Butyl Ether	µg/kg	1	74600000	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	mg/kg	0.05				< 0.050	< 0.050		< 0.050	< 0.050		
Phenol	mg/kg	0.05	440	S4UL (direct contact)		< 0.050	< 0.050		< 0.050	< 0.050		
2-Chlorophenol	mg/kg	0.05	597	AGAC		< 0.050	< 0.050		< 0.050	< 0.050		
Bis-(2-Chloroethyl)Ether	mg/kg	0.05				< 0.050	< 0.050		< 0.050	< 0.050		
1,3-Dichlorobenzene	mg/kg	0.05	247	AGAC		< 0.050	< 0.050		< 0.050	< 0.050		
1,4-Dichlorobenzene	mg/kg	0.05	17200	AGAC		< 0.050	< 0.050		< 0.050	< 0.050		
1,2-Dichlorobenzene	mg/kg	0.05	89000	AGAC		< 0.050	< 0.050		< 0.050	< 0.050		
2-Methylphenol	mg/kg	0.05	25080	AGAC		< 0.050	< 0.050		< 0.050	< 0.050		
Bis(2-Chloroisopropyl)Ether	mg/kg	0.05				< 0.050	< 0.050		< 0.050	< 0.050		
Hexachloroethane	mg/kg	0.05	124	AGAC		< 0.050	< 0.050		< 0.050	< 0.050		
N-Nitrosodi-n-propylamine	mg/kg	0.05				< 0.050	< 0.050		< 0.050	< 0.050		
4-Methylphenol	mg/kg	0.05	25080	AGAC		< 0.050	< 0.050		< 0.050	< 0.050		
Nitrobenzene	mg/kg	0.05				< 0.050	< 0.050		< 0.050	< 0.050		
Isophorone	mg/kg	0.05				< 0.050	< 0.050		< 0.050	< 0.050		
2-Nitrophenol	mg/kg	0.05				< 0.050	< 0.050		< 0.050	< 0.050		
2,4-Dimethylphenol	mg/kg	0.05	5020	AGAC		< 0.050	< 0.050		< 0.050	< 0.050		

				Sample Location:	TP02	TP04	TP04	WS01	WS02	WS02	WS02	WS03
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	1.5	0.5	1.4	0.9	0.2	0.8	1.5	0.5
				Date Sampled:	28-Sep-2021	29-Sep-2021	29-Sep-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021
Determinand	**Units**	**LOD**	**Screening Value**	**Source**								
Bis(2-Chloroethoxy)Methane	mg/kg	0.05				< 0.050	< 0.050		< 0.050	< 0.050		
2,4-Dichlorophenol	mg/kg	0.05	597	AGAC		< 0.050	< 0.050		< 0.050	< 0.050		
1,2,4-Trichlorobenzene	mg/kg	0.05	14900	AGAC		< 0.050	< 0.050		< 0.050	< 0.050		
Naphthalene	mg/kg	0.05	4890	AGAC		0	0		0	1		
4-Chloroaniline	mg/kg	0.05				< 0.050	< 0.050		< 0.050	< 0.050		
Hexachlorobutadiene	mg/kg	0.05				< 0.050	< 0.050		< 0.050	< 0.050		
4-Chloro-3-Methylphenol	mg/kg	0.05				< 0.050	< 0.050		< 0.050	< 0.050		
2-Methylnaphthalene	mg/kg	0.05				1	1		< 0.050	0.3		
Hexachlorocyclopentadiene	mg/kg	0.05				< 0.050	< 0.050		< 0.050	< 0.050		
2,4,6-Trichlorophenol	mg/kg	0.05	598	AGAC		< 0.050	< 0.050		< 0.050	< 0.050		
2,4,5-Trichlorophenol	mg/kg	0.05	620	S4UL		< 0.050	< 0.050		< 0.050	< 0.050		
2-Chloronaphthalene	mg/kg	0.05	7490	AGAC		< 0.050	< 0.050		< 0.050	< 0.050		
2-Nitroaniline	mg/kg	0.05				< 0.050	< 0.050		< 0.050	< 0.050		
Acenaphthylene	mg/kg	0.05	14800	AGAC		0	< 0.050		0	1		
Dimethylphthalate	mg/kg	0.05				< 0.050	< 0.050		< 0.050	< 0.050		
2,6-Dinitrotoluene	mg/kg	0.05	251	AGAC		< 0.050	< 0.050		< 0.050	< 0.050		
Acenaphthene	mg/kg	0.05	14800	AGAC		1	1		< 0.050	0		
3-Nitroaniline	mg/kg	0.05				< 0.050	< 0.050		< 0.050	< 0.050		
Dibenzofuran	mg/kg	0.05	7.8	US EPA 2021		0.5	0.5		< 0.050	0.5		
4-Chlorophenylphenylether	mg/kg	0.05				< 0.050	< 0.050		< 0.050	< 0.050		
2,4-Dinitrotoluene	mg/kg	0.05	501	AGAC		< 0.050	< 0.050		< 0.050	< 0.050		
Fluorene	mg/kg	0.05	9870	AGAC		1	1		< 0.050	1		
Diethyl Phthalate	mg/kg	0.05	49400	AGAC		< 0.050	< 0.050		< 0.050	< 0.050		
4-Nitroaniline	mg/kg	0.05				< 0.050	< 0.050		< 0.050	< 0.050		
2-Methyl-4,6-Dinitrophenol	mg/kg	0.05				< 0.050	< 0.050		< 0.050	< 0.050		
Azobenzene	mg/kg	0.05				< 0.050	< 0.050		< 0.050	< 0.050		
4-Bromophenylphenyl Ether	mg/kg	0.05				< 0.050	< 0.050		< 0.050	< 0.050		
Hexachlorobenzene	mg/kg	0.05	15.6	AGAC/S4UL		< 0.050	< 0.050		< 0.050	< 0.050		
Pentachlorophenol	mg/kg	0.05	59.8	AGAC/S4UL		< 0.050	< 0.050		< 0.050	< 0.050		
Phenanthrene	mg/kg	0.05	3070	AGAC		5	5		0	8		
Anthracene	mg/kg	0.05	74100	AGAC		2	2		0	2		
Carbazole	mg/kg	0.05				0.4	0.4		0.11	0.62		
Di-N-Butyl Phthalate	mg/kg	0.05	1300	AGAC		< 0.050	< 0.050		< 0.050	< 0.050		
Fluoranthene	mg/kg	0.05	3080	AGAC		8	7		2	11		
Pyrene	mg/kg	0.05	7410	AGAC		8	7		2	12		
Butylbenzyl Phthalate	mg/kg	0.05	126000	AGAC		< 0.050	< 0.050		< 0.050	< 0.050		
Benzo[a]anthracene	mg/kg	0.05	28.5	AGAC/S4UL		4	3		1	5		
Chrysene	mg/kg	0.05	57	AGAC		4	4		1	6		
Bis(2-Ethylhexyl)Phthalate	mg/kg	0.05	9688	AGAC		1	1		< 0.050	< 0.050		
Di-N-Octyl Phthalate	mg/kg	0.05	10700	AGAC		< 0.050	< 0.050		< 0.050	< 0.050		
Benzo[b]fluoranthene	mg/kg	0.05	7.23	AGAC/S4UL		6	4		2	6		
Benzo[k]fluoranthene	mg/kg	0.05	191	AGAC		2	1		1	3		
Benzo[a]pyrene	mg/kg	0.05	5.74	AGAC/S4UL		4	3		1	5		
Indeno(1,2,3-c,d)Pyrene	mg/kg	0.05	82	AGAC/S4UL		3	2		1	3		
Dibenz(a,h)Anthracene	mg/kg	0.05	0.574	AGAC/S4UL		1	0		0	1		
Benzo[g,h,i]perylene	mg/kg	0.05	637	AGAC		2.7	2		1	2		
4-Nitrophenol	mg/kg	0.05				< 0.050	< 0.050		< 0.050	< 0.050		
Pyrethrin												
Naphthalene	mg/kg	0.1	4890	AGAC	0.8	0.6	1	< 0.10	1	1	< 0.10	< 0.10
Acenaphthylene	mg/kg	0.1	14800	AGAC	0.2	0.1	0	< 0.10	0	0	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	14800	AGAC	0.2	1.1	1	< 0.10	1	0	< 0.10	< 0.10
Fluorene	mg/kg	0.1	9870	AGAC	0.2	1.2	1	< 0.10	2	1	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	3070	AGAC	4.7	8.2	5	< 0.10	14	9	< 0.10	0
Anthracene	mg/kg	0.1	74100	AGAC	0.3	2.1	2	< 0.10	3	2	< 0.10	0
Fluoranthene	mg/kg	0.1	3080	AGAC	6.7	15.0	11	< 0.10	14	11	0.41	0
Pyrene	mg/kg	0.1	28.6	AGAC/S4UL	5.3	13.0	10	< 0.10	13	11	0.52	0
Benzo[a]anthracene	mg/kg	0.1	7410	AGAC	2.2	7.8	5	< 0.10	5	5	0.17	0
Chrysene	mg/kg	0.1	57.2	AGAC/S4UL	3.0	7.2	5	< 0.10	5	4	0.21	0
Benzo[b]fluoranthene	mg/kg	0.1	7.23	AGAC/S4UL	4.3	11	8	< 0.10	7	5	0.48	0
Benzo[k]fluoranthene	mg/kg	0.1	191	AGAC	1.2	4	2	< 0.10	2	2	0.18	0
Benzo[a]pyrene	mg/kg	0.1	5.74	AGAC/S4UL	3.0	9	7	< 0.10	5	4	0.40	0
Indeno(1,2,3-c,d)Pyrene	mg/kg	0.1	82	AGAC/S4UL	2.1	6	4	< 0.10	3	3	0.40	3

				Sample Location:	TP02	TP04	TP04	WS01	WS02	WS02	WS02	WS03
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	1.5	0.5	1.4	0.9	0.2	0.8	1.5	0.5
				Date Sampled:	28-Sep-2021	29-Sep-2021	29-Sep-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021
Determinand	**Units**	**LOD**	**Screening Value**	**Source**								
Dibenz(a,h)Anthracene	mg/kg	0.1	0.574	AGAC/S4UL	0.3	1	1	< 0.10	1	1	0.11	3
Benzo[g,h,i]perylene	mg/kg	0.1	637	AGAC	2.0	5	4	< 0.10	3	3	0.33	2
Coronene	mg/kg	0.1			< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	mg/kg	2			37	93	66	< 2.0	80	61	3	10
PCB 28	mg/kg	0.01			< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 52	mg/kg	0.01			< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 90+101	mg/kg	0.01			< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 118	mg/kg	0.01	0.171	Median UK urban background concentration	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 153	mg/kg	0.01			< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 138	mg/kg	0.01			< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 180	mg/kg	0.01	240	SGV	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	mg/kg	0.1			< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Atraton	mg/kg	0.2										
Prometon	mg/kg	0.2										
Simazine	mg/kg	0.2										
Atrazine	mg/kg	0.2	1200	S4UL								
Propazine	mg/kg	0.2										
Terbuthylazine	mg/kg	0.2										
Secbumeton	mg/kg	0.2										
Simetryn	mg/kg	0.2										
Ametryn	mg/kg	0.2										
Prometryn	mg/kg	0.2										
Terbutryn	mg/kg	0.2										
2,4-D	mg/kg	0.5										
Dichlorprop	mg/kg	0.5										
MCPA	mg/kg	0.5										
MCPB	mg/kg	0.5										
Mecoprop	mg/kg	0.5										
2,4,5-T	mg/kg	0.5										
Cyfluthrin	mg/kg	0.5										
Cypermethrin	mg/kg	0.5										
Deltamethrin	mg/kg	0.5										
Permethrin	mg/kg	0.5										
Resmethrin	mg/kg	0.5										
Tetramethrin	mg/kg	0.5										
Carbetamide (Subcon)	mg/kg	0.1										
Chlorbufam (Subcon)	mg/kg	0.1										
Chlorpropham (Subcon)	mg/kg	0.1										
Ethiofencarb (Subcon)	mg/kg	0.1										
Phenmedipham (Subcon)	mg/kg	0.1										
Pirimicarb (Subcon)	mg/kg	0.1										
Propham (Subcon)	mg/kg	0.1										
SVOC TIC	mg/kg	N/A				None Detected	None Detected		None Detected	See Below		
(SVOC TIC) Dibenzothiophene	mg/kg	N/A								1		
VOC TIC	µg/kg	N/A				None Detected	None Detected		None Detected	None Detected		

				Sample Location:	WS03	WS06	WS06	WS06	WS07	WS07	WS07	WS07
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	1.5	0.4	1.5	2.5	0.4	1.5	2.7	3.8
				Date Sampled:	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
Determinand	**Units**	**LOD**	**Screening Value**	**Source**								
ACM Type		N/A			-	-	-	-	-	-	-	-
Asbestos Identification		N/A			No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Asbestos by Gravimetry	%	0.001										
Total Asbestos	%	0.001										
Moisture	%	0.02			44	9.3	24	52	9.5	13	42	25
pH		4			8.6	8.3	7.8	8.3	8.0	8.5	8.1	8.8
Arsenic	mg/kg	1	79	C4SL/S4UL	50	21	56	28	11	7	13	11
Barium	mg/kg	10	1500	US EPA 2021	280	140	210	130	78	16	100	23
Cadmium	mg/kg	0.1	106	AGAC	1	1	0	0	1	< 0.10	0	0
Molybdenum	mg/kg	2	39	US EPA 2021	4	4	5	< 2.0	< 2.0	< 2.0	2.1	< 2.0
Antimony	mg/kg	2	1070	AGAC	8	3	4	2	2	< 2.0	4	< 2.0
Copper	mg/kg	0.5	12000	AGAC/S4UL	96	67	89	33	20	15	55	66
Mercury	mg/kg	0.1	120	AGAC (inorganic)	< 0.10	3	< 0.10	0	1	< 0.10	1	0
Nickel	mg/kg	0.5	231	AGAC	100	31	100	32	15	14	34	18
Lead	mg/kg	0.5	630	C4SL	69	160	29	33	83	16	220	52
Selenium	mg/kg	0.2	1140	AGAC	< 0.20	< 0.20	< 0.20	0	< 0.20	0	0	0
Zinc	mg/kg	0.5	80500	AGAC	210	120	57	63	270	35	840	78
Chromium (Trivalent)	mg/kg	1	1539	AGAC	17	51	21	12	8	14	24	17
Chromium (Hexavalent)	mg/kg	0.5	7.7	AGAC/S4UL	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
LOI	%	0.1			9	7	7	15	4	4	32	2
Total Organic Carbon	%	0.2			7	9	4	10	4	2	28	1
Mineral Oil (TPH Calculation)	mg/kg	10			< 10	53	< 10	< 10	< 10	< 10	< 10	< 10
Diesel Present												
Total TPH >C6-C40												
Aliphatic TPH >C5-C6	mg/kg	1	575000	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	mg/kg	1	597000	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	mg/kg	1	12500	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	mg/kg	1	12600	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	mg/kg	1	12600	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	mg/kg	1	251000	AGAC (Ali >C16-35)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	mg/kg	1	251000	AGAC (Ali >C16-35)	< 1.0	53	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	mg/kg	1	251000	AGAC (Ali >C16-35)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	mg/kg	5			< 5.0	53	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	mg/kg	1	72	AGAC/S4UL (benzene)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	mg/kg	1	55800	AGAC (toluene)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	mg/kg	1	5020	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	mg/kg	1	5040	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	mg/kg	1	5050	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	mg/kg	1	3770	AGAC	< 1.0	56	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	mg/kg	1	3770	AGAC	< 1.0	600	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	mg/kg	1	3770	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	mg/kg	5			< 5.0	650	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	mg/kg	10			< 10	710	< 10	< 10	< 10	< 10	< 10	< 10
Dichlorodifluoromethane	µg/kg	0.2										
Tetraethyl Lead	µg/kg	10										
Tetramethyl Lead	µg/kg	10										
Chloromethane	µg/kg	0.2	543000	AGAC								
Vinyl Chloride	µg/kg	0.2	3490	AGAC/S4UL								
Bromomethane	µg/kg	0.2										
Chloroethane	µg/kg	0.2	601000000	AGAC								
Trichlorofluoromethane	µg/kg	0.2										
1,1-Dichloroethene	µg/kg	0.2	10200000	AGAC								
Trans 1,2-Dichloroethene	µg/kg	0.2	3866000	AGAC								
1,1-Dichloroethane	µg/kg	0.2	45900000	AGAC								
cis 1,2-Dichloroethene	µg/kg	0.2	1320000	AGAC								
Bromochloromethane	µg/kg	0.5										
Trichloromethane	µg/kg	0.2										
1,1,1-Trichloroethane	µg/kg	0.2	137000000	AGAC								
Tetrachloromethane	µg/kg	0.2										
1,1-Dichloropropene	µg/kg	0.2										
Benzene	µg/kg	0.2	72000	AGAC/S4UL								

				Sample Location:	WS03	WS06	WS06	WS06	WS07	WS07	WS07	WS07
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	1.5	0.4	1.5	2.5	0.4	1.5	2.7	3.8
				Date Sampled:	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
Determinand	**Units**	**LOD**	**Screening Value**	**Source**								
Benzene	µg/kg	1	72000	AGAC/S4UL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/kg	0.2	28900	AGAC/S4UL								
Trichloroethene	µg/kg	0.2	119000	AGAC								
1,2-Dichloropropane	µg/kg	0.2	1720000	AGAC								
Dibromomethane	µg/kg	0.2										
Bromodichloromethane	µg/kg	0.2	72500	AGAC								
cis-1,3-Dichloropropene	µg/kg	0.2										
Toluene	µg/kg	0.2	55800000	AGAC								
Toluene	µg/kg	1	55800000	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	µg/kg	0.2										
1,1,2-Trichloroethane	µg/kg	0.2	985000	AGAC								
Tetrachloroethene	µg/kg	0.2	1390000	AGAC								
1,3-Dichloropropane	µg/kg	0.2										
Dibromochloromethane	µg/kg	0.2										
1,2-Dibromoethane	µg/kg	0.2										
Chlorobenzene	µg/kg	0.2	11450000	AGAC								
1,1,1,2-Tetrachloroethane	µg/kg	0.2	1410000	AGAC								
Ethylbenzene	µg/kg	0.2	23900000	AGAC								
Ethylbenzene	µg/kg	1	23900000	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	µg/kg	0.2	40700000	AGAC (p-xylene)								
m & p-Xylene	µg/kg	1	40700000	AGAC (p-xylene)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/kg	0.2	41000000	AGAC/S4UL								
o-Xylene	µg/kg	1	41000000	AGAC/S4UL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/kg	0.2	3016000	AGAC								
Tribromomethane	µg/kg	0.2										
Isopropylbenzene	µg/kg	0.2	24500000	AGAC								
Bromobenzene	µg/kg	0.2	5217000	AGAC								
1,2,3-Trichloropropane	µg/kg	0.2										
N-Propylbenzene	µg/kg	0.2	24900000	AGAC								
2-Chlorotoluene	µg/kg	0.2										
1,3,5-Trimethylbenzene	µg/kg	0.2										
4-Chlorotoluene	µg/kg	0.2										
Tert-Butylbenzene	µg/kg	0.2										
1,2,4-Trimethylbenzene	µg/kg	0.2	248000	AGAC								
Sec-Butylbenzene	µg/kg	0.2										
1,3-Dichlorobenzene	µg/kg	0.2	247000	AGAC								
4-Isopropyltoluene	µg/kg	0.2										
1,4-Dichlorobenzene	µg/kg	0.2	17200000	AGAC								
N-Butylbenzene	µg/kg	0.2										
1,2-Dichlorobenzene	µg/kg	0.2	89000000	AGAC								
1,2-Dibromo-3-Chloropropane	µg/kg	0.2										
1,2,4-Trichlorobenzene	µg/kg	0.2	14900000	AGAC								
Hexachlorobutadiene	µg/kg	0.2	25200	AGAC/S4UL								
1,2,3-Trichlorobenzene	µg/kg	0.2	1780000	AGAC								
Methyl Tert-Butyl Ether	µg/kg	0.2	74600000	AGAC								
Methyl Tert-Butyl Ether	µg/kg	1	74600000	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	mg/kg	0.05										
Phenol	mg/kg	0.05	440	S4UL (direct contact)								
2-Chlorophenol	mg/kg	0.05	597	AGAC								
Bis-(2-Chloroethyl)Ether	mg/kg	0.05										
1,3-Dichlorobenzene	mg/kg	0.05	247	AGAC								
1,4-Dichlorobenzene	mg/kg	0.05	17200	AGAC								
1,2-Dichlorobenzene	mg/kg	0.05	89000	AGAC								
2-Methylphenol	mg/kg	0.05	25080	AGAC								
Bis(2-Chloroisopropyl)Ether	mg/kg	0.05										
Hexachloroethane	mg/kg	0.05	124	AGAC								
N-Nitrosodi-n-propylamine	mg/kg	0.05										
4-Methylphenol	mg/kg	0.05	25080	AGAC								
Nitrobenzene	mg/kg	0.05										
Isophorone	mg/kg	0.05										
2-Nitrophenol	mg/kg	0.05										
2,4-Dimethylphenol	mg/kg	0.05	5020	AGAC								

				Sample Location:	WS03	WS06	WS06	WS06	WS07	WS07	WS07	WS07
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	1.5	0.4	1.5	2.5	0.4	1.5	2.7	3.8
				Date Sampled:	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
Determinand	**Units**	**LOD**	**Screening Value**	**Source**								
Bis(2-Chloroethoxy)Methane	mg/kg	0.05										
2,4-Dichlorophenol	mg/kg	0.05	597	AGAC								
1,2,4-Trichlorobenzene	mg/kg	0.05	14900	AGAC								
Naphthalene	mg/kg	0.05	4890	AGAC								
4-Chloroaniline	mg/kg	0.05										
Hexachlorobutadiene	mg/kg	0.05										
4-Chloro-3-Methylphenol	mg/kg	0.05										
2-Methylnaphthalene	mg/kg	0.05										
Hexachlorocyclopentadiene	mg/kg	0.05										
2,4,6-Trichlorophenol	mg/kg	0.05	598	AGAC								
2,4,5-Trichlorophenol	mg/kg	0.05	620	S4UL								
2-Chloronaphthalene	mg/kg	0.05	7490	AGAC								
2-Nitroaniline	mg/kg	0.05										
Acenaphthylene	mg/kg	0.05	14800	AGAC								
Dimethylphthalate	mg/kg	0.05										
2,6-Dinitrotoluene	mg/kg	0.05	251	AGAC								
Acenaphthene	mg/kg	0.05	14800	AGAC								
3-Nitroaniline	mg/kg	0.05										
Dibenzofuran	mg/kg	0.05	7.8	US EPA 2021								
4-Chlorophenylphenylether	mg/kg	0.05										
2,4-Dinitrotoluene	mg/kg	0.05	501	AGAC								
Fluorene	mg/kg	0.05	9870	AGAC								
Diethyl Phthalate	mg/kg	0.05	49400	AGAC								
4-Nitroaniline	mg/kg	0.05										
2-Methyl-4,6-Dinitrophenol	mg/kg	0.05										
Azobenzene	mg/kg	0.05										
4-Bromophenylphenyl Ether	mg/kg	0.05										
Hexachlorobenzene	mg/kg	0.05	15.6	AGAC/S4UL								
Pentachlorophenol	mg/kg	0.05	59.8	AGAC/S4UL								
Phenanthrene	mg/kg	0.05	3070	AGAC								
Anthracene	mg/kg	0.05	74100	AGAC								
Carbazole	mg/kg	0.05										
Di-N-Butyl Phthalate	mg/kg	0.05	1300	AGAC								
Fluoranthene	mg/kg	0.05	3080	AGAC								
Pyrene	mg/kg	0.05	7410	AGAC								
Butylbenzyl Phthalate	mg/kg	0.05	126000	AGAC								
Benzo[a]anthracene	mg/kg	0.05	28.5	AGAC/S4UL								
Chrysene	mg/kg	0.05	57	AGAC								
Bis(2-Ethylhexyl)Phthalate	mg/kg	0.05	9688	AGAC								
Di-N-Octyl Phthalate	mg/kg	0.05	10700	AGAC								
Benzo[b]fluoranthene	mg/kg	0.05	7.23	AGAC/S4UL								
Benzo[k]fluoranthene	mg/kg	0.05	191	AGAC								
Benzo[a]pyrene	mg/kg	0.05	5.74	AGAC/S4UL								
Indeno(1,2,3-c,d)Pyrene	mg/kg	0.05	82	AGAC/S4UL								
Dibenz(a,h)Anthracene	mg/kg	0.05	0.574	AGAC/S4UL								
Benzo[g,h,i]perylene	mg/kg	0.05	637	AGAC								
4-Nitrophenol	mg/kg	0.05										
Pyrethrin												
Naphthalene	mg/kg	0.1	4890	AGAC	< 0.10	< 0.10	< 0.10	< 0.10	1	< 0.10	< 0.10	< 0.10
Acenaphthylene	mg/kg	0.1	14800	AGAC	< 0.10	< 0.10	< 0.10	< 0.10	0	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	14800	AGAC	< 0.10	< 0.10	< 0.10	< 0.10	0	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	9870	AGAC	< 0.10	< 0.10	< 0.10	< 0.10	0	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	3070	AGAC	< 0.10	0	0	< 0.10	2	2	< 0.10	< 0.10
Anthracene	mg/kg	0.1	74100	AGAC	< 0.10	0	< 0.10	< 0.10	0	0	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	3080	AGAC	< 0.10	1	0	< 0.10	2	2	0	< 0.10
Pyrene	mg/kg	0.1	28.6	AGAC/S4UL	< 0.10	2	0	< 0.10	3	2	0	< 0.10
Benzo[a]anthracene	mg/kg	0.1	7410	AGAC	< 0.10	1	0	< 0.10	1	1	0	< 0.10
Chrysene	mg/kg	0.1	57.2	AGAC/S4UL	< 0.10	1	0	< 0.10	1	1	0	< 0.10
Benzo[b]fluoranthene	mg/kg	0.1	7.23	AGAC/S4UL	< 0.10	5	< 0.10	< 0.10	1	2	< 0.10	< 0.10
Benzo[k]fluoranthene	mg/kg	0.1	191	AGAC	< 0.10	2	< 0.10	< 0.10	1	1	< 0.10	< 0.10
Benzo[a]pyrene	mg/kg	0.1	5.74	AGAC/S4UL	< 0.10	4	< 0.10	< 0.10	1	1	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	mg/kg	0.1	82	AGAC/S4UL	< 0.10	3	< 0.10	< 0.10	1	1	< 0.10	< 0.10

				Sample Location:	WS03	WS06	WS06	WS06	WS07	WS07	WS07	WS07
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	1.5	0.4	1.5	2.5	0.4	1.5	2.7	3.8
				Date Sampled:	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
Determinand	**Units**	**LOD**	**Screening Value**	**Source**								
Dibenz(a,h)Anthracene	mg/kg	0.1	0.574	AGAC/S4UL	< 0.10	1	< 0.10	< 0.10	0	0	< 0.10	< 0.10
Benzo[g,h,i]perylene	mg/kg	0.1	637	AGAC	< 0.10	3	< 0.10	< 0.10	1	1	< 0.10	< 0.10
Coronene	mg/kg	0.1			< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	mg/kg	2			< 2.0	24	< 2.0	< 2.0	16	15	< 2.0	< 2.0
PCB 28	mg/kg	0.01			< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 52	mg/kg	0.01			< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 90+101	mg/kg	0.01			< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 118	mg/kg	0.01	0.171	Median UK urban background concentration	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 153	mg/kg	0.01			< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 138	mg/kg	0.01			< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 180	mg/kg	0.01	240	SGV	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	mg/kg	0.1			< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Atraton	mg/kg	0.2										
Prometon	mg/kg	0.2										
Simazine	mg/kg	0.2										
Atrazine	mg/kg	0.2	1200	S4UL								
Propazine	mg/kg	0.2										
Terbuthylazine	mg/kg	0.2										
Secbumeton	mg/kg	0.2										
Simetryn	mg/kg	0.2										
Ametryn	mg/kg	0.2										
Prometryn	mg/kg	0.2										
Terbutryn	mg/kg	0.2										
2,4-D	mg/kg	0.5										
Dichlorprop	mg/kg	0.5										
MCPA	mg/kg	0.5										
MCPB	mg/kg	0.5										
Mecoprop	mg/kg	0.5										
2,4,5-T	mg/kg	0.5										
Cyfluthrin	mg/kg	0.5										
Cypermethrin	mg/kg	0.5										
Deltamethrin	mg/kg	0.5										
Permethrin	mg/kg	0.5										
Resmethrin	mg/kg	0.5										
Tetramethrin	mg/kg	0.5										
Carbetamide (Subcon)	mg/kg	0.1										
Chlorbufam (Subcon)	mg/kg	0.1										
Chlorpropham (Subcon)	mg/kg	0.1										
Ethiofencarb (Subcon)	mg/kg	0.1										
Phenmedipham (Subcon)	mg/kg	0.1										
Pirimicarb (Subcon)	mg/kg	0.1										
Propham (Subcon)	mg/kg	0.1										
SVOC TIC	mg/kg	N/A										
(SVOC TIC) Dibenzothiophene	mg/kg	N/A										
VOC TIC	µg/kg	N/A										

				Sample Location:	WS12	WS12	WSTP12	WS15	WS15	WS18	WS18	WS18
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.4	1.3	2.5	0.5	2.7	0.2	0.8	1.8
				Date Sampled:	12-Oct-2021	14-Oct-2021	15-Oct-2021	29-Sep-2021	05-Oct-2021	14-Oct-2021	14-Oct-2021	14-Oct-2021
Determinand	**Units**	**LOD**	**Screening Value**	**Source**								
ACM Type		N/A			-	-	-	-	-	-	-	-
Asbestos Identification		N/A			No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Asbestos by Gravimetry	%	0.001						-				
Total Asbestos	%	0.001						-				
Moisture	%	0.02			8.9	18	24.0	13	12	7.7	13	8.6
pH		4			8.3	8.5	8.9	9.2	8.3	9.9	8.3	8.7
Arsenic	mg/kg	1	79	C4SL/S4UL	13	10	7	9	51	14	23	13
Barium	mg/kg	10	1500	US EPA 2021	230	71	27	110	420	67	110	120
Cadmium	mg/kg	0.1	106	AGAC	1	0	0	0	2	0	0	1
Molybdenum	mg/kg	2	39	US EPA 2021	< 2.0	< 2.0	< 2.0	< 2.0	4	< 2.0	2	< 2.0
Antimony	mg/kg	2	1070	AGAC	3	< 2.0	< 2.0	< 2.0	7	< 2.0	5	2
Copper	mg/kg	0.5	12000	AGAC/S4UL	31	56	19	59	300	85	80	50
Mercury	mg/kg	0.1	120	AGAC (inorganic)	0	1	0	0	0	0	1	0
Nickel	mg/kg	0.5	231	AGAC	19	25	9	28	45	27	15	26
Lead	mg/kg	0.5	630	C4SL	91	140	33	96	340	120	320	85
Selenium	mg/kg	0.2	1140	AGAC	< 0.20	0	< 0.20	0	< 0.20	< 0.20	0	< 0.20
Zinc	mg/kg	0.5	80500	AGAC	170	100	39	220	< 0.50	120	92	170
Chromium (Trivalent)	mg/kg	1	1539	AGAC	11	24	9	19	25	20	11	19
Chromium (Hexavalent)	mg/kg	0.5	7.7	AGAC/S4UL	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
LOI	%	0.1			6	6	12	7	17	3	10	4
Total Organic Carbon	%	0.2			7	3	11	5	12	1	7	2
Mineral Oil (TPH Calculation)	mg/kg	10			15	< 10	< 10	< 10	< 10	< 10	180	< 10
Diesel Present												
Total TPH >C6-C40												
Aliphatic TPH >C5-C6	mg/kg	1	575000	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	mg/kg	1	597000	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	mg/kg	1	12500	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	mg/kg	1	12600	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	mg/kg	1	12600	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	mg/kg	1	251000	AGAC (Ali >C16-35)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	mg/kg	1	251000	AGAC (Ali >C16-35)	15	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	180	< 1.0
Aliphatic TPH >C35-C44	mg/kg	1	251000	AGAC (Ali >C16-35)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	mg/kg	5			15	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	180	< 5.0
Aromatic TPH >C5-C7	mg/kg	1	72	AGAC/S4UL (benzene)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	mg/kg	1	55800	AGAC (toluene)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	mg/kg	1	5020	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	mg/kg	1	5040	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	mg/kg	1	5050	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	mg/kg	1	3770	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	mg/kg	1	3770	AGAC	84	< 1.0	< 1.0	< 1.0	< 1.0	290	350	< 1.0
Aromatic TPH >C35-C44	mg/kg	1	3770	AGAC	13	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	mg/kg	5			97	< 5.0	< 5.0	< 5.0	< 5.0	290	350	< 5.0
Total Petroleum Hydrocarbons	mg/kg	10			110	< 10	< 10	< 10	< 10	290	540	< 10
Dichlorodifluoromethane	µg/kg	0.2										
Tetraethyl Lead	µg/kg	10										
Tetramethyl Lead	µg/kg	10										
Chloromethane	µg/kg	0.2	543000	AGAC								
Vinyl Chloride	µg/kg	0.2	3490	AGAC/S4UL								
Bromomethane	µg/kg	0.2										
Chloroethane	µg/kg	0.2	601000000	AGAC								
Trichlorofluoromethane	µg/kg	0.2										
1,1-Dichloroethene	µg/kg	0.2	10200000	AGAC								
Trans 1,2-Dichloroethene	µg/kg	0.2	3866000	AGAC								
1,1-Dichloroethane	µg/kg	0.2	45900000	AGAC								
cis 1,2-Dichloroethene	µg/kg	0.2	1320000	AGAC								
Bromochloromethane	µg/kg	0.5										
Trichloromethane	µg/kg	0.2										
1,1,1-Trichloroethane	µg/kg	0.2	137000000	AGAC								
Tetrachloromethane	µg/kg	0.2										
1,1-Dichloropropene	µg/kg	0.2										
Benzene	µg/kg	0.2	72000	AGAC/S4UL								

				Sample Location:	WS12	WS12	WSTP12	WS15	WS15	WS18	WS18	WS18
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.4	1.3	2.5	0.5	2.7	0.2	0.8	1.8
				Date Sampled:	12-Oct-2021	14-Oct-2021	15-Oct-2021	29-Sep-2021	05-Oct-2021	14-Oct-2021	14-Oct-2021	14-Oct-2021
Determinand	**Units**	**LOD**	**Screening Value**	**Source**								
Benzene	µg/kg	1	72000	AGAC/S4UL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/kg	0.2	28900	AGAC/S4UL								
Trichloroethene	µg/kg	0.2	119000	AGAC								
1,2-Dichloropropane	µg/kg	0.2	1720000	AGAC								
Dibromomethane	µg/kg	0.2										
Bromodichloromethane	µg/kg	0.2	72500	AGAC								
cis-1,3-Dichloropropene	µg/kg	0.2										
Toluene	µg/kg	0.2	55800000	AGAC								
Toluene	µg/kg	1	55800000	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	µg/kg	0.2										
1,1,2-Trichloroethane	µg/kg	0.2	985000	AGAC								
Tetrachloroethene	µg/kg	0.2	1390000	AGAC								
1,3-Dichloropropane	µg/kg	0.2										
Dibromochloromethane	µg/kg	0.2										
1,2-Dibromoethane	µg/kg	0.2										
Chlorobenzene	µg/kg	0.2	11450000	AGAC								
1,1,1,2-Tetrachloroethane	µg/kg	0.2	1410000	AGAC								
Ethylbenzene	µg/kg	0.2	23900000	AGAC								
Ethylbenzene	µg/kg	1	23900000	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1
m & p-Xylene	µg/kg	0.2	40700000	AGAC (p-xylene)								
m & p-Xylene	µg/kg	1	40700000	AGAC (p-xylene)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	11
o-Xylene	µg/kg	0.2	41000000	AGAC/S4UL								
o-Xylene	µg/kg	1	41000000	AGAC/S4UL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/kg	0.2	3016000	AGAC								
Tribromomethane	µg/kg	0.2										
Isopropylbenzene	µg/kg	0.2	24500000	AGAC								
Bromobenzene	µg/kg	0.2	5217000	AGAC								
1,2,3-Trichloropropane	µg/kg	0.2										
N-Propylbenzene	µg/kg	0.2	24900000	AGAC								
2-Chlorotoluene	µg/kg	0.2										
1,3,5-Trimethylbenzene	µg/kg	0.2										
4-Chlorotoluene	µg/kg	0.2										
Tert-Butylbenzene	µg/kg	0.2										
1,2,4-Trimethylbenzene	µg/kg	0.2	248000	AGAC								
Sec-Butylbenzene	µg/kg	0.2										
1,3-Dichlorobenzene	µg/kg	0.2	247000	AGAC								
4-Isopropyltoluene	µg/kg	0.2										
1,4-Dichlorobenzene	µg/kg	0.2	17200000	AGAC								
N-Butylbenzene	µg/kg	0.2										
1,2-Dichlorobenzene	µg/kg	0.2	89000000	AGAC								
1,2-Dibromo-3-Chloropropane	µg/kg	0.2										
1,2,4-Trichlorobenzene	µg/kg	0.2	14900000	AGAC								
Hexachlorobutadiene	µg/kg	0.2	25200	AGAC/S4UL								
1,2,3-Trichlorobenzene	µg/kg	0.2	1780000	AGAC								
Methyl Tert-Butyl Ether	µg/kg	0.2	74600000	AGAC								
Methyl Tert-Butyl Ether	µg/kg	1	74600000	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	mg/kg	0.05										
Phenol	mg/kg	0.05	440	S4UL (direct contact)								
2-Chlorophenol	mg/kg	0.05	597	AGAC								
Bis-(2-Chloroethyl)Ether	mg/kg	0.05										
1,3-Dichlorobenzene	mg/kg	0.05	247	AGAC								
1,4-Dichlorobenzene	mg/kg	0.05	17200	AGAC								
1,2-Dichlorobenzene	mg/kg	0.05	89000	AGAC								
2-Methylphenol	mg/kg	0.05	25080	AGAC								
Bis(2-Chloroisopropyl)Ether	mg/kg	0.05										
Hexachloroethane	mg/kg	0.05	124	AGAC								
N-Nitrosodi-n-propylamine	mg/kg	0.05										
4-Methylphenol	mg/kg	0.05	25080	AGAC								
Nitrobenzene	mg/kg	0.05										
Isophorone	mg/kg	0.05										
2-Nitrophenol	mg/kg	0.05										
2,4-Dimethylphenol	mg/kg	0.05	5020	AGAC								

				Sample Location:	WS12	WS12	WSTP12	WS15	WS15	WS18	WS18	WS18
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.4	1.3	2.5	0.5	2.7	0.2	0.8	1.8
				Date Sampled:	12-Oct-2021	14-Oct-2021	15-Oct-2021	29-Sep-2021	05-Oct-2021	14-Oct-2021	14-Oct-2021	14-Oct-2021
Determinand	**Units**	**LOD**	**Screening Value**	**Source**								
Bis(2-Chloroethoxy)Methane	mg/kg	0.05										
2,4-Dichlorophenol	mg/kg	0.05	597	AGAC								
1,2,4-Trichlorobenzene	mg/kg	0.05	14900	AGAC								
Naphthalene	mg/kg	0.05	4890	AGAC								
4-Chloroaniline	mg/kg	0.05										
Hexachlorobutadiene	mg/kg	0.05										
4-Chloro-3-Methylphenol	mg/kg	0.05										
2-Methylnaphthalene	mg/kg	0.05										
Hexachlorocyclopentadiene	mg/kg	0.05										
2,4,6-Trichlorophenol	mg/kg	0.05	598	AGAC								
2,4,5-Trichlorophenol	mg/kg	0.05	620	S4UL								
2-Chloronaphthalene	mg/kg	0.05	7490	AGAC								
2-Nitroaniline	mg/kg	0.05										
Acenaphthylene	mg/kg	0.05	14800	AGAC								
Dimethylphthalate	mg/kg	0.05										
2,6-Dinitrotoluene	mg/kg	0.05	251	AGAC								
Acenaphthene	mg/kg	0.05	14800	AGAC								
3-Nitroaniline	mg/kg	0.05										
Dibenzofuran	mg/kg	0.05	7.8	US EPA 2021								
4-Chlorophenylphenylether	mg/kg	0.05										
2,4-Dinitrotoluene	mg/kg	0.05	501	AGAC								
Fluorene	mg/kg	0.05	9870	AGAC								
Diethyl Phthalate	mg/kg	0.05	49400	AGAC								
4-Nitroaniline	mg/kg	0.05										
2-Methyl-4,6-Dinitrophenol	mg/kg	0.05										
Azobenzene	mg/kg	0.05										
4-Bromophenylphenyl Ether	mg/kg	0.05										
Hexachlorobenzene	mg/kg	0.05	15.6	AGAC/S4UL								
Pentachlorophenol	mg/kg	0.05	59.8	AGAC/S4UL								
Phenanthrene	mg/kg	0.05	3070	AGAC								
Anthracene	mg/kg	0.05	74100	AGAC								
Carbazole	mg/kg	0.05										
Di-N-Butyl Phthalate	mg/kg	0.05	1300	AGAC								
Fluoranthene	mg/kg	0.05	3080	AGAC								
Pyrene	mg/kg	0.05	7410	AGAC								
Butylbenzyl Phthalate	mg/kg	0.05	126000	AGAC								
Benzo[a]anthracene	mg/kg	0.05	28.5	AGAC/S4UL								
Chrysene	mg/kg	0.05	57	AGAC								
Bis(2-Ethylhexyl)Phthalate	mg/kg	0.05	9688	AGAC								
Di-N-Octyl Phthalate	mg/kg	0.05	10700	AGAC								
Benzo[b]fluoranthene	mg/kg	0.05	7.23	AGAC/S4UL								
Benzo[k]fluoranthene	mg/kg	0.05	191	AGAC								
Benzo[a]pyrene	mg/kg	0.05	5.74	AGAC/S4UL								
Indeno(1,2,3-c,d)Pyrene	mg/kg	0.05	82	AGAC/S4UL								
Dibenz(a,h)Anthracene	mg/kg	0.05	0.574	AGAC/S4UL								
Benzo[g,h,i]perylene	mg/kg	0.05	637	AGAC								
4-Nitrophenol	mg/kg	0.05										
Pyrethrin												
Naphthalene	mg/kg	0.1	4890	AGAC	< 0.10	0	< 0.10	< 0.10	< 0.10	< 0.10	2	0
Acenaphthylene	mg/kg	0.1	14800	AGAC	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0	< 0.10
Acenaphthene	mg/kg	0.1	14800	AGAC	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1	0
Fluorene	mg/kg	0.1	9870	AGAC	< 0.10	0	< 0.10	< 0.10	< 0.10	< 0.10	1	0
Phenanthrene	mg/kg	0.1	3070	AGAC	2	1	< 0.10	1.4	< 0.10	0	6	2
Anthracene	mg/kg	0.1	74100	AGAC	0	0	< 0.10	0.4	< 0.10	0	1	1
Fluoranthene	mg/kg	0.1	3080	AGAC	3	1	< 0.10	3.1	0	1	5	7
Pyrene	mg/kg	0.1	28.6	AGAC/S4UL	3	1	< 0.10	2.5	0	1	3	6
Benzo[a]anthracene	mg/kg	0.1	7410	AGAC	2	1	< 0.10	1.7	< 0.10	0	2	3
Chrysene	mg/kg	0.1	57.2	AGAC/S4UL	2	1	< 0.10	1.4	< 0.10	0	2	3
Benzo[b]fluoranthene	mg/kg	0.1	7.23	AGAC/S4UL	2	1	< 0.10	2.3	< 0.10	1	2	5
Benzo[k]fluoranthene	mg/kg	0.1	191	AGAC	1	0	< 0.10	0.9	< 0.10	0	1	2
Benzo[a]pyrene	mg/kg	0.1	5.74	AGAC/S4UL	2	1	< 0.10	2.1	< 0.10	0	1	4
Indeno(1,2,3-c,d)Pyrene	mg/kg	0.1	82	AGAC/S4UL	1	1	< 0.10	1.2	< 0.10	1	1	3

				Sample Location:	WS12	WS12	WSTP12	WS15	WS15	WS18	WS18	WS18
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.4	1.3	2.5	0.5	2.7	0.2	0.8	1.8
				Date Sampled:	12-Oct-2021	14-Oct-2021	15-Oct-2021	29-Sep-2021	05-Oct-2021	14-Oct-2021	14-Oct-2021	14-Oct-2021
Determinand	**Units**	**LOD**	**Screening Value**	**Source**								
Dibenz(a,h)Anthracene	mg/kg	0.1	0.574	AGAC/S4UL	0	0	< 0.10	0.3	< 0.10	1	0	1
Benzo[g,h,i]perylene	mg/kg	0.1	637	AGAC	1	1	< 0.10	1.1	< 0.10	1	1	3
Coronene	mg/kg	0.1			< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	mg/kg	2			19	8	< 2.0	18	< 2.0	7	30	39
PCB 28	mg/kg	0.01			< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 52	mg/kg	0.01			< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 90+101	mg/kg	0.01			< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 118	mg/kg	0.01	0.171	Median UK urban background concentration	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 153	mg/kg	0.01			< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 138	mg/kg	0.01			< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 180	mg/kg	0.01	240	SGV	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	mg/kg	0.1			< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Atraton	mg/kg	0.2										
Prometon	mg/kg	0.2										
Simazine	mg/kg	0.2										
Atrazine	mg/kg	0.2	1200	S4UL								
Propazine	mg/kg	0.2										
Terbuthylazine	mg/kg	0.2										
Secbumeton	mg/kg	0.2										
Simetryn	mg/kg	0.2										
Ametryn	mg/kg	0.2										
Prometryn	mg/kg	0.2										
Terbutryn	mg/kg	0.2										
2,4-D	mg/kg	0.5										
Dichlorprop	mg/kg	0.5										
MCPA	mg/kg	0.5										
MCPB	mg/kg	0.5										
Mecoprop	mg/kg	0.5										
2,4,5-T	mg/kg	0.5										
Cyfluthrin	mg/kg	0.5										
Cypermethrin	mg/kg	0.5										
Deltamethrin	mg/kg	0.5										
Permethrin	mg/kg	0.5										
Resmethrin	mg/kg	0.5										
Tetramethrin	mg/kg	0.5										
Carbetamide (Subcon)	mg/kg	0.1										
Chlorbufam (Subcon)	mg/kg	0.1										
Chlorpropham (Subcon)	mg/kg	0.1										
Ethiofencarb (Subcon)	mg/kg	0.1										
Phenmedipham (Subcon)	mg/kg	0.1										
Pirimicarb (Subcon)	mg/kg	0.1										
Propham (Subcon)	mg/kg	0.1										
SVOC TIC	mg/kg	N/A										
(SVOC TIC) Dibenzothiophene	mg/kg	N/A										
VOC TIC	µg/kg	N/A										

				Sample Location:	WS19	WS19	WS20	WS20	WS20	WS21	WS21	WS22
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.5	1.8	0.6	2.45	5.2	0.7	1.2	0.5
				Date Sampled:	15-Oct-2021	29-Sep-2021	29-Sep-2021	30-Sep-2021	30-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021
Determinand	**Units**	**LOD**	**Screening Value**	**Source**								
ACM Type		N/A			Fibres/Clumps	-	-	-		Fibres/Clumps	Fibres/Clumps	-
Asbestos Identification		N/A			Chrysotile	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected		Chrysotile	Amosite Chrysotile	No Asbestos Detected
Asbestos by Gravimetry	%	0.001			<0.001		-	-		0.001	0.050	-
Total Asbestos	%	0.001			<0.001		-	-		0.001	0.050	-
Moisture	%	0.02			8.8	15	9.2	41	40	9.9	11	7
pH		4			11.7	8.3	11.4	8.7	8.7	8.0	8.3	10.2
Arsenic	mg/kg	1	79	C4SL/S4UL	14	11	7	12	4	16	18	12
Barium	mg/kg	10	1500	US EPA 2021	110	67	61	30	<10	230	140	88
Cadmium	mg/kg	0.1	106	AGAC	0	0	<0.10	0	<0.10	1	1	0
Molybdenum	mg/kg	2	39	US EPA 2021	<2.0	<2.0	<2.0	6	<2.0	<2.0	2	<2.0
Antimony	mg/kg	2	1070	AGAC	<2.0	<2.0	<2.0	<2.0	<2.0	10	3	<2.0
Copper	mg/kg	0.5	12000	AGAC/S4UL	130	36	51	24	8	90	71	53
Mercury	mg/kg	0.1	120	AGAC (inorganic)	0	0	0	0	<0.10	1	1	0
Nickel	mg/kg	0.5	231	AGAC	35	22	20	110	13	33	28	20
Lead	mg/kg	0.5	630	C4SL	190	88	100	36	2	260	320	54
Selenium	mg/kg	0.2	1140	AGAC	0	<0.20	<0.20	0	<0.20	<0.20	0	<0.20
Zinc	mg/kg	0.5	80500	AGAC	1000	99	110	120	22	430	230	110
Chromium (Trivalent)	mg/kg	1	1539	AGAC	20	15	13	17	5	21	23	15
Chromium (Hexavalent)	mg/kg	0.5	7.7	AGAC/S4UL	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
LOI	%	0.1			12	6	7	7	7	7	8	4
Total Organic Carbon	%	0.2			6	3	4	8	2	5	8	1
Mineral Oil (TPH Calculation)	mg/kg	10			<10	73	<10	<10	56	1000	890	<10
Diesel Present												
Total TPH >C6-C40												
Aliphatic TPH >C5-C6	mg/kg	1	575000	AGAC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aliphatic TPH >C6-C8	mg/kg	1	597000	AGAC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aliphatic TPH >C8-C10	mg/kg	1	12500	AGAC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aliphatic TPH >C10-C12	mg/kg	1	12600	AGAC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aliphatic TPH >C12-C16	mg/kg	1	12600	AGAC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aliphatic TPH >C16-C21	mg/kg	1	251000	AGAC (Ali >C16-35)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	140	<1.0
Aliphatic TPH >C21-C35	mg/kg	1	251000	AGAC (Ali >C16-35)	<1.0	73	<1.0	<1.0	56	1000	750	<1.0
Aliphatic TPH >C35-C44	mg/kg	1	251000	AGAC (Ali >C16-35)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Aliphatic Hydrocarbons	mg/kg	5			<5.0	73	<5.0	<5.0	56	1000	890	<5.0
Aromatic TPH >C5-C7	mg/kg	1	72	AGAC/S4UL (benzene)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aromatic TPH >C7-C8	mg/kg	1	55800	AGAC (toluene)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aromatic TPH >C8-C10	mg/kg	1	5020	AGAC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aromatic TPH >C10-C12	mg/kg	1	5040	AGAC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aromatic TPH >C12-C16	mg/kg	1	5050	AGAC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aromatic TPH >C16-C21	mg/kg	1	3770	AGAC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aromatic TPH >C21-C35	mg/kg	1	3770	AGAC	<1.0	<1.0	<1.0	<1.0	180	470	1400	<1.0
Aromatic TPH >C35-C44	mg/kg	1	3770	AGAC	<1.0	<1.0	<1.0	<1.0	21	<1.0	<1.0	<1.0
Total Aromatic Hydrocarbons	mg/kg	5			<5.0	<5.0	<5.0	<5.0	200	470	1400	<5.0
Total Petroleum Hydrocarbons	mg/kg	10			<10	73	<10	<10	260	1500	2300	<10
Dichlorodifluoromethane	µg/kg	0.2										
Tetraethyl Lead	µg/kg	10										
Tetramethyl Lead	µg/kg	10										
Chloromethane	µg/kg	0.2	543000	AGAC								
Vinyl Chloride	µg/kg	0.2	3490	AGAC/S4UL								
Bromomethane	µg/kg	0.2										
Chloroethane	µg/kg	0.2	601000000	AGAC								
Trichlorofluoromethane	µg/kg	0.2										
1,1-Dichloroethene	µg/kg	0.2	10200000	AGAC								
Trans 1,2-Dichloroethene	µg/kg	0.2	3866000	AGAC								
1,1-Dichloroethane	µg/kg	0.2	45900000	AGAC								
cis 1,2-Dichloroethene	µg/kg	0.2	1320000	AGAC								
Bromochloromethane	µg/kg	0.5										
Trichloromethane	µg/kg	0.2										
1,1,1-Trichloroethane	µg/kg	0.2	137000000	AGAC								
Tetrachloromethane	µg/kg	0.2										
1,1-Dichloropropene	µg/kg	0.2										
Benzene	µg/kg	0.2	72000	AGAC/S4UL								

				Sample Location:	WS19	WS19	WS20	WS20	WS20	WS21	WS21	WS22
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.5	1.8	0.6	2.45	5.2	0.7	1.2	0.5
				Date Sampled:	15-Oct-2021	29-Sep-2021	29-Sep-2021	30-Sep-2021	30-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021
Determinand	**Units**	**LOD**	**Screening Value**	**Source**								
Benzene	µg/kg	1	72000	AGAC/S4UL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	3	2	< 1.0
1,2-Dichloroethane	µg/kg	0.2	28900	AGAC/S4UL								
Trichloroethene	µg/kg	0.2	119000	AGAC								
1,2-Dichloropropane	µg/kg	0.2	1720000	AGAC								
Dibromomethane	µg/kg	0.2										
Bromodichloromethane	µg/kg	0.2	72500	AGAC								
cis-1,3-Dichloropropene	µg/kg	0.2										
Toluene	µg/kg	0.2	55800000	AGAC								
Toluene	µg/kg	1	55800000	AGAC	< 1.0	2	< 1.0	5	< 1.0	4	6	< 1.0
Trans-1,3-Dichloropropene	µg/kg	0.2										
1,1,2-Trichloroethane	µg/kg	0.2	985000	AGAC								
Tetrachloroethene	µg/kg	0.2	1390000	AGAC								
1,3-Dichloropropane	µg/kg	0.2										
Dibromochloromethane	µg/kg	0.2										
1,2-Dibromoethane	µg/kg	0.2										
Chlorobenzene	µg/kg	0.2	11450000	AGAC								
1,1,1,2-Tetrachloroethane	µg/kg	0.2	1410000	AGAC								
Ethylbenzene	µg/kg	0.2	23900000	AGAC								
Ethylbenzene	µg/kg	1	23900000	AGAC	< 1.0	< 1.0	< 1.0	2	< 1.0	< 1.0	2	< 1.0
m & p-Xylene	µg/kg	0.2	40700000	AGAC (p-xylene)								
m & p-Xylene	µg/kg	1	40700000	AGAC (p-xylene)	< 1.0	< 1.0	< 1.0	5	< 1.0	< 1.0	4	< 1.0
o-Xylene	µg/kg	0.2	41000000	AGAC/S4UL								
o-Xylene	µg/kg	1	41000000	AGAC/S4UL	< 1.0	< 1.0	< 1.0	3	< 1.0	< 1.0	1	< 1.0
Styrene	µg/kg	0.2	3016000	AGAC								
Tribromomethane	µg/kg	0.2										
Isopropylbenzene	µg/kg	0.2	24500000	AGAC								
Bromobenzene	µg/kg	0.2	5217000	AGAC								
1,2,3-Trichloropropane	µg/kg	0.2										
N-Propylbenzene	µg/kg	0.2	24900000	AGAC								
2-Chlorotoluene	µg/kg	0.2										
1,3,5-Trimethylbenzene	µg/kg	0.2										
4-Chlorotoluene	µg/kg	0.2										
Tert-Butylbenzene	µg/kg	0.2										
1,2,4-Trimethylbenzene	µg/kg	0.2	248000	AGAC								
Sec-Butylbenzene	µg/kg	0.2										
1,3-Dichlorobenzene	µg/kg	0.2	247000	AGAC								
4-Isopropyltoluene	µg/kg	0.2										
1,4-Dichlorobenzene	µg/kg	0.2	17200000	AGAC								
N-Butylbenzene	µg/kg	0.2										
1,2-Dichlorobenzene	µg/kg	0.2	89000000	AGAC								
1,2-Dibromo-3-Chloropropane	µg/kg	0.2										
1,2,4-Trichlorobenzene	µg/kg	0.2	14900000	AGAC								
Hexachlorobutadiene	µg/kg	0.2	25200	AGAC/S4UL								
1,2,3-Trichlorobenzene	µg/kg	0.2	1780000	AGAC								
Methyl Tert-Butyl Ether	µg/kg	0.2	74600000	AGAC								
Methyl Tert-Butyl Ether	µg/kg	1	74600000	AGAC	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	mg/kg	0.05										
Phenol	mg/kg	0.05	440	S4UL (direct contact)								
2-Chlorophenol	mg/kg	0.05	597	AGAC								
Bis-(2-Chloroethyl)Ether	mg/kg	0.05										
1,3-Dichlorobenzene	mg/kg	0.05	247	AGAC								
1,4-Dichlorobenzene	mg/kg	0.05	17200	AGAC								
1,2-Dichlorobenzene	mg/kg	0.05	89000	AGAC								
2-Methylphenol	mg/kg	0.05	25080	AGAC								
Bis(2-Chloroisopropyl)Ether	mg/kg	0.05										
Hexachloroethane	mg/kg	0.05	124	AGAC								
N-Nitrosodi-n-propylamine	mg/kg	0.05										
4-Methylphenol	mg/kg	0.05	25080	AGAC								
Nitrobenzene	mg/kg	0.05										
Isophorone	mg/kg	0.05										
2-Nitrophenol	mg/kg	0.05										
2,4-Dimethylphenol	mg/kg	0.05	5020	AGAC								

				Sample Location:	WS19	WS19	WS20	WS20	WS20	WS21	WS21	WS22
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.5	1.8	0.6	2.45	5.2	0.7	1.2	0.5
				Date Sampled:	15-Oct-2021	29-Sep-2021	29-Sep-2021	30-Sep-2021	30-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021
Determinand	**Units**	**LOD**	**Screening Value**	**Source**								
Bis(2-Chloroethoxy)Methane	mg/kg	0.05										
2,4-Dichlorophenol	mg/kg	0.05	597	AGAC								
1,2,4-Trichlorobenzene	mg/kg	0.05	14900	AGAC								
Naphthalene	mg/kg	0.05	4890	AGAC								
4-Chloroaniline	mg/kg	0.05										
Hexachlorobutadiene	mg/kg	0.05										
4-Chloro-3-Methylphenol	mg/kg	0.05										
2-Methylnaphthalene	mg/kg	0.05										
Hexachlorocyclopentadiene	mg/kg	0.05										
2,4,6-Trichlorophenol	mg/kg	0.05	598	AGAC								
2,4,5-Trichlorophenol	mg/kg	0.05	620	S4UL								
2-Chloronaphthalene	mg/kg	0.05	7490	AGAC								
2-Nitroaniline	mg/kg	0.05										
Acenaphthylene	mg/kg	0.05	14800	AGAC								
Dimethylphthalate	mg/kg	0.05										
2,6-Dinitrotoluene	mg/kg	0.05	251	AGAC								
Acenaphthene	mg/kg	0.05	14800	AGAC								
3-Nitroaniline	mg/kg	0.05										
Dibenzofuran	mg/kg	0.05	7.8	US EPA 2021								
4-Chlorophenylphenylether	mg/kg	0.05										
2,4-Dinitrotoluene	mg/kg	0.05	501	AGAC								
Fluorene	mg/kg	0.05	9870	AGAC								
Diethyl Phthalate	mg/kg	0.05	49400	AGAC								
4-Nitroaniline	mg/kg	0.05										
2-Methyl-4,6-Dinitrophenol	mg/kg	0.05										
Azobenzene	mg/kg	0.05										
4-Bromophenylphenyl Ether	mg/kg	0.05										
Hexachlorobenzene	mg/kg	0.05	15.6	AGAC/S4UL								
Pentachlorophenol	mg/kg	0.05	59.8	AGAC/S4UL								
Phenanthrene	mg/kg	0.05	3070	AGAC								
Anthracene	mg/kg	0.05	74100	AGAC								
Carbazole	mg/kg	0.05										
Di-N-Butyl Phthalate	mg/kg	0.05	1300	AGAC								
Fluoranthene	mg/kg	0.05	3080	AGAC								
Pyrene	mg/kg	0.05	7410	AGAC								
Butylbenzyl Phthalate	mg/kg	0.05	126000	AGAC								
Benzo[a]anthracene	mg/kg	0.05	28.5	AGAC/S4UL								
Chrysene	mg/kg	0.05	57	AGAC								
Bis(2-Ethylhexyl)Phthalate	mg/kg	0.05	9688	AGAC								
Di-N-Octyl Phthalate	mg/kg	0.05	10700	AGAC								
Benzo[b]fluoranthene	mg/kg	0.05	7.23	AGAC/S4UL								
Benzo[k]fluoranthene	mg/kg	0.05	191	AGAC								
Benzo[a]pyrene	mg/kg	0.05	5.74	AGAC/S4UL								
Indeno(1,2,3-c,d)Pyrene	mg/kg	0.05	82	AGAC/S4UL								
Dibenz(a,h)Anthracene	mg/kg	0.05	0.574	AGAC/S4UL								
Benzo[g,h,i]perylene	mg/kg	0.05	637	AGAC								
4-Nitrophenol	mg/kg	0.05										
Pyrethrin												
Naphthalene	mg/kg	0.1	4890	AGAC	1	< 0.10	0	< 0.10	< 0.10	3	1	< 0.10
Acenaphthylene	mg/kg	0.1	14800	AGAC	1	< 0.10	0	< 0.10	< 0.10	0	0	< 0.10
Acenaphthene	mg/kg	0.1	14800	AGAC	< 0.10	< 0.10	0	< 0.10	< 0.10	0	0	< 0.10
Fluorene	mg/kg	0.1	9870	AGAC	0	< 0.10	0	< 0.10	< 0.10	0	0	< 0.10
Phenanthrene	mg/kg	0.1	3070	AGAC	4	1	2	1	< 0.10	3	4	< 0.10
Anthracene	mg/kg	0.1	74100	AGAC	3	0	1	0	< 0.10	1	1	< 0.10
Fluoranthene	mg/kg	0.1	3080	AGAC	9	3	4	1	< 0.10	7	8	1
Pyrene	mg/kg	0.1	28.6	AGAC/S4UL	7	3	4	1	< 0.10	6	7	1
Benzo[a]anthracene	mg/kg	0.1	7410	AGAC	5	2	2	1	< 0.10	4	4	< 0.10
Chrysene	mg/kg	0.1	57.2	AGAC/S4UL	5	2	2	0	< 0.10	4	4	< 0.10
Benzo[b]fluoranthene	mg/kg	0.1	7.23	AGAC/S4UL	5	3	3	1	< 0.10	5	5	< 0.10
Benzo[k]fluoranthene	mg/kg	0.1	191	AGAC	3	1	1	0	< 0.10	2	2	< 0.10
Benzo[a]pyrene	mg/kg	0.1	5.74	AGAC/S4UL	1	2	2	1	< 0.10	4	4	< 0.10
Indeno(1,2,3-c,d)Pyrene	mg/kg	0.1	82	AGAC/S4UL	3	2	1	< 0.10	< 0.10	3	3	< 0.10

				Sample Location:	WS19	WS19	WS20	WS20	WS20	WS21	WS21	WS22
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.5	1.8	0.6	2.45	5.2	0.7	1.2	0.5
				Date Sampled:	15-Oct-2021	29-Sep-2021	29-Sep-2021	30-Sep-2021	30-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021
Determinand	**Units**	**LOD**	**Screening Value**	**Source**								
Dibenz(a,h)Anthracene	mg/kg	0.1	0.574	AGAC/S4UL	7	0	0	< 0.10	< 0.10	1	1	< 0.10
Benzo[g,h,i]perylene	mg/kg	0.1	637	AGAC	2	2	1	< 0.10	< 0.10	3	3	< 0.10
Coronene	mg/kg	0.1			< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	mg/kg	2			55	22	23	6	< 2.0	46	46	2
PCB 28	mg/kg	0.01			< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 52	mg/kg	0.01			< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 90+101	mg/kg	0.01			< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 118	mg/kg	0.01	0.171	Median UK urban background concentration	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 153	mg/kg	0.01			< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 138	mg/kg	0.01			< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 180	mg/kg	0.01	240	SGV	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	mg/kg	0.1			< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Atraton	mg/kg	0.2										
Prometon	mg/kg	0.2										
Simazine	mg/kg	0.2										
Atrazine	mg/kg	0.2	1200	S4UL								
Propazine	mg/kg	0.2										
Terbuthylazine	mg/kg	0.2										
Secbumeton	mg/kg	0.2										
Simetryn	mg/kg	0.2										
Ametryn	mg/kg	0.2										
Prometryn	mg/kg	0.2										
Terbutryn	mg/kg	0.2										
2,4-D	mg/kg	0.5										
Dichlorprop	mg/kg	0.5										
MCPA	mg/kg	0.5										
MCPB	mg/kg	0.5										
Mecoprop	mg/kg	0.5										
2,4,5-T	mg/kg	0.5										
Cyfluthrin	mg/kg	0.5										
Cypermethrin	mg/kg	0.5										
Deltamethrin	mg/kg	0.5										
Permethrin	mg/kg	0.5										
Resmethrin	mg/kg	0.5										
Tetramethrin	mg/kg	0.5										
Carbetamide (Subcon)	mg/kg	0.1										
Chlorbufam (Subcon)	mg/kg	0.1										
Chlorpropham (Subcon)	mg/kg	0.1										
Ethiofencarb (Subcon)	mg/kg	0.1										
Phenmedipham (Subcon)	mg/kg	0.1										
Pirimicarb (Subcon)	mg/kg	0.1										
Propham (Subcon)	mg/kg	0.1										
SVOC TIC	mg/kg	N/A										
(SVOC TIC) Dibenzothiophene	mg/kg	N/A										
VOC TIC	µg/kg	N/A										

				Sample Location:	WS22A
				Sample Type:	SOIL
				Top Depth (m):	1.9
				Date Sampled:	29-Sep-2021
Determinand	**Units**	**LOD**	**Screening Value**	**Source**	
ACM Type		N/A			-
Asbestos Identification		N/A			No Asbestos Detected
Asbestos by Gravimetry	%	0.001			-
Total Asbestos	%	0.001			-
Moisture	%	0.02			14
pH		4			8.6
Arsenic	mg/kg	1	79	C4SL/S4UL	10
Barium	mg/kg	10	1500	US EPA 2021	78
Cadmium	mg/kg	0.1	106	AGAC	0
Molybdenum	mg/kg	2	39	US EPA 2021	< 2.0
Antimony	mg/kg	2	1070	AGAC	< 2.0
Copper	mg/kg	0.5	12000	AGAC/S4UL	57
Mercury	mg/kg	0.1	120	AGAC (inorganic)	0
Nickel	mg/kg	0.5	231	AGAC	26
Lead	mg/kg	0.5	630	C4SL	170
Selenium	mg/kg	0.2	1140	AGAC	0
Zinc	mg/kg	0.5	80500	AGAC	120
Chromium (Trivalent)	mg/kg	1	1539	AGAC	21
Chromium (Hexavalent)	mg/kg	0.5	7.7	AGAC/S4UL	< 0.50
LOI	%	0.1			5
Total Organic Carbon	%	0.2			2
Mineral Oil (TPH Calculation)	mg/kg	10			< 10
Diesel Present					
Total TPH >C6-C40					
Aliphatic TPH >C5-C6	mg/kg	1	575000	AGAC	< 1.0
Aliphatic TPH >C6-C8	mg/kg	1	597000	AGAC	< 1.0
Aliphatic TPH >C8-C10	mg/kg	1	12500	AGAC	< 1.0
Aliphatic TPH >C10-C12	mg/kg	1	12600	AGAC	< 1.0
Aliphatic TPH >C12-C16	mg/kg	1	12600	AGAC	< 1.0
Aliphatic TPH >C16-C21	mg/kg	1	251000	AGAC (Ali >C16-35)	< 1.0
Aliphatic TPH >C21-C35	mg/kg	1	251000	AGAC (Ali >C16-35)	< 1.0
Aliphatic TPH >C35-C44	mg/kg	1	251000	AGAC (Ali >C16-35)	< 1.0
Total Aliphatic Hydrocarbons	mg/kg	5			< 5.0
Aromatic TPH >C5-C7	mg/kg	1	72	AGAC/S4UL (benzene)	< 1.0
Aromatic TPH >C7-C8	mg/kg	1	55800	AGAC (toluene)	< 1.0
Aromatic TPH >C8-C10	mg/kg	1	5020	AGAC	< 1.0
Aromatic TPH >C10-C12	mg/kg	1	5040	AGAC	< 1.0
Aromatic TPH >C12-C16	mg/kg	1	5050	AGAC	< 1.0
Aromatic TPH >C16-C21	mg/kg	1	3770	AGAC	< 1.0
Aromatic TPH >C21-C35	mg/kg	1	3770	AGAC	< 1.0
Aromatic TPH >C35-C44	mg/kg	1	3770	AGAC	< 1.0
Total Aromatic Hydrocarbons	mg/kg	5			< 5.0
Total Petroleum Hydrocarbons	mg/kg	10			< 10
Dichlorodifluoromethane	µg/kg	0.2			< 0.20
Tetraethyl Lead	µg/kg	10			
Tetramethyl Lead	µg/kg	10			
Chloromethane	µg/kg	0.2	543000	AGAC	< 0.20
Vinyl Chloride	µg/kg	0.2	3490	AGAC/S4UL	< 0.20
Bromomethane	µg/kg	0.2			< 0.20
Chloroethane	µg/kg	0.2	601000000	AGAC	< 0.20
Trichlorofluoromethane	µg/kg	0.2			< 0.20
1,1-Dichloroethene	µg/kg	0.2	10200000	AGAC	< 0.20
Trans 1,2-Dichloroethene	µg/kg	0.2	3866000	AGAC	< 0.20
1,1-Dichloroethane	µg/kg	0.2	45900000	AGAC	< 0.20
cis 1,2-Dichloroethene	µg/kg	0.2	1320000	AGAC	< 0.20
Bromochloromethane	µg/kg	0.5			< 0.50
Trichloromethane	µg/kg	0.2			< 0.20
1,1,1-Trichloroethane	µg/kg	0.2	137000000	AGAC	< 0.20
Tetrachloromethane	µg/kg	0.2			< 0.20
1,1-Dichloropropene	µg/kg	0.2			< 0.20
Benzene	µg/kg	0.2	72000	AGAC/S4UL	< 0.20

				Sample Location:	WS22A
				Sample Type:	SOIL
				Top Depth (m):	1.9
				Date Sampled:	29-Sep-2021
Determinand	**Units**	**LOD**	**Screening Value**	**Source**	
Benzene	µg/kg	1	72000	AGAC/S4UL	< 1.0
1,2-Dichloroethane	µg/kg	0.2	28900	AGAC/S4UL	< 0.20
Trichloroethene	µg/kg	0.2	119000	AGAC	< 0.20
1,2-Dichloropropane	µg/kg	0.2	1720000	AGAC	< 0.20
Dibromomethane	µg/kg	0.2			< 0.20
Bromodichloromethane	µg/kg	0.2	72500	AGAC	< 0.20
cis-1,3-Dichloropropene	µg/kg	0.2			< 0.20
Toluene	µg/kg	0.2	55800000	AGAC	< 0.20
Toluene	µg/kg	1	55800000	AGAC	< 1.0
Trans-1,3-Dichloropropene	µg/kg	0.2			< 0.20
1,1,2-Trichloroethane	µg/kg	0.2	985000	AGAC	< 0.20
Tetrachloroethene	µg/kg	0.2	1390000	AGAC	< 0.20
1,3-Dichloropropane	µg/kg	0.2			< 0.20
Dibromochloromethane	µg/kg	0.2			< 0.20
1,2-Dibromoethane	µg/kg	0.2			< 0.20
Chlorobenzene	µg/kg	0.2	11450000	AGAC	< 0.20
1,1,1,2-Tetrachloroethane	µg/kg	0.2	1410000	AGAC	< 0.20
Ethylbenzene	µg/kg	0.2	23900000	AGAC	< 0.20
Ethylbenzene	µg/kg	1	23900000	AGAC	< 1.0
m & p-Xylene	µg/kg	0.2	40700000	AGAC (p-xylene)	< 0.20
m & p-Xylene	µg/kg	1	40700000	AGAC (p-xylene)	< 1.0
o-Xylene	µg/kg	0.2	41000000	AGAC/S4UL	< 0.20
o-Xylene	µg/kg	1	41000000	AGAC/S4UL	< 1.0
Styrene	µg/kg	0.2	3016000	AGAC	< 0.20
Tribromomethane	µg/kg	0.2			< 0.20
Isopropylbenzene	µg/kg	0.2	24500000	AGAC	< 0.20
Bromobenzene	µg/kg	0.2	5217000	AGAC	< 0.20
1,2,3-Trichloropropane	µg/kg	0.2			< 0.20
N-Propylbenzene	µg/kg	0.2	24900000	AGAC	< 0.20
2-Chlorotoluene	µg/kg	0.2			< 0.20
1,3,5-Trimethylbenzene	µg/kg	0.2			< 0.20
4-Chlorotoluene	µg/kg	0.2			< 0.20
Tert-Butylbenzene	µg/kg	0.2			< 0.20
1,2,4-Trimethylbenzene	µg/kg	0.2	248000	AGAC	< 0.20
Sec-Butylbenzene	µg/kg	0.2			< 0.20
1,3-Dichlorobenzene	µg/kg	0.2	247000	AGAC	< 0.20
4-Isopropyltoluene	µg/kg	0.2			< 0.20
1,4-Dichlorobenzene	µg/kg	0.2	17200000	AGAC	< 0.20
N-Butylbenzene	µg/kg	0.2			< 0.20
1,2-Dichlorobenzene	µg/kg	0.2	89000000	AGAC	< 0.20
1,2-Dibromo-3-Chloropropane	µg/kg	0.2			< 0.20
1,2,4-Trichlorobenzene	µg/kg	0.2	14900000	AGAC	< 0.20
Hexachlorobutadiene	µg/kg	0.2	25200	AGAC/S4UL	< 0.20
1,2,3-Trichlorobenzene	µg/kg	0.2	1780000	AGAC	< 0.20
Methyl Tert-Butyl Ether	µg/kg	0.2	74600000	AGAC	< 0.20
Methyl Tert-Butyl Ether	µg/kg	1	74600000	AGAC	< 1.0
N-Nitrosodimethylamine	mg/kg	0.05			< 0.050
Phenol	mg/kg	0.05	440	S4UL (direct contact)	< 0.050
2-Chlorophenol	mg/kg	0.05	597	AGAC	< 0.050
Bis-(2-Chloroethyl)Ether	mg/kg	0.05			< 0.050
1,3-Dichlorobenzene	mg/kg	0.05	247	AGAC	< 0.050
1,4-Dichlorobenzene	mg/kg	0.05	17200	AGAC	< 0.050
1,2-Dichlorobenzene	mg/kg	0.05	89000	AGAC	< 0.050
2-Methylphenol	mg/kg	0.05	25080	AGAC	< 0.050
Bis(2-Chloroisopropyl)Ether	mg/kg	0.05			< 0.050
Hexachloroethane	mg/kg	0.05	124	AGAC	< 0.050
N-Nitrosodi-n-propylamine	mg/kg	0.05			< 0.050
4-Methylphenol	mg/kg	0.05	25080	AGAC	< 0.050
Nitrobenzene	mg/kg	0.05			< 0.050
Isophorone	mg/kg	0.05			< 0.050
2-Nitrophenol	mg/kg	0.05			< 0.050
2,4-Dimethylphenol	mg/kg	0.05	5020	AGAC	< 0.050

				Sample Location:	WS22A
				Sample Type:	SOIL
				Top Depth (m):	1.9
				Date Sampled:	29-Sep-2021
Determinand	**Units**	**LOD**	**Screening Value**	**Source**	
Bis(2-Chloroethoxy)Methane	mg/kg	0.05			< 0.050
2,4-Dichlorophenol	mg/kg	0.05	597	AGAC	< 0.050
1,2,4-Trichlorobenzene	mg/kg	0.05	14900	AGAC	< 0.050
Naphthalene	mg/kg	0.05	4890	AGAC	< 0.050
4-Chloroaniline	mg/kg	0.05			< 0.050
Hexachlorobutadiene	mg/kg	0.05			< 0.050
4-Chloro-3-Methylphenol	mg/kg	0.05			< 0.050
2-Methylnaphthalene	mg/kg	0.05			< 0.050
Hexachlorocyclopentadiene	mg/kg	0.05			< 0.050
2,4,6-Trichlorophenol	mg/kg	0.05	598	AGAC	< 0.050
2,4,5-Trichlorophenol	mg/kg	0.05	620	S4UL	< 0.050
2-Chloronaphthalene	mg/kg	0.05	7490	AGAC	< 0.050
2-Nitroaniline	mg/kg	0.05			< 0.050
Acenaphthylene	mg/kg	0.05	14800	AGAC	< 0.050
Dimethylphthalate	mg/kg	0.05			< 0.050
2,6-Dinitrotoluene	mg/kg	0.05	251	AGAC	< 0.050
Acenaphthene	mg/kg	0.05	14800	AGAC	0.13
3-Nitroaniline	mg/kg	0.05			< 0.050
Dibenzofuran	mg/kg	0.05	7.8	US EPA 2021	< 0.050
4-Chlorophenylphenylether	mg/kg	0.05			< 0.050
2,4-Dinitrotoluene	mg/kg	0.05	501	AGAC	< 0.050
Fluorene	mg/kg	0.05	9870	AGAC	< 0.050
Diethyl Phthalate	mg/kg	0.05	49400	AGAC	< 0.050
4-Nitroaniline	mg/kg	0.05			< 0.050
2-Methyl-4,6-Dinitrophenol	mg/kg	0.05			< 0.050
Azobenzene	mg/kg	0.05			< 0.050
4-Bromophenylphenyl Ether	mg/kg	0.05			< 0.050
Hexachlorobenzene	mg/kg	0.05	15.6	AGAC/S4UL	< 0.050
Pentachlorophenol	mg/kg	0.05	59.8	AGAC/S4UL	< 0.050
Phenanthrene	mg/kg	0.05	3070	AGAC	0.28
Anthracene	mg/kg	0.05	74100	AGAC	0.11
Carbazole	mg/kg	0.05			< 0.050
Di-N-Butyl Phthalate	mg/kg	0.05	1300	AGAC	< 0.050
Fluoranthene	mg/kg	0.05	3080	AGAC	0.60
Pyrene	mg/kg	0.05	7410	AGAC	0.51
Butylbenzyl Phthalate	mg/kg	0.05	126000	AGAC	< 0.050
Benzo[a]anthracene	mg/kg	0.05	28.5	AGAC/S4UL	0.30
Chrysene	mg/kg	0.05	57	AGAC	0.35
Bis(2-Ethylhexyl)Phthalate	mg/kg	0.05	9688	AGAC	< 0.050
Di-N-Octyl Phthalate	mg/kg	0.05	10700	AGAC	< 0.050
Benzo[b]fluoranthene	mg/kg	0.05	7.23	AGAC/S4UL	0.38
Benzo[k]fluoranthene	mg/kg	0.05	191	AGAC	0.13
Benzo[a]pyrene	mg/kg	0.05	5.74	AGAC/S4UL	0.30
Indeno(1,2,3-c,d)Pyrene	mg/kg	0.05	82	AGAC/S4UL	0.31
Dibenz(a,h)Anthracene	mg/kg	0.05	0.574	AGAC/S4UL	< 0.050
Benzo[g,h,i]perylene	mg/kg	0.05	637	AGAC	0.15
4-Nitrophenol	mg/kg	0.05			< 0.050
Pyrethrin					< 0.50
Naphthalene	mg/kg	0.1	4890	AGAC	< 0.10
Acenaphthylene	mg/kg	0.1	14800	AGAC	< 0.10
Acenaphthene	mg/kg	0.1	14800	AGAC	< 0.10
Fluorene	mg/kg	0.1	9870	AGAC	< 0.10
Phenanthrene	mg/kg	0.1	3070	AGAC	< 0.10
Anthracene	mg/kg	0.1	74100	AGAC	< 0.10
Fluoranthene	mg/kg	0.1	3080	AGAC	0.57
Pyrene	mg/kg	0.1	28.6	AGAC/S4UL	0.53
Benzo[a]anthracene	mg/kg	0.1	7410	AGAC	0.26
Chrysene	mg/kg	0.1	57.2	AGAC/S4UL	0.32
Benzo[b]fluoranthene	mg/kg	0.1	7.23	AGAC/S4UL	< 0.10
Benzo[k]fluoranthene	mg/kg	0.1	191	AGAC	< 0.10
Benzo[a]pyrene	mg/kg	0.1	5.74	AGAC/S4UL	< 0.10
Indeno(1,2,3-c,d)Pyrene	mg/kg	0.1	82	AGAC/S4UL	< 0.10

				Sample Location:	WS22A
				Sample Type:	SOIL
				Top Depth (m):	1.9
				Date Sampled:	29-Sep-2021
Determinand	**Units**	**LOD**	**Screening Value**	**Source**	
Dibenz(a,h)Anthracene	mg/kg	0.1	0.574	AGAC/S4UL	< 0.10
Benzo[g,h,i]perylene	mg/kg	0.1	637	AGAC	< 0.10
Coronene	mg/kg	0.1			< 0.10
Total Of 17 PAH's	mg/kg	2			< 2.0
PCB 28	mg/kg	0.01			< 0.010
PCB 52	mg/kg	0.01			< 0.010
PCB 90+101	mg/kg	0.01			< 0.010
PCB 118	mg/kg	0.01	0.171	Median UK urban background concentration	< 0.010
PCB 153	mg/kg	0.01			< 0.010
PCB 138	mg/kg	0.01			< 0.010
PCB 180	mg/kg	0.01	240	SGV	< 0.010
Total PCBs (7 Congeners)	mg/kg	0.1			< 0.10
Atraton	mg/kg	0.2			< 0.20
Prometon	mg/kg	0.2			< 0.20
Simazine	mg/kg	0.2			< 0.20
Atrazine	mg/kg	0.2	1200	S4UL	< 0.20
Propazine	mg/kg	0.2			< 0.20
Terbuthylazine	mg/kg	0.2			< 0.20
Secbumeton	mg/kg	0.2			< 0.20
Simetryn	mg/kg	0.2			< 0.20
Ametryn	mg/kg	0.2			< 0.20
Prometryn	mg/kg	0.2			< 0.20
Terbutryn	mg/kg	0.2			< 0.20
2,4-D	mg/kg	0.5			< 0.50
Dichlorprop	mg/kg	0.5			< 0.50
MCPA	mg/kg	0.5			< 0.50
MCPB	mg/kg	0.5			< 0.50
Mecoprop	mg/kg	0.5			< 0.50
2,4,5-T	mg/kg	0.5			< 0.50
Cyfluthrin	mg/kg	0.5			< 0.50
Cypermethrin	mg/kg	0.5			< 0.50
Deltamethrin	mg/kg	0.5			< 0.50
Permethrin	mg/kg	0.5			< 0.50
Resmethrin	mg/kg	0.5			< 0.50
Tetramethrin	mg/kg	0.5			< 0.50
Carbetamide (Subcon)	mg/kg	0.1			< 0.1000
Chlorbufam (Subcon)	mg/kg	0.1			< 0.1000
Chlorpropham (Subcon)	mg/kg	0.1			< 0.1000
Ethiofencarb (Subcon)	mg/kg	0.1			< 0.1000
Phenmedipham (Subcon)	mg/kg	0.1			< 0.1000
Pirimicarb (Subcon)	mg/kg	0.1			< 0.1000
Propham (Subcon)	mg/kg	0.1			< 0.1000
SVOC TIC	mg/kg	N/A			None Detected
(SVOC TIC) Dibenzothiophene	mg/kg	N/A			
VOC TIC	µg/kg	N/A			None Detected

Appendix 13.5

Gas Monitoring

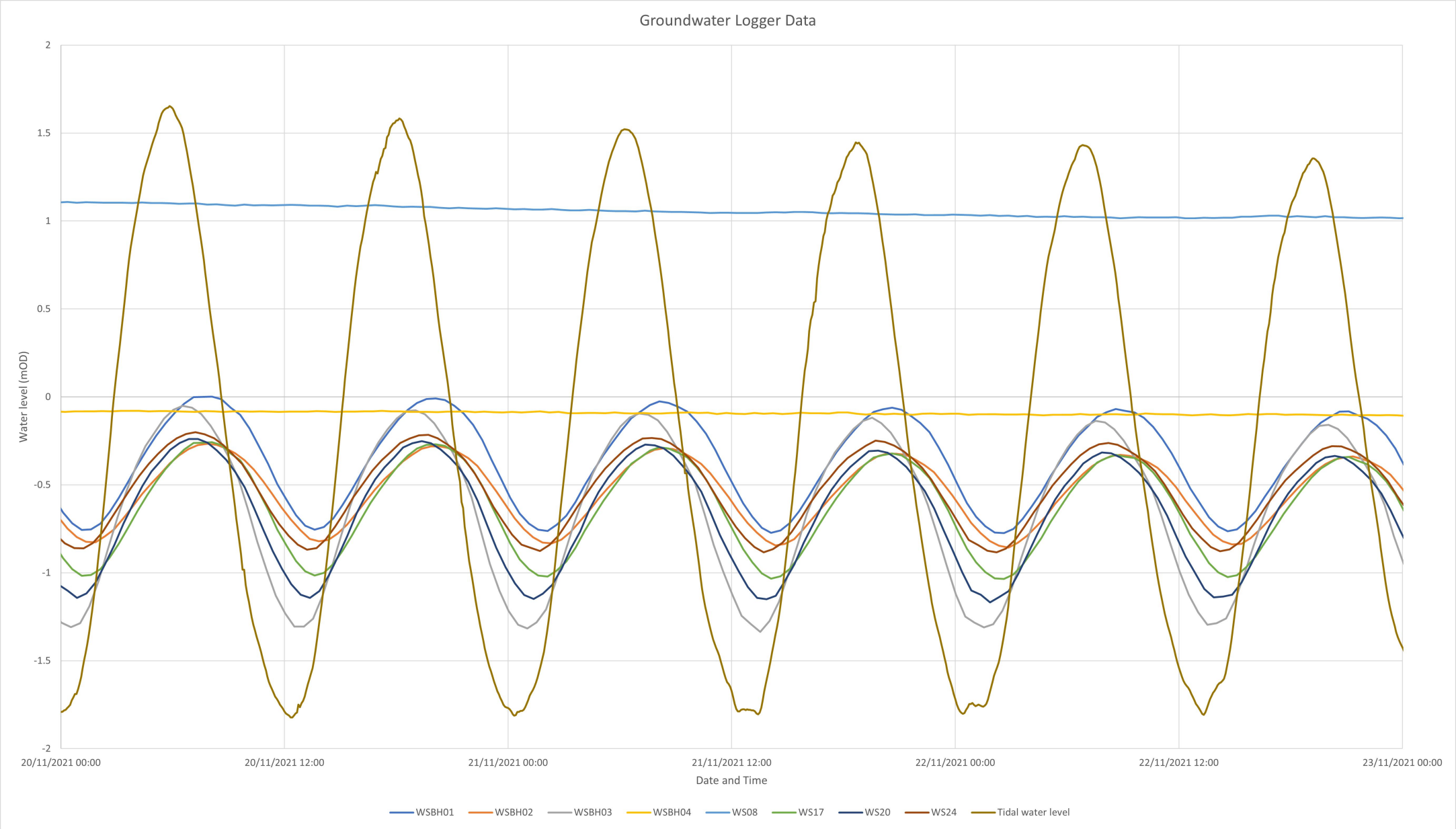
Gas Monitoring

Borehole	Flow	CH4	CO2	O2	Balance	CO	H2S	CH4 lel	CH4 peak	Baro pressure	Relative pressure
04/11/2021											
WS02	0.00 l/h	0%	0%	21.30%	78.50%	0ppm	0ppm	1%	0%	1026 mb	-0.16
WSBH05	0.2 l/h	0%	0.10%	20.90%	78.90%	0ppm	0ppm	1%	0%	1026 mb	-0.09
WS20	0.1 l/h	0%	2%	17.60%	80.50%	0ppm	0ppm	1%	0%	1026 mb	0.26
WSBH04	0.0 l/h	0%	0.20%	20.00%	79.70%	0ppm	0ppm	1%	0%	1027 mb	-0.07
WS15	0.0 l/h	0.1%	0.10%	20%	79.60%	0ppm	0ppm	1%	0.10%	1027 mb	-0.07
WS23	0.0 l/h	0.1%	0.10%	19.90%	79.90%	3ppm	0ppm	1%	0%	1027 mb	-0.02
WSBH07	0.0 l/h	0.1%	0.10%	20%	80.00%	2ppm	0ppm	1%	0.10%	1027 mb	-0.13
WS08	1.9 l/h	0%	0.10%	18.60%	81.30%	0ppm	0ppm	1%	0%	1027 mb	-10.49
WS10	0.3 l/h	0.1	0.1	19.5	80.3	0ppm	0ppm	1	0.1	1027 mb	3.44
08/12/2021											
WS02	0.00 l/h	0%	0%	19.10%	80.80%	0ppm	0ppm	1%	0%	999 mb	0.04
WSBH05	0.0 l/h	0%	0.10%	19.70%	80.10%	0ppm	0ppm	1%	0%	999 mb	0.04
WS20	0.0 l/h	0%	0%	20.10%	79.70%	0ppm	0ppm	1%	0%	999 mb	3.64
WSBH04	0.0 l/h	0%	0.10%	20.60%	79.20%	0ppm	0ppm	1%	0%	999 mb	4.2
WS15	0.1 l/h	0.10%	0.10%	21%	79.20%	0ppm	0ppm	1%	0.10%	999 mb	4.2
WS23	0.0 l/h	0.10%	0.20%	19.70%	80.10%	1ppm	0ppm	1%	0%	1000 mb	0.01
WSBH07	0.0 l/h	0.10%	0.10%	20%	79.70%	0ppm	0ppm	1%	0.10%	1000mb	-0.16
WS08	0.0 l/h	0%	0.10%	20.30%	79.50%	0ppm	0ppm	1%	0%	999 mb	4.2
WS10	0.0l l/h	0.1	0.1	20.1	79.7	0ppm	0ppm	1	0.1	999 mb	4.2
17/12/2021											
WS02	-5.9	0.10%	0.10%	20.80%	79%	0 ppm	0 ppm	1%	0.10%	1040 mb	0.02
WSBH05	0.00 l/h	0.10%	0.10%	20.70%	79.10%	0ppm	0ppm	1%	0.10%	1040 mb	0.02
WS20	0.2 l/h	0.10%	0.10%	20.90%	78.90%	0ppm	0ppm	1%	0.10%	1040 mb	-0.02
WSBH04	0.0 l/h	0.10%	0.60%	16.60%	82.70%	0ppm	0ppm	1%	0.10%	1041 mb	-0.01
WS15	0.1 l/h	0.10%	0.60%	20.20%	79.00%	0ppm	0ppm	1%	0.10%	1040 mb	0.02
WS23	0.1 l/h	0.10%	0.60%	19.10%	80.20%	0ppm	0ppm	1%	0.10%	1041 mb	-0.05
WSBH07	0.0 l/h	0.10%	0.10%	20.40%	79.40%	0ppm	0ppm	1%	0.10%	1041 mb	-0.02
WS08	0.2 l/h	0.10%	0.10%	20.80%	79.00%	0ppm	0ppm	1%	0.10%	1041 mb	0.01
WS10	0.2l/h	0.10%	0.10%	20.50%	79.40%	0ppm	0ppm	1%	0.10%	1041 mb	0

Appendix 13.6

Hydrograph

Hydrograph

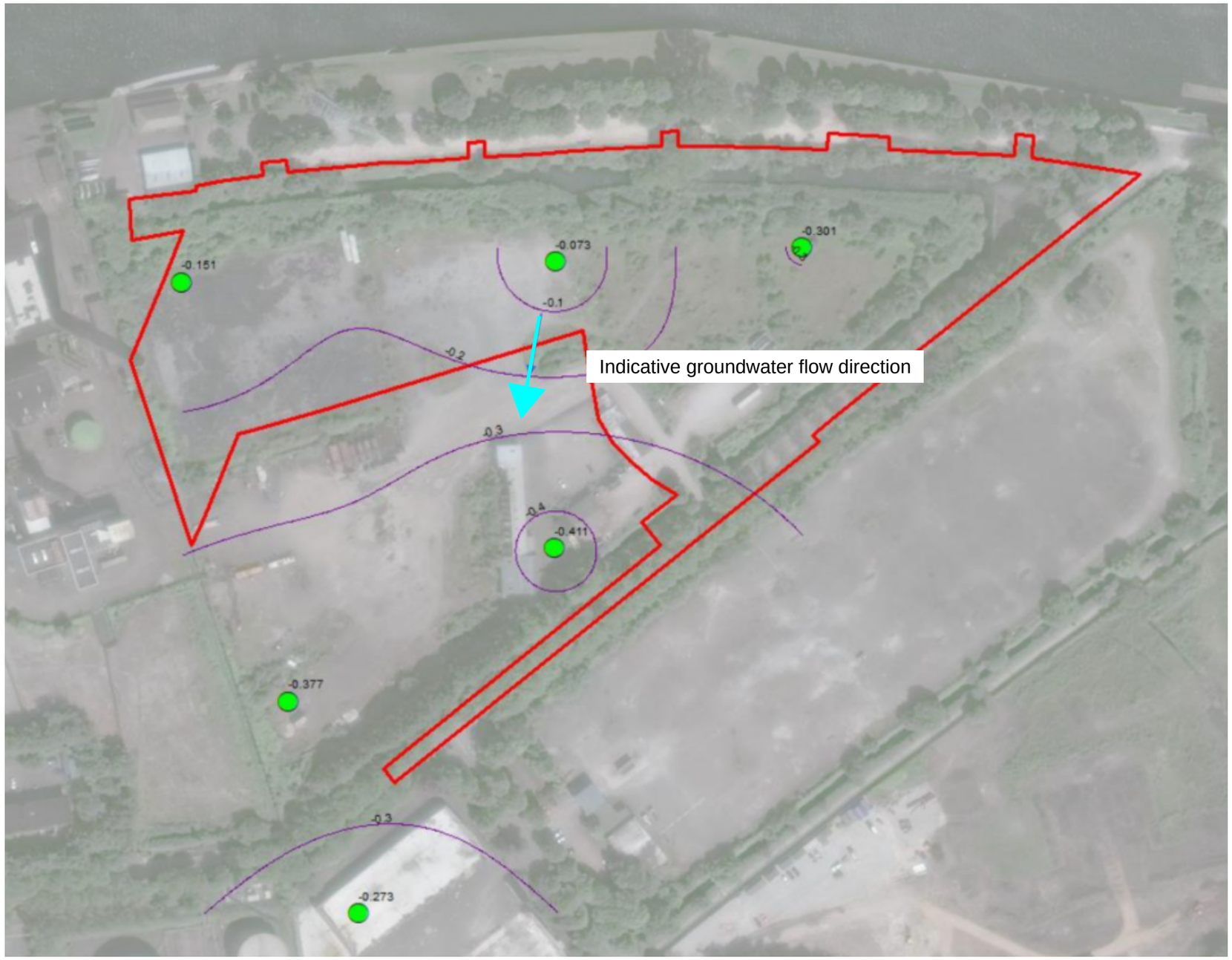

Groundwater Logger Data
Water level (mOD)
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
20/11/2021 00:00
20/11/2021 12:00
21/11/2021 00:00
21/11/2021 12:00
22/11/2021 00:00
22/11/2021 12:00
23/11/2021 00:00
Date and Time
WSBH01
WSBH02
WSBH03
WSBH04
WS08
WS17
WS20
WS24
Tidal water level

Appendix 13.7

Ground Water Contour Map

Ground Water Contour Map

A3



Indicative site boundary

Water monitoring locations

- Made ground
- Gravel

Copyright statements

Issue	Date	By	Chkd	Appd
	25.3.22	LC	CN	

ARUP

50 Ringsend Road
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Client: Tiznow Property Company Limited (Comer Group Ireland)

Job Title: City Parks Development at the Former Tedcastles Site Environmental Impact Assessment Report

Groundwater contours in the Lee Valley Gravel (high tide)

Scale at A3

Job No

Drawing Status

Drawing No

Issue

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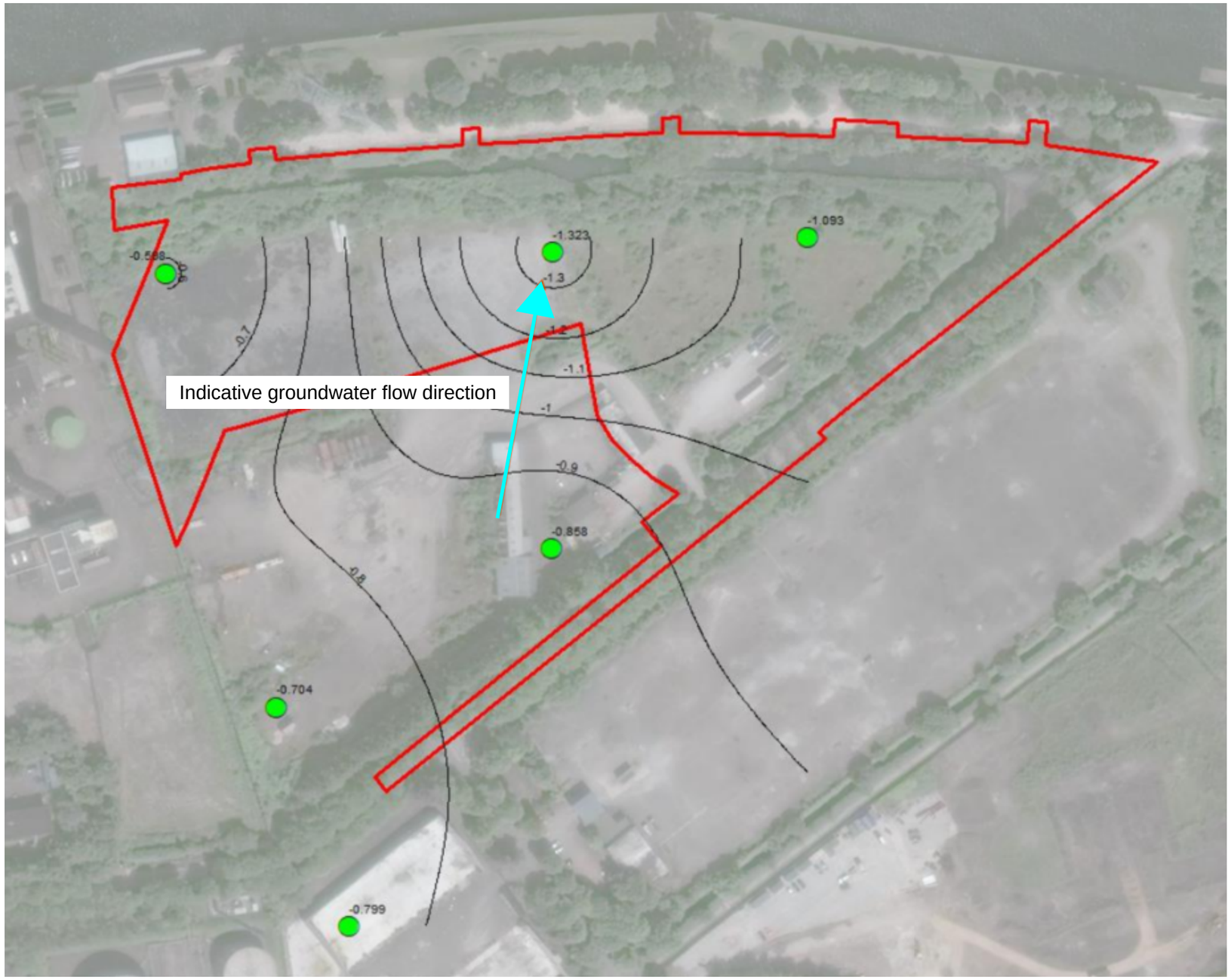
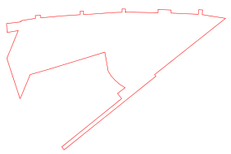
A3





Indicative site boundary

Water monitoring locations

- Made ground
- Gravel

Copyright statements

Issue	Date	By	Chkd	Appd
	25.3.22	LC	CN	

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Groundwater contours in the Lee Valley Gravel (low tide)

Scale at A3

Job No

Drawing Status

Drawing No

Issue

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Appendix 13.8

Ground Water GQRA

Ground Water GQRA

Sample Location					WSBH04	WSBH04	WSBH04	WSBH05	WSBH05	WS02	WS02	WS15	WS15	WS15	WS22
Date Sampled					08-Nov-2021	22-Nov-2021	24-Jan-2022	08-Nov-2021	22-Nov-2021	08-Nov-2021	22-Nov-2021	08-Nov-2021	22-Nov-2021	24-Jan-2022	08-Nov-2021
Installation Monitoring					Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground
Determinand	Groundwater Screening Standards Combination - Unit convert to Screen data	Screening Units	Units	LOD											
pH	>6.5 and <9.5			N/A	8	9	7	8	8	8	8	8	8	8	8
Electrical Conductivity	1000	µS/cm	µS/cm	1	860	870	830	810	820	2100	1600	1100	1300	1300	6700
Total Dissolved Solids	1000	mg/l	mg/l	1	560	570	540	530	530	1400	1000	720	860	830	4400
Redox Potential	nv	nv	mV	N/A	74	120	97	83	130	67	190	83	150	94	97
Alkalinity (Total)	No abnormal change	nv	mg/l	10	510	480	480	450	1900	230	210	430	380	470	430
Chloride	187.5	mg/l	mg/l	1	38	31	26	14	2400	17	25	17	16	23	49
Ammoniacal Nitrogen	0.065	mg/l	mg/l	0.05	1	1	1	0	7	2	1	2	4	1	2
Phosphate	nv	nv	mg/l	0.2	0	0	< 0.20	< 0.20	14	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Sulphate	187.5	mg/l	mg/l	1	49	51	55	58	< 1.0	1300	680	300	480	490	52
Total Calcium	200	mg/l	mg/l	5	110	120	120	150	110	520	330	220	270	280	110
Total Potassium	5.0	mg/l	mg/l	0.5	12	12	8	7	41	6	4	16	17	13	5
Total Magnesium	50	mg/l	mg/l	0.5	19	21	15	8	130	20	17	18	20	18	9
Total Sodium	150	mg/l	mg/l	0.5	51	36	17	15	1800	15	12	15	24	15	14
Barium (Dissolved)	100	µg/l	µg/l	5	120	120	95	96	55	76	50	91	130	71	110
Cadmium (Dissolved)	0.25	µg/l	µg/l	0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11
Iron (Dissolved)	200	µg/l	µg/l	5	26	7	9	12	1300	300	270	33	17	18	15
Manganese (Dissolved)	50	µg/l	µg/l	0.5	1000	1300	700	1300	360	3600	1700	2400	2300	2700	1300
Nickel (Dissolved)	15	µg/l	µg/l	0.5	8	7	4	7	4	10	6	5	10	5	14
Zinc (Dissolved)	75	µg/l	µg/l	2.5	28	19	18	5	< 2.5	5	< 2.5	16	29	110	4
Chromium (Trivalent)	0.0375	mg/l	mg/l	0.02	< 0.020	< 0.020	< 0.020	< 0.020	14	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
PFAS	0.65	ng/l													
Aliphatic TPH >C16-C21	7.5	µg/l	µg/l	0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	7.5	µg/l	µg/l	0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Trichloromethane	12	µg/l	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	500	µg/l	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Sample Location				WSBH01	WSBH01	WSBH01	WSBH03	WSBH03	WSBH03	WS20	WS20	WS20
Date Sampled				08-Nov-2021	23-Nov-2021	24-Jan-2022	08-Nov-2021	23-Nov-2021	24-Jan-2022	08-Nov-2021	22-Nov-2021	24-Jan-2022
Installation Monitoring				Gravel	Gravel	Gravel	Gravel	Gravel	Gravel	Gravel	Gravel	Gravel
Groundwater Screening Standards Combination - Unit convert to Screen data	Screening Units	Units	LOD									
>6.5 and <9.5			N/A	9	9	9	8	9	8	8	9	8
1000	µS/cm	µS/cm	1	1200	990	1000	4100	4100	4100	8600	8900	5400
1000	mg/l	mg/l	1	780	640	670	2700	2700	2600	5600	5800	3500
nv	nv	mV	N/A	120	150	110	50	130	96	65	95	94
No abnormal change	nv	mg/l	10	500	390	430	1800	1300	1400	1900	1700	1100
187.5	mg/l	mg/l	1	92	94	88	850	820	1100	2800	2300	1600
0.065	mg/l	mg/l	0.05	1	3	4	0	4	5	3	7	0
nv	nv	mg/l	0.2	1	1	1	10	9	11	14	12	4
187.5	mg/l	mg/l	1	62	50	53	22	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
200	mg/l	mg/l	5	15	17	15	72	61	85	93	100	64
5.0	mg/l	mg/l	0.5	15	15	13	33	28	37	36	41	24
50	mg/l	mg/l	0.5	25	28	29	69	62	86	110	120	67
150	mg/l	mg/l	0.5	150	150	120	750	710	840	1600	1800	1000
100	µg/l	µg/l	5	77	84	53	18	22	20	55	63	47
0.25	µg/l	µg/l	0.11	< 0.11	< 0.11	< 0.11	< 0.11	0	< 0.11	< 0.11	< 0.11	< 0.11
200	µg/l	µg/l	5	9	8	< 5.0	370	870	170	1900	1200	740
50	µg/l	µg/l	0.5	57	48	72	160	160	170	300	340	210
15	µg/l	µg/l	0.5	3	2	3	2	5	4	4	7	23
75	µg/l	µg/l	2.5	4	< 2.5	10	6	16	31	72	< 2.5	21
0.0375	mg/l	mg/l	0.02	8	7	< 0.020	15	12	3	12	13	3
0.65	ng/l											
7.5	µg/l	µg/l	0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
7.5	µg/l	µg/l	0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
12	µg/l	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
500	µg/l	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Sample Location				SW03	SW03	SW03	SW05	SW05	SW05	SW06	SW06	SW06	SW01	SW01	SW01	SW02	SW02	SW02
Date Sampled				09-Nov-2021	21-Nov-2021	25-Jan-2022	09-Nov-2021	22-Nov-2021	24-Jan-2022	09-Nov-2021	21-Nov-2021	25-Jan-2022	09-Nov-2021	22-Nov-2021	25-Jan-2022	09-Nov-2021	21-Nov-2021	25-Jan-2022
Installation Monitoring				Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Groundwater Screening Standards Combination - Unit convert to Screen data	Screening Units	Units	LOD															
>6.5 and <9.5			N/A	7	8	8	7	8	7	8	9	8	8	8	7	8	8	8
1000	µS/cm	µS/cm	1	40000	40000	40000	37000	36000	1900	8200	8500	7100	11000	10000	4200	7000	9600	4600
1000	mg/l	mg/l	1	26000	26000	26000	24000	23000	1200	5300	5500	4600	7200	6500	2700	4600	6200	3000
nv	nv	mV	N/A	26	240	210	33	120	120	72	220	210	2	130	170	25	240	170
No abnormal change	nv	mg/l	10	68	93	55	83	120	210	160	200	170	67	89	56	68	80	51
187.5	mg/l	mg/l	1	15000	17000	17000	14000	12000	7000	2300	2600	2300	2900	2900	1300	2100	3400	1500
0.065	mg/l	mg/l	0.05	1	1	1	1	1	2	5	3	11	0	1	0	0	0	0
nv	nv	mg/l	0.2	< 0.20	0	< 0.20	0	1	1	2	1	3	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
187.5	mg/l	mg/l	1	2100	2300	2200	1900	1800	940	380	470	360	410	420	180	300	470	210
200	mg/l	mg/l	5	340	350	320	310	260	200	140	140	120	73	83	47	61	87	48
5.0	mg/l	mg/l	0.5	300	310	290	280	230	120	57	61	57	53	61	25	42	63	28
50	mg/l	mg/l	0.5	980	980	930	890	730	380	160	170	150	170	200	82	140	210	91
150	mg/l	mg/l	0.5	8800	8800	7500	7300	6900	3800	1300	1500	1200	1400	1700	620	1100	1800	750
100	µg/l	µg/l	5	9	19	100	30	45	160	57	65	130	16	13	98	15	14	110
0.25	µg/l	µg/l	0.11	< 0.11	0	0	0	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	0	< 0.11	< 0.11	0
200	µg/l	µg/l	5	8	< 5.0	< 5.0	34	6	24	< 5.0	23	12	53	29	45	61	34	32
50	µg/l	µg/l	0.5	63	17	45	68	71	180	170	190	160	80	33	48	72	41	45
15	µg/l	µg/l	0.5	1	< 0.50	< 0.50	1	1	2	4	< 0.50	2	1	< 0.50	< 0.50	1	< 0.50	< 0.50
75	µg/l	µg/l	2.5	6	37	< 2.5	49	15	19	3	35	16	7	< 2.5	18	4	3	< 2.5
0.0375	mg/l	mg/l	0.02	< 0.020	5	15	8	4	1	4	< 0.020	18	8	7	9	7	7	7
0.65	ng/l					Not Detected			Detected									
7.5	µg/l	µg/l	0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
7.5	µg/l	µg/l	0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
12	µg/l	µg/l	1	< 5	< 1.0	< 1.0	< 5	< 1.0	< 1.0	< 5	< 1.0	9	< 5	< 1.0	< 1.0	< 5	< 1.0	< 1.0
500	µg/l	µg/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Appendix 13.9

Contaminated Land Remediation Strategy

Contaminated Land Remediation Strategy

ARUP

Tiznow Property Company Limited (Comer Group Ireland)

City Park Development at the Former Tedcastles Site

Contaminated Land Remediation Strategy

Reference: 267365-ARUP-XX-XX-RP-YE-0011

P02 | 28 March 2022

This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 267365-00

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Document Verification

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Document title	Contaminated Land Remediation Strategy
Job number	267365-00
Document ref	267365-ARUP-XX-XX-RP-YE-0011
File reference	P02

Revision	**Date**	**Filename**	267365-ARUP-XX-XX-RP-YE-0011.docx		
P01	15 Mar 2022	**Description**	S2 - Suitable for information - Draft Planning Issue		
			Prepared by	**Checked by**	**Approved by**
		Name	Lindsay Connolly	Christopher Newton	John Hynes
		Signature	L.Connolly	C.N	John Hynes
P02	28 Mar 2022	**Filename**	267365-ARUP-XX-XX-RP-YE-0011.docx		
		Description	S2 - Suitable for information - Planning Issue		
			Prepared by	**Checked by**	**Approved by**
		Name	Lindsay Connolly	Christopher Newton	John Hynes
		Signature	L.Connolly	C.N	John Hynes
		Filename			
		Description			
			Prepared by	**Checked by**	**Approved by**
		Name			
		Signature			

Issue Document Verification with Document ✓

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Figure 1: Ground Investigation of the Former Tedcastles Site, highlighted in red. 2

Figure 2: Soil plan for the Former Tedcastles Site from 0mbgl to 1mbgl. *Red line boundary to be updated* 4

Figure 3: Soil plan for the Former Tedcastles Site from 1mbgl to 2mbgl. *Red line boundary to be updated* 5

1. Introduction

Arup were commissioned to design and interpret a Ground Investigation (GI) to review the potential for contamination at the Former Tedcastles Site for the project called the City Park Development, hereafter referred to as the Former Tedcastles Site. This report presents a summary of the findings and highlights the proposed remedial strategy and method statement for the management of contaminated soils.

This report supplements the planning application for planning permission for a Strategic Housing Development (SHD) and has been prepared alongside the Construction Environmental Management Plan (CEMP) (267365-ARUP-XX-XX-RP-YE-0008).

1.1 Purpose

In the CEMP it was highlighted that contaminated soils are present on site. This Remedial Strategy provides a method statement for their management and remediation as part of the proposed application.

This remedial strategy considers impacts on human health, groundwater, the nearby open channels and the River Lee.

1.2 Structure

A summary of the proposed development, ground conditions and contamination found are presented in the CEMP. These are reproduced in Sections 2 and 3 of this Remedial Strategy so that the reader has all the information in one document. The contaminated soil remedial strategy is presented in Section 4 of this report and a short conclusion in Section 5.

No ground investigation or detailed assessment of the contamination are presented in this report.

2. Proposed Development

The Developer intends to apply to An Bord Pleanála (the Board) for consent for a Strategic Housing Development (SHD) with a total application area of c. 4.86ha on lands located on the Former Tedcastles Site at Centre Park Road, in Cork City. The area is considered to be a brownfield site with a number of pre-existing structures on the site which have been partially demolished.

A detailed description of the proposed development and construction strategy is presented in the CEMP and planning application documents. A summary of the earthworks that could interact with potential contamination is presented below.

2.1 Construction Phase

The proposed development is anticipated to be constructed from East to West in 4 phases, with a number of sequential subphases in each, preceded by a Mobilisation and Enabling Works Phase.

During the Mobilisation and Enabling Works, site level shall be lowered to approximately -1.30mOD. This will require the excavation of approximately 73,022m^3 soil and hardstanding. Excavation will remove made ground, some silts and potentially some sand/gravels (a summary of the ground conditions is presented in Section 3.). The excavation will require a temporary dewatering strategy.

Once the foundations are constructed fill materials will be required to build up the site to the required levels, in addition, further fill will be required for under hard and soft landscaping areas.

2.2 Operational Phase

The development will consist of:

- The construction of a strategic housing development of 823 no. apartments, resident amenity and ancillary commercial areas including childcare facilities.
- The development will comprise 6 no. buildings ranging in height from part 1 no. to part 35 no. storeys over lower ground floor level.
- The proposed development also comprises hard and soft landscaping, pedestrian bridges, car parking, bicycle stores and shelters, bin stores, ESB substations, plant rooms and all ancillary site development works.
- Vehicular access to the proposed development will be provided via Centre Park Road.

3. Ground Investigation

A geo-environmental ground investigation (GI) was carried out between September 2021 to January 2022 across a series of properties in the Cork Docklands under the ownership of the applicant. This included the Former Tedcastles Site, the subject of this report (Figure 1). The ground investigation was carried out in accordance Irish and International good practice.

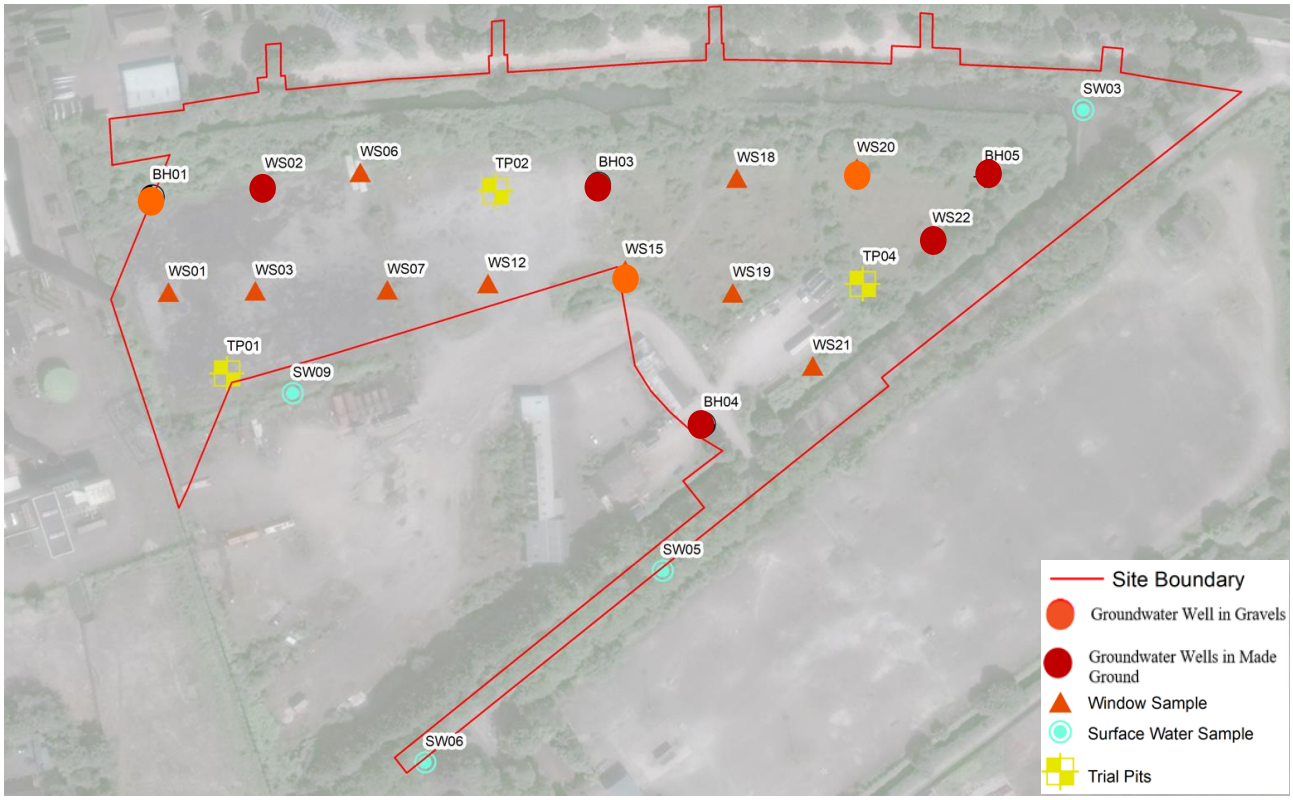

Figure 1: Ground Investigation of the Former Tedcastles Site, highlighted in red.

The Former Tedcastles Site is located to the north of Centre Park Road and to the south of the Marina, shown in Figure 1 by the red line boundary. During the GI a number of Trial Pits (TP), Window Samples (WS), Boreholes (BH) and groundwater well installations were carried out across the site (Figure 1). The

investigation was undertaken to examine the ground conditions and take geo-environmental samples of the soil and water to determine their waste classification and any risk to human health and the environment.

The existing topography of the site is slightly sloped with levels generally decreasing in elevation from approximately +5.3mOD at the northern boundary to +0.2mOD at the southern boundary.

3.1 Stratigraphy

The ground investigation for the site has found in general that the site stratigraphy is as follows:

- Made ground (comprising of sandy gravelly silt / silty sandy gravel with cobbles and boulders and typically 10% to 20% anthropogenic materials including brick, concrete blocks, pieces of glass and ceramics) from approximately 2.01 metres above Ordnance Datum, (mOD) up to -1.1mOD,
- Silt (reclaimed and natural) from approximately 0.36mOD up to a depth of -2.19mOD.
- Sand/Gravel from -2.19mOD and extending for several 10's of metres under the site.

3.2 Sample strategy

During the Ground Investigation, soil samples were collected from the trial pits and window samples. The soil samples were taken at 50m spacing, as required for an exploratory investigation according to BS 10175:2011+A2:2017, 'Investigation of potentially contaminated sites'.

The soil samples were taken at varying depths between the surface and 0.5 meters below ground level (mbgl). Subsequent samples were taken at approximately 1.0m intervals and where colour, odour or consistency indicate a change in the nature of the soil.

Groundwater samples were taken from wells with a response zone in the made ground and a response zone in the gravels. Surface water samples were taken from drainage ditches near the site and the River Lee, approximately 60m north of the site.

Ground gas measurements for carbon dioxide, methane and oxygen were collected from standpipes installed in the made ground on three occasions.

3.3 Contamination Assessment

3.3.1 Soil assessment

The soil samples were compared against Generic Assessment Criteria (GAC) for human health relevant to a '*public open space with residential land use*', based on the English Environment Agency CLEA model. This is equivalent to the most conservative proposed use of the site which includes communal spaces. The soil samples exceeded the GAC for the following:

- Metals (Arsenic, molybdenum and nickel) were above the screening limit in WSBH01 at 0.7mbgl.
- Lead was above the screening limit in WS01 at 0.9mbgl and WSBH01 at 0.7mbgl.
- Benzo[b]fluoranthene and Benzo[a]pyrene were above the screening limit in TP01 at 1.4mbgl, and TP04 at 0.5mbgl and 1.4mbgl.
- Dibenz(a,h)Anthracene was above the screening limit in WSBH03 at 1.4mbgl, TP01 at 1.4mbgl, TP04 at 0.5mbgl and 1.4mbgl, WS02 at 0.2mbgl and 0.8mbgl, WS03 at 0.5mbgl, WS06 at 0.4mbgl, WS18 at 0.2mbgl and 1.8mbgl, WS19 at 0.5mbgl and WS21 at 0.7mbgl and 1.2mbgl.
- Asbestos was detected in TP01 at 1.4mbgl, TP02 at 0.5 mbgl, TP04 at 1.4mbgl, WS02 at 0.2 and 0.8mbgl, WS19 at 0.5mbgl and WS21 at 0.7 and 1.2mbgl. Ranging from 0.001% to 0.05% of amosite and chrysotile.

The following soil samples did not exceed the human health assessment criteria but were recorded above their detection limit:

- 1,3,5-Trimethylbenzene was above the detection limit (DL) in WSBH05 at 1.1mbgl and TP04 at 1.4mbgl.

- 4-Chlorotoluene, Tert-Butylbenzene, and N-Butylbenzene was above the DL in WSBH04 at 0.6mbgl.
- Sec-Butylbenzene was above the DL in WSBH04 at 0.6mbgl and WSBH05 at 1.1mbgl.
- 4-Isopropyltoluene was above the DL in WSBH04 at 0.6mbgl and WS02 at 0.8mbgl.
- 1,2-Dibromo-3-Chloropropane was above the DL in WSBH05 at 1.1mbgl
- 2-Methylnaphthalene was above the DL in WSBH05 at 1.1mbgl, TP04 at 0.5mbgl and 1.4mbgl, and WS02 at 0.8mbgl.
- Carbazole was above the DL in WSBH03 at 1.4mbgl, WSBH04 at 0.6mbgl, WSBH05 at 1.1mbgl, TP01 at 1.4mbgl, TP04 at 0.5mbgl and 1.4mbgl, and WS02 at 0.2mbgl and 0.8mbgl.
- (SVOC TIC) Dibenzothiophene was detected in TP01 at 1.4mbgl and WS02 at 0.8mbgl.

Soil plans were compiled for the Former Tedcastles Site highlighting the contaminants of concern, with results recorded in concentrations over their soil screening limit (SSL). The plans show the contaminant exceedances from 0mbgl to 1mbgl (Figure 2) and 1mbgl to 2mbgl (Figure 3). Below 2mbgl, no exceedances of the human health criteria were noted.

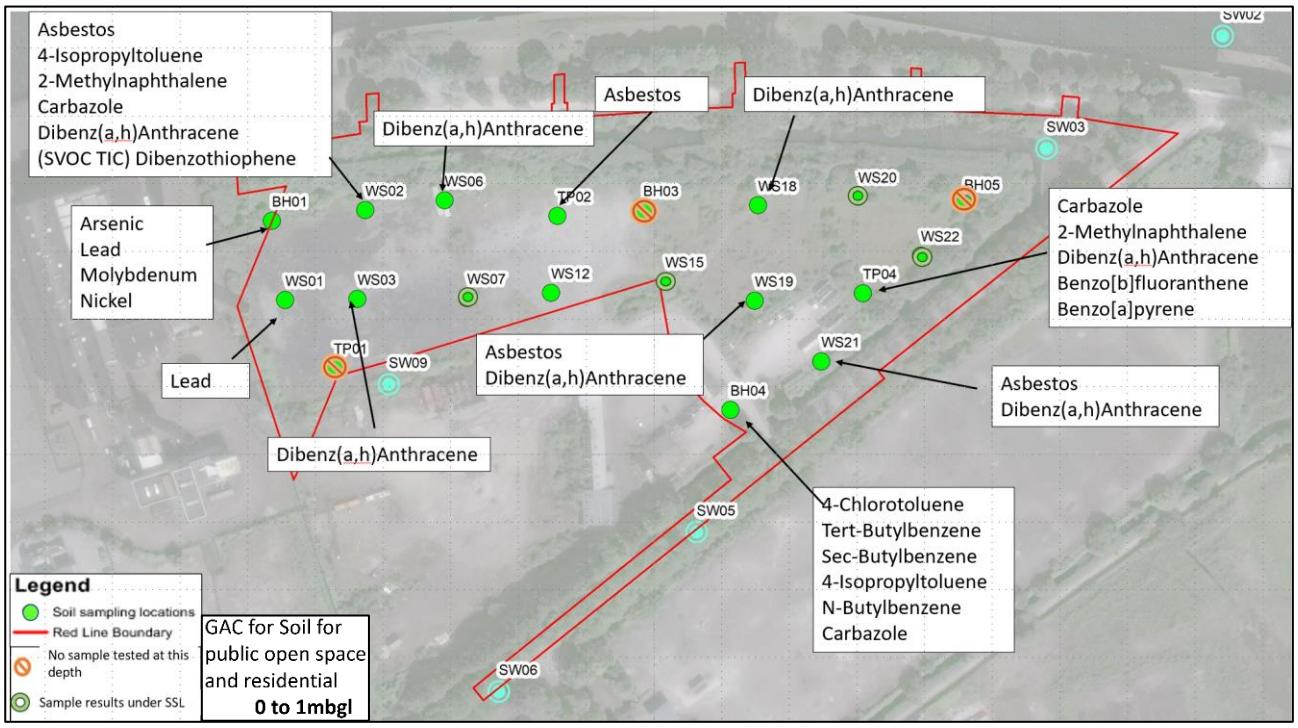

Figure 2: Soil plan for the Former Tedcastles Site from 0mbgl to 1mbgl. ***Red line boundary to be updated***

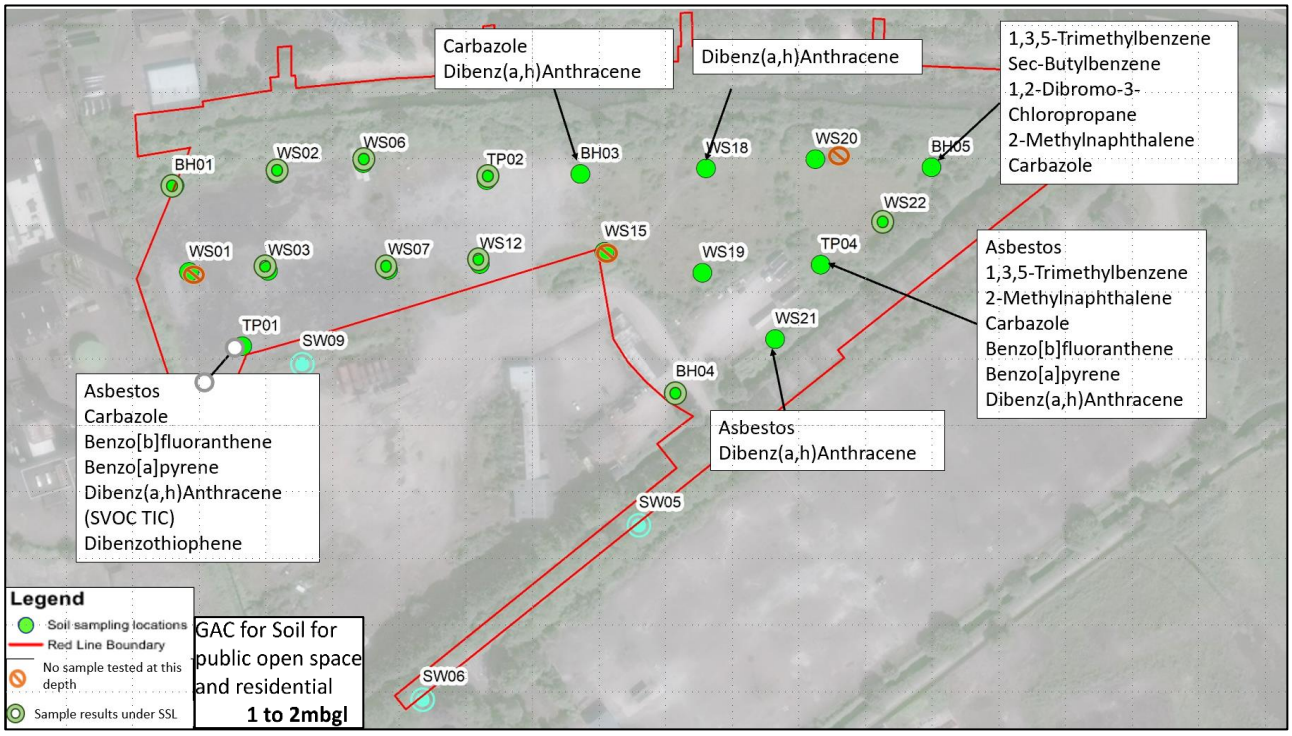

Figure 3: Soil plan for the Former Tedcastles Site from 1mbgl to 2mbgl. ***Red line boundary to be updated***

3.3.2 Water assessment

Water samples from the made ground, gravel and the open channels were compared with Environmental Quality Standards (EQS).

Some elevations in the water quality from the made ground, gravel and the open channels were noted. The following summarises the water quality for the Former Tedcastles Site.

General water quality

- Groundwater samples collected from the made ground, gravels and open channels showed elevated ammoniacal nitrogen above the screening value. This is considered to be a background concentration. Ammoniacal nitrogen was also found to be above the screening standard in the River Lee but in quantities of generally an order of magnitude lower than the other water samples collected.
- Naturally occurring inorganic compounds: chloride, sulphate, potassium, magnesium and sodium exceed the screening standards in the water samples across the made ground, gravels and open channels. These compounds are associated with brackish conditions.

Made ground

- The made ground water samples from WS02, WS15 and WS22 indicate brackish water.
- The made ground water samples contained metals elevated above the screening limit for: barium, chromium, iron, manganese and zinc.

Gravels

- The gravel water samples contained metals elevated above the screening limit for: cadmium, chromium, iron, manganese and nickel.

Open channels

- Trichloromethane and 1,1,1-Trichloroethane were in concentrations above the detection limit in SW06.
- Per- and poly-fluoroalkylated substances (PFAS) was detected and above the screening limit in SW05. However, PFAS was not detected in SW03.

3.3.3 Ground gas assessment

Ground gas samples were measured for standpipes installed in the made ground. Differential pressure, borehole pressure flow, carbon dioxide, oxygen and methane were recorded during the three monitoring rounds. Based on the BS8485 2015, the results of the ground gas measurements categorised the hazard potential as *very low* with no special measures required for ground gas for the Former Tedcastles Site development.

3.3.4 Summary of contamination assessment

Based on the soil assessment, the soil between 0mbgl to 2mbgl is of poor quality in terms of risk to human health, with the presence of asbestos, polycyclic aromatic hydrocarbon (PAH), elevated metals, and benzene and toluene amongst others. Below 2mbgl, no significant risks were noted in relation to contaminants in the soil.

From the water assessment, the sand/gravel has an overall moderate quality, however, there are elevated concentrations in some determinands which are likely linked to off-site sources and background concentrations. Should it be necessary to dewater the gravel during construction, and dependant on the proposed discharge location, treatment is likely to be required.

Manganese was found to be elevated in the made ground and gravel groundwater samples. Manganese is usually linked to the breakdown of hydrocarbons. There were high levels of hydrocarbons observed in the soil on site. Hence, the concentrations of manganese in the groundwater may be linked to the soil on site and/or an off-site source.

The water quality in the open channels surrounding the site indicates brackish conditions with some elevated metals. During a site visit, a white film was observed on the water in the drainage channel that runs next to Centre Park Road. Due to this observation, per- and poly-fluoroalkylated substances (PFAS) were tested for in the water sample and was found to be present at this location (SW05).

Water quality monitoring carried out at the site indicated that the water quality in the made ground could impact on the water quality in the open channels surrounding the site. However, there is no evidence that the soil and water are impacting the water quality in the River Lee.

Based on the ground gas monitoring, no ground gas protection is recommended for the development.

3.4 Preliminary Waste Assessment

Soil to be disposed off-site has been classified as 17 05 04 and has been preliminarily assessed according to the Guidance of the Classification and Assessment of Waste. Further testing will be required at a rate determined by the waste receiver and the results from that will provide information on the final waste classification of the soil will be based. The waste soil classification was carried out using the Hazwaste Online (HWO) Tool and the leachate results have been compared to Waste Acceptance Criteria (WAC), ISBN 978-1-84095-880-5.

Based on the HWO tool, out of the 49 total samples tested, 6 are classified as Hazardous, 5 are classified as Non-Hazardous and the remaining 38 are classified as Inert. The Hazardous samples have been classified as such due to elevated levels of; chromate, pH and hydrocarbons. The Non-Hazardous samples have been classified as such due to the presence of asbestos in soils (AiS) at less than 0.1%.

There was no pattern in the spacing or depth of the AiS, therefore, it is quite probable that asbestos is present throughout the made ground (see the Figure 4). Consequently, as a preliminary worst case assessment, all made ground samples in the Former Tedcastles Site that are not already deemed Hazardous, will be classified as Non-Hazardous with trace asbestos. This is only an initial analysis and further testing could confirm a different pattern. The natural soil under the made ground was seen to be free of contamination and can be classed as suitable for disposal to an inert landfill.

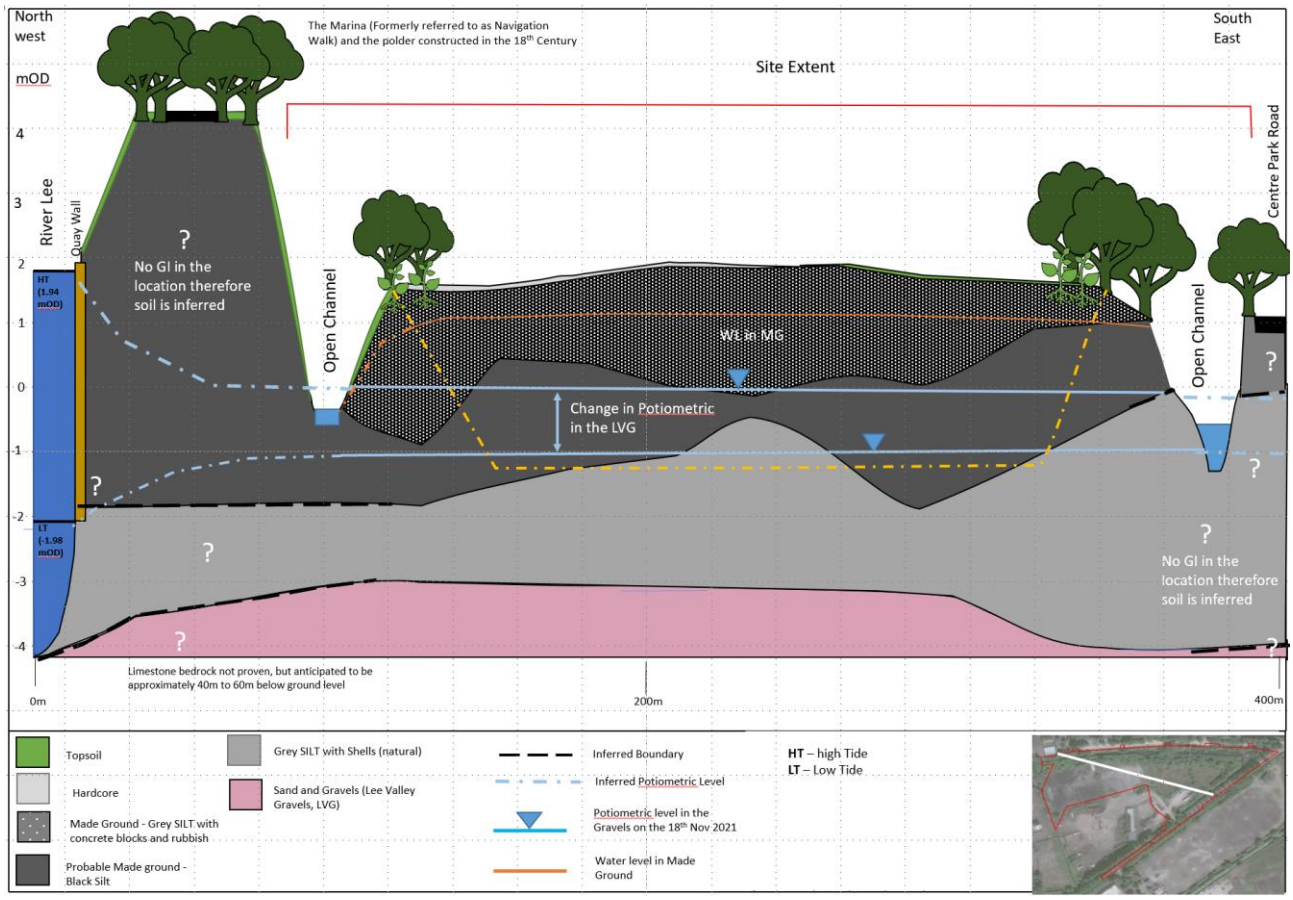

Figure 4: Conceptual site model highlighting ground conditions and indicative excavation line.

3.5 Contaminants of Concern

Based on the ground investigation carried out to date, the principal contaminants of concern are considered to comprise metals, hydrocarbons and asbestos, which are assumed to be present throughout the made ground. PFAS is also a contaminant of concern, which was detected in the surface water sample from the drainage channel that runs parallel to Centre Park Road. PFAS is likely to be present in the sediment in the drainage channel.

The main pathways for these contaminants to reach site users (construction workers and future residents) are though dermal contact with the soil or consuming produce grown in the soil (metals and hydrocarbons) or inhalation of dust generated by the soil (AiS).

Exposure to the metals and hydrocarbons in the soil are considered to be a long-term issue and short-term exposure is not envisaged to have any significant impacts on health of those exposed to them. However, there is no safe limit for asbestos, hence, even short-term exposure is considered potentially harmful.

For the soil on site, as AiS presents the greatest risk to receptors, if soil exposure is minimised to reduce the impact of AiS then this will manage the risks from metals and hydrocarbons. Consequently, the remedial measures presented in the following section are considered in relation to the risk principally from AiS.

There are adverse health and environmental impacts associated with PFAS. Exposure to the surface water at SW05 and the sediment in this drainage channel are considered potentially harmful to the environment. The main pathway for PFAS to reach users is through contact with the water.

The PFAS may reach environmental receptors downstream through mobilisation of contaminated sediment or transport of dissolved PFAS present in the sediment. In addition, during the construction there is a risk of PFAS coming in to contact with the gravels underneath the sediment in the drainage channel if construction is poorly managed.

4. Management of Contaminated Soils

The final design of any remediation will be subject to the detailed design. This will include a detailed Soil Management Plan that will include a volumetric assessment of what soil will be reused, where and all necessary conditions required to allow it to be reused. In this section, the framework required to remediate the PFAS contamination and prepare the Soil Management Plan is highlighted.

4.1 Construction Phase

4.1.1 PFAS remediation

During the construction phase, it will be necessary to investigate the sediments in the drainage channel that runs parallel to Centre Park Road as PFAS is present in the surface water at this location and is likely to be present in the sediment. The sediments will need to be tested to understand the extent of contamination (depth and lateral extent).

A risk assessment will need to be carried out to assess the impact of the presence of PFAS on the gravels and the surrounding water courses, and to account for any seepage from the gravels into the base of the drainage channel. The risk assessment will determine a minimal concentration that can be left in place and will recommend an area and depth to be dug up and disposed of off-site. The risk assessment shall consider the depth to the gravels to prevent breaching the silt under the open channels and opening a pathway to the underlying gravels.

During the remediation of the sediments, measures will need to be put in place to stop the sediments and PFAS contamination from being mobilised and to allow access for an excavator to remove the sediment. Further samples will need to be taken in the drainage channel, where the new sediments have been exposed, to verify the base of the drainage channel is clean material. During the excavation, the sediment samples will be kept separate from soil on site and measures will be put in place to prevent water escaping from the excavated sediments. Once excavated, the sediments shall be classified and disposed of as required. Reuse of the sediments in the drainage channel, onsite or offsite, will not be possible.

4.1.2 Soil management and asbestos in soil

During the excavation of the soils on the Former Tedcastles Site, the soil can either be excavated and disposed of to a suitable landfill or, subject to regulatory approval, it can be excavated and retained for potential reuse on site or reused elsewhere. There is a requirement for non-engineered fill around the foundations once constructed which could take a portion of the excavated soil. The onsite reuse could include the contaminated soils (with or without treatment). Reuse offsite could include the inert natural soils under the made ground. This would be carried out under an Article 27.

Considering the AiS content of the made ground, if the soil is retained on site for potential reuse, then there is a potential legal requirements such as environmental licensing/permitting that will need to be agreed with the local waste regulator Cork City Council and or the Environmental Protection Agency.

The key to retaining soil onsite and demonstrating that it can be re-used, will be understanding the risk of respirable asbestos becoming airborne. This shall be determined by risk assessment and review of additional testing of the soil such as dustiness testing. If the risk is significant then the designer shall need to incorporate measures during construction and operation to mitigate against any risk.

Standard mitigation measures for the construction phase, including excavation, stockpiling, and disposal of the soil are outlined in the CIRIA C733 Asbestos in Soil and Made Ground: A guide to understanding and managing risks (hereafter referred to as CIRIA C733). These include measures such as:

- Maintaining an exclusion zone around the area of the dig;
- Use of personal protection equipment (PPE) such as respiratory protection and full body disposable suits;

- Controlling surface water run-off from contaminated soil;
- Spraying soil to minimise dust generation; and
- Covering exposed soils.

Figure 5 summarises the different risks involved in dealing with AiS and how these can be managed by standard mitigation measures.

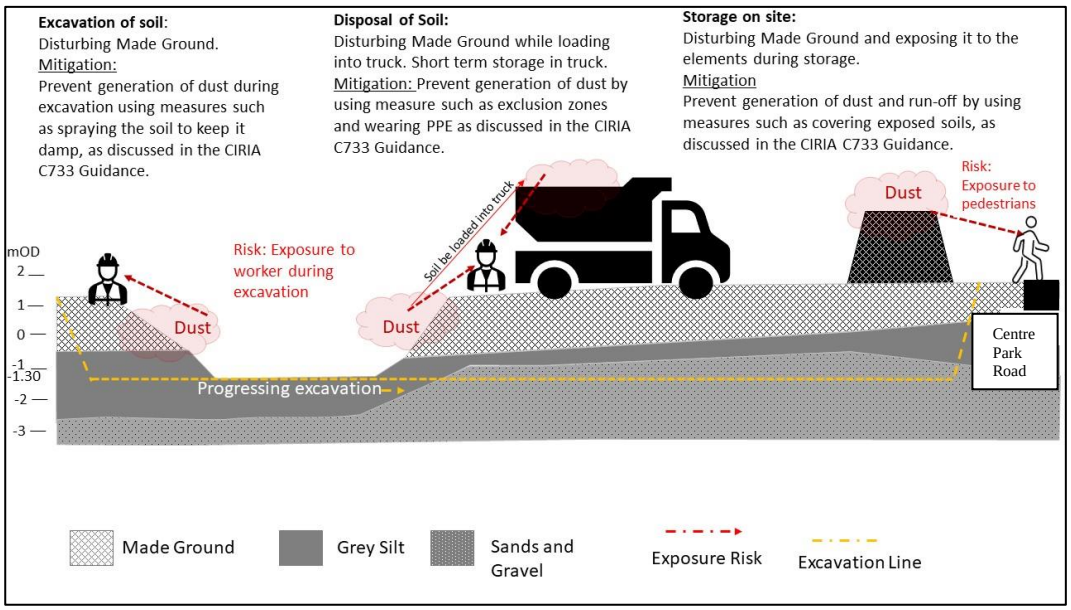

Figure 5: Different risks involved in dealing with asbestos in soil and standard mitigation measures. The geology and elevations are indicative.

It is likely that the construction will involve some soil to be disposed of off-site. Following the 2013 HSA Asbestos Guidance Document entitled Asbestos-containing Materials (ACMs) in Workplaces Practical Guidelines on ACM Management and Abatement, collection, transport, and disposal of asbestos waste should only be undertaken by an authorised waste collection permit holders under the Waste Management (Collection Permit) Regulations, 2007, (S.I.No.820 of 2007) and waste sent to an appropriately authorised facility for disposal.

Notification

A risk assessment shall be carried out by a competent person and in line with Section 6 of the 2013 HSA Asbestos Guidance Document. Where the risk assessment indicated that an asbestos work activity is high risk, then it is required to submit a notification in writing to the HSA. Section 16 of the 2013 HSA Asbestos Guidance details the requirements on notification to the HSA.

An exemption to notification to the HSA is when the risk assessment indicates lower risk asbestos work activities where exposure is low and sporadic. Discussion with the Cork City Council will help advise weather Notification to the HAS will be required.

The Safety, Health and Welfare at Work (Asbestos) Regulations

The Safety, Health and Welfare at Work (Asbestos) Regulations 2006 - 2010 apply to all work activities which expose people to risks arising from the inhalation of dust from asbestos or asbestos containing materials.

The main risk relates to dry soils and generating dust during excavation or by vehicular activity. The likely airborne fibre concentrations released from AiS will depend on the types of activities involved (hand digging or mechanic digging etc), the amount and the types of Asbestos being disturbed. During the construction phase the generation of dust must be managed by measures such as PPE, exclusions zones, good site awareness, site management, asbestos specific mitigation measures and appropriate training of staff. Part 2 of the CIRIA C733 details the management of risks associated with asbestos in soil and made ground.

Monitoring

The contractor who carries out the earthworks shall be required to demonstrate that the control measures do not release airborne asbestos fibres. It is a mandatory requirement, as stated in the 2013 HSA Asbestos Guidance Document to implement an air monitoring program by an independent analyst during the removal of the asbestos in soil.

In addition, the contractor shall keep a watching brief to manage any unforeseen hotspots that may be encountered during the dig.

Storage of soil on site

Waste soil can be temporality stored on site during the construction phase. Storage of the waste soil should follow Section 17 of the 2013 HSA Asbestos Guidance Document, which states that the waste soil '*must be placed in a dedicated lockable skip or suitable controlled compound'*. There needs to be clear agreement on who is responsible for the waste soils stored on site. Care and diligence should be exercised when looking at both storage and disposal.

The main risk to storing soils on site relates to dry soils and generating dust allowing fibres to become airborne. The soil can be stored as stockpiles on site but good site management of these shall be implemented to prevent the generation dust and prevent any potential runoff from the stockpile. The CIRIA C733 outlines good management measures relevant to any soils with AiS stored on site.

4.2 Operational Phase

The sediment containing PFAS that presents a risk to the environment will be removed from site during the construction phase. Consequently, there will be no risk to the environment during the operational phase.

The soil containing asbestos may have suitable engineering properties that could make it useful as a fill material. Subject to the necessary regulatory approval during the detailed design analysis shall be undertaken to consider the potential options for reuse of the soil. Suitable potential re-use options include between pile caps, under hard and soft landscaping under areas such as communal spaces. The detailed design shall consider the necessary control measures to prevent site users being exposed to the AiS where contaminated soil is reused.

The CIRIA C733 states that AiS should be at a suitable depth below the ground level dependant on the risk of site users being exposed to the soil. In areas where soil is uncovered and in communal spaces, a significant thickness of clean materials is required to act as a barrier material. When soil is covered by infrastructure, such as roads and buildings, the thickness of the barrier can be reduced.

5. Conclusion

Based on the investigation and assessments carried out to date, the biggest risk to human health or the environment during the development of the Former Tedcastles Site is the presence of asbestos in soil (AiS) and per- and poly-fluoroalkylated substances (PFAS) in sediment. Other soil contaminants exist but will be dealt with by the same measures that shall be employed for the AiS.

During construction and the operation of the development, there is the potential for asbestos fibres to become airborne. The likely airborne fibre concentrations released from AiS will depend on the types of activities involved (hand digging or mechanic digging etc), the amount and the types of asbestos being disturbed.

Suitable standard measures such as continued dampening of soil during excavation, disposal or stockpiling will help prevent generation of dust. The CIRIA C733 provides suitable guidelines on how to reduce the risks from the presence of AiS during construction and operation of the proposed development.

Exposure to the surface water and the sediment in the drainage channel is considered potentially harmful to the environment. Further investigation shall be carried out to understand the extent of the PFAS

contamination in the sediment of the drainage channel. PFAS may reach environmental receptors downstream through mobilisation of contaminated sediment or transport of dissolved PFAS present in the sediment. A risk assessment will be carried out to determine a safe concentration that can be left in the sediment. If necessary, the sediment that possess a risk shall be excavated and removed from site.

In line with best practice and subject to regulatory approval, during the detailed design, options to reduce disposal of soil will be followed. The re-use of soil containing asbestos shall be subject of a risk assessment and discussed and agreed with Local Authorities or the EPA, as necessary. Where disposal of waste is unavoidable, this shall be done in accordance the necessary waste regulations.

Appendix 14.1

Flood Risk Assessment Report

Flood Risk Assessment Report

ARUP

Tiznow Property Company Limited (Comer Group Ireland)

City Park Development at the Former Tedcastles Site

Flood Risk Assessment Report

267365-ARUP-XX-XX-RP-CF-0002

P04 | 28 March 2022

This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 267365-00

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ARUP

Document Verification

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Document title	Flood Risk Assessment Report
Job number	267365-00
Document ref	P04
File reference	

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1. Introduction

1.1 Project background

Arup has been commissioned by Tiznow Property Company Limited (Comer Group Ireland) to provide flood risk advice to inform the master planning of a mixed-use development located in the Cork City Docklands.

This commission includes the preparation of a site-specific flood risk assessment (FRA) to support a Strategic Housing Development (SHD) planning application at the Former Tedcastles Site.

This report takes account of the following:

- Knowledge of the existing site and local constraints.
- Knowledge of current and upcoming CCC studies including but not limited to the CCC South Docklands Levels Drainage Study.
- Requirements of 'The Planning System and Flood Risk Management Guidelines for Planning Authorities' published in November 2009, jointly by the Office of Public Works (OPW) and the then Department of Environment, Heritage and Local Government (DoEHLG), herein referred to as 'The Guidelines'.
- Cork City Development Plan 2015-2021 (including Strategic Flood Risk Assessment).
- Cork City DRAFT Development Plan 2022-2028 (including Strategic Flood Risk Assessment).
- Currently anticipated programme and timescales.

1.2 Scope of the FRA

The scope of the FRA includes the following:

- A review of the availability and adequacy of existing information.
- Confirmation of the sources of flooding which may affect the site.
- A qualitative assessment of the risk of flooding to the site and identification of possible measures which can mitigate the flood risk to acceptable levels.
- Demonstration that the construction of the proposed development will not worsen flood risk elsewhere.
- Preparation of a Justification Test.

1.3 Summary of data used

Flood risk data relevant to the proposed development and surrounding area has been obtained from the following sources:

- Cork City Development Plan 2015-2021 (including Strategic Flood Risk Assessment).
- Cork City DRAFT Development Plan 2022-2028 (including Strategic Flood Risk Assessment).
- Lee CFRAM Hydrology and Hydraulics Reports and predictive flood mapping (https://www.floodinfo.ie/publications/).
- OPW Flood Plans and Flood Maps (www.floodinfo.ie).
- OPW National Flood Hazard Mapping Website (www.floodinfo.ie)
- Preliminary Flood Risk Assessment (PFRA) mapping produced by OPW (www.floodinfo.ie).

- Lower Lee (Cork City) Drainage Scheme Exhibition Drawings and Reports (https://www.floodinfo.ie/frs/en/lower-lee/project-info/project-documents/public-exhibition-interactive-map/).
- Topographical survey of the site.
- Proposed development planning application drawings.
- Feedback from CCC with regards to the preliminary outcomes of the South Docklands Levels Drainage Study.

All levels referred to in this report are to Malin Head Ordnance Datum, unless stated otherwise.

The following documents and drawings are referenced within this report and contained within the appendices to this report:

- Lee CFRAM Flood Extent Maps (Appendix A)
  - Fluvial flood extent (Current)
  - Fluvial flood extent (Mid-Range Future Scenario)
  - Tidal flood extent (Current)
  - Tidal flood extent (Mid-Range Future Scenario)
- Lower Lee (Cork City) Drainage Scheme Exhibition Drawings - Flood Extents Map (Appendix B)

1.4 Site location

The proposed development is located within the South Docklands area to the east of Cork City, approximately 50m south of the River Lee. The location of the site is shown Figure 1 below.

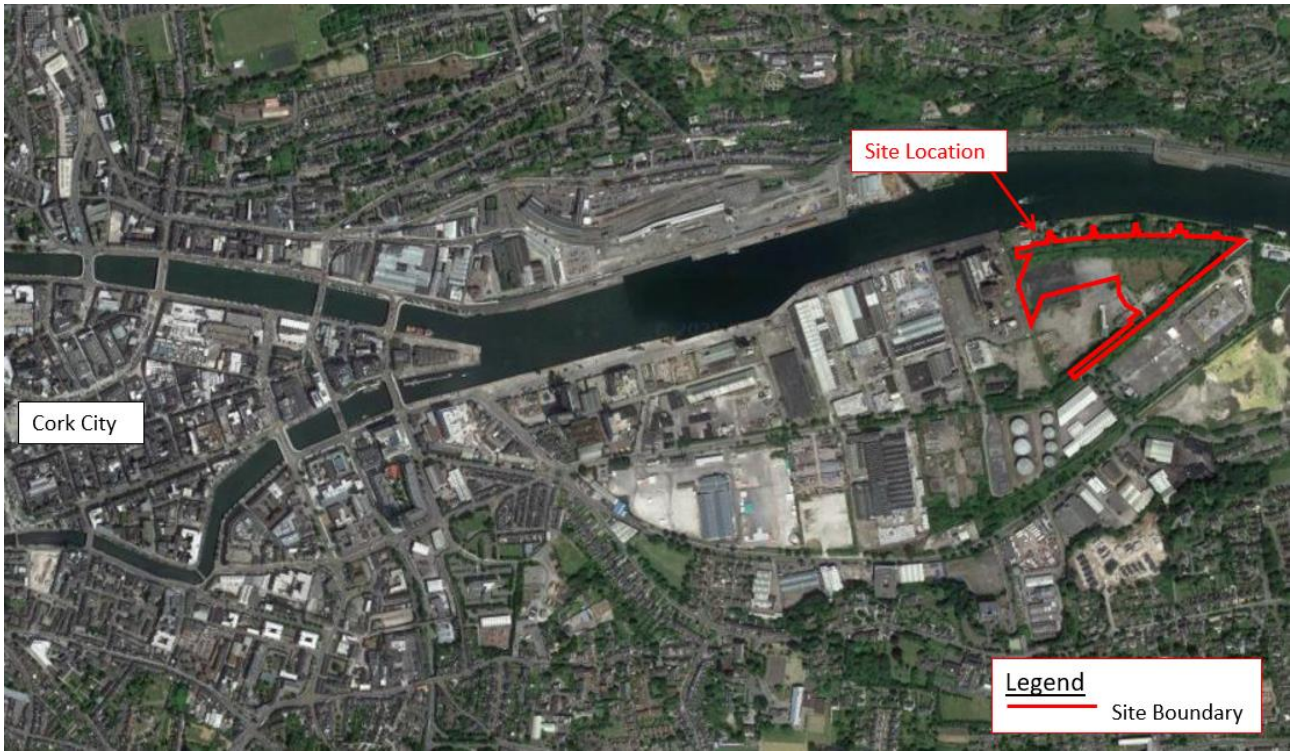


Figure 1: Site location in relation to Cork City

Figure 2 indicates the development boundary (red line). The subject site is bounded by the Marina to the north, Centre Park Road to the south, and the former Marina Generating Station to the west.

The existing topography of site is relatively flat with levels between 1.5 to 2.5mOD, with a slight gradient falling from north to south. The site is currently a mix of greenfield and paved areas. There are existing drainage ditches at the northern and south-eastern boundaries of the site.

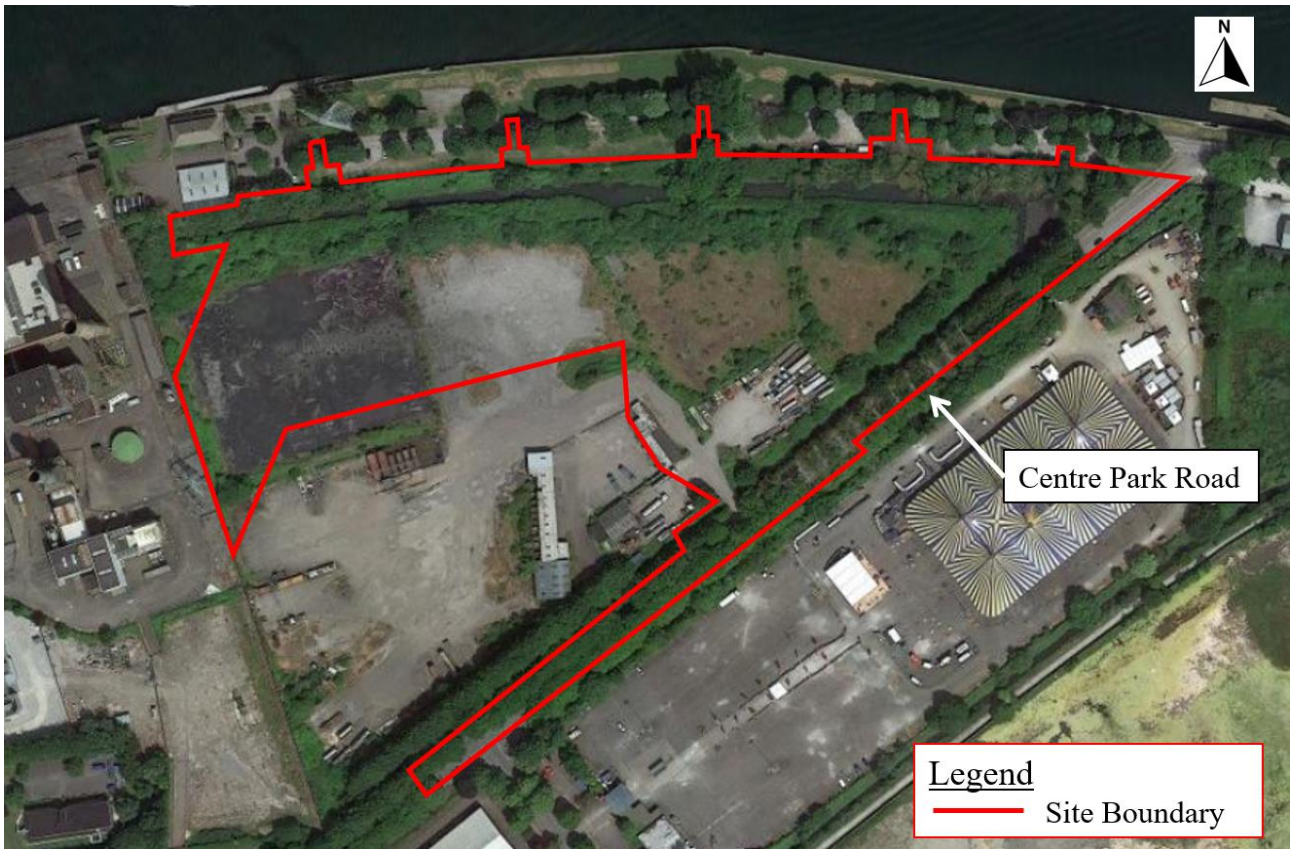


Figure 2: Site boundary

1.5 Proposed development

Planning permission is being sought for a Strategic Housing Development on the subject site. The proposed development comprises demolition of the existing structures on site and the construction of 823 no. apartments, resident amenity and ancillary commercial areas including childcare facilities.

The development will comprise 6 no. buildings ranging in height from part 1 no. to part 35 no. storeys over lower ground floor level. The proposed development also comprises hard and soft landscaping, pedestrian bridges, car parking, bicycle stores and shelters, bin stores, ESB substations, plant rooms and all ancillary site development works. Vehicular access to the proposed development will be provided via Centre Park Road.

Architect's drawings of the proposed development accompany this application.

2. Planning context

2.1 Introduction

Cork City Council aims to regenerate the Cork South Docks area to create a vibrant, innovative, mixed use, sustainable, socially inclusive, urban quarter. City Docks is a regeneration area of national importance and has been identified in the Project Ireland 2040 National Planning Framework (NPF) as a key growth enabler to deliver large scale regeneration in terms of employment, housing and supporting infrastructure.

The following planning policy documents are relevant to the flood risk assessment of the proposed development:

- Cork City Development Plan 2015-2021 (including Strategic Flood Risk Assessment)
- Cork City DRAFT Development Plan 2022-2028 (including Strategic Flood Risk Assessment)
- Cork City Climate Change Adaptation Strategy 2019-2024
- The Planning System and Flood Risk Management Guidelines for Planning Authorities

2.2 Cork City Development Plan 2015-2021

The Cork City Development Plan 2015 – 2021 contains the policies and objectives to guide development and land use in Cork City. The South Docklands area of Cork City is a critical strategic location for development and is identified as such within the zoning map provided in the Cork City Development Plan (2015-2021) displayed in Figure 3. The subject site is zoned for a combination of ‘Mixed-Use Development’, ‘Public Open Space’ and ‘Neighbourhood Centres’.

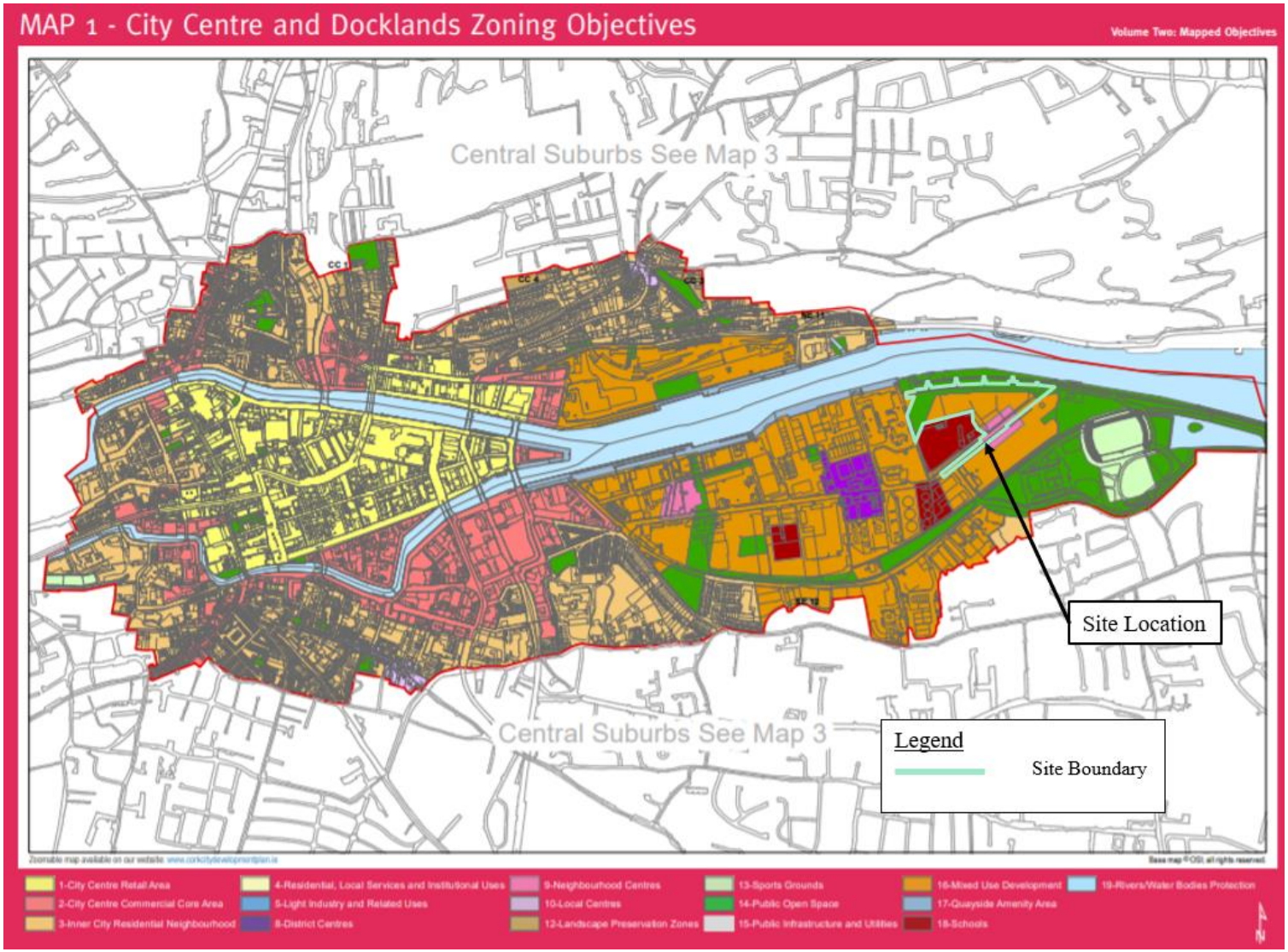


Figure 3: Cork City Development Plan City Centre and Docklands zoning objectives

The Development Plan states that the vision for Cork City will be achieved through a series of interconnected strategic goals and related chapters. Goal 6 is relevant to flood risk and is reproduced in Table 1 below.

Table 1: Cork City Development Plan 2015-2021 Goals

Goal	Details
Goal 6 – Tackle Climate Change Through Reducing Energy Usage, Reducing Emissions, Adapt to Climate Change and Mitigate Against Flood Risk	A key aim of the Plan is to reduce emissions that lead to global warming through sustainable energy usage in transport and buildings. It also aims to mitigate and adapt to the challenges of climate change such as the increased risk of flooding, through the design, layout and location of appropriate land-uses. This is particularly addressed in Chapter 12. Environmental Infrastructure and Management and Chapter 16. Development Management.

The following objectives relevant to flood risk are set out in Chapter 12 of the Development Plan.

Table 2: Cork City Development Plan 2015-2021

Objective	Details
Objective 12.13 Lee Catchment Management Plan / Lower Lee Flood Relief Scheme	Cork City Council shall have regard to the recommendations of the Draft Lee Catchment Flood Risk Assessment and Management Plan and shall incorporate the updated hydraulic modelling, mapping data and recommendations of South West CFRMP / Lee CRFMP (River Catchment Framework Management Plan) and the Lower Lee Flood Relief Scheme as each plan progresses.
Objective 12.14 Flood Risk Management in Development Proposals	Cork City Council will implement The Planning System and Flood Risk Management: Guidelines for Planning Authorities, 2009 in the preparation of land-use plans and determining planning applications.
Objective 12.15 Restrictions on Development in Flood Risk areas	To restrict development in identified flood risk areas, in particular, floodplains, except where the applicant satisfies the Justification Test as outlined in The Planning System and Flood Risk Management: Guidelines for Planning Authorities 2009.
Objective 12.16 Floodplains	To protect, enhance and manage the City's floodplains, wetlands and coastal habitat areas that are subject to flooding as vital 'green infrastructure' which provides space for storage and conveyance of floodwater, enabling flood risk to be more effectively managed and reduce the need to provide flood defence infrastructures.
Objective 12.17 Flood Impact Assessment	All significant developments impacting on flood risk areas will be required to provide a Flood Impact Assessment to accompany the planning application to identify potential loss of floodplain storage and proposals for the storage or attenuation (e.g. SUDS) of run-off discharges (including foul drains) to ensure development does not increase the flood risk in the relevant catchment.

2.2.1 Cork City Development Plan 2015-2021 Strategic Flood Risk Assessment

In preparation of the Cork City Development Plan 2015 – 2021, a Strategic Flood Risk Assessment (SFRA) was undertaken in accordance with The Guidelines. This includes large areas of the South Docklands, which are referenced as Site 3.1 in Figure 4. In this figure, any site which shows colour, such as the subject site, requires a justification test.

The SFRA included a Justification Test for lands within Flood Zones A and B which are currently zoned for uses categorised as 'Highly Vulnerable' or 'Less Vulnerable' development (Refer to Figure 5 for Development Plan Justification Test).

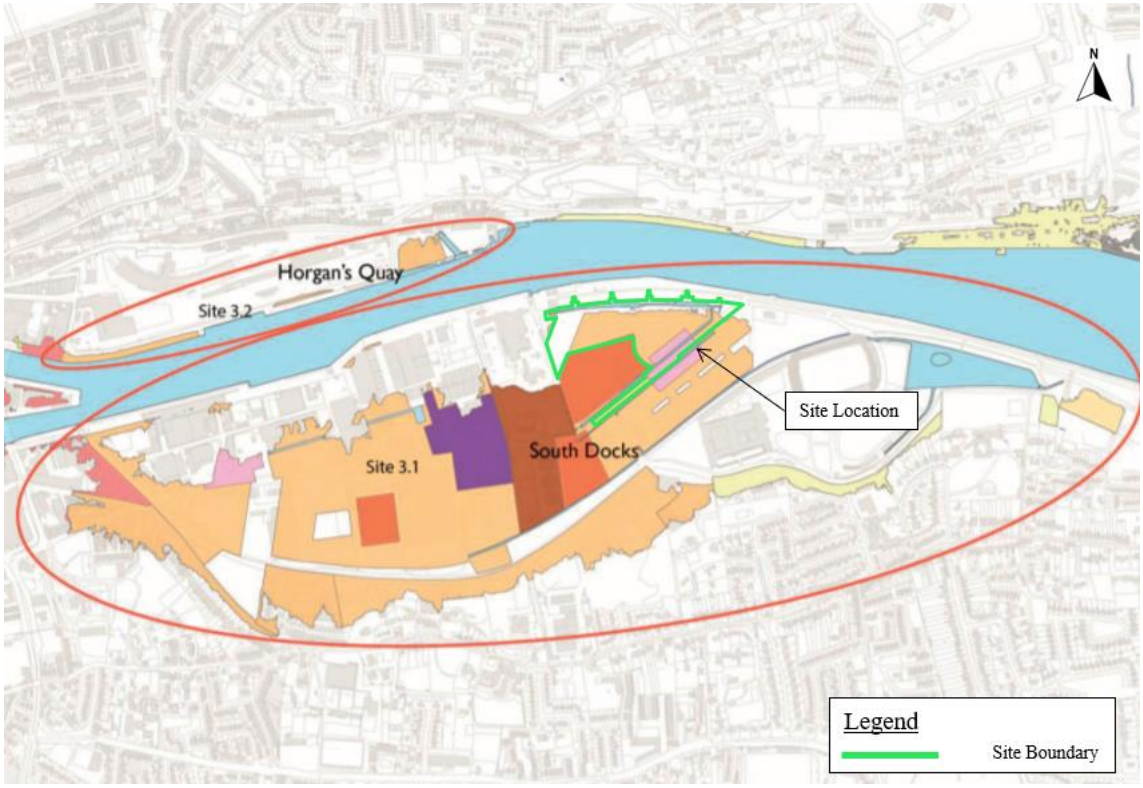


Figure 4: Key plan of sites where a Justification Test is required (extract from the Cork City development plan SFRA)

Justification Test for Development Plans	
1. The urban settlement is targeted for growth under the National Spatial Strategy, regional planning guidelines, statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.	Response Yes, Cork is a designated Gateway under the National Spatial Strategy
2. The zoning or designation of the lands for the particular use or development type is required to achieve the proper planning and sustainable development of the urban settlement and, in particular:	
(a) Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement;	Response Yes. The said lands adjoin the city centre the most important strategic growth centre.
(b) Comprises significant previously developed and / or under-utilised lands;	Response Yes. The said lands have been subject to significant development.
(c) Is within or adjoining the core of an established or designated urban settlement;	Response Yes. The said lands are within the City Centre.
(d) Will be essential in achieving compact and sustainable urban growth;	Response Yes. The said lands will be served by the proposed route of the planned Bus Rapid Transit corridor (Ballincollig to Mahon), the Commuter Rail Service and all main city bus routes and so accords with sustainable development principles.
(e) There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.	Response There are alternative residential and commercial zoned lands, but this is a long established urban area.
3. A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere.	Response The Draft Lee CFRAMS (Management Plan) demonstrates that flood risk to the development area can be adequately managed and will not cause unacceptable adverse impacts elsewhere. Actions are recommended that would mitigate significant negative effects.

Figure 5: Justification Test for Cork City Development Plan 2015-2021

2.3 Draft Cork City Development Plan 2022-2028

The Cork City Development Plan 2022-2028 is currently in a draft stage but is expected to be finalised in the coming months. In preparation of the Development Plan, an SFRA was undertaken in accordance with The Guidelines.

2.3.1 Draft Cork City Development Plan 2022-2028 Strategic Flood Risk Assessment

This SFRA is currently a work in progress. The SFRA draws on existing flood risk information to provide recommendations in relation to land use zoning, integration of flood risk management provisions into the plan, and justification tests.

In the SFRA, the Cork South Docks area has been earmarked as an exception to The Guidelines. It has passed a Justification Test which allows it to be zoned for development in an area that would otherwise be considered inappropriate. The SFRA notes that future development in the Cork South Docks will:

- Be subject to a site-specific flood risk assessment
- Comply with the flood risk management provisions of this Plan
- Comply with the relevant measures contained in the Council's 2020 South Docks Drainage Strategy
- Will benefit from Flood Relief Schemes being progressed by the OPW.

2.4 Cork City Climate Change Adaptation Strategy 2019-2024

Cork City Council has developed a climate change adaptation strategy to help increase its resilience in accordance with the provisions of The Climate Action and Low Carbon Development Act 2015 and the National Adaptation Framework (NAF), 2018. This climate change adaptation strategy was adopted by Cork City Council on Monday, 30 September 2019. The purpose of the Strategy is to

(i) ensure a proper comprehension of the key risks and vulnerabilities of climate change

(ii) bring forward the implementation of climate resilient actions in a planned and proactive manner and,

(iii) ensure that climate adaptation considerations are mainstreamed into all operations and functions of Cork City Council.

2.5 The Planning System and Flood Risk Management Guideline for Planning Authorities

In November 2009, the Department of Environment, Heritage and Local Government and the Office of Public Works jointly published a Guidance Document for Planning Authorities entitled 'The Planning System and Flood Risk Management'.

The guidelines are issued under Section 28 of the Planning and Development Act 2000; and Planning Authorities and An Bord Pleanála are therefore required to implement these Guidelines in carrying out their functions under the Planning Acts.

The aim of the guidelines is to ensure that flood risk is neither created nor increased by inappropriate development.

The guidelines require the planning system to avoid development in areas at risk of flooding, unless they can be justified on wider sustainability grounds, where the risk can be reduced or managed to an acceptable level.

They require the adoption of a Sequential Approach (to Flood Risk Management) of Avoidance, Reduction, Justification and Mitigation and they require the incorporation of Flood Risk Assessment into the process of making decisions on planning applications and planning appeals. Fundamental to the guidelines is the introduction of flood risk zoning and the classification of different types of development having regard to their vulnerability. The management of flood risk is now a key element of any development proposal in an area of potential flood risk and should therefore be addressed as early as possible in the site master planning stage.

2.6 Definition of flood zones

Flood zones are geographical areas within which the likelihood of flooding is in a particular range. There are three types of flood zones defined in The Guidelines as follows;

Table 3: Flood Zone Categories

Zone Category	Definition
Flood Zone A	Probability of flooding from rivers and the sea is highest (greater than 1% or 1 in 100 for river flooding or 0.5% or 1 in 200 for coastal flooding).
Flood Zone B	Probability of flooding from rivers and the sea is moderate (between 0.1% or 1 in 1000 year and 1% or 1 in 100 for river flooding and between 0.1% or 1 in 1000 year and 0.5% or 1 in 200 for coastal flooding).
Flood Zone C	Probability of flooding from rivers and the sea is low (less than 0.1% or 1 in 1000 for both river and coastal flooding). Flood Zone C covers all areas of the plan which are not in zones A or B.

2.7 Definition of vulnerability classes

The following table summarises the vulnerability classes defined in The Guidelines and provides a sample of the most common type of development applicable to each. The proposed development is categorised as 'Highly Vulnerable' and 'Less Vulnerable' development.

Table 4: Vulnerability Classes

Vulnerability class	Land uses and types of development which include:
Highly Vulnerable Development	Includes Garda, ambulance and fire stations, hospitals, schools, residential dwellings, residential institutions, essential infrastructure, such as primary transport and utilities distribution and SEVESO and IPPC sites, etc.
Less Vulnerable Development	Includes retail, leisure, warehousing, commercial, industrial and non-residential institutions, etc.
Water Compatible Development	Includes Flood Control Infrastructure, docks, marinas, wharves, navigation facilities, water based recreation facilities, amenity open spaces and outdoor sport and recreation facilities.

2.8 Sequential approach and Justification Test

The Guidelines outline the sequential approach that is to be applied to all levels of the planning process.

This approach should also be used in the design and layout of a development and the broad philosophy is shown in Figure 6. In general, development in areas with a high risk of flooding should be avoided as per the sequential approach.

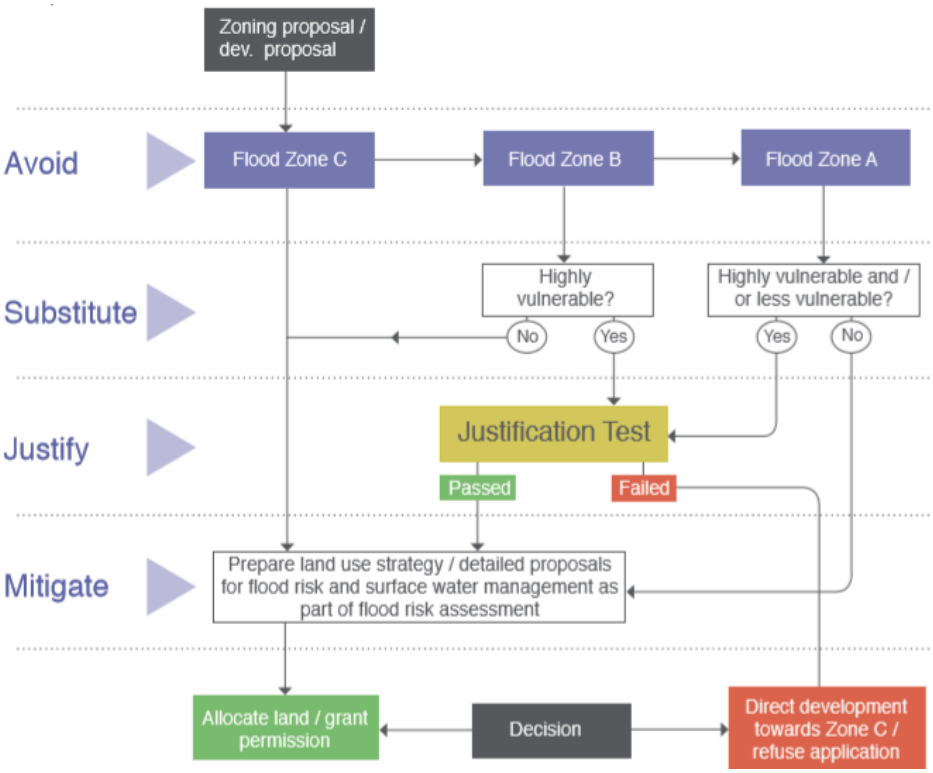


Figure 6: Sequential approach (reproduced from The Guidelines)

The Justification Test has been designed to rigorously assess the appropriateness, or otherwise, of developments that are being considered in areas of moderate or high flood risk. The test comprises the following two processes.

The first is the Plan-making Justification Test and is used at the plan preparation and adoption stage where it is intended to zone or otherwise designate land which is at moderate or high risk of flooding.

The second is the Development Management Justification Test and is used at the planning application stage where it is intended to develop land at moderate or high risk of flooding for uses or development vulnerable to flooding that would generally be inappropriate for that land.

Table 5 illustrates the different types of vulnerability class appropriate to each zone and indicates where the Justification Test is required.

Table 5: Vulnerability classes

	Flood Zone A	Flood Zone B	Flood Zone C
Highly Vulnerable	Justification Test	Justification Test	Appropriate
Less Vulnerable	Justification Test	Appropriate	Appropriate
Water Compatible	Appropriate	Appropriate	Appropriate

The Guidelines recognise that there is a need to reconcile the desire to avoid development in areas at risk of flooding while also ensuring sequential and compact urban development as several large urban centres are already located in areas that are at risk of flooding. The following section of The Guidelines is particularly relevant to the proposed development on the subject site:

"*Notwithstanding the need for future development to avoid areas at risk of flooding, it is recognised that the existing urban structure of the country contains many well-established cities and urban centres, which will continue to be at risk of flooding.*

At the same time such centres may also have been targeted for growth in the National Spatial Strategy, regional planning guidelines and the various city and county development plans taking account of historical patterns of development and their national and strategic value.

In addition, development plans have identified various strategically located urban centres and particularly city and town centre areas whose continued growth and development is being encouraged in order to bring about compact and sustainable urban development and more balanced regional development. Furthermore, development plan guidelines, issued by the Minister for the Environment, Heritage and Local Government under Section 28 of the Planning and Development Act 2000, have underlined the importance of compact and sequential development of urban areas with a focus on town and city centre locations for major retailing and higher residential densities."

3. Identification of potential flood mechanisms and historic flooding

3.1 Potential flood mechanisms at the site

The following potential sources and mechanisms of flood risk have been identified at the site:

- Fluvial and/or tidal flooding from high levels in the River Lee resulting in breaching or overtopping of the existing South Docks Polder Defences or overtopping of the quays further west of the site. This risk will increase with climate change, in particular with respect to sea level rise and increasing storm events. This risk is assessed in detail in Section 4 of this report.
- Groundwater flooding / seepage risk – As the site lies within a polder and is underlain by deep gravels known to be in hydraulic continuity with the Lee, the evaluation of groundwater flood risk is an important consideration. This risk is assessed in detail in Section 5 of this report.
- Pluvial and/or surface water drainage flooding – Pluvial flooding can occur due to lack of capacity of the local surface water drainage network during periods of intense rainfall and/or as a result of discharge restrictions such as blockage and/or being tide-locked. The tide-locking aspect means that this risk also has the potential to increase with climate change. This risk is assessed in detail in Section 6 of this report.

3.2 Historic flood data

3.2.1 OPW National Flood Hazard Mapping website

Records of historical flood data were obtained from the OPW National Flood Hazard Mapping website (www.floodinfo.ie) and reports produced as part of the Lee CFRAMS.

According to the website, there is a documented report from Cork City Council noting flooding of Centre Park Road which occurred on 12 January 1988 and concludes that it was a result of high-water levels in the River Lee. This is likely to have been caused by backing up of drains resulting in surface water flooding. An extract from the OPW website indicating the location of the flooding is displayed in Figure 7.

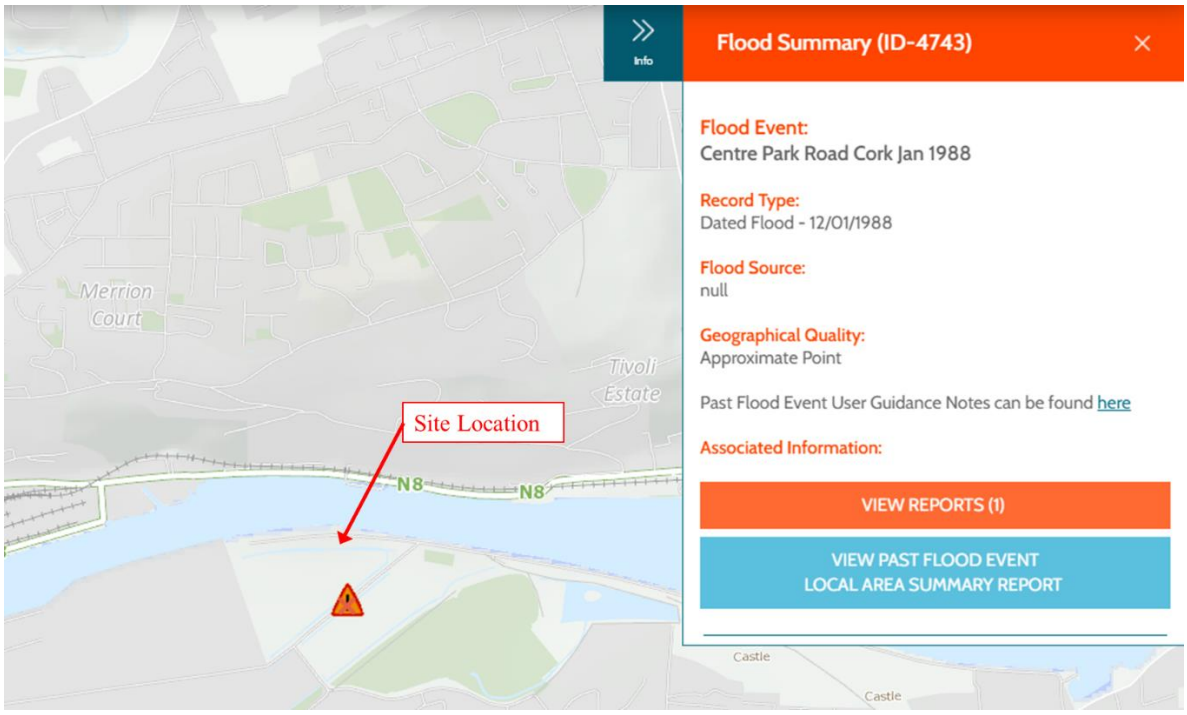


Figure 7: Extract from FloodInfo.ie website

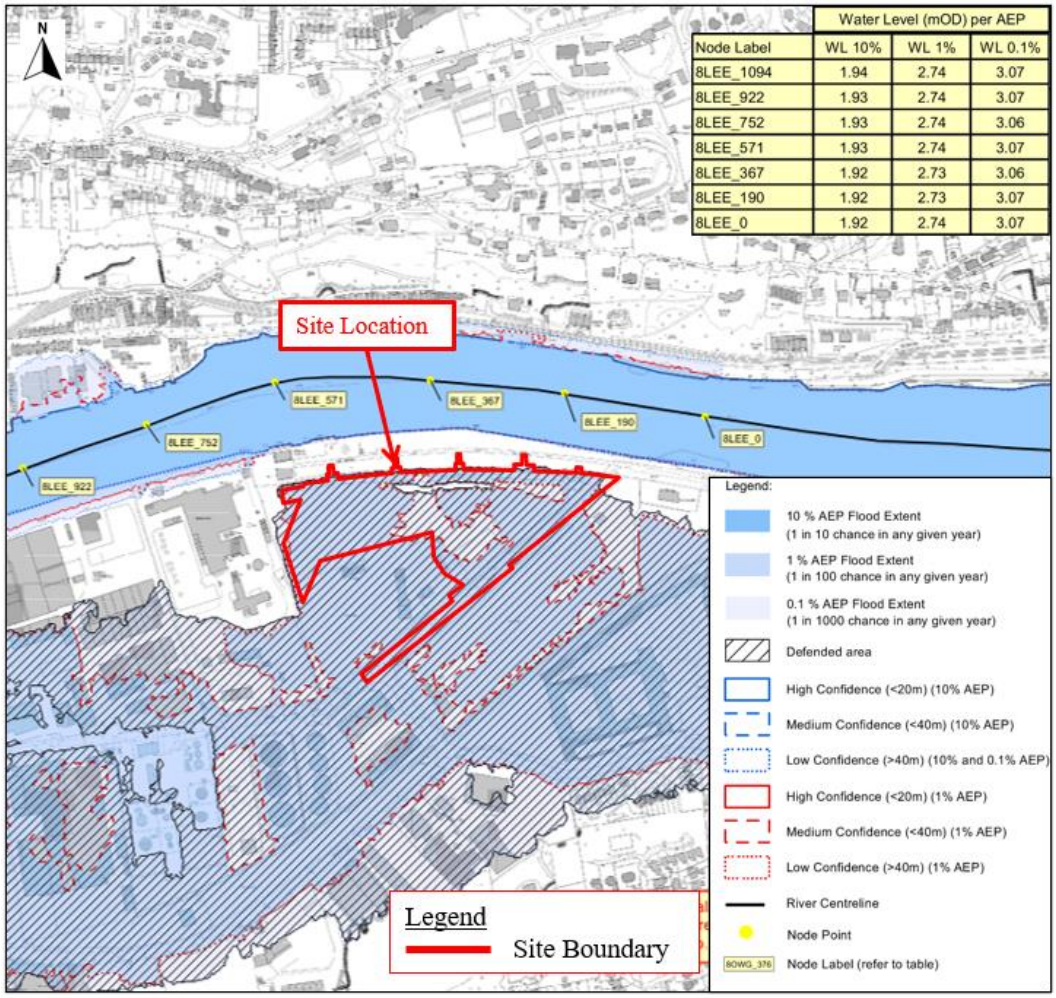
3.2.2 Anecdotal knowledge of historic flooding

In addition to the recorded event above, there is a well-known issue with pluvial flooding on the low-lying roads in the South Docks during periods of heavy rainfall coinciding with extreme tides resulting in tide-locking and backing up of the system.

4. Fluvial and tidal flood risk from the River Lee

4.1 Current fluvial flood risk

An extract from the Lee CFRAMS fluvial flood extent map is presented in Figure 8 below and illustrates the predicted current fluvial flood extents within the South Docklands area (1 in 10, 100, and 1000-year fluvial flood events).



Node Label	Water Level (mOD) per AEP		
	WL 10%	WL 1%	WL 0.1%
8LEE_1094	1.94	2.74	3.07
8LEE_922	1.93	2.74	3.07
8LEE_752	1.93	2.74	3.06
8LEE_571	1.93	2.74	3.07
8LEE_367	1.92	2.73	3.06
8LEE_190	1.92	2.73	3.07
8LEE_0	1.92	2.74	3.07

Figure 8: Extract from Lee CFRAMS fluvial flood extent map, current scenario

The flood map indicates that a large proportion of the site is located within Flood Zone A (within the 1 in 100-year undefended fluvial flood extent – dark blue shade). However, the CFRAM maps also confirm that the site lies within a defended area (hatched) due to the presence of the existing polder flood defences at the Marina to the north of the site. The higher levels of the Marina are evidenced by the white coloured area between the river and the flooded area.

Node 8LEE_571 is the model node adjacent to the site with the most conservative levels, it indicates a peak fluvial flood level (1% Annual Exceedance Probability [AEP] or 1 in 100-year event) of 2.74mOD and 0.1% AEP or 1 in 1000-year flood level of 3.07mOD. None of these events overtop the polder defences, which are at an average level of 4.0Mod north of the site.

The low point in the quayside defences is at Albert Quay East (1.3km west of the site). In the 100-year fluvial event, flow paths from Albert Quay East cause flooding along Centre Park Road but do not reach or impact the site. This can be seen in Figure 8 as the light blue shade with no hatch. Inundation of the site is unlikely to occur from the north due to the presence of the higher polder flood defences along Marina Walk, which are generally well above the design fluvial flood level. The existing fluvial flood risk to the site is therefore considered to be low.

The residual risk can be summarised as the risk of a local breach of the polder defence or by overtopping by a design exceedance event. The risk of an exceedance event is extremely low given the high standard of defence provided by the existing polder (in excess of 1 in 200-year tidal event).

The risk of a breach is also considered to be low as the Marina Embankment is quite wide and there is no historic evidence of significant past failures.

4.1.1 Drainage channels

There are existing drainage ditches at the northern and south-eastern boundaries of the site as shown in Figure 9. Both ditches collect storm water from the site which is conveyed in an easterly direction to the north-east corner where then outfalls to the River Lee.

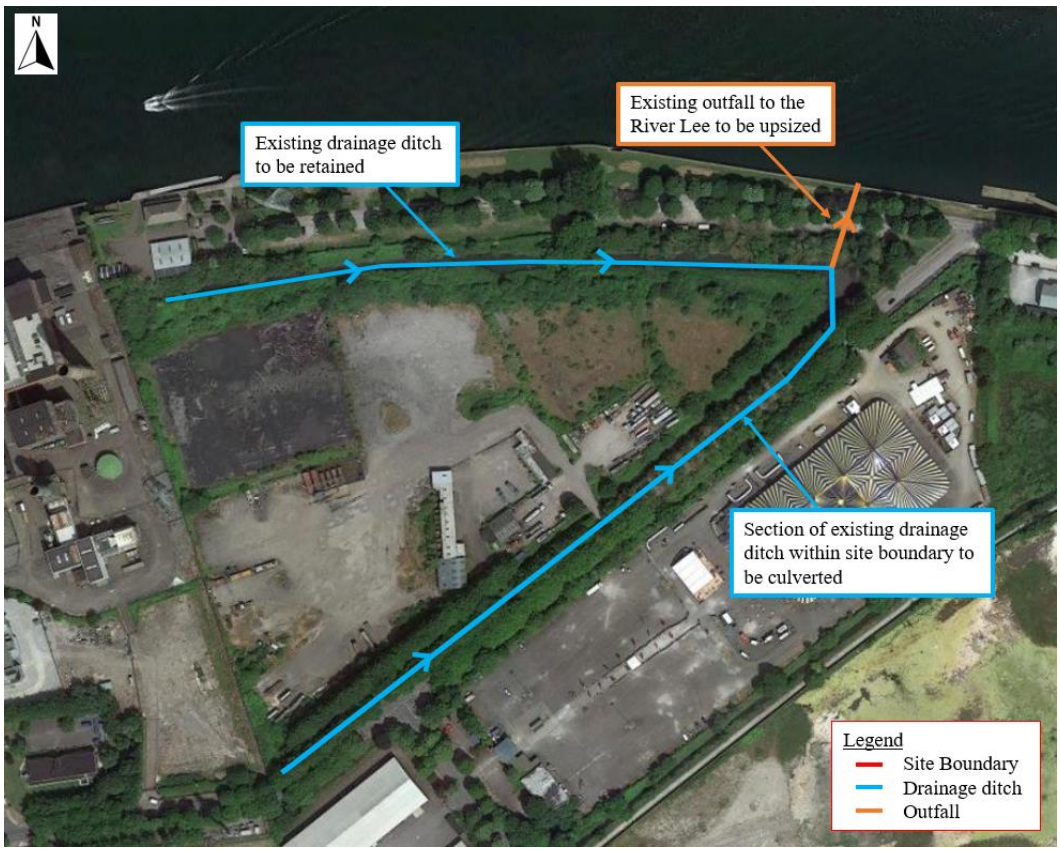


Figure 9:Drainage ditches at the northern and southern site boundaries

As part of the proposed development the northern ditch will be retained, the outfall will be upsized and the portion of the southern drainage ditch which is within the site boundary will be culverted. The ditch and culvert will convey surface water from the proposed development to the River Lee via the upsized outfall. The reader is referred to the accompanying Site Infrastructure Report for further information.

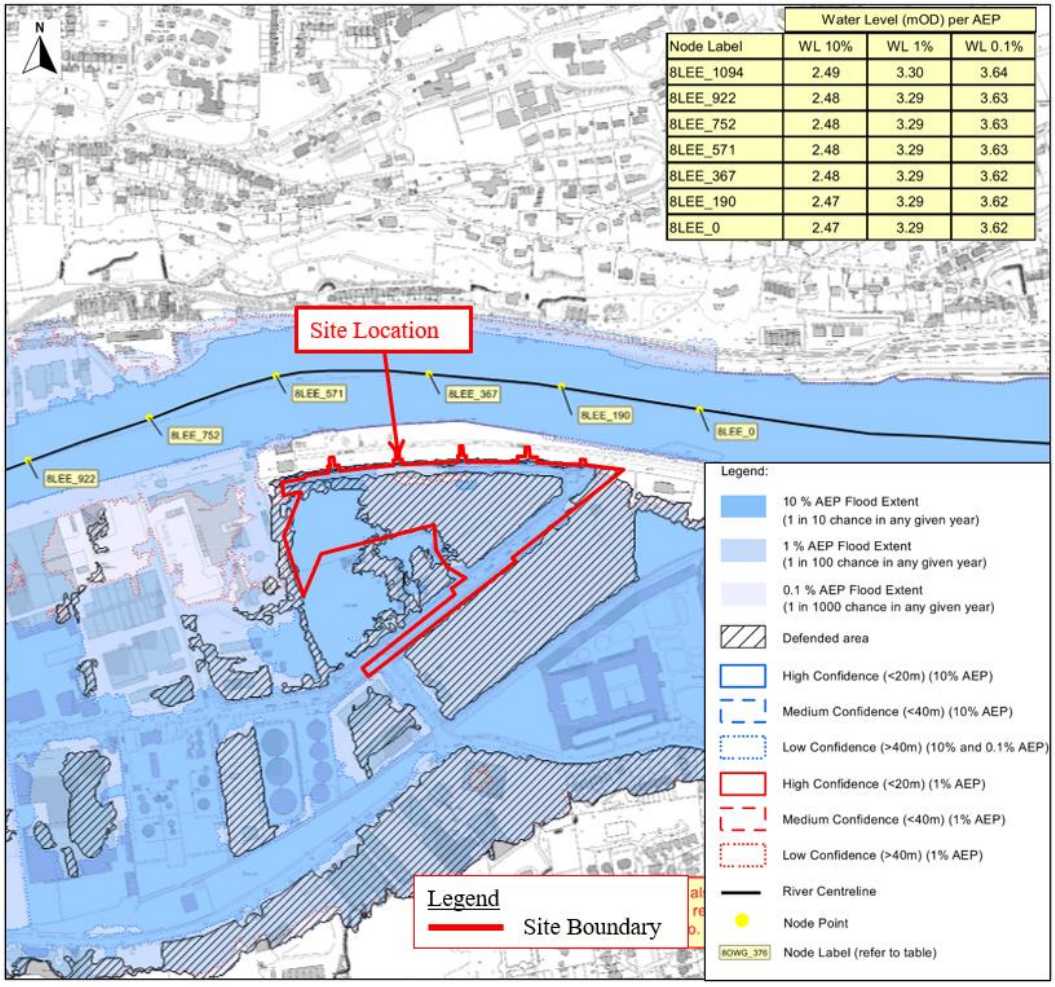
Topographic data for the site shows that if the outfall were to get blocked and the drainage ditch was to overtop its banks, water would flow east onto Centre Park Road which is at a lower elevation than the subject site.

Given this information, flood risk to the site from these ditches is considered to be low.

4.2 Future fluvial flood risk (Mid-Range Future Scenario)

Figure 10 below displays an extract from the Lee CFRAM Mid-Range Future Scenario (MRFS) fluvial flood event in the vicinity of the site. The predicted level for the 1% AEP fluvial flood event is 3.29mOD (node 8LEE_571), which is 0.55m above the equivalent current scenario level.

The MRFS extents were generated by assessing the potential effects of climate change and adopting an assumed increase in river flow of 20% and sea level rise of 500mm.



Node Label	Water Level (mOD) per AEP		
	WL 10%	WL 1%	WL 0.1%
8LEE_1094	2.49	3.30	3.64
8LEE_922	2.48	3.29	3.63
8LEE_752	2.48	3.29	3.63
8LEE_571	2.48	3.29	3.63
8LEE_367	2.48	3.29	3.62
8LEE_190	2.47	3.29	3.62
8LEE_0	2.47	3.29	3.62

Figure 10: Extract from Lee CFRAMS MRFS fluvial flood extent map

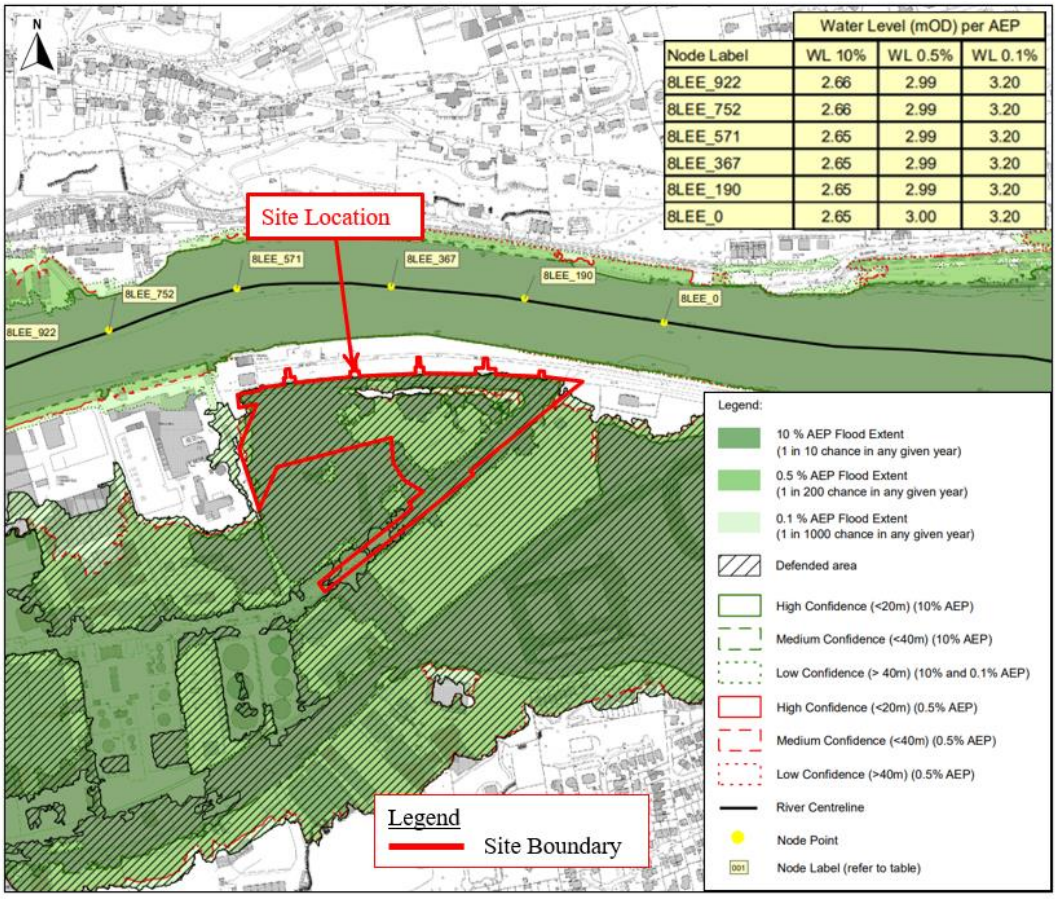
The subject site is indicated as being at risk of fluvial flooding in the MRFS scenario. Flooding to the site during the 1% AEP MRFS scenario originates from a westerly direction, as a result of overtopping of the quayside defences. The eastern area of the site is indicated as being in a 'defended area', which is as a result of its higher topography relative to the lower ground which will flood first. In the MRFS, fluvial flood risk to the site is considered to be high.

Direct overtopping of the polder defence to the north of the site does not occur in this scenario.

It is worth noting that the risk of breach or exceedance will increase over time due to natural degradation of the polder defence (if not maintained) and increasing frequency of extreme river events.

4.3 Current tidal flood risk

An extract from the Lee CFRAMS tidal flood extent map is presented in Figure 11 below and displays the predicted current scenario tidal flood extents within the South Docklands area (1 in 10, 200, and 1000-year tidal flood events).



	Water Level (mOD) per AEP		
Node Label	WL 10%	WL 0.5%	WL 0.1%
8LEE_922	2.66	2.99	3.20
8LEE_752	2.66	2.99	3.20
8LEE_571	2.65	2.99	3.20
8LEE_367	2.65	2.99	3.20
8LEE_190	2.65	2.99	3.20
8LEE_0	2.65	3.00	3.20

Figure 11: Extract from the Lee CFRAM extent map, current scenario

The flood map indicates that the majority of the site is located within Flood Zone A (1 in 200-year flood extent – dark green shade). However, the CFRAM maps also confirm that the site is within a defended area (hatched)due to the presence of the existing polder flood defences to the north of the site.

Nodes 8LEE_190, LEE_367, LEE_571 are located adjacent to the site and these indicate a peak tidal level (0.5% AEP or 1 in 200-year) of 2.99mOD.

As with the fluvial flooding, inundation of areas near to the site occur from a flow path originating at Albert Quay East west of the site, travelling along Centre Park Road. Flooding is shown on Centre Park Road to the south of the site (not hatched dark green shade); the site itself is defended and not shown inundated (hatched). Flooding is not likely to inundate the site from the north due to the presence of the higher polder flood defences along Marina Walk. Therefore, the existing tidal flood risk to the site is considered to be low.

The findings of the Lower Lee (Cork City) Drainage Scheme reaffirms the findings of the CFRAMS. An extract from the Lower Lee Exhibition drawings for this scheme is shown in Figure 12 below. This confirms that tidal flooding in the vicinity of the site for the 1 in 200-year event is limited to the lower extents of Centre Park Road and the drainage ditch at the northern and eastern extent of the site.

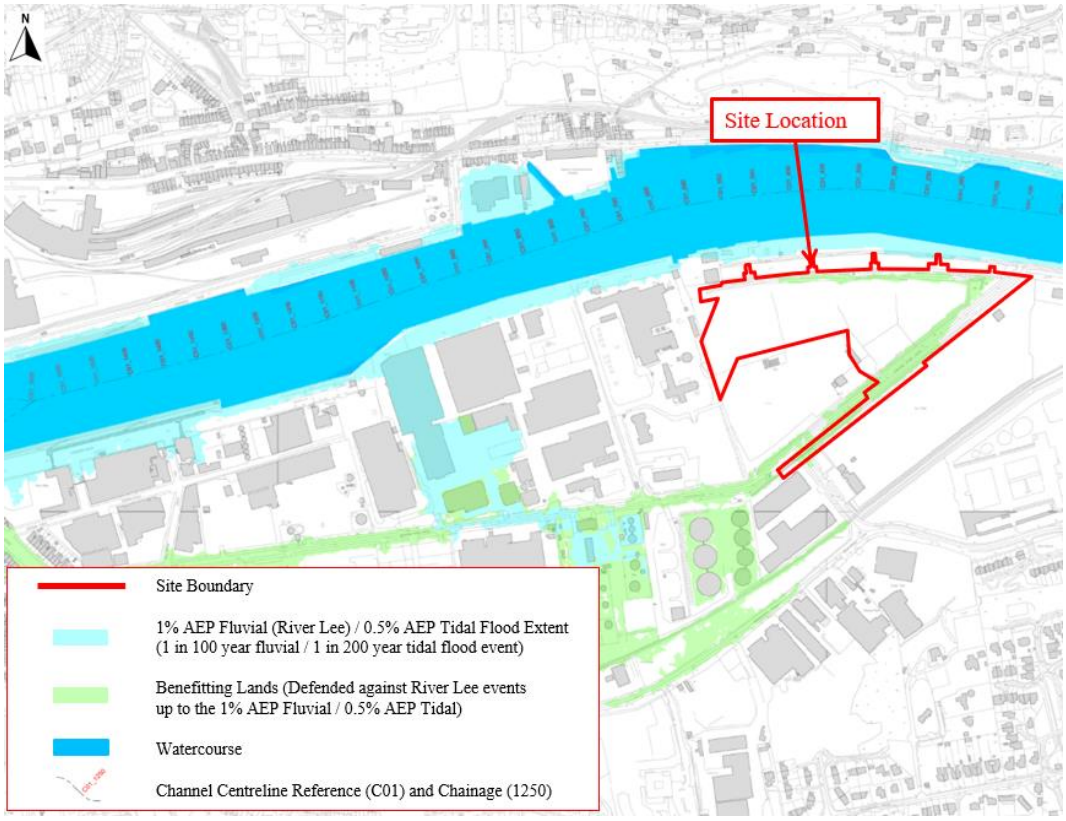


Figure 12: Lower Lee (Cork City) Drainage Flood Extents and Benefitting Areas

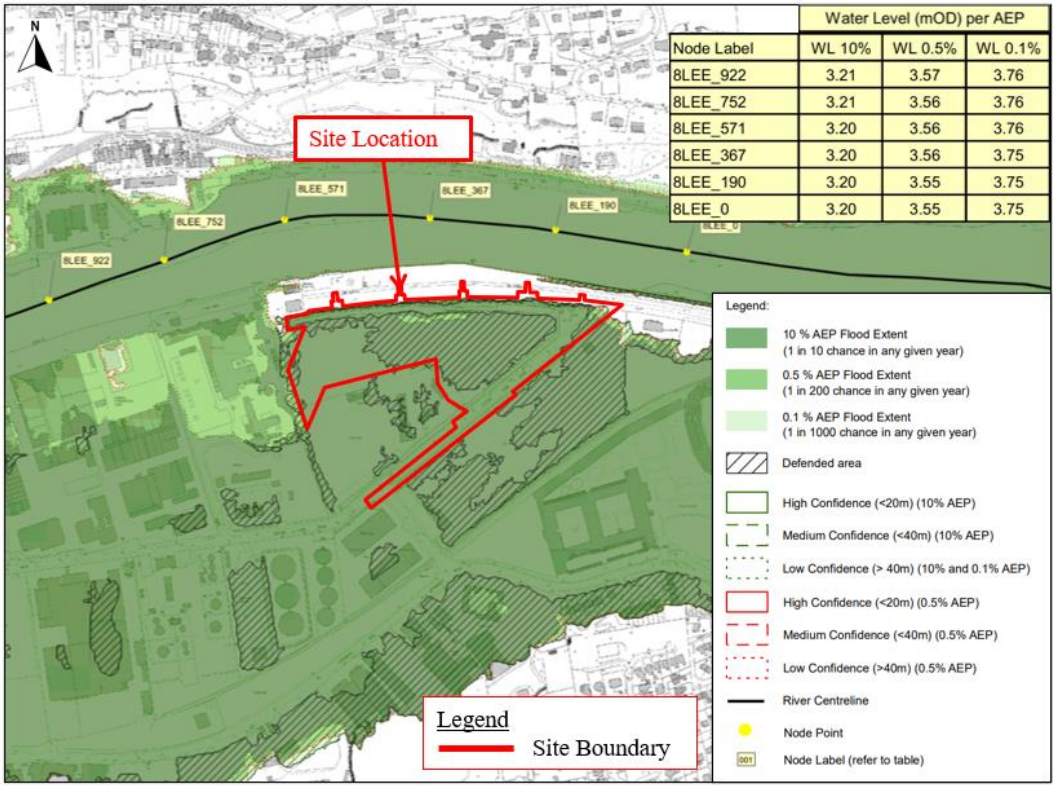
The mapping also demonstrates that the flood risk to Centre Park Road will be removed following implementation of the Lower Lee (Cork City) Drainage Scheme (the green shading indicates the area benefitting from the scheme).

The flooding mapping provides further evidence that flooding from a 1 in 100-year (fluvial) / 200-year (tidal) event is predicted to occur from a westerly direction towards the site. It is noted that a significant period of time is likely to elapse before any significant volumes could reach the site.

The risk of flooding to the site from a tidal/fluvial event is low and is tidally dominated.

4.4 Future tidal flood risk (Mid-Range Future Scenario)

Figure 13 indicates the risk of tidal flooding during the MRFS scenario. The site is shown at risk of tidal flooding during the 10% AEP MRFS event. The predicted MRFS levels (0.5% AEP) in the River Lee in the vicinity of the site is 3.56mOD (node 8LEE_571). This is 0.57m above the equivalent current scenario level.



	Water Level (mOD) per AEP		
Node Label	WL 10%	WL 0.5%	WL 0.1%
8LEE_922	3.21	3.57	3.76
8LEE_752	3.21	3.56	3.76
8LEE_571	3.20	3.56	3.76
8LEE_367	3.20	3.56	3.75
8LEE_190	3.20	3.55	3.75
8LEE_0	3.20	3.55	3.75

Figure 13: Extract from Lee CFRAM MRFS Tidal flood extent map

As above, inundation of the area is noted to occur from a westerly direction and not likely to inundate site from the north due to the presence of the existing polder flood defence. A section of the site is indicated as a 'defended area', with the remainder within the 10% AEP flood extent. Accordingly, the predicted volume of water which may potentially inundate the site is predicted to be moderate and tidal flood risk to the site is considered to be high in the MRFS.

It is worth noting that the risk of breach or exceedance will increase over time due to natural degradation of the polder defence (if not maintained) and increasing frequency of extreme tidal events.

As the dominant risk of flooding from the Lee here is tidal, it is particularly vulnerable to sea level rise as the current standard of protection offered by the polder defence along the working quays is around 1 in 200-years. However, with circa 500mm of sea level rise, the standard of protection would reduce to around 1 in 2-years. Accordingly, it is vital that future raising of the perimeter polder defences advance ahead of the pace of sea level rise.

5. Groundwater flooding/ seepage risk

Similar to many polders, the South Docks area was historically reclaimed from the sea by incrementally depositing dredged estuarine silts atop of the pre-existing mudflats. See Figure 14 below which shows the area prior to reclamation and indicates the presence of 'mud' which is consistent with the description of silts above.

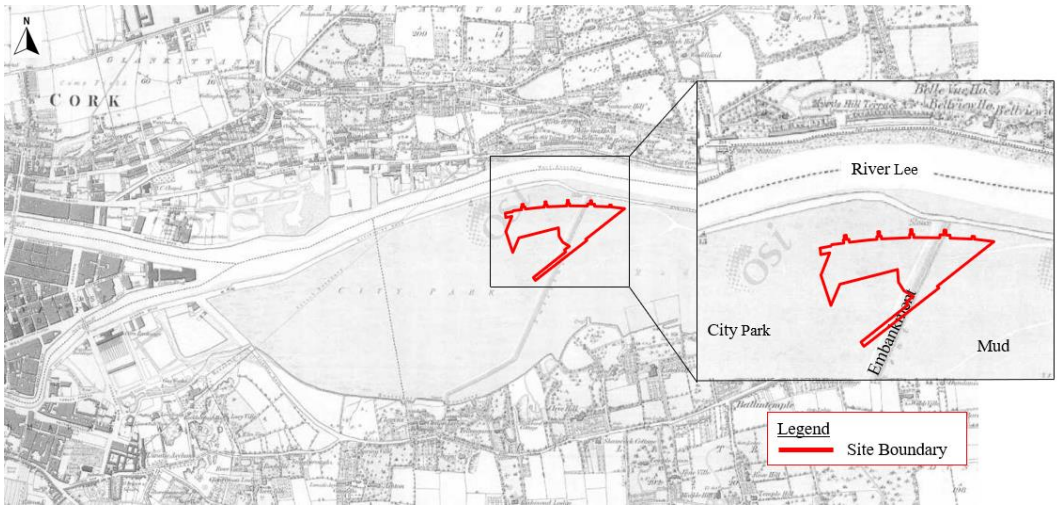


Figure 14: Area prior to reclamation (OSI Historic 6-inch map 1837-1842)

Below these silts, there are great depths of permeable gravels which are hydraulically connected to the Lee. This means that in addition to the risk of overland flow above the surface, there is a risk of seepage underneath polder defences as a result of hydrostatic pressure when river levels are high relative to the much lower polder levels. Due to the increasing hydrostatic head differential, this risk will increase with sea level rise. It is therefore essential that this risk is understood and managed.

5.1.1 PFRA groundwater flood extents

The Preliminary Flood Risk Assessment (PFRA) groundwater mapping undertaken by the OPW has been reviewed and an extract from the PFRA map at the site location is presented in Figure 15. PFRA mapping was the first step in the OPW's CFRAM programme which helped identify areas of flood risk for further assessment.

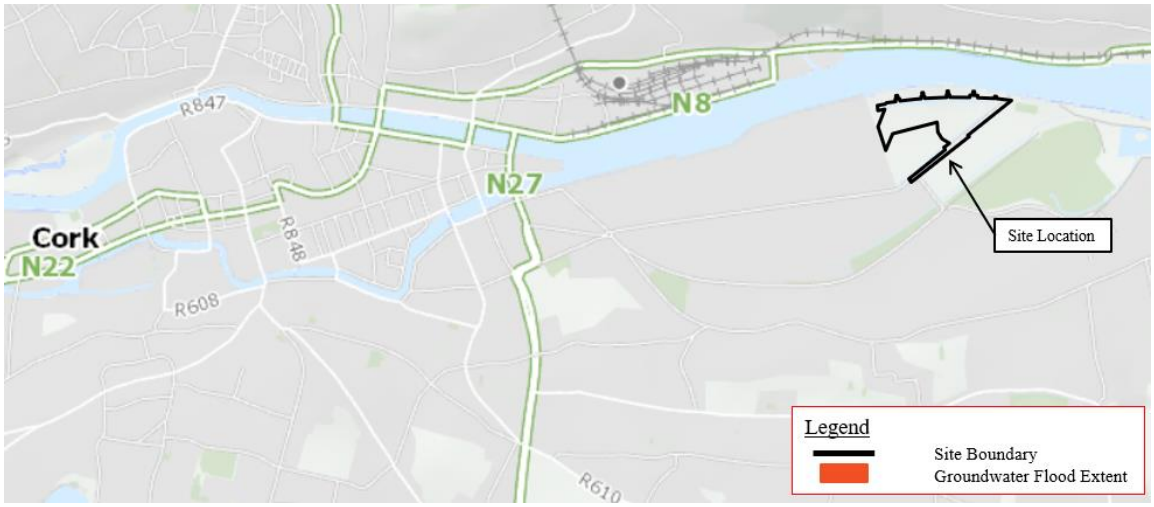


Figure 15: Groundwater Flood Extents extract from PFRA mapping

The map does not show the site or the areas in the vicinity of the site as being at risk of groundwater flooding.

However, it is important to recognise that this mapping was based predominantly on historic anecdotal evidence of flooding and therefore generally mapped areas of turloughs, springs and other groundwater features generally associated with areas of karst limestone where bedrock is close to the surface. This does not apply in the Docklands area.

5.1.2 GSI Mapping

Groundwater vulnerability mapping for the site from the GSI website is presented in Figure 16, annotated with the subject site outlined in red. It is noted that vulnerability of the groundwater within the site boundary is classified as 'moderate'.

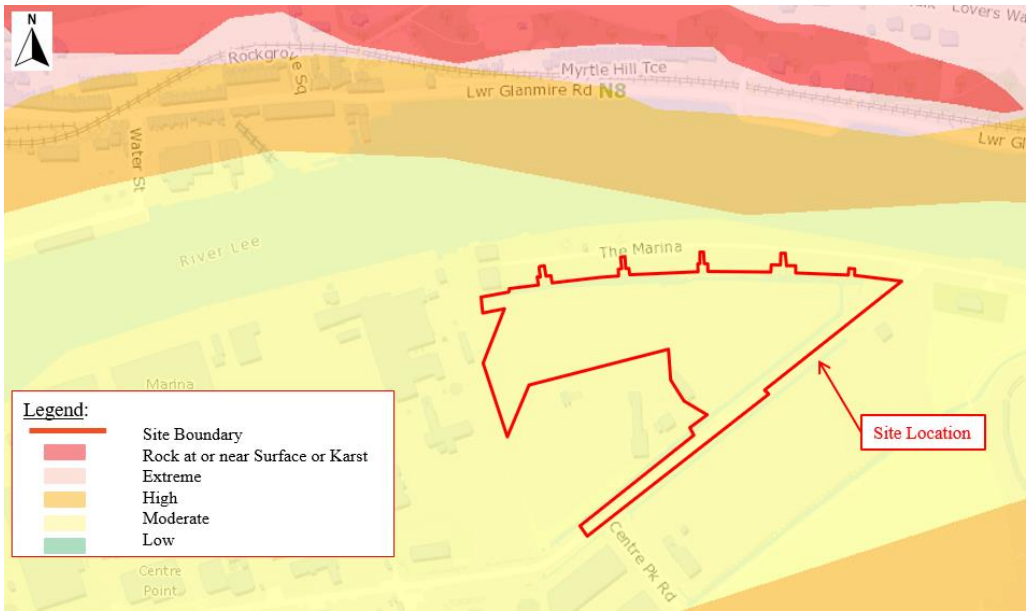


Figure 16: Extract from Groundwater Survey Ireland Vulnerability mapping (www.gsi.ie)

This dataset however is indicative only and does not examine the groundwater regime in detail at the site.

5.1.3 Cork South Docks Levels Strategy

CCC has advised that the preliminary hydrogeology study undertaken as part of the Cork South Docks Levels Strategy (CSDLS) indicates that overlying the deep gravels in the area, is a very low permeability clay layer approximately 3 to 4m thick. The top of this layer is typically about 3m below existing ground levels which were raised, typically with dredged silts and/or other available fill, to reclaim much of the area. Due to the volume and nature of historic site investigation data available to the study, there is a high degree of confidence in this ground profile.

The low permeability clay/silt layers perform a hugely important function as an aquitard in preventing the rapid rise of groundwater in response to fluctuations in the tide. In developing South Docks as a polder, it will be vital that the integrity of this layer is protected to maintain its function, the importance of which will only increase with sea level rise. Due to the nature of the ground conditions and height of the proposed development, construction methods may require piling, and so the detailing of this in a way which maintains the integrity of the clay layer is vital. The requirement to maintain drainage systems at higher levels because of tide locking will also avoid the need to interfere with this aquitard layer.

5.1.4 Review of site investigation data

To inform the ground conditions and groundwater regime of the site, site investigation was undertaken during late 2021 which noted that made ground and gravel was observed throughout the site. Within the made ground and gravel stratigraphy, groundwater was observed and recorded. Figure 17 shows the SI locations at the site.

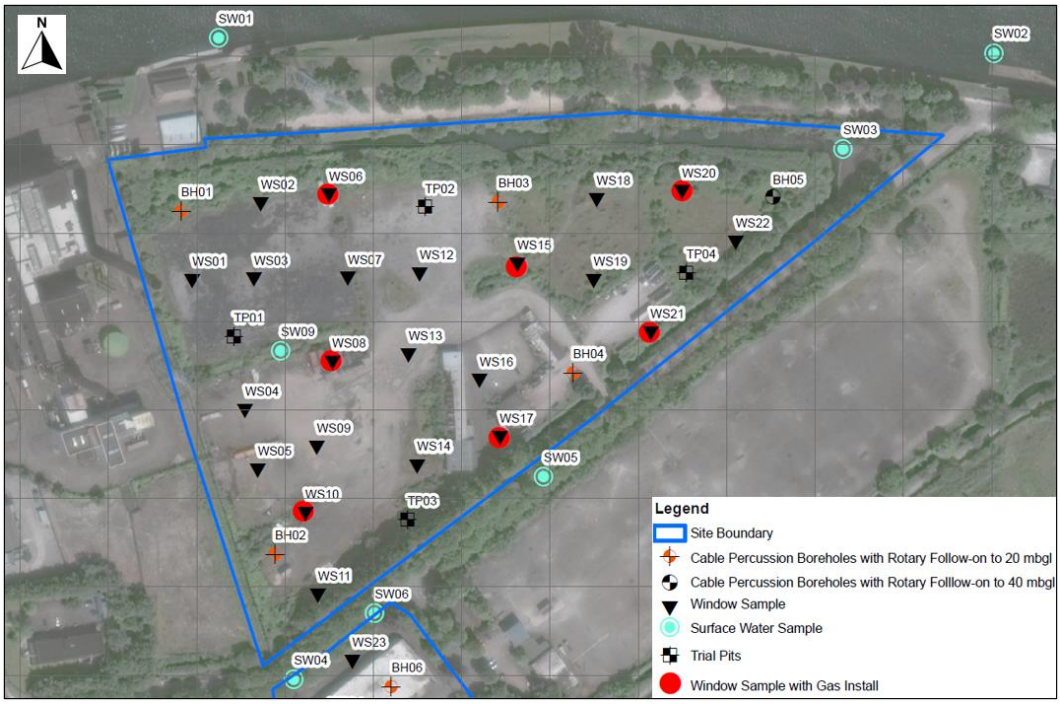


Figure 17: SI Locations

Groundwater was monitored using loggers in 7 standpipes installed in either the made ground or gravel between 10th November 2021 and 8th December 2021. Groundwater monitoring data collected during the 2021 SI is presented in Table 6.

Table 6: Summary of groundwater levels

Lithology monitored	Boreholes	Groundwater level (mbgl)	Groundwater level (mOD)
Made ground	BH04, WS08	0.7 to 1.52	1.25 to -0.24
Gravel	BH01, BH03, WS20, WS17	1.74 to 3.70	0.15 to -1.38

Made Ground

Water levels in the made ground appear to be unaffected by the tide. The water in the made ground is likely to be derived from a mixture of a small amount of surface infiltration, water seeping up through the silt aquitard and potentially small amounts of water seeping through the polder.

Gravel Aquifer

Water levels in the gravel aquifer are tidally influenced and fluctuate during a single cycle by up to 1.3m. Consequently, the groundwater in the gravel is considered to be in direct continuity with the Lee. Net groundwater flow is expected to be towards the Lee and generally to the east.

The difference in groundwater levels between the gravel and made ground suggests that hydraulic continuity between the two units is limited. The layer of silt between the two units is considered to act as at least an aquitard, limiting movement from one body of water to the other.

Given all of the above information, and providing the recommendations from the CSDLS are implemented, groundwater flood risk to the site is considered to be low.

6. Pluvial flood risk

Pluvial flooding typically occurs when extreme rainfall overwhelms drainage systems or soil infiltration capacity, causing excess rainwater to pond above ground at low points in the topography.

Pluvial flood risk can also be directly related to the backwater effects of tide locking on the area where surface water is unable to drain freely due to closure of non-return valves during times of high tides. This is particularly the case in a polder environment such as the South Docks. This impact will increase with future predicted increases in sea level and rainfall intensity.

The existing drainage network servicing the South Docks is known to be laid at shallow gradient and accordingly suffers from siltation, conveyance and capacity problems. As noted earlier, historic pluvial flooding of Centre Park Road is known to occur.

The existing (1.5 to 2.5mOD) and proposed site levels (1.3 to 5.4mOD) are elevated above the levels of Centre Park Road (which range from 0.1mOD at the vehicular entrance to the site to 1.4mOD toward the north east). As a result, offsite water from pluvial flooding will not flow towards the site, but instead west along Centre Park Road or south along Marquee Road, which are both at lower elevations than the subject site. Please refer to the proposed site layout drawings for further context.

As part of the CSDLS, it is proposed to raise the level of Centre Park Road adjacent to the subject site to a minimum of 0.7mOD. In this scenario, site levels are still above the new road level.

The proposed development's surface water drainage network was designed so there is no surface flooding in a 100-year rainfall event (including an allowance for Climate Change). The reader is referred to the accompanying Site Infrastructure Report which details the proposed drainage design for the development.

Future pluvial flood risk to the proposed development will be mitigated through the installation of an appropriately designed surface water drainage system (outlined in the Site Infrastructure Report) in conjunction with the adoption of finished floor levels raised above the surrounding roads will mitigate pluvial flood risk to the site to an acceptable standard.

The risk of pluvial flooding to the site is considered low due to its higher elevation above the lower adjoining road network which will convey flood waters away from the site.

7. Consideration of other studies/projects in developing a Flood Risk Management strategy for the site

In order to inform a suitable and practical flood risk management strategy for the site, it is important to consider the strategy in the context of relevant knowledge gleaned from other relevant studies and of other infrastructure projects currently being planned and/or delivered. Accordingly, the evolution of the flood risk management strategy for the site has considered the following other studies and upcoming projects:

- Preliminary findings of Cork City Council's (CCC) South Docklands Levels Drainage Strategy and as set out in Section 7.1 below.
- Lower Lee Flood Relief Scheme (LLFRS) (currently being finalised for Ministerial Consent)
- Docklands to City Centre Transportation Project (currently being designed)
- Cork City Council Marina Park Phase 1 (recently completed)
- Area Based Transport Assessment (ABTA) Transport Corridors (Currently being finalised)

These are discussed below.

7.1 Cork South Docklands Level Strategy

Arup has liaised extensively with Cork City Council in relation to the outcomes of the Cork South Docklands Levels Strategy (CSDLS), so that the design of the proposed development took account of and is compatible with the City's proposed strategy.

Cork City Council has confirmed that the work underpinning the CSDLS has now been completed, with the production of the Final Report imminent. The key findings and recommendations are summarised below:

- The study confirms that it is feasible to maintain the area as a polder provided that the standard of protection along the quayside is raised over time (as CCC acquires the quayside lands from Port of Cork company, and the owners of quayside fronting landbanks redevelop these lands etc.) and that a compatible surface water drainage strategy is developed which can safely store surface water during periods where the outfalls are tide-locked.
- It recommends a proposed Polder Defence Level of 4.35mOD.
- The CSDLS found that groundwater flood risk is very low, even in future climate change scenarios, due to the presence of a confining aquitard layer of clay/silt which is approximately 3 to 4m thick and has a relatively consistent presence in the South Docks area. A key recommendation of the CSDLS is that all developments must ensure that this layer is not compromised. Furthermore, piled foundations must be designed such that they do not create conduits for groundwater flow from the underlying saturated gravel layers.
- Confirmation that in general, it is proposed to retain ground levels as close as possible to the existing with only localised raising of some particularly low points on the road network to a minimum of circa 0.7mOD and more generally 1mOD. In the vicinity of the subject site, this requires the raising of ground levels on Centre Park Road and Marquee Road to a minimum level of between 0.7m to 1mOD (current minimum level is circa 0.44mOD). CCC intend to raise the low points on Centre Park Road in the medium term and therefore the development will need to function in both the short term with Centre Park Road at current levels as well as also being able to function when the proposed future road raising is implemented.
- To minimise risk of pluvial flooding of buildings and to allow for exceedance events, the CSDLS proposes a minimum development finished floor level of 1.3mOD. In addition, ground floor levels should where possible be set at least 150mm above streetscape levels, with external gradients falling away from building thresholds.

- The CSDLS also includes a preliminary design for the vertical alignment of Centre Park Road and the proposed Monahan Road extension which has been developed by CCC and its agents in consideration of the Eastern Gateway Bridge requirements, the Marina Park development currently on site and the recommended polder defence level along Marina Walk.
- The CSDLS has developed a level and drainage strategy that facilitates a public drainage system that can operate by gravity for up to and including the mid-range future scenario (up to 0.5m of sea level rise). If sea level rise greater than this occurs, it is envisaged that a regional pumping station will be required to augment the gravity system during extreme tidal events.
- The drainage strategy in the CSDLS requires that storage of surface water during periods of tide-locking be shared between private development sites and the public infrastructure. Storage in the public areas forms part of a proposed integrated blue-green infrastructure approach incorporating a combination of piped systems, swales, ponds and floodable green areas.
  This requires that all developments limit discharge to the public system to a specified maximum discharge rate of 68 l/s/ha for events up to the MRFS, to allow the public surface water drainage system to be designed accordingly. CCC has also provided peak downstream water levels in the public surface water storage system so that the backwater impacts can be considered in the design of the site drainage system.

7.2 Lower Lee Flood Relief Scheme (LLFRS)

The Office of Public Works (OPW) in partnership with Cork City Council is currently advancing the Lower Lee Flood Relief Scheme (LLFRS), also known as the Lower Lee (Cork City) Drainage Scheme. This scheme will be designed to provide protection to much of Cork City from the 1 in 100 year fluvial/1 in 200-year tidal flood events.

It is noted that the proposed LLFRS works do not extend significantly into the South Docklands area as this area is already protected to a high standard by the existing quayside defences. However, the LLFRS will still provide a significant benefit to the South Docklands including the subject site, by preventing overland flow from Albert Quay East propagating into the Docklands, thus reducing flood risk to the site. This risk is identified and discussed in Section 4 of this report.

7.3 Docklands to City Centre Transportation Project

As the delivery of the LLFRS is likely to be phased over a number of years, Cork City Council is currently advancing a transportation project which includes the reimagining of Albert Quay East, including new public realm spaces, greater space for pedestrians and cyclists and new river access points. As part of this project, changes have been incorporated to the road levels to provide local perimeter flood protection to a level of 3.4mOD, thus removing the primary flow path for floodwaters into Docklands and significantly reducing flood risk to the subject site. This project is currently being finalised for planning application.

7.4 Marina Park Phase 1

The proposed development needs to be compatible with the recently completed Cork City Council Marina Park Phase 1. The Marina Park Development significantly increases the surface water storage volume within the South Docks and is a key component of the CSDLS approach.

7.5 Cork Area Based Transport Assessment Study

The design is cognisant of the preliminary findings of the Cork Area Based Transport Assessment (ABTA), in particular, the required transport corridor widths on Centre Park Road, Marquee Road and the Monahan Road Extension. These requirements have been incorporated into the design, including the drainage design which will mitigate the risk of pluvial flooding.

8. Summary of overall Flood Risk Management strategy

8.1 Polder context

In considering an appropriate development masterplan and associated flood risk management strategy, it is important firstly to recognise that the proposed development lies within an existing polder, and therefore the approach to flood risk management will differ from many other developments.

The existing polder defences are generally in good condition and provide a high standard of protection to the land bank within the polder. This provides a high degree of confidence that the risk of direct river flooding will be low and will remain low for quite some time. However, the standard of defences will gradually erode over time as the rate of sea level rise increases. Given the planned scale of development in Docklands, and the outcome of the CSDLS, it is clear that Cork City Council intends to, and will have no alternative but to invest in raising the polder defences to ensure that they can continue to act as the primary line of flood defence and continue to provide a high standard of protection, as sea level rise takes place.

Given the firm commitment of Cork City Council to this Strategy, it is entirely reasonable that the flood risk management strategy should assume that the polder defence will remain the primary line of defence into the future.

In order for the development to respond to Cork City Council's polder strategy, to achieve wider strategic planning objectives such as functional streetscapes and transitions to the local transportation corridors, it is necessary to place some aspects of the proposed development at floor levels below the predicted rivers levels in the adjoining Lee estuary.

Whilst the flood risk management strategy recognises the primary defence provided by the polder, it must also recognise the residual risks to the development which in the short to medium term are the risk of overtopping and/or breach, both of which are low. In the longer term, there is the risk that the raising of the polder defences may be delayed, and that the risk of breach and/or overtopping would increase accordingly.

Therefore, the flood risk management strategy for the proposed development adopts a precautionary approach by also incorporating flood risk management proposals and infrastructure at a site level so that flood risk is mitigated to an acceptable level, independent of the City's planned polder defence works.

In this context, it is important to consider vertical differentiation of uses and apply a differing approach to minimum development floor levels for highly vulnerable development (such as residential) versus less vulnerable development (such as commercial or retail etc).

Use of flood resilient approaches is an important aspect of the strategy, as is the use of building perimeter defences and demountable barriers.

All of this strategy will come together as part of the developments Emergency Response Plan. The following sections set out the various components of the strategy both at a regional level within the wider South Docks area and at a development plot level.

8.2 Primary polder flood protection

As noted above, the primary line of flood protection to all development in Docklands will be along the northern perimeter bounding the River Lee.

Currently, the level of the polder defence located north of the site is approximately 4.00mOD (varies) and provides a high level of tidal and fluvial flood defence to the site.

However, the level of protection is lower further west, with an existing level of circa 2.80mOD along Kennedy Quay, with the greatest risk at Albert Quay East where defence levels are circa 2.55mOD.

The existing quayside defences described above generally provide a standard of protection of approximately 1 in 200-years save for the local low point on Albert Quay East. CCC propose to raise this low-lying section in the short term as part of the Docklands to City Centre Transportation project, thus universally ensuring a 1 in 200-year standard of protection to all of Docklands in the current scenario.

Over time, this defence will be raised by CCC to the proposed long-term design defence level of 4.35mOD. This may well be undertaken on a phased basis as land and funding becomes available, with the next lowest lying areas being prioritised where possible.

Whilst the flood risk strategy for the proposed development is not solely reliant on the implementation of other public projects, such as the Docklands Transportation project and the future raising of the polder defences, it is worth noting that the future residual flood risk to the site will be further reduced if, and when these schemes are implemented.

8.3 Precautionary approach to highly vulnerable development

8.3.1 Overview

Given the residual risks identified above, the development proposes to significantly reduce the risk to more vulnerable users by introducing vertical differentiation of uses. It is proposed to only provide less vulnerable and water compatible development at ground level with more vulnerable uses such as residential being provided at first floor level and above, such that these elements are not reliant on the continued function of the polder defences. The basis for establishing a minimum floor level for these higher vulnerability uses is described in the following sections.

8.3.2 Establishment of Design Tidal Level

As noted above, tidal flood risk is the dominant river flooding risk (i.e. the predicted 1 in 200-year (0.5% AEP) current day tidal water level in the vicinity of the site is higher than the corresponding fluvial level). Therefore, predicted tidal levels will be the driver when considering minimum floor levels for highly vulnerable residential development.

As noted in Section 4.3, the design water level (0.5% AEP) indicated on the Lee CFRAM drawings is 2.99mOD. This level will therefore be used as the starting point for the calculation of the design river flood level and thus minimum floor level for highly vulnerable development.

8.3.3 Allowance for Climate Change

In addition to the present-day risk, it is important to recognise the very real risk of sea level rise in choosing an appropriate floor level. Future Climate Change is predicted to result in several effects, including more extreme rainfall, more severe floods, and an increase in mean sea level.

The OPW has published draft guidelines on Climate Change for flood risk management and defines two possible future scenarios of varying severity:

- Mid-range future scenario (MRFS)
- High-end future scenario (HEFS)

The OPW recommended allowance for both scenarios is included in Figure 18.

Table 3.1: Allowances in Flood Parameters for the Mid-Range and High-End Future Scenarios

Parameter	MRFS	HEFS
Extreme Rainfall Depths	+ 20%	+ 30%
Peak Flood Flows	+ 20%	+ 30%
Mean Sea Level Rise	+ 500 mm	+ 1000 mm
Land Movement	- 0.5 mm / year[1]	- 0.5 mm / year[1]
Urbanisation	*No General Allowance – Review on Case-by-Case Basis*	*No General Allowance – Review on Case-by-Case Basis*
Forestation	- 1/6 Tp[2]	- 1/3 Tp[2] + 10% SPR[3]

Note 1: Applicable to the southern part of the country only (Dublin – Galway and south of this)

Note 2: Reduction in the time to peak (Tp) to allow for potential accelerated runoff that may arise as a result of drainage of afforested land

Note 3: Add 10% to the Standard Percentage Runoff (SPR) rate: This allows for temporary increased runoff rates that may arise following felling of forestry.

Figure 18: OPW recommended allowances for future scenarios

There are a number of conclusions that may be taken from the predictions of Climate Change implications:

- Increases in sea levels may result in extreme tidal events, with tidal levels increasing by more than 1 metre in the next century.
- Increases in the frequency of extreme events, particularly hydrological extremes, storms and droughts may cause an increase in rainfall intensity, duration and volume, resulting in increased surface water runoff.

CCC has confirmed that the CSDLS has chosen a polder defence level of 4.35mOD on the basis that quayside defences may continue to provide the optimum solution to flood protection for Cork City for sea level rise up to 1m. Beyond this, it is considered likely that a harbour wide solution such as a tidal barrier or barrage may become necessary and/or viable. Based on the same rationale, it is considered that the HEFS can be taken as the upper bound consideration of sea level rise for development on the subject site.

8.3.4 Freeboard allowance

It is generally accepted that a minimum freeboard of 0.3m above predicted flood levels is appropriate for establishing a minimum flood defence level and floor levels.

8.3.5 Recommended finished floor level for highly vulnerable development

Based on the above, it is recommended that all 'highly vulnerable development' have a minimum floor level of 3.80mOD, which provides protection from the 1 in 200-year current tidal flood level (2.99m) plus an allowance of 0.5m for sea level rise to the MRFS and 0.3m for freeboard.

Where possible, it is recommended that floor levels for highly vulnerable development be raised even further to a level equating to the polder defence level of 4.35mOD to provide for sea level rise of 1m to the HEFS, with such development then not being reliant on the polder defence at all.

The development proposal as submitted complies with the above recommendations, with all highly vulnerable aspects of the development being located at 5.4mOD or above, approximately 1m above the proposed long term polder defence level. This provides protection to the circa 1 in 1000-year tidal flood level plus an allowance of 2m (min.) of sea level rise. This implies significant safeguarding and longevity against the potential impacts of climate change and is in line with guidance provided in the OPW guidelines.
It also ensures that protection of the most vulnerable development is not contingent on the future raising of the polder defences.

8.4 Versatile approach to less vulnerable development on Site

In line with Cork City Council's preferred strategy of maintaining existing levels where possible, it is proposed that less vulnerable development (car park, commercial and retail units etc.) be provided at a minimum finished floor level (Level 00) of 1.3mOD. This level complies with CCC's advised minimum floor level of 1.3mOD for less vulnerable development.

This will ensure that the proposed development is protected from pluvial flooding by being elevated by at least 150mm above the external transportation corridors (both existing levels and proposed future raising to circa 0.7m to 1mOD) and above the onsite storage level of the proposed surface water drainage system.

As noted above, the primary flood protection to this level of development will be provided by the polder wide quayside defences which generally provide protection to a standard of approximately 1 in 200-years at present.

Secondary site wide measures have been incorporated into the design of the development to further mitigate the very low residual risk of overtopping or breach. These are described in the following sections of the report.

8.5 Other elements of Flood Risk Management strategy

In addition to the above defence elements, the other aspects of the flood risk management strategy focuses on:

- Preparing and implementing a robust emergency response plan (including provision for safe access and egress)
- Ensuring that the design of the foundations, and drainage systems do not compromise the integrity of the aquitard clay layer underlying the site
- The surface water drainage system will be designed to include sufficient storage to cater for rainfall events up to and including the MRFS whilst complying with Cork City Council's required discharge limits.

9. Proposed on-site flood protection and mitigation measures

9.1 Overview

This section sets out the details of the proposed flood risk management infrastructure on the site.

9.2 Appropriate finished floor levels

As outlined above, to ensure alignment with Cork City Council's preferred strategy of maintaining existing levels where possible and taking into account the key outputs of the South Docks Levels Strategy, it is proposed to locate less vulnerable development at Level 00 (ground floor level) at a minimum finished floor level of 1.30mOD. This includes the retail areas, cafes, bike storage areas, car park, plant and amenity areas.

Highly vulnerable development, such as the creches and residential dwellings, will have a minimum floor level of 5.4mOD, 1.05m above the polder defence level of 4.35mOD. This level allows for sufficient freeboard on top of the 1 in 200-year HEFS tidal event.

Due to the constraints outlined previously, less vulnerable development will be located below the predicted current 1 in 200-year tidal undefended flood level of 3.0mOD. Where this occurs, it is proposed to adopt one of two approaches at a site level. The first is to acknowledge the low residual risk of flooding and adopt a flood resilient approach, allowing water entry, planning for infrequent flooding and making the development resilient to the impacts of same. The second approach is a flood resistant approach, providing a secondary line of defence at building perimeters to prevent water entry. These approaches are described further below.

9.3 Flood resilient strategy

This approach acknowledges and designs for a low residual risk to some less vulnerable commercial units to be located at building perimeters on the Ground Floor Level (Level 00) to tie in with the existing streetscape constraints. This will include appropriate design to incorporate flood resilient construction, measures and finishes. Utility services are to be installed to a level of 3.8mOD or higher, above the design flood level for highly vulnerable development.

Employment of a flood resilient approach includes use of materials and methods that reduce the impact from a flood while ensuring that structural integrity of the development is maintained during any flood event. The choice of finishes aids ease of cleaning up in a safe and efficient manner following a flood event and prior to re-occupation. This can include both external and internal flood resilient finishes. Typical external finishes include use of materials such as concrete and stainless steel which are resilient to flooding.

Typical internal resilient features would include installing water resistant surfaces (e.g. tiles rather than carpet etc.) on floors and walls which facilitates ease of cleaning after any flood event, installation of floor drains to aid drainage of flood water, washing points such as taps and cleaning apparatus within strategic locations of the building to facilitate clean-up operations, use of flood resilient finishes on doors, skirting boards and internal finishes (PVC, plastics etc.), avoiding the use of unsuitable materials such as chipboard or similar materials and raising electrical sockets and mechanical equipment above flood level and facilitates to store valuables (food etc.) above flood level.

To minimise the risk of an electrical fire being caused by a flood, all electrical systems at the lower levels will be designed to be flood proof and not to ignite in the event of a flood. Sumps can be located within lift shafts to ease drainage once flood levels have receded and the design of the lifts will be such to minimise damages during flooding.

Applying flood resilient methods and measures as outlined above aligns with the recommendations as highlighted in the Cork City Council Adaptation Strategy 2019-2024.

9.4 Flood resistant strategy: On-site flood defences

The alternative approach to flood resilience is to provide a secondary line of defence to some ground floor (Level 00) elements such as the car park areas, plant and some commercial units to prevent water entry.

As the Docklands area is quite large, it is highly unlikely that there would be a sufficient volume of inundation to result in flood levels within the polder reaching the same level as in the river. For this reason, given the primacy of the polder flood defences, a lower flood defence height is deemed to be acceptable.

For this secondary line of flood defence, a minimum level of 1.9mOD is recommended by the CSDLS. In most cases, this will be provided predominantly by waterproofing of the perimeter up to the 1.9mOD level, design of the structure to withstand the relevant hydrostatic load and protecting openings with demountable flood defences of up to 600mm in height.

The number of demountable defences incorporated into the development has been minimised and limited to strategic locations within the development. This reduces the risk of human error in erecting active flood defences for the development and allows efficient deployment in advance of a flood event. An emergency response plan will be developed for the site, which will include the location of demountable flood defences and responsibility to erect them following a flood warning. More information is included in Section 11.

Large parts of the development which are at 1.3mOD (e.g., the carparks) are often surrounded by ground levels greater than 1.9mOD which would prevent water ingress and therefore do not require flood defences. Refer to Appendix C for a proposed plan alignment of flood defences to the site which includes demountable defences, permanent defences and indicates areas of proposed flood resilient construction.

9.5 Mitigation of groundwater flood risk

The foundation design will ensure that no conduit is created to the higher permeability gravels. This is being achieved by omitting basement structures, ensuring that all drainage infrastructure is kept at the highest elevation possible, as well as designing a piling methodology which does not create preferential flow paths for groundwater. Accordingly, the development will not compromise the integrity of the aquitard layer.

9.6 Mitigation of pluvial/surface water flood risk

The proposed minimum finished floor level (Lower Ground Floor of 1.30mOD) and proposed surface water drainage system will minimise the risk of pluvial flooding. The residual risk will be further minimised by making ground levels on site slope away from all building entrance points or making building entrances 150mm higher than the external surrounding ground.

9.7 Surface water drainage design

Please refer to the accompanying Site Infrastructure Report and drawings for details on the proposed surface water drainage design.

9.8 Other penetrations

All services entering the development will be sealed to prevent ingress of floodwaters into the buildings. If any air vents or openings are proposed, they shall be placed above the secondary flood defence level of 1.9mOD.

10. Residual risks

10.1 Residual risk of breach or overtopping of polder defences

Given its location in a polder, it is important to recognise, mitigate and plan for the residual risk associated with a breach or overtopping of the polder defence.

The probability of the risk arising will be a function of the extent to which sea level rise occurs, the upkeep of the defences and the timing of CCC's raising of the quayside defences.

These issues will be documented in the Emergency Response Plan and reviewed annually.

The risk is mitigated to a high degree through either the adoption of a flood resilient approach or the use of secondary defences along building perimeters.

The risk will be further mitigated through the implementation of the Emergency Response Plan and associated procedures as set out in Section 11.

10.2 Residual risk of rainfall exceedance event

Whilst the proposed surface water drainage system and associated storage has been designed to a very high standard of protection, including an allowance for climate change, there remains a risk of a rainfall event in excess of the design standard. In practice, this risk is quite small as the design event assumes a conservative joint probability of extreme rainfall event and high tide. In all likelihood, these will not coincide and therefore the on-site storage tanks will have sufficient capacity to deal with many rainfall exceedance events. If not, by raising the buildings above external ground levels and generally having ground levels which fall away from the buildings to the lower road levels, the residual risk of surface water/pluvial flooding will be very low.

11. Emergency planning

11.1 Flood Emergency Response Plan

A flood emergency response plan will be developed for the site and will be implemented in the event of a significant flood event being forecast for Cork City.

Cork City Council currently operate a tidal flood forecasting and warning system which provides warnings of extreme tidal flooding which will be the critical risk for the Docklands area.

Currently, no fluvial flood forecasting system is in place for Cork. However, the ESB issues warnings to Cork City Council in advance of releasing large volumes of water from Inniscarra dam. Cork City Council in turn distribute these warnings to the public. It is worth noting that a formal fluvial flood forecasting system is being developed as part of the proposed Lower Lee (Cork City) Drainage Scheme. In any event, river levels in the Lee at this location are not particularly sensitive to river flows and therefore, in the absence of high tides, large river flows will not of themselves create a major threat.

As part of the emergency response plan, the management staff of the proposed development will be required to maintain awareness of flood and weather forecasts on an ongoing basis as well as receive warnings from Cork City Council and Met Éireann. Occupants of the buildings will be provided with sufficient notice to either leave in advance of the flood or stay in the building until the flood recedes, if needed. The likelihood of a need for evacuation is considered extremely low.

On receipt of a forecast or warning from Cork City Council, the management staff at the development will provide advance warning to allow users/residents to remove vehicles from the car parks at the site in advance of deploying flood demountable barriers, if they so wish.

A Flood Awareness Plan will be developed, whereby building users will be made aware that the building is located in a potential flood zone and that, in the same way as they must always be aware of the possibility of fire and of fire escape procedures, they also need to understand the procedures to be followed if a flood occurs. Similar to fire notices, flood information and evacuation notices will be posted throughout each building. Flood response drills will be conducted on a regular basis. The implications of flood events will need to be addressed in the Safety Plans of individual tenants.

In the event of forecasts of significant or severe flooding, the general response plan will be as follows:

- Warnings of the impending flood with details of timings and likely levels of impact will be communicated to all building users.
- Where possible, building users will remain inside until any flood recedes. This is normal practice in Cork City.
- As with the general population of Cork City in this situation, people choosing to leave the building during a flood would be responsible for their own safety and would have to exercise appropriate care and caution. They would be advised of the best route to take to get to higher ground.
- Where an individual or individuals are required to leave the building due to a medical emergency, depending on the severity of the flooding, they would be evacuated by emergency vehicle as required.
- The development will have its own first aid equipment (including defibrillators) and procedures, and the staff will be trained to respond as required.
- The development management and management of the individual tenancies will, as part of their Emergency Evacuation Plans, be connected to the medical services at appropriate hospitals and will have a plan to deal with the treatment and evacuation of a medical emergency during a flood.
- In the extremely unlikely event of a fire breaking out during a flood and a building having to be evacuated, people will be advised of the optimum route to take on exiting the building to get to higher ground. Management staff will be trained to deal with such an emergency evacuation.

- In the event of an extreme flood being forecast, then it is likely that advisories will be issued by Cork City Council and the Emergency Authorities for the prior evacuation of all vulnerable parts of the city, and that such evacuation will be carried out in a safe and timely manner.
- The development management will develop a Flood Emergency Plan in accordance with the OPW Planning Guidelines which will be updated annually to take account of the latest knowledge on flooding, the latest situation on flood protection for Cork City and the latest Cork City Emergency Plan. The Flood Emergency Plan will be informed by the Emergency Response Plans of Cork City and Cork County Councils.

11.2 Safe access and egress

In general, emergency egress is to be directed to areas of higher ground. The proposed access and egress arrangements are described below for the development. The egress routes will be further elaborated on as part of the development of the Flood Emergency Response Plan. Figure 19 shows emergency egress routes for the development in the event of a flood.

- The design will facilitate emergency egress to the south of the development along Centre Park Road. Emergency egress will then proceed further south along Marquee Road, east along Monahan Road towards higher ground and then south along Maryville road to move away from the River Lee.
- Emergency egress will also be possible to the north, onto the higher ground of the Marina.
- As flood risk to the site is predominantly tidal, advance warning of flood events is predictable. Therefore, advance warnings will be issued for development users to remove vehicles in advance of possible flood events in the short term.
- It is worth reinforcing the point that whilst it is proposed to incorporate these emergency provisions, they would only need to be implemented in the highly unlikely scenario of a tidal flood event having a return period greater than 1 in 200-years and/or in the case of a breach of the existing polder defence.
- Emergency services access would exist via the junction of Centre Park Road and an internal road, where three access points to the carpark will be present for all vehicles.

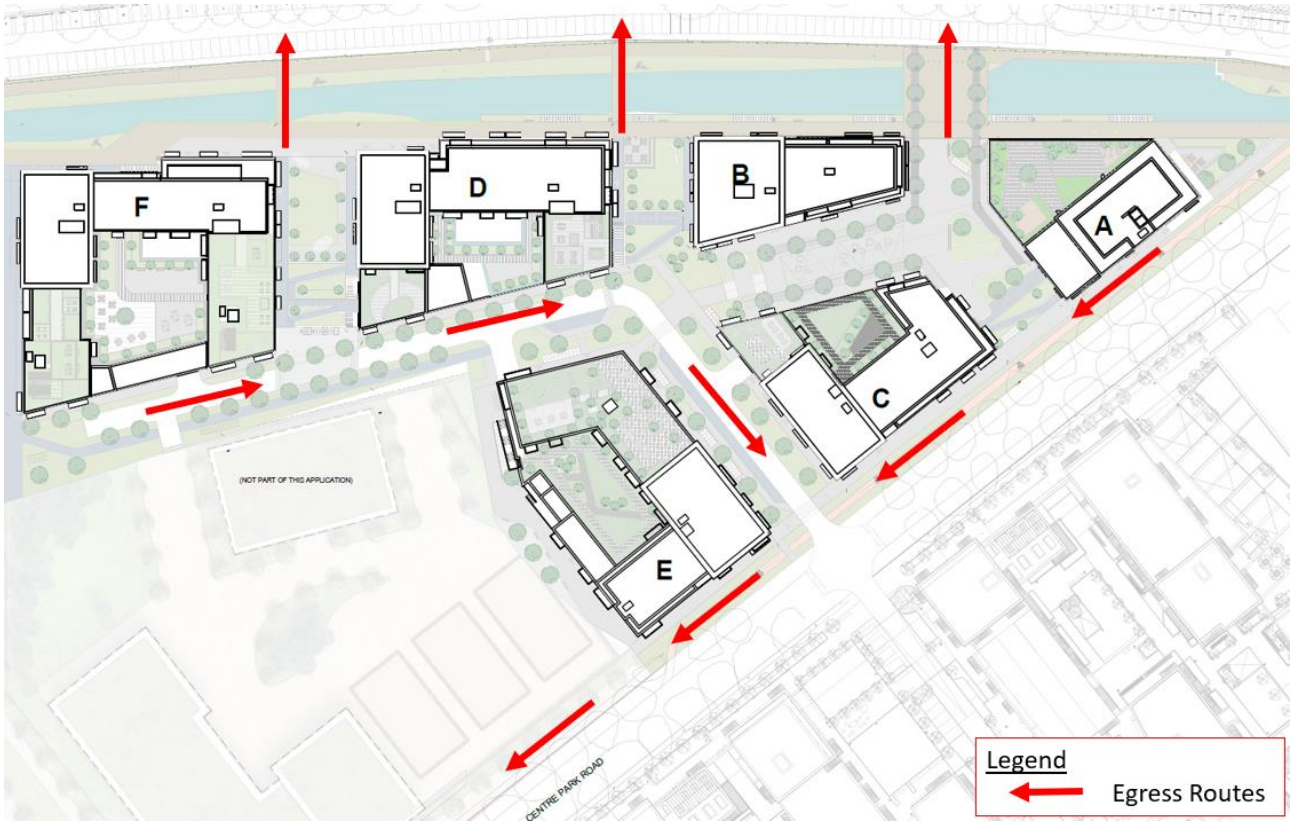


Figure 19: Emergency egress routes

12. Justification Test

12.1 Flood zones

The proposed development is located within Flood Zone A (i.e. within the 1 in 200-year tidal flood extent, assuming no defence in place).

12.2 Vulnerability classification

The proposed development at Ground Level consists of a combination of 'Less Vulnerable' development such as commercial and retail space; and 'Highly Vulnerable' development such as residential accommodation at Upper Ground Level and above.

This has been justified by increasing the FFL of all 'Highly Vulnerable' development to a minimum of 5.4mOD, which provides a 1 in 1000-year level of protection in the current tidal scenario plus an allowance of 2m for sea level rise.

12.3 Sequential approach and Justification Test

As the site lies within Flood Zone A and includes in part some development classified as either 'Less Vulnerable' and 'Highly Vulnerable', a Justification Test is required in accordance with The Guidelines.

12.3.1 Application of the Justification Test

The applicable Justification Test is the 'Development Management' Justification Test described in Section 5 of The Guidelines.

The Justification Test is adopted by a planning authority when developments vulnerable to flooding are proposed in areas at moderate or high risk of flooding (Flood Zones A and B). Prior to granting permission for the development, the planning authority must be satisfied that the development meets the criteria set out in the Development Management Justification Test in The Guidelines. These criteria are included in Figure 20.

Box 5.1 Justification Test for development management (to be submitted by the applicant)

When considering proposals for development, which may be vulnerable to flooding, and that would generally be inappropriate as set out in Table 3.2, the following criteria must be satisfied:

1. The subject lands have been zoned or otherwise designated for the particular use or form of development in an operative development plan, which has been adopted or varied taking account of these Guidelines.
2. The proposal has been subject to an appropriate flood risk assessment that demonstrates:
   - (i) The development proposed will not increase flood risk elsewhere and, if practicable, will reduce overall flood risk;
   - (ii) The development proposal includes measures to minimise flood risk to people, property, the economy and the environment as far as reasonably possible;
   - (iii) The development proposed includes measures to ensure that residual risks to the area and/or development can be managed to an acceptable level as regards the adequacy of existing flood protection measures or the design, implementation and funding of any future flood risk management measures and provisions for emergency services access; and
   - (iv) The development proposed addresses the above in a manner that is also compatible with the achievement of wider planning objectives in relation to development of good urban design and vibrant and active streetscapes.

The acceptability or otherwise of levels of residual risk should be made with consideration of the type and foreseen use of the development and the local development context.

Note: See section 5.27 in relation to major development on zoned lands where sequential approach has not been applied in the operative development plan.

Refer to section 5.28 in relation to minor and infill developments.

Figure 20: Justification Test for development management (extract from The Guidelines)

12.3.1.1 Justification Test – Part 1

The current Development Plan (2015 – 2021 Cork City Development Plan) was informed by a Strategic Environmental Assessment (SEA), which considered flood risk through the preparation of an SFRA in accordance with The Guidelines.

The subject site is zoned for a combination of 'Mixed-Use Development', 'Public Open Space' and 'Neighbourhood Centres' in the Development Plan. The proposed development is of mixed-use (including commercial and residential accommodation), open space and will provide local shopping. It is deemed to be compatible with the current Development Plan zoning.

Therefore, it is considered that the proposed development satisfies the criteria of Part 1 of the development management Justification Test.

12.3.1.2 Justification Test – Part 2(i)

In terms of assessing whether the development would increase flood risk elsewhere, the three key elements to consider are conveyance, storage and surface water runoff.

As noted above, the site is protected to the north by the existing polder defence and is within a 'defended area' as noted in the CFRAM study flood extent mapping for current scenarios.

Accordingly, the site can no longer be considered a natural flood plain as it is protected by existing polder flood defences and therefore the issue of flood storage or conveyance is not considered to be relevant.

In relation to surface water runoff, the design of the surface water drainage systems to serve the proposed development will limit post development run-off in accordance with Cork City Council requirements. As the site already consists of areas of hardstanding, the proposed development will reduce the burden on the existing public surface water system and thus improve the situation both in the short and longer terms.

In summary, the proposed development will not have a significant impact on flood risk off site as the primary flood risk to the site is tidal and the site is already protected to a high standard by the existing quayside defences. As such, the site does not provide any current significant benefit in terms of either conveyance of flood storage. Accordingly, its development will not increase off site impacts.

Therefore, it is considered that the proposed development satisfies the criteria of Part 2(i) of the development management Justification Test.

12.3.1.3 Justification Test – Part 2(ii)

Significant mitigation measures are proposed to minimise flood risk to people, property, the economy and the environment. These are described in detail in Section 9 and 11 of this report.

Accordingly, it is considered that the proposed development satisfies the criteria of Part 2(ii) of the development management Justification Test.

12.3.1.4 Justification Test – Part 2(iii)

The measures to ensure that residual risks to the area and/or development will be managed to an acceptable level as regards the adequacy of existing flood protection measures and/or the design, implementation and funding of any future flood risk management measures and provisions for emergency services access are addressed in Section 10 and 11 of this report.

Accordingly, it is considered that the proposed development satisfies the criteria of Part 2(iii) of the development management Justification Test.

12.3.1.5 Justification Test – Part 2(iv)

The proposed development is consistent with the objectives of the Cork City Development Plan 2015 – 2021 in terms of providing high quality mixed-use development whilst also satisfying the requirements to maintain the landscape and visual character of the area by tying into the existing streetscape levels and being respectful to the heritage of the area.

It is considered that the proposed development satisfies the criteria of Part 2(iv) of the development management Justification Test.

13. Discussion and conclusion

The site of the proposed development is benefitting from flood defences against fluvial and tidal flooding. The risk of pluvial and groundwater flooding is considered low. The site is located within Flood Zone A, as it is located within the 1 in 200-year tidal flood extent according to CFRAM mapping. However, it is protected to a high standard by the existing polder defences along the quayside. Cork City Council intend to raise this polder defence in the future to ensure the existing standard of protection is maintained or increased. Accordingly, it will be the primary flood protection measure for the Docklands.

The recommended minimum finished floor level for highly vulnerable uses is 3.8mOD. In practice, an even higher level of protection is being provided by locating 'Highly Vulnerable' development at first floor level which is at 5.4mOD in the current scheme. This provides protection to the circa 1 in 1000-year tidal flood level plus an allowance of greater than 2m for sea level rise. This implies significant safeguarding and longevity against the potential impacts of climate change and is line with guidance provided in the OPW guidelines. It also ensures that protection of the most vulnerable development is not contingent on the future raising of the polder defences.

To comply with Cork City Council's strategy of maintaining existing road levels where possible and creating appropriate streetscape relationships between developments and the transportation corridors, it is necessary to construct less vulnerable development such as car parks and commercial units at lower ground floor level at a finished floor level of 1.30mOD.

To mitigate the residual risk to this development, the development will incorporate appropriate flood resistant and resilient construction, measures and finishes. Utilities are to be installed above a level of 3.8mOD, to be above the 1 in 200-year tidal flood level with allowance for sea level rise. This will be combined with demountable flood defence barriers at strategic openings in the defence perimeter and will include appropriate design of the structure to withstand the relevant hydrostatic load for up to 600mm of flood depth.

The development will not compromise the integrity of the existing aquitard layer. The foundation design will ensure that no conduit is created to the higher permeability gravels. This is being achieved by omitting basement structures, ensuring that all drainage infrastructure is kept as high as possible, and designing a piling methodology which does not create preferential flow paths for groundwater.

A Flood Emergency Response Plan will be developed, whereby building users will be made aware that the building is located in a potential flood zone. In the event of forecasts of significant flooding the general response plan will be enacted which will entail the deployment of flood defence measures at the development perimeter.

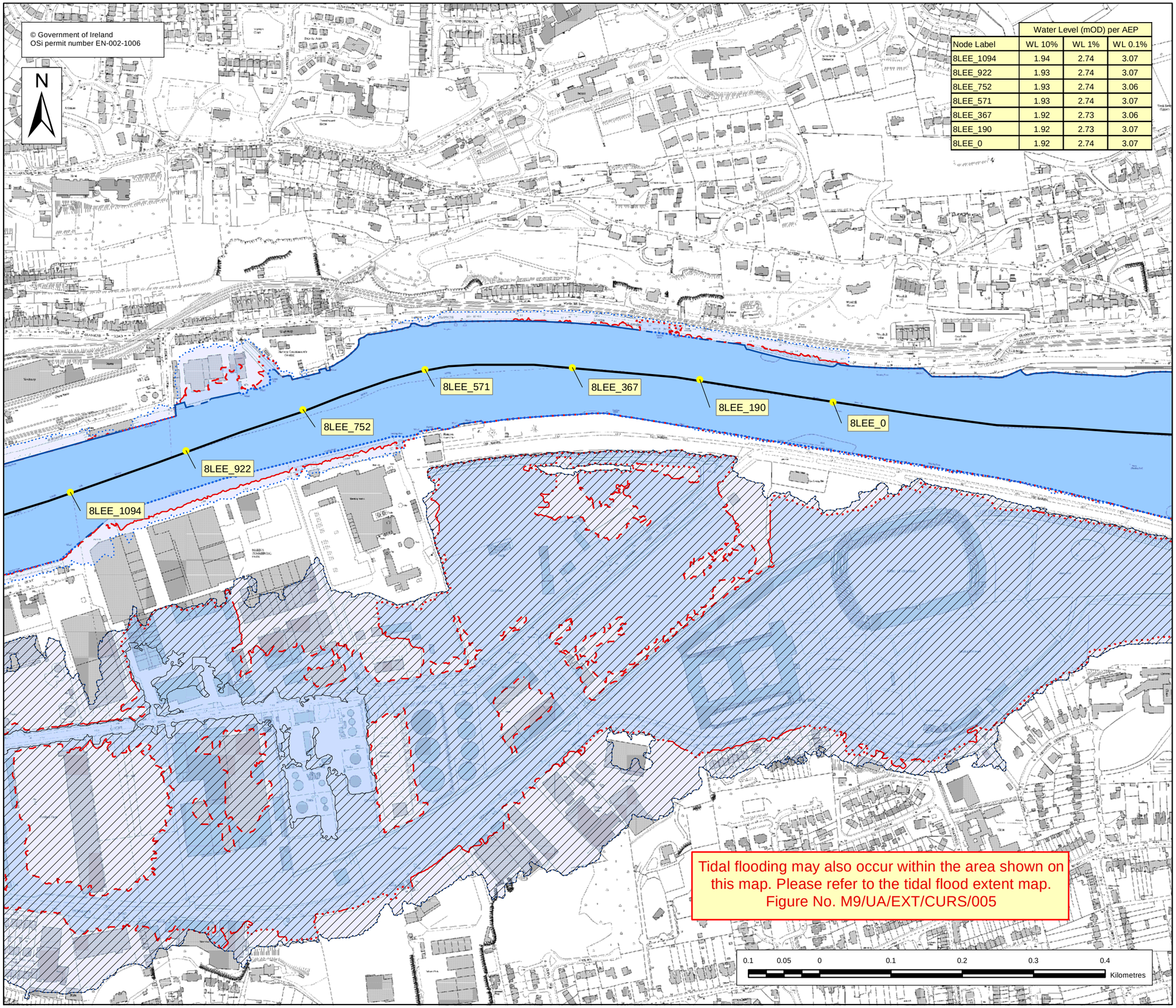
Where possible building users will stay inside until the flood recedes which is common practice in Cork City. Early flood warning will allow users to leave their building if they wish to do so, before the flood occurs. Due to advance warning, users have the option of leaving before the flood occurs.

A Justification Test has been carried out in Section 12.3 of this report. It has been demonstrated that the proposed development satisfies the criteria of the Development Management Justification Test.

This FRA has demonstrated that the risks relating to flooding to the proposed development can be managed and mitigated to acceptable levels and therefore comply with DoEHLG / OPW and Cork City Council planning guidance.

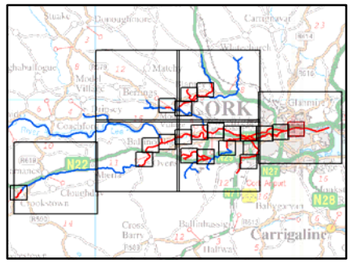
Appendix A

Lee CFRAMS flood extents maps



	Water Level (mOD) per AEP		
Node Label	WL 10%	WL 1%	WL 0.1%
8LEE_1094	1.94	2.74	3.07
8LEE_922	1.93	2.74	3.07
8LEE_752	1.93	2.74	3.06
8LEE_571	1.93	2.74	3.07
8LEE_367	1.92	2.73	3.06
8LEE_190	1.92	2.73	3.07
8LEE_0	1.92	2.74	3.07

Location Plan :



EXTENT MAP

Legend:

- 10 % AEP Flood Extent (1 in 10 chance in any given year)
- 1 % AEP Flood Extent (1 in 100 chance in any given year)
- 0.1 % AEP Flood Extent (1 in 1000 chance in any given year)
- Defended area
- High Confidence (<20m) (10% AEP)
- Medium Confidence (<40m) (10% AEP)
- Low Confidence (>40m) (10% and 0.1% AEP)
- High Confidence (<20m) (1% AEP)
- Medium Confidence (<40m) (1% AEP)
- Low Confidence (>40m) (1% AEP)
- River Centreline
- Node Point
- 8OWG_376 Node Label (refer to table)

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Project :
LEE CATCHMENT FLOOD RISK ASSESSMENT AND MANAGEMENT STUDY

Map :
CORK CITY

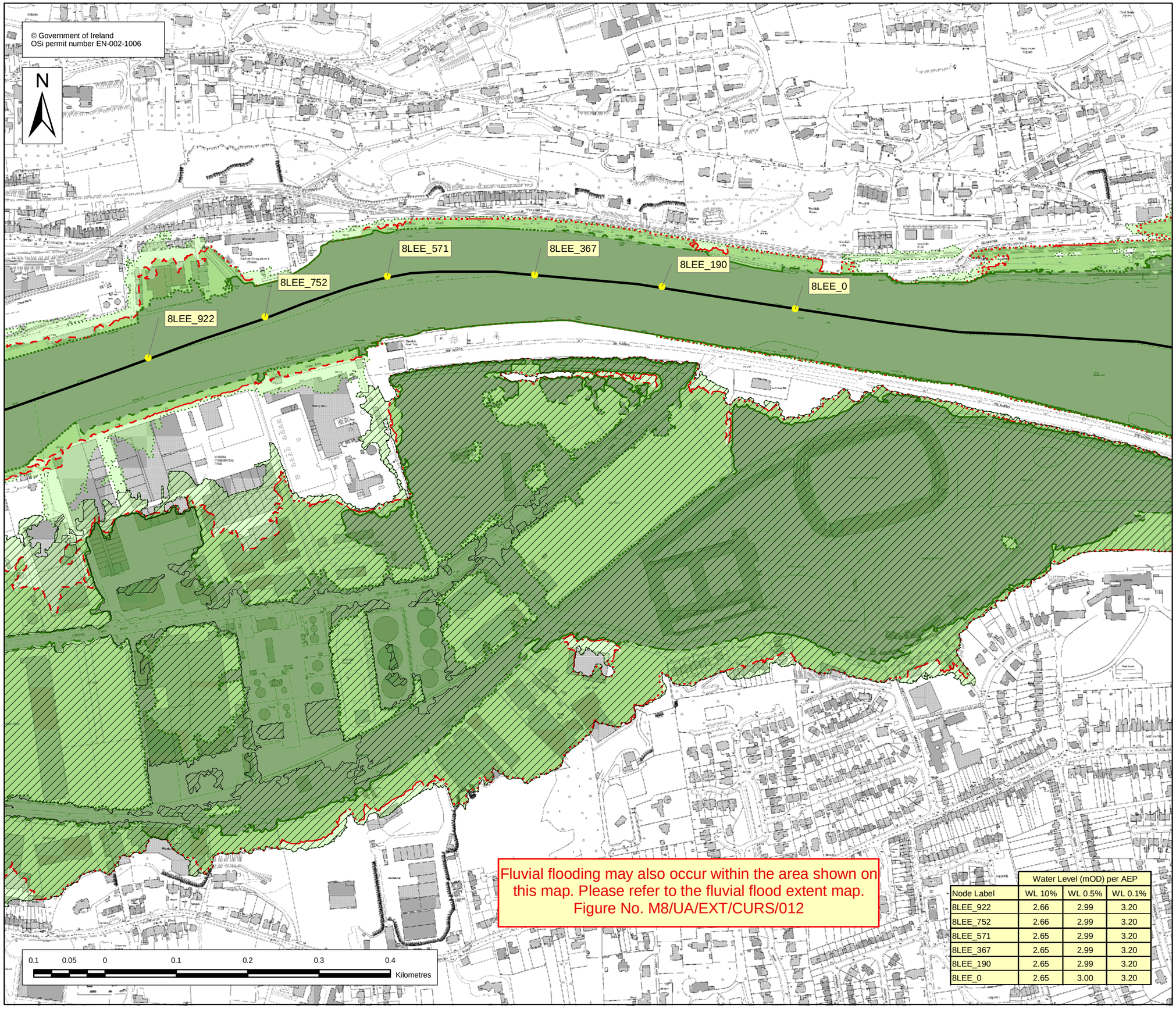
Map Type :	FLOOD EXTENT		
Source :	FLUVIAL FLOODING		
Map area :	URBAN AREA		
Scenario :	CURRENT		
Figure By :	Valeria Medina	Date :	10 March 2014
Checked By :	Ricardo Santaella	Date :	10 March 2014
Approved By :	Clare Dewar	Date :	10 March 2014

Figure No. : M8/UA/EXT/CURS/012

Revision 2

Drawing Scale : 1:5,000

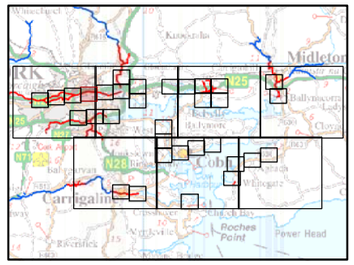
Plot Scale : 1:1 @ A3



Fluvial flooding may also occur within the area shown on this map. Please refer to the fluvial flood extent map. Figure No. M8/UA/EXT/CURS/012

	Water Level (mOD) per AEP		
Node Label	WL 10%	WL 0.5%	WL 0.1%
8LEE_922	2.66	2.99	3.20
8LEE_752	2.66	2.99	3.20
8LEE_571	2.65	2.99	3.20
8LEE_367	2.65	2.99	3.20
8LEE_190	2.65	2.99	3.20
8LEE_0	2.65	3.00	3.20

Location Plan :



EXTENT MAP

Legend:

- 10 % AEP Flood Extent (1 in 10 chance in any given year)
- 0.5 % AEP Flood Extent (1 in 200 chance in any given year)
- 0.1 % AEP Flood Extent (1 in 1000 chance in any given year)
- Defended area
- High Confidence (<20m) (10% AEP)
- Medium Confidence (<40m) (10% AEP)
- Low Confidence (> 40m) (10% and 0.1% AEP)
- High Confidence (<20m) (0.5% AEP)
- Medium Confidence (<40m) (0.5% AEP)
- Low Confidence (>40m) (0.5% AEP)
- River Centreline
- Node Point
- 001 Node Label (refer to table)

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Ireland

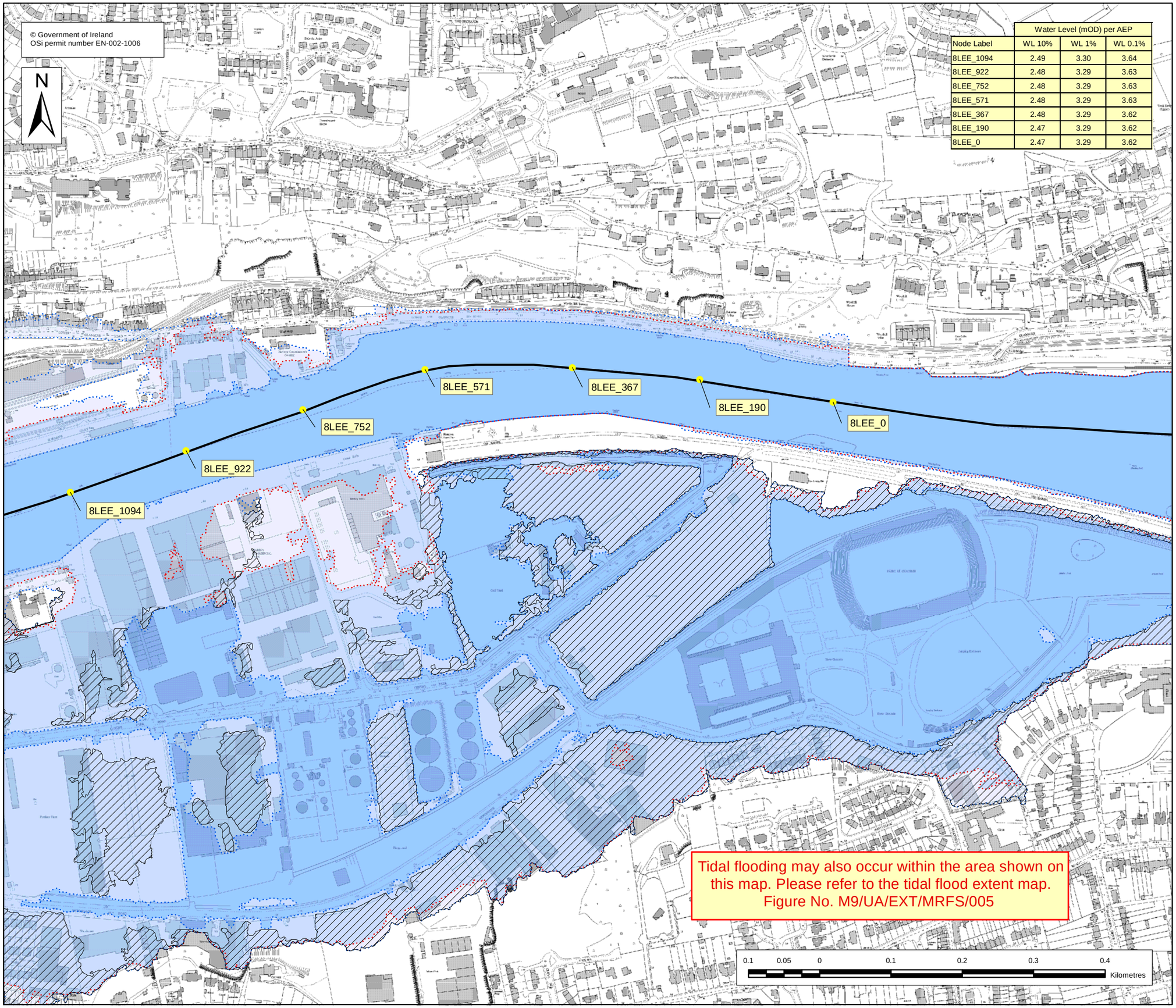
Project :
LEE CATCHMENT FLOOD RISK ASSESSMENT AND MANAGEMENT STUDY

Map :
CORK CITY

Map Type :	FLOOD EXTENT		
Source :	TIDAL FLOODING		
Map area :	URBAN AREA		
Scenario :	CURRENT		
Figure By :	Valeria Medina	Date :	10 March 2014
Checked By :	Ricardo Santaella	Date :	10 March 2014
Approved By :	Clare Dewar	Date :	10 March 2014

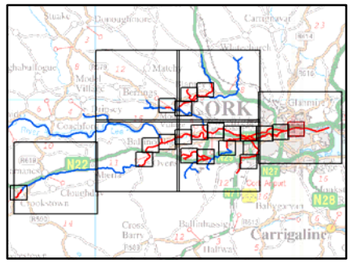
Figure No. : M9/UA/EXT/CURS/005
Revision 2

Drawing Scale : 1:5,000
Plot Scale : 1:1 @ A3



Node Label	Water Level (mOD) per AEP		
	WL 10%	WL 1%	WL 0.1%
8LEE_1094	2.49	3.30	3.64
8LEE_922	2.48	3.29	3.63
8LEE_752	2.48	3.29	3.63
8LEE_571	2.48	3.29	3.63
8LEE_367	2.48	3.29	3.62
8LEE_190	2.47	3.29	3.62
8LEE_0	2.47	3.29	3.62

Location Plan :



EXTENT MAP

Legend:

- 10 % AEP Flood Extent (1 in 10 chance in any given year)
- 1 % AEP Flood Extent (1 in 100 chance in any given year)
- 0.1 % AEP Flood Extent (1 in 1000 chance in any given year)
- Defended area
- High Confidence (<20m) (10% AEP)
- Medium Confidence (<40m) (10% AEP)
- Low Confidence (>40m) (10% and 0.1% AEP)
- High Confidence (<20m) (1% AEP)
- Medium Confidence (<40m) (1% AEP)
- Low Confidence (>40m) (1% AEP)
- River Centreline
- Node Point
- 8OWG_376 Node Label (refer to table)

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Project :
LEE CATCHMENT FLOOD RISK ASSESSMENT AND MANAGEMENT STUDY

Map :
CORK CITY

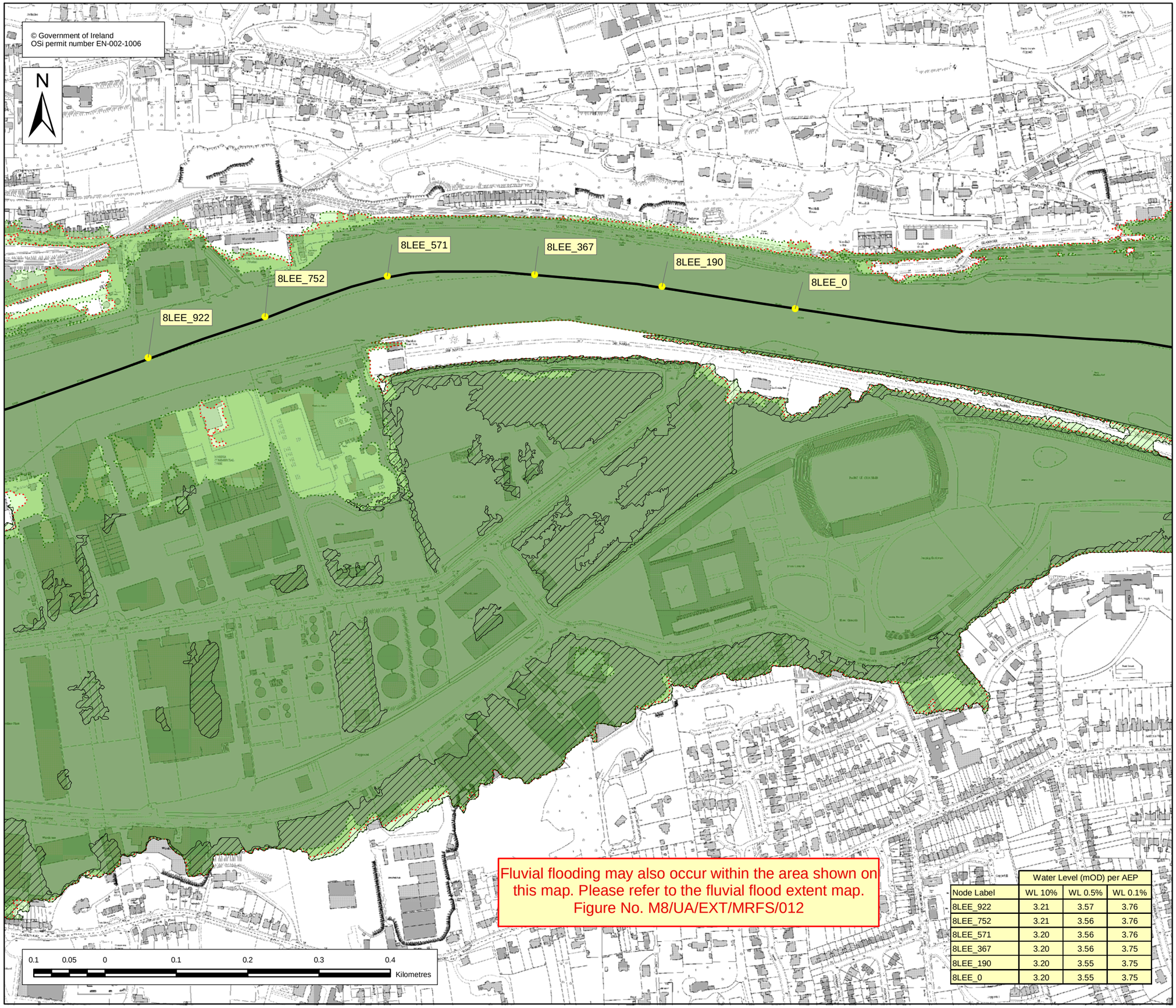
Map Type :	FLOOD EXTENT		
Source :	FLUVIAL FLOODING		
Map area :	URBAN AREA		
Scenario :	MID RANGE FUTURE SCENARIO		
Figure By :	Valeria Medina	Date :	10 March 2014
Checked By :	Ricardo Santaella	Date :	10 March 2014
Approved By :	Clare Dewar	Date :	10 March 2014

Figure No. : M8/UA/EXT/MRFS/012

Revision 2

Drawing Scale : 1:5,000

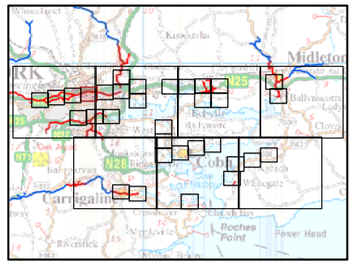
Plot Scale : 1:1 @ A3



Fluvial flooding may also occur within the area shown on this map. Please refer to the fluvial flood extent map. Figure No. M8/UA/EXT/MRFS/012

Node Label	Water Level (mOD) per AEP		
	WL 10%	WL 0.5%	WL 0.1%
8LEE_922	3.21	3.57	3.76
8LEE_752	3.21	3.56	3.76
8LEE_571	3.20	3.56	3.76
8LEE_367	3.20	3.56	3.75
8LEE_190	3.20	3.55	3.75
8LEE_0	3.20	3.55	3.75

Location Plan :



EXTENT MAP

Legend:

- 10 % AEP Flood Extent (1 in 10 chance in any given year)
- 0.5 % AEP Flood Extent (1 in 200 chance in any given year)
- 0.1 % AEP Flood Extent (1 in 1000 chance in any given year)
- Defended area
- High Confidence (<20m) (10% AEP)
- Medium Confidence (<40m) (10% AEP)
- Low Confidence (> 40m) (10% and 0.1% AEP)
- High Confidence (<20m) (0.5% AEP)
- Medium Confidence (<40m) (0.5% AEP)
- Low Confidence (>40m) (0.5% AEP)
- River Centreline
- Node Point
- 001 Node Label (refer to table)

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Project :
LEE CATCHMENT FLOOD RISK ASSESSMENT AND MANAGEMENT STUDY

Map :
CORK CITY

Map Type :	FLOOD EXTENT		
Source :	TIDAL FLOODING		
Map area :	URBAN AREA		
Scenario :	MID RANGE FUTURE SCENARIO		
Figure By :	Valeria Medina	Date :	10 March 2014
Checked By :	Ricardo Santaella	Date :	10 March 2014
Approved By :	Clare Dewar	Date :	10 March 2014

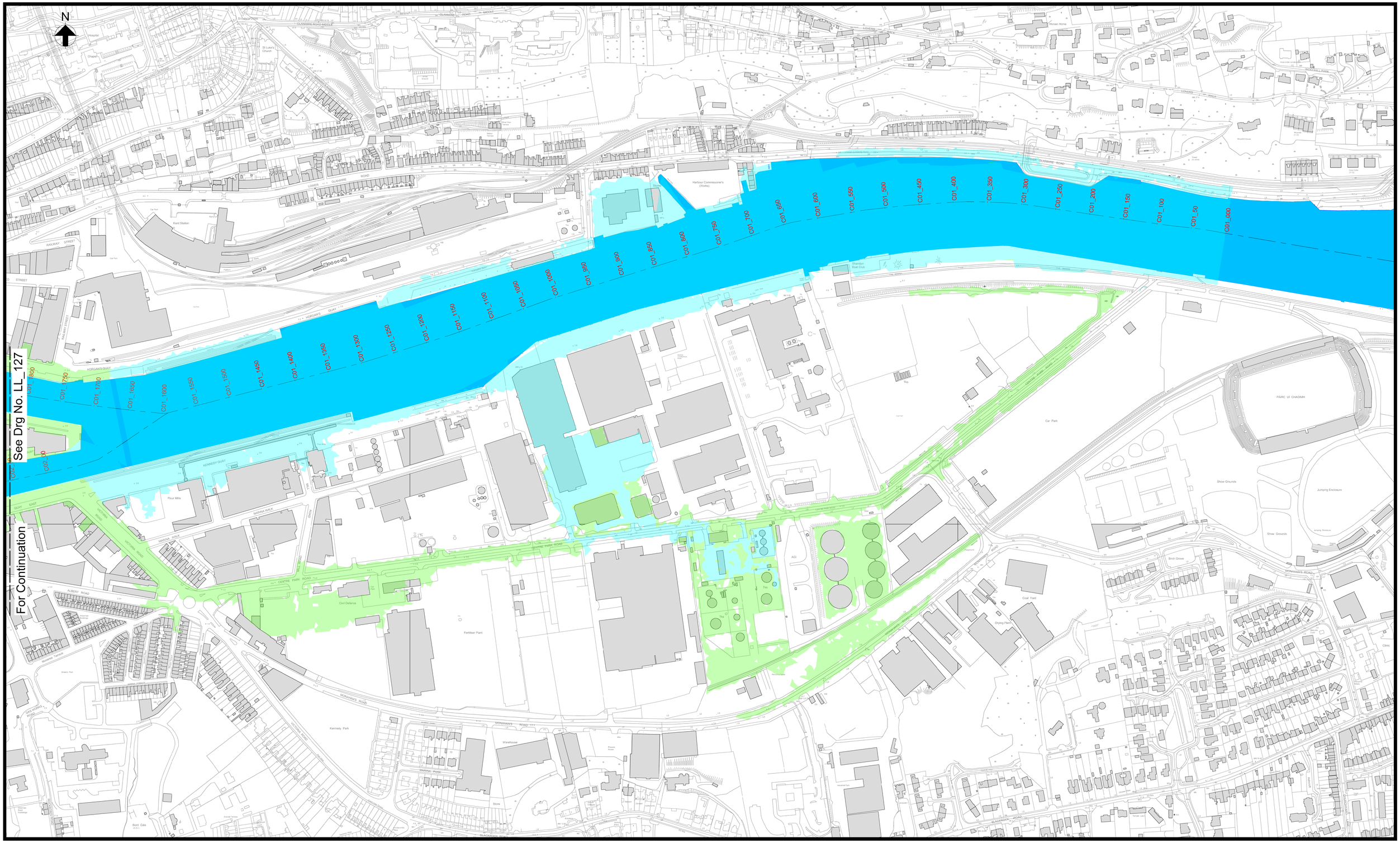
Figure No. : M9/UA/EXT/MRFS/005

Revision 2

Drawing Scale : 1:5,000 Plot Scale : 1:1 @ A3

Appendix B

Lower Lee (Cork City) Drainage Scheme exhibition drawings



Location Plan

0 25 50 100 Metres

Legend:

- 1% AEP Fluvial (River Lee) / 0.5% AEP Tidal Flood Extent (1 in 100 year fluvial / 1 in 200 year tidal flood extent)
- Benefitting Lands (Defended against River Lee events up to the 1% AEP Fluvial / 0.5% AEP Tidal)
- Watercourse
- C01_1250 Channel Centreline Reference (C01) and Chainage (1250)

Scale 1:2,500 at A1
Scale 1:5,000 at A3

Drg. No. LL_128 Flood Extents and Benefitting Areas (Sheet 9 of 9)

Notes:

1. Do not scale from drawing.
2. The channels on this drawing have been assigned colours for the purpose of assigning identification labels and interference references.
3. This drawing should be read in conjunction with all other Lower Lee (Cork City) Drainage Scheme Exhibition Drawings and Schedules.

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Appendix C

Proposed flood defence alignment

Proposed ground levels on northern side of the car park of circa 5.4mOD, acting as a defence for the lower car park level

Car park at 1.3mOD is largely surrounded on all sides by higher ground (>1.9mOD) which acts as a flood defence

Flood defences to tie into proposed street level of 1.9mOD

Proposed ground levels are higher than 1.9mOD, acting as a defence for the lower car park level

Proposed ground levels are higher than 1.9mOD, acting as a defence for the lower car park level

FORMER FORD FACTORY
SITE GRANTED PERMISSION APRIL 2021

North

SITE BOUNDARY LINE
LANDS IN APPLICANT'S OWNERSHIP

AREA TYPES

- 1 BED
- 2 BED
- 3 BED
- CAR PARK
- SERVICES
- CIRCULATION
- COMMERCIAL
- COMMUNAL AMENITY
- BAR/ CAFE
- CRECHE
- BIKE

NOTE: This drawing is for indicative purposes only and is subject to further development in detailed design

Legend

- Proposed demountable flood defence barrier (to 1.90 mOD minimum)
- Proposed flood defence structure (to 1.90 mOD minimum)
- Indicates areas of proposed flood resilient measures/construction

1 SITE GA PLAN - LOWER GROUND LEVEL
1 : 500

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Status	For Information		
Job Title	Former Tedcastles Site		
Drawing Title	Appendix C		
Scales	NTS	File Ref.	
Drn DW	Date 09/02/22	Checked RG/JH	
Job No. 267365-00	Drg. No.	Rev. A	

Appendix 15.1

Operational Waste Management Plan

Operational Waste Management Plan

ARUP

Tiznow Property Company Limited (Comer Group Ireland)

City Park Development at the Former Tedcastles Site

Operational Waste Management Plan

Reference: 267365-ARUP-XX-XX-RP-YE-0010

P02 | 28 March 2022

This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 267365-00

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ARUP

Document Verification

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Executive Summary

This report sets out the Operational Waste Management Plan prepared by Arup to support the application by Tiznow Property Company Limited (Comer Group Ireland) for consent for a proposed Strategic Housing Development (SHD) (the 'City Park Development') at the Former Tedcastles Site, Centre Park Road, Cork City.

Waste will be generated from both residential and commercial spaces in the proposed development during the operational phase. All waste will be stored and segregated into separate fractions to facilitate the collection of dry mixed recyclables, residual waste, organic waste and glass.

Waste handling areas have been identified for the storage of wheeled bins and other waste equipment at both the lower ground level and Level 0 of the proposed development. Bins will be transported to collection points located at Level 0. Storage and collection of wastes will be undertaken on site in accordance with the Cork City Council (Segregation, Storage and Presentation of Household and Commercial Waste) Bye-Laws, 2019, the Cork City Development Plan 2015-2021 and the standard BS 5906:2005 Waste management in buildings — Code of Practice, as appropriate.

1. Introduction

This report sets out the Operational Waste Management Plan prepared by Arup to support the application by Tiznow Property Company Limited (Comer Group Ireland) for consent for a proposed Strategic Housing Development (SHD) (the 'City Park Development', hereafter referred to as the 'proposed development') at the Former Tedcastles Site, Centre Park Road, Cork City

2. Proposed Development

Tiznow Property Company Limited (Comer Group Ireland) intend to apply to An Bord Pleanála (the Board) for consent for a Strategic Housing Development (SHD) with a total application area of c. 4.86ha on lands located at the Former Tedcastles Site, Centre Park Road, Cork City.

Refer to **Figure 1** for a site location map. The existing site is bounded by Centre Park Road to the south, by the Marina to the north and by a former ESB power station to the west. The primary access to the site at present is via Centre Road as indicated by the blue arrow in **Figure 1**.

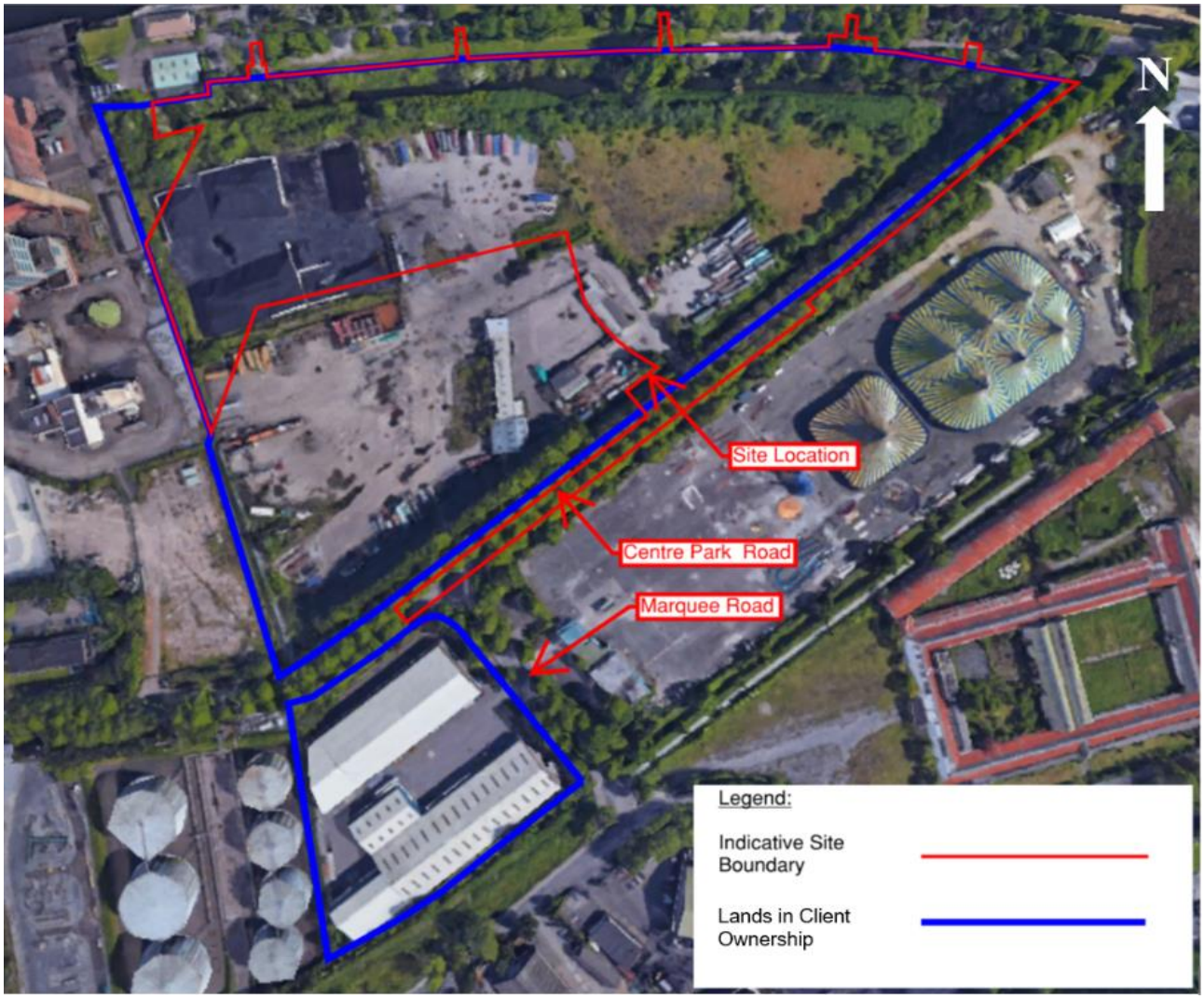

Figure 1: Indicative location of the proposed development site and existing access points. Source: Google Earth © 2022. Not to scale.

The proposed development will consist of the demolition of the existing structures on site and the construction of a strategic housing development of 823 no. apartments, resident amenity and ancillary commercial areas including childcare facilities. The development will comprise 6 no. buildings ranging in height from 1 no. to 35 no. storeys over lower ground floor level. The proposed development also comprises hard and soft landscaping, pedestrian bridges, car parking, bicycle stores and shelters, bin stores, ESB substations, plant rooms and all ancillary site development works. Vehicular access to the proposed development will be provided via Centre Park Road.

Site plans for the lower ground level and Level 0 of the proposed development are presented in **Appendix A**.

3. Planning and Policy

3.1 Overview

The principal objective of sustainable resource and waste management is to use material resources more efficiently, to re-use, recycle and recover material and to reduce the amount of waste requiring final disposal. The value of products, material and resources is maintained in the economy for as long as possible such that the generation of waste is minimised.

To achieve resource efficiency there is a need to move from a traditional linear economy to a circular economy (refer to **Figure 2**).

A Waste Action Plan for a Circular Economy – Ireland's National Waste Policy 2020 – 2025 (Department of Environment, Climate and Communications (DoECC), 2020) notes that:

> *"In a circular economy the value of products and materials is maintained for as long as possible; waste and resource use are minimised, and resources are kept within the economy when a product has reached the end of its life, to be used again and again to create further value."*

The EU Circular Economy Action Plan (European Commission, 2020) notes that:

> *"the EU needs to accelerate the transition towards a regenerative growth model that gives back to the planet more than it takes, advance towards keeping its resource consumption within planetary boundaries, and therefore strive to reduce its consumption footprint and double its circular material use rate in the coming decade."*

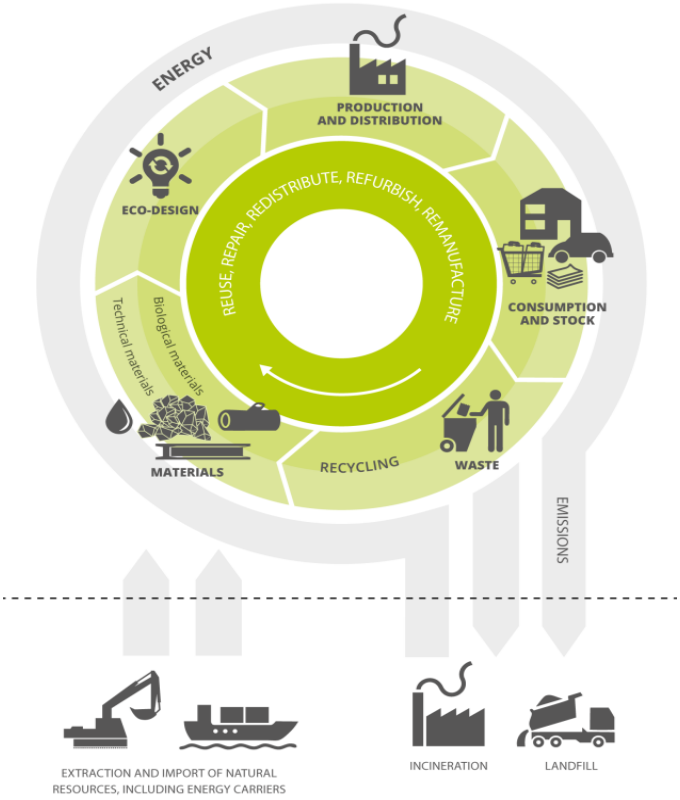

Figure 2: A Simplified Model of the Circular Economy for Materials and Energy (European Environment Agency, 2016)

Where residual waste is generated, it should be dealt with in a way that follows the waste hierarchy (refer to **Figure 3**) and set out in Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2009 on waste and repealing certain Directives and Directive 2018/851 of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98/EC on waste.

The waste hierarchy supports the need to achieve efficient use of material resources, minimise the amount of waste produced (or otherwise increase its value as a resource) and reduce, as far as possible, the amount of waste that is disposed to landfill.

Key resource and waste management policy and planning documents were taken into account in preparing this Operational Waste Management Plan including the Southern Region Waste Management Plan 2015 - 2021 (Limerick City & County Council/Tipperary County Council, 2015) and the Cork City Council Development Plan 2015 – 2021 (Cork City Council, 2015). Provisions of these plans relevant to resource and waste management at the proposed development are described below.

An overview of additional relevant legislation, policy and best practice guidance related to waste management is presented in **Appendix B**.

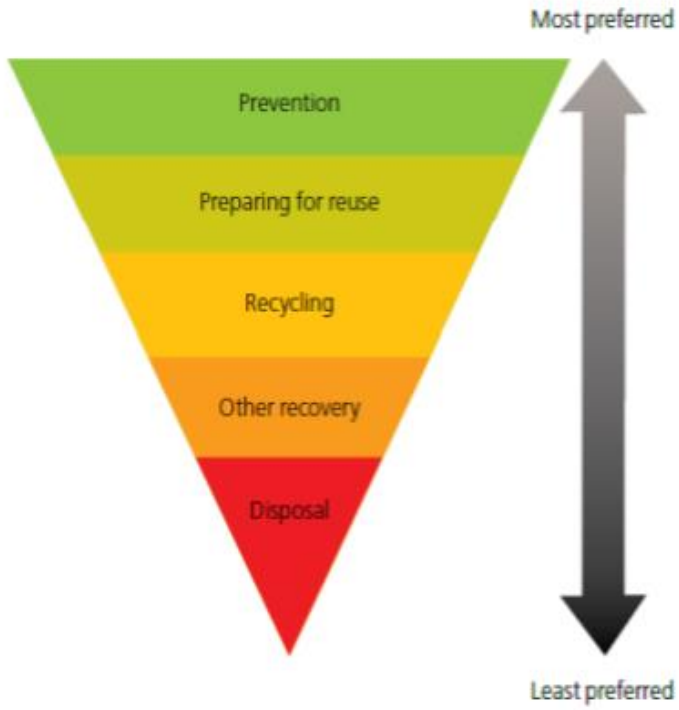

Figure 3: Waste Hierarchy

3.2 Development Plan Policies

3.2.1 Southern Region Waste Management Plan 2015 - 2021

For the purposes of waste management planning, Ireland is now divided into three regions: Southern, Eastern-Midlands, Connacht-Ulster. The Southern Region includes Cork City Council. The Southern Region Waste Management Plan 2015 - 2021 was launched in 2015 (Limerick City & County Council/Tipperary County Council, 2015). The strategic approach of the plan places a stronger emphasis on preventing wastes and material reuse activities. Three strategic targets have been set in the plan which include:

- 1% reduction per annum in the quantity of household waste generated per capita over the period of the plan;
- Achieve a recycling rate of 50% of managed municipal waste by 2020; and

- Reduce to 0% the direct disposal of unprocessed residual municipal waste to landfill in favour of higher value pre-treatment processes and indigenous recovery practices.

The plan looks to 2030 and includes a goal of reaching a recycling rate of 60%.

3.2.2 Cork City Development Plan 2015 – 2021

The Cork City Development Plan 2015-2021 (Cork City Council, 2015) sets out Cork City Council's policies and objectives for the development of the city over the Plan period.

The Council includes two waste management objectives as part of Chapter 12 Environmental Infrastructure and Management – relating to Bin Provision in the City Centre and a Litter Management Plan, respectively. It also identifies a strategic environmental infrastructure objective to follow a waste hierarchy that starts with prevention, preparing for re-use, recycling, other recovery (e.g. energy recovery) and finally disposal (including landfill).

Section 12.22 of the Development plan sets out the following guidelines related to design standards for proposed developments:

"12.22 Design Standards

The incorporation of adequate waste storage facilities and management procedures in private developments is critical to ensure the effective separation of waste streams in a manner that maintains residential amenity."

A draft Plan was also recently published which sets out the priorities for the city for a 6-year period from 2022 to 2028 (Cork City Council, 2021). The draft Plan seeks to ensure that measures will be adopted to ensure sustainable waste management while it also aims to support provisional initiatives that will develop the circular economy through implementation of the Regional Waste Management Plan for the Southern Region 2015-2021 and its successor.

4. Receiving Environment

4.1 Municipal Waste

Municipal waste is the waste type that will be most relevant to the operational phase of the proposed development. Municipal waste includes the following waste types:

- **Residual** (sometimes known as black bin) waste e.g. waste that cannot be recycled;
- **Recyclable** (sometimes known as green bin) waste e.g. plastic, paper and cardboard, metals;
- **Glass;**
- **Organic** (sometimes known as brown bin) waste e.g. food and garden waste;
- **Bulky waste** e.g. waste that cannot fit in a wheelie bin such as broken furniture, carpets, toys etc.; and
- **Waste Electrical and Electronic Equipment** (WEEE).

The most recent complete figures published by the EPA relating to municipal waste are for the year 2019 and note that 3,085,652 tonnes of municipal waste were generated in Ireland (EPA, 2021).

Of this 83% was recovered, which means the waste was recycled, incinerated for energy recovery or used to cover landfilled waste. 37% was recycled. 'Recycled' means the waste was broken down and used to make new items and includes the breakdown of food and garden waste to make compost. 15% of municipal waste was disposed of in 2019.

The figures in **Table 1** were obtained from the most recent waste characterisation surveys conducted in Ireland undertaken in 2016 and published in 2018. They should be considered as a guide only as municipal waste can vary significantly from one location to another, depending on the nature of the development and the waste management practices employed on-site. The predominant waste streams in municipal waste include plastics, papers and organic waste, with these streams comprising 40% of total municipal waste composition.

Table 1: Composition of Municipal Waste[1]

Category	Composition
Plastics	17.2%
Papers	15.3%
Organic waste (non-garden)	12.5%
Cardboards	8.5%
Fines (<20mm)	8.6%
Organic waste (garden)	7.6%
Textiles excl. nappies	7.6%
Nappies	6.7%
Metals	4.2%
Unclassified Combustibles	4.3%
Glass	2.6%
Unclassified Incombustibles	1.7%
Haz Municipal Waste (excl. WEEE &Tubes)	0.9%
Composite beverage cartons	0.8%
Wood	0.8%
WEEE & Tubes	0.7%
Total	**100.0%**

[1] EPA (2018) Household Waste Characterisation Campaign - Final Report. https://www.epa.ie/publications/monitoring--assessment/waste/national-waste-statistics/Household_Surveys_Final_Report1.pdf [Accessed: March 2022]

5. Waste Generation

5.1 Residential

Residential waste generation from the proposed development has been estimated to enable the number of bins required for storage to be calculated. This calculation was based on the schedule of accommodation for the scheme. To demonstrate how this was calculated, the calculation for Block A is set out in this section. Residential waste storage requirements for the proposed development are presented in **Section 6.2**.

Block A contains 174 residential units.

Assumptions are as follows in this section:

- Block A contains a total of 174 no. apartments comprising:
  - 29 no. 1 bed apartments;
  - 79 no. 2 bed apartments; and
  - 66 no. 3 bed apartments.
- Occupancy rates are assumed to be 2 persons per 1 bed apartment, 3/4 persons per 2 bed apartment and 5 persons per 3 bed apartment.
- Household waste will be source separated into recyclables, residual, organic and glass waste. Wheeled bins will also be available in waste storage room for WEEE.
- It is assumed that approximately 55% of waste generated will be dry mixed recyclables (which complies with the target of the Southern Region Waste Management Plan – refer to **Section 3.2.1**), 30% of waste generated will be residual waste, 10% of waste generated will be organic waste and 5% of waste generated will be glass waste. The waste management system will be flexible to allow for increases in the proportion of source segregated recyclables and reduction of residual wastes in the future. This includes the European Commission's 70% target for re-use and recycling of waste by 2030.
- Twice weekly waste collection of residential waste is assumed for the purpose of these calculations.
- It is assumed that all waste will be delivered by householders to communal waste stores.
- The EPA reported a household waste generation rate per capita of 330kg per annum for 2019[2], the most recent year for which published data is available.

Specific assumptions, formula and calculations used are presented in **Table 2**.

[2] https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/household/ [Accessed: March 2022]

Table 2: Assumptions, Formulas and Calculations used – Block A (Residential)

Assumptions	Formula	Calculation
1 bed: 2 person occupancy rate 2 bed: 3/4 person occupancy rate 3 bed: 5 person occupancy rate	No of People = No. of units * occupancy rate	1 Bed: 29 units * 2 people = 58 people. 2 Bed: 79 units * 4 people = 316 people. 3 bed: 66 units * 5 people = 330 people Total = 704 people
330kg per annum waste generation	Tonnes of waste = waste per annum * No. of people	0.33 tonnes/person/year * 704 people = 232.32 tonnes / year
Density of 0.21 tonnes/m3[3]	Volume of waste = Tonnes / density	232.32 tonnes / 0.21 tonnes/m^3 = 1,106.28 m^3 per annum
1,100 litre (1.1m^3) wheeled bins will be used for communal waste collection of dry mixed recyclables and residual waste. 360 litre (0.36m^3) wheeled bins will be used for communal waste collection of organic waste. 240 litre (0.24m^3) wheeled bins will be used for communal waste collection of glass waste. Assume twice weekly waste collection.	Volume twice weekly = Total volume / 2 / 52	1,106.28 m^3 per annum / 2 / 52 weeks = 10.63 m^3 twice weekly

[3] http://www.wrap.org.uk/sites/files/wrap/WRAP%20waste%20volume%20to%20mass%20conversion%20factors%20-%20July%202014.xlsx [Accessed: March 2022]

5.2 Commercial

While the proposed development is predominantly residential, there are some commercial activities included in the scheme, these are:

- Retail – various uses;
- Food and beverage (restaurant/café/bar);
- Neighbourhood Centre (pharmacy, medical centre, dentist, library, post office and newsagent); and
- Creche.

Commercial waste generation from the proposed development has been estimated to enable the number of bins required for storage to be calculated. This calculation was based on the schedule of accommodation for the scheme.

In addition to non-hazardous commercial waste from the proposed pharmacy, medical centre and dentist within the proposed development, small quantities of medicines and healthcare risk waste such as sharps will be generated from these areas. These will be stored within the commercial units themselves due to the small quantities. They will be stored in UN approved lockable healthcare risk waste containers. Where additional storage bins are required externally within the waste storage room these will be UN approved and locked at all times.

Assumptions are as follows in this section:

- Creche – assumed to be occupied on a 5 day/week basis;
- All other uses – assumed to be occupied on a 7 day/week basis;
- Creche – attendance assumption across Blocks D and F is 130 no. children/day;
- 2 no. collections per week of commercial waste is assumed for the purpose of these calculations.

The waste generation rates and percentage distribution of waste which can be categorised as dry mixed recyclables, residual, organic and glass waste for each commercial source are presented in **Table 3**. These were used to determine the waste storage requirements. All percentage distributions are based on the results of the EPA Municipal Waste Characterisation Surveys 2008 (EPA, 2009).

Using the waste generation rates and percentage distributions of waste, the number of bins required for commercial waste was calculated.

Table 3: Waste Generation Rates and Waste Splits – Commercial

		Retail 1	Retail 2	Creche	Pharmacy/ Dentist	Medical Centre	Food & Beverage	Post Office/ Library
Generation rate		100 litres/ 100m^2/day[4]	75 litres/ 100m^2/day[5]	450 g/child/ day[6]	100 litres/ 100m^2/day[4]	340 litres/ 100m^2/day[7]	180 litres/ 100m^2/day[8]	27 litres/ 100m^2/day[9]
Waste Split[10]	**Residual**	10%	10%	10%	10%	10%	5%	10%
	Dry Mixed Recyclable	60%	60%	60%	60%	60%	20%	60%
	Organic	25%	25%	25%	25%	25%	50%	25%
	Glass	5%	5%	5%	5%	5%	25%	5%

[4] Based on Retail – Non-food shops >100m^2 - *Biffa/Forward Scotland/ICE/Enviro Centre (2005) Planning for Resource Sustainable Communities - Volume 1: Waste Infrastructure and Management*.

[5] Based on Retail – Non-food shops <100m^2 - *Biffa/Forward Scotland/ICE/Enviro Centre (2005) Planning for Resource Sustainable Communities - Volume 1: Waste Infrastructure and Management*.

[6] Based on primary school waste generation rate, with adjustments made for toddlers and nappy generation – *WRAP (2008) The nature and scale of waste produced by schools in England*.

[7] Based on Community centres (low) – *Biffa/Forward Scotland/ICE/Enviro Centre (2005) Planning for Resource Sustainable Communities - Volume 1: Waste Infrastructure and Management*.

[8] Based on Retail – Food Shops (average) – Recyclables rate of 20% also included – *Biffa/Forward Scotland/ICE/Enviro Centre (2005) Planning for Resource Sustainable Communities - Volume 1: Waste Infrastructure and Management*.

[9] Based on Office (average) - *Biffa/Forward Scotland/ICE/Enviro Centre (2005) Planning for Resource Sustainable Communities - Volume 1: Waste Infrastructure and Management*.

[10] Based on Waste Compositions from *EPA (2009) Municipal Waste Characterisation Surveys 2008*.

6. Waste Storage and Movement

6.1 Overview

This section presents information on the storage and movement of residential and commercial waste within the proposed development.

Refer to **Appendix C** for an outline of typical technical specifications in relation to sizes of the waste containers and waste equipment to be used for the proposed development.

Site plans for the lower ground level and Level 0 which detail the locations of the waste storage rooms in the proposed development are presented in **Appendix A**.

It is noted that a number of different tenants and businesses will use the waste management facilities on site. As a result, and in order to ensure the waste storage and collection facilities on site will be effectively used and managed, a facilities manager will be required to arrange both movement of waste and recyclables around the site and access to the waste management storage area.

Storage and collection of recyclables and wastes will be undertaken on site in accordance with the Cork City Council (Segregation, Storage and Presentation of Household and Commercial Waste) Bye-Laws, 2019 (Cork City Council, 2019), the Cork City Development Plan 2015-2019 (Cork City Council, 2015) and the standard BS 5906:2005 Waste management in buildings — Code of practice (BSI, 2005), as appropriate.

The facilities management team will be responsible for the maintenance of the waste handling areas and will act as a single point of contact for the waste collection contractor.

BS 5906:2005 Waste management in buildings - Code of practice (BSI, 2005) notes that waste operatives should not be required to move 4 wheeled waste containers a distance of more than 10 metres. As a result, a tow tractor will be used for the transport of wheeled bins between the waste storage rooms and the designated waste marshalling areas.

The waste storage rooms will be appropriately ventilated and sufficient drainage will be provided to enable a thorough wash down of all bins and the waste storage rooms themselves.

The waste storage rooms will have adequate provision to move waste to designated waste marshalling areas (refer to Section 7 for further details). Waste collection will take place from these designated marshalling areas.

6.2 Residential Waste

Residential waste will be source separated by householders into separate fractions to facilitate the collection of dry mixed recyclables, residual waste, organic waste, glass waste and WEEE in line with the Cork City Council (Segregation, Storage and Presentation of Household and Commercial Waste) Bye-Laws, 2019 (Cork City Council, 2019).

The various residential waste fractions will be delivered by householders to designated communal waste storage rooms located at the lower ground level and Level 0. Site plans for the lower ground level and Level 0 which detail the locations of the waste storage rooms in the proposed development are presented in **Appendix A**.

All rooms containing wheeled bins will have a head height of 2m or greater and be designed in accordance with BS5906:2005 Waste Management in Buildings - Code of Practice (BSI, 2005) particularly in relation to fire risk.

It is proposed that dry mixed recyclable and residual waste will be stored in 1,100 litre bins, while organic waste will be stored in 360 litre bins and glass waste will be stored in 240 litre bins. Waste collectors

operating in Cork City Council have confirmed that these are the appropriate bin sizes to use for the respective wastes.

The number of bins required per residential block per week (assuming twice weekly collections) to cater for the volume of residential waste estimated are presented in **Table 4**. The numbers have been calculated using the formulas assumptions and calculations previously noted in **Table 2**.

In addition to the bin requirements for dry mixed recyclables, residual waste, organic waste and glass waste, 1 no. WEEE cage and 1 no. fluorescent tube coffin will be located in each waste storage room. The WEEE cages will be for small items only and exclude TVs and monitors. A bulky waste storage area of $2m^2$ will also be provided in each waste storage room.

Table 4: Residential Waste Storage, assuming twice weekly collection

Waste Storage Room	Block	Dry Mixed Recyclable 1,100 litre bins	Residual Waste 1,100 litre bins	Organic Waste 360 litre bins	Glass Waste 240 litre bins
R01	A	6	4	4	3
	C	2	1	2	1
R02	B	3	2	2	2
R03	D	5	3	3	2
	F	6	3	3	3
R04	E	3	2	2	2
Total		**25**	**15**	**16**	**13**

6.3 Commercial Waste

Commercial waste will be source separated by tenants into separate fractions to facilitate the collection of dry mixed recyclables, residual waste, organic waste, glass waste and WEEE in line with the Cork City Council (Segregation, Storage and Presentation of Household and Commercial Waste) Bye-Laws, 2019 (Cork City Council, 2019).

The various commercial waste fractions will be delivered by commercial tenants to designated communal waste storage rooms located at the lower ground level and at Level 0. Site plans for the lower ground level and Level 0 which detail the locations of the waste storage rooms in the proposed development are presented in **Appendix A**.

All rooms containing wheeled bins will have a head height of 2m or greater and be designed in accordance with BS5906:2005 Waste Management in Buildings - Code of Practice (BSI, 2005) particularly in relation to fire risk.

It is proposed that dry mixed recyclable and residual waste will be stored in 1,100 litre bins, while organic waste will be stored in 360 litre bins and glass waste will be stored in 240 litre bins. Waste collectors

operating in Cork City Council have confirmed that these are the appropriate bin sizes to use for the respective wastes.

The number of bins required per commercial block per week (assuming twice weekly collections) to cater for the volume of commercial waste estimated are presented in **Table 5**.

In addition to the bin requirements for dry mixed recyclables, residual waste, organic waste and glass waste, 1 no. WEEE cage and 1 no. fluorescent tube coffin will be located in each waste storage room. The WEEE cages will be for small items only and exclude TVs and monitors. A bulky waste storage area of $2m^2$ will also be provided in each waste storage room.

Table 5: Commercial Waste Storage, assuming twice weekly collection

Waste Storage Room	Block	Dry Mixed Recyclable 1,100 litre bins	Residual Waste 1,100 litre bins	Organic Waste 360 litre bins	Glass Waste 240 litre bins
R01	A	2	1	6	4
	C	3	1	4	1
R02	B	1	1	3	2
R03	D	1	1	2	2
	F	1	1	1	1
R04	E	2	1	2	1
Total		**10**	**6**	**18**	**11**

7. Waste Collection

Residential and commercial waste will be collected on a twice weekly basis from the proposed development. Dry mixed recyclables, residual waste, organic waste and glass waste will be collected on different days.

Marshalling areas capable of containing the largest waste stream i.e. dry mixed recyclables, will be located at Level 0 – refer to **Appendix A**. Bins will be transported from the waste storage rooms to the designated marshalling areas for collection.

A facilities manager will be required to arrange movement of waste and recyclables around the site on collection days.

The marshalling areas will be located adjacent to waste collection vehicle set down areas so that the waste operatives will not be required to move 4 wheeled waste containers a distance of more than 10 metres. This is in line with guidance specified in BS 5906:2005 Waste management in buildings — Code of practice (BSI, 2005).

Vehicle swept path drawings have been prepared which illustrate the proposed movement of waste vehicles around the proposed development – refer to **Appendix D**.

Following appointment of a residential and commercial waste collector and prior to commencement, collection arrangements, including the proposed days of collection, will be notified to and agreed with the waste department of Cork City Council.

8. References

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Limerick City & County Council/Tipperary County Council, 2015. Southern Region Waste Management Plan 2015 – 2021.

WRAP, 2008. The nature and scale of waste produced by schools in England.

Appendix A

Site Layout Plans

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NOTES:

DESIGN INTENT DRAWING

1 PROPOSED SITE PLAN
1 : 500

Rev	Date	Description	Issued By
P04	28/03/2021	ISSUED FOR PLANNING	EB
P03	04/03/2021	ISSUED FOR INFORMATION	EB
P02	08/10/2021	ISSUED FOR PRE-PLANNING	EB
P01	27/09/2021	ISSUED FOR REVIEW	EB

Project Stage

PLANNING

Client:

Tiznow Property Company Limited
(Comer Group Ireland)

Project:

City Park Development
at the Former Tedcastles Site,
Centre Park Road, Cork

Drawing Title:

PROPOSED SITE PLAN

Drawn	Checked	Paper Size	Scale	Date
VF	EB	A0	1 : 500 @A0	07/19/21

Project No.	Drawing No.	Classification	Revision
PE21055	0106		P04

File Name

PE21055-CWO-ZZ-00-DR-A-0106

Status:

A1 - Authorized and accepted for planning stage

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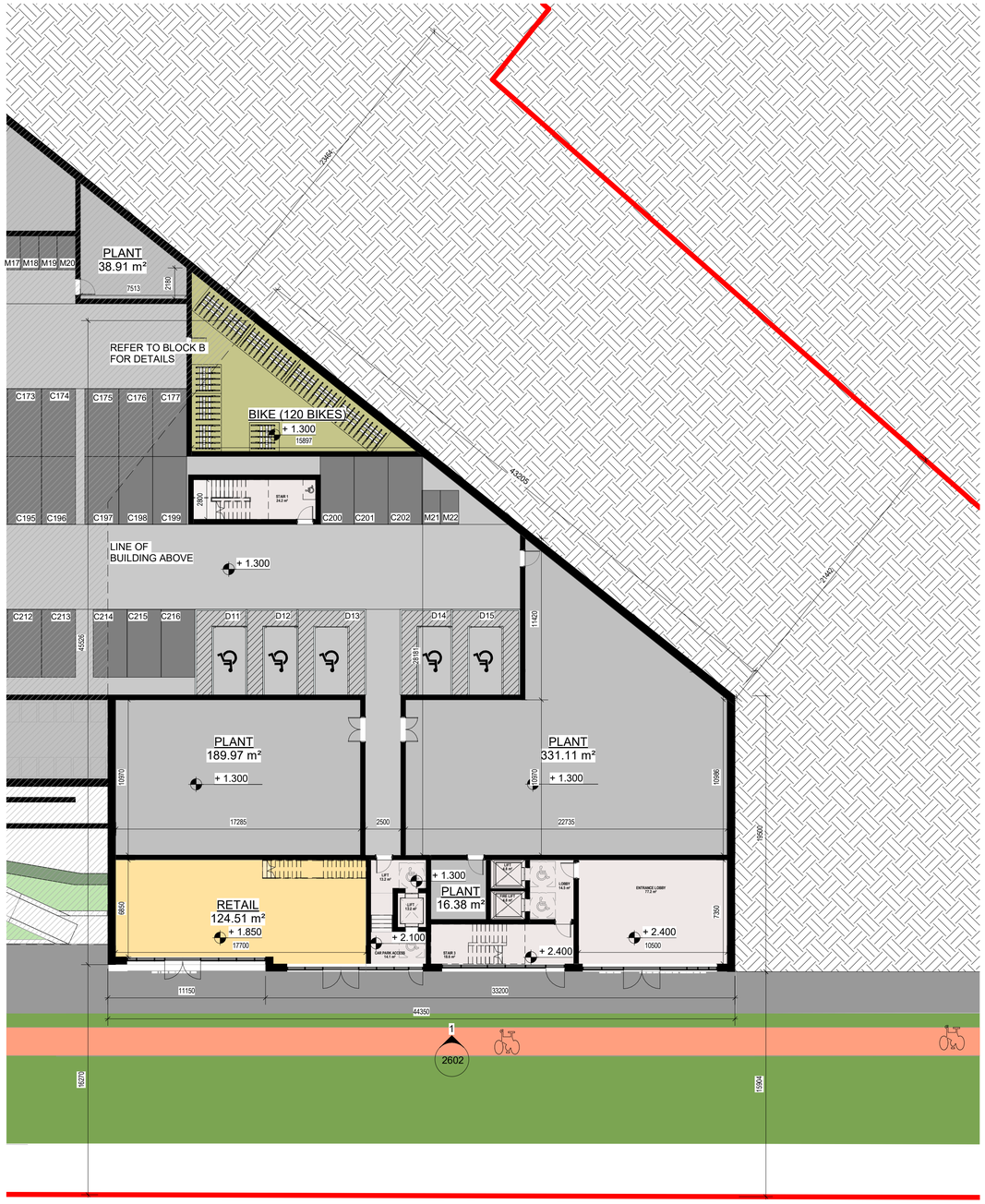

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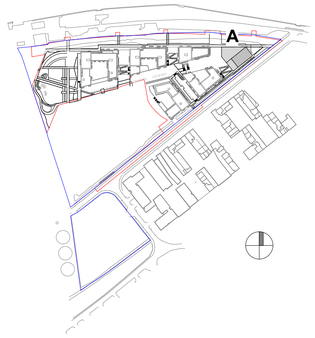

SITE OUTLINE RED

LANDS IN APPLICANT'S OWNERSHIP

FLOOR PLAN KEY :

EH - ENTRANCE HALL
ST - STORAGE
HP- HOT PRESS
KIT/LIV/DIN - KITCHEN + LIVING +DINING ROOM

AREA TYPES

- 1 BED
- 2 BED
- 3 BED
- 3 BED - DUPLEX
- CAR PARK
- SERVICES
- CIRCULATION
- COMMERCIAL
- COMMUNAL AMENITY
- BAR/ CAFE
- CRECHE
- BIKE
- NEIGHBOURHOOD CENTRE

Rev	Date	Description	Issued By
P04	03/03/2022	ISSUED FOR PLANNING	EB
P03	08/10/2021	ISSUED FOR PRE-PLANNING	EB
P02	27/09/2021	ISSUED FOR REVIEW	EB
P01	10/09/2021	ISSUED FOR PRE-PLANNING	EB

Project Stage

PLANNING

Client:

Tiznow Property Company Limited
(Comer Group Ireland)

Project:

Residential Development
The Former Tedcastles Site,
Centre Park Road, Cork

Drawing Title:

PLAN - BLOCK A - LEVEL LG

Drawn	Checked	Paper Size	Scale	Date
VF	EB	A1	1 : 200 @A1	08/19/21

Project No.	Drawing No.	Classification	Revision
PE21055	2099		P04

File Name

PE21055-CWO-01-LG-DR-A-2099

Status:

S2 - Suitable for Information

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1 PLAN - BLOCK A - LEVEL LG
1 : 200

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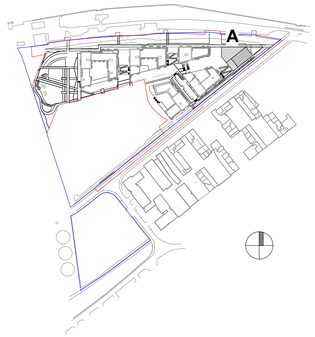

SITE OUTLINE RED

LANDS IN APPLICANT'S OWNERSHIP

FLOOR PLAN KEY :

EH - ENTRANCE HALL
ST - STORAGE
HP- HOT PRESS
KIT/LIV/DIN - KITCHEN + LIVING +DINING ROOM

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Rev	Date	Description	Issued By
P04	03/03/2022	ISSUED FOR PLANNING	EB
P03	08/10/2021	ISSUED FOR PRE-PLANNING	EB
P02	27/09/2021	ISSUED FOR REVIEW	EB
P01	10/09/2021	ISSUED FOR PRE-PLANNING	EB

Project Stage

PLANNING

Client:

Tiznow Property Company Limited
(Comer Group Ireland)

Project:

Residential Development
The Former Tedcastles Site,
Centre Park Road, Cork

Drawing Title:

PLAN - BLOCK A - LEVEL 00

Drawn	Checked	Paper Size	Scale	Date
VF	EB	A1	1 : 200 @A1	06/25/21

Project No.	Drawing No.	Classification	Revision
PE21055	2100		P04

File Name

PE21055-CWO-01-00-DR-A-2100

Status:

S2 - Suitable for Information

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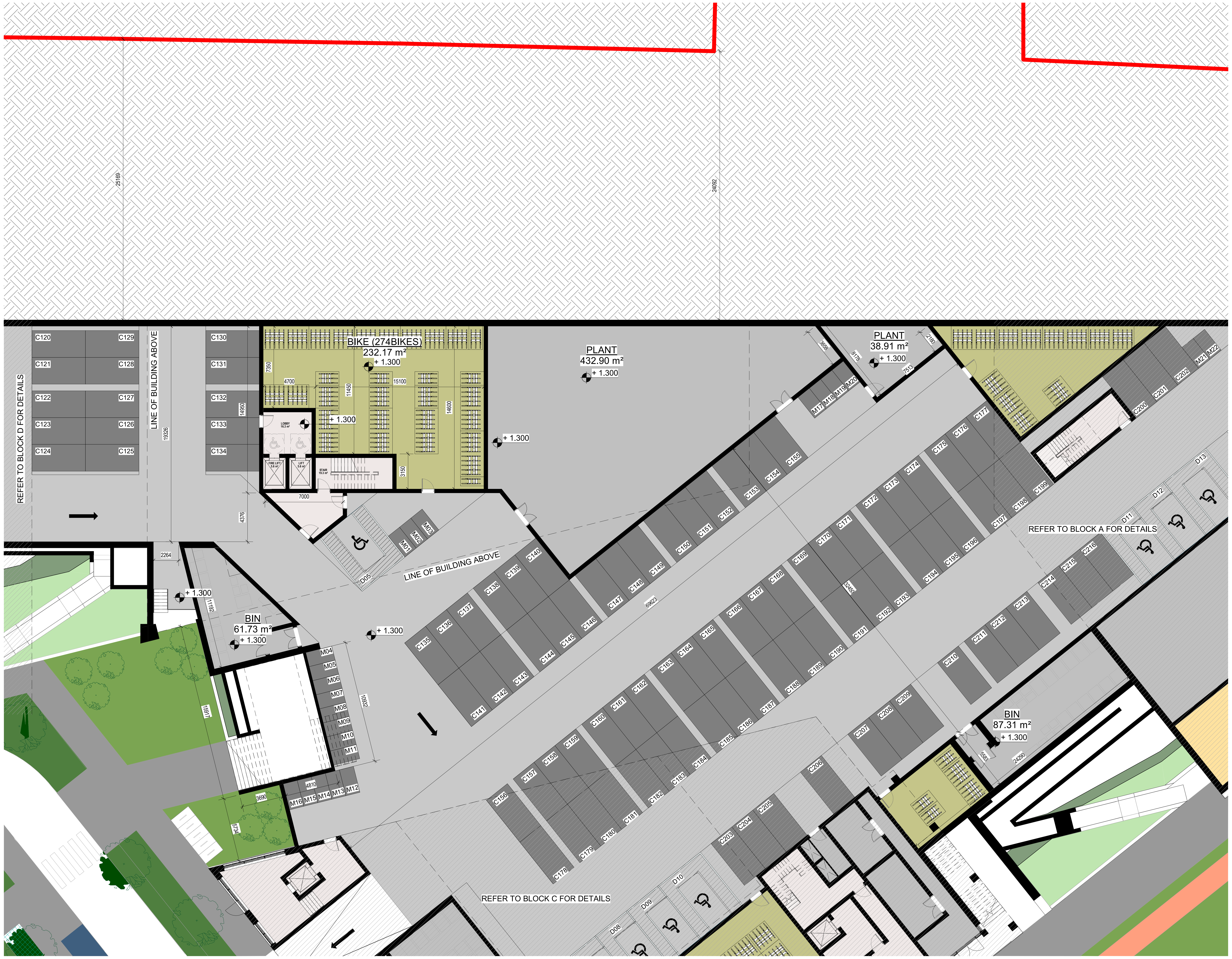
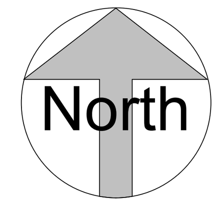
1 PLAN - BLOCK A - LEVEL 00
1 : 200





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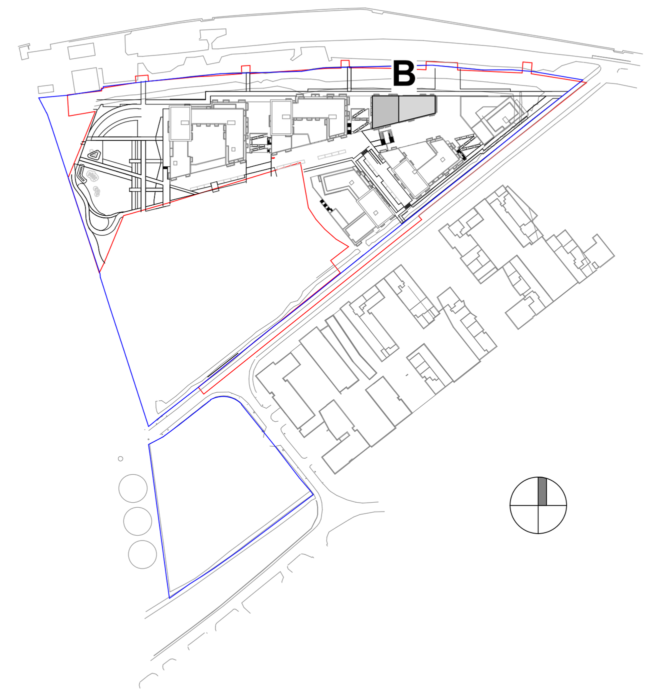

SITE OUTLINE RED

LANDS IN APPLICANT'S OWNERSHIP

FLOOR PLAN KEY :

EH - ENTRANCE HALL
ST - STORAGE
HP- HOT PRESS
KIT/LIV/DIN - KITCHEN + LIVING +DINING ROOM

AREA TYPES

- 1 BED
- 2 BED
- 3 BED
- 3 BED - DUPLEX
- CAR PARK
- SERVICES
- CIRCULATION
- COMMERCIAL
- COMMUNAL AMENITY
- BAR/ CAFE
- CRECHE
- BIKE
- NEIGHBOURHOOD CENTRE

Rev	Date	Description	Issued By
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P02	27/09/2021	ISSUED FOR REVIEW	EB
P01	10/09/2021	ISSUED FOR PRE-PLANNING	EB

Project Stage

PLANNING

Client:

Tiznow Property Company Limited
(Comer Group Ireland)

Project:

Residential Development
The Former Tedcastles Site,
Centre Park Road, Cork

Drawing Title:

PLAN - BLOCK B - LEVEL LG

Drawn	Checked	Paper Size	Scale	Date
VF	EB	A1	1 : 200 @A1	07/01/21

Project No.	Drawing No.	Classification	Revision
PE21055	2139		P04

File Name
PE21055-CWO-02-LG-DR-A-2139

Status:
S2 - Suitable for Information

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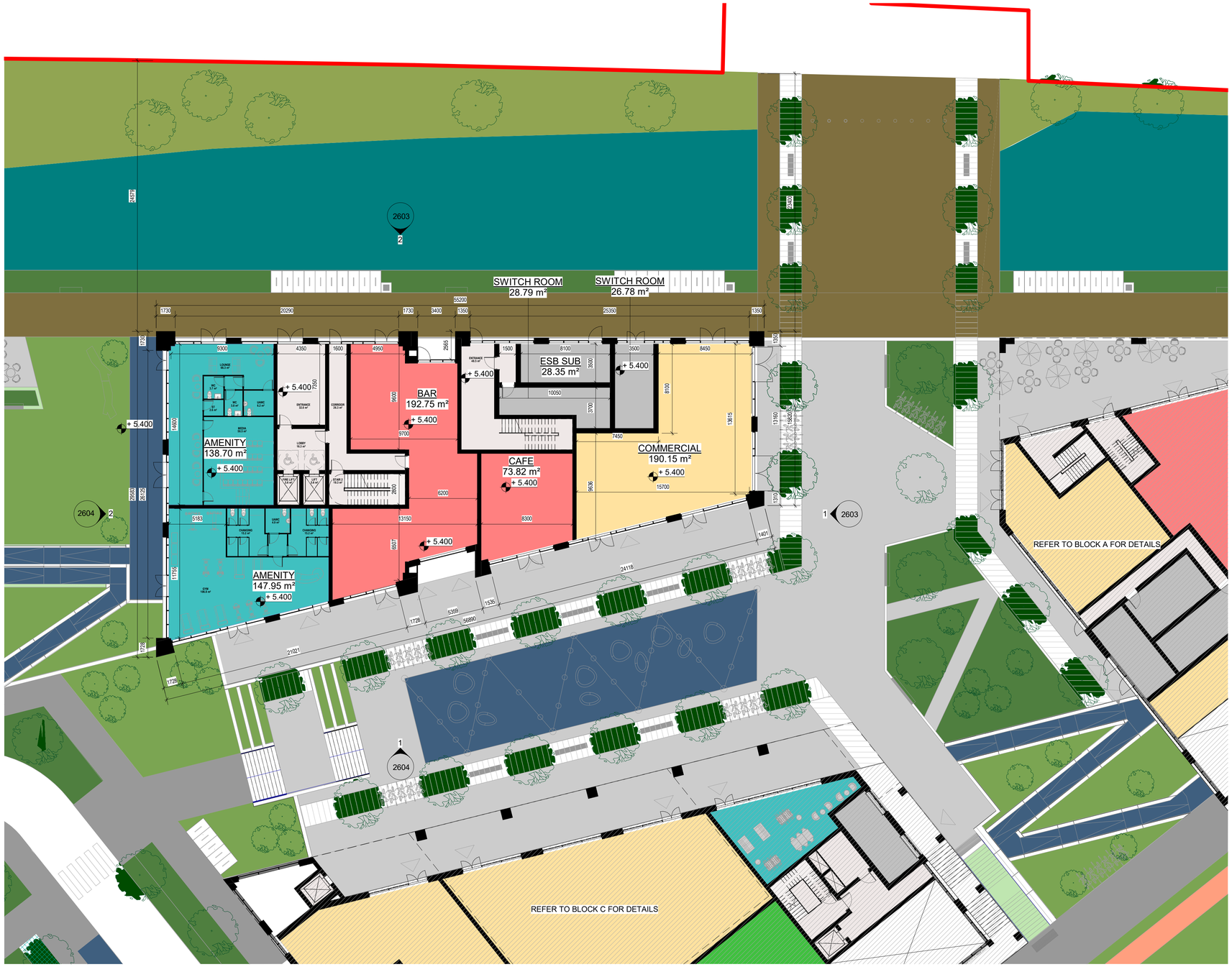
1 PLAN - BLOCK B - LEVEL LG
1 : 200



1 PLAN - BLOCK B - LEVEL 00

1 : 200

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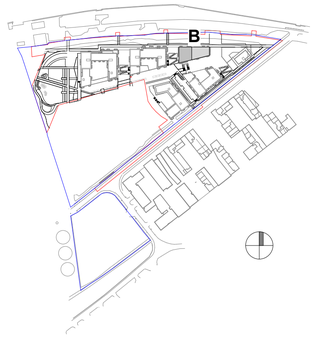

SITE OUTLINE RED

LANDS IN APPLICANT'S OWNERSHIP

FLOOR PLAN KEY :

EH - ENTRANCE HALL
ST - STORAGE
HP- HOT PRESS
KIT/LIV/DIN - KITCHEN + LIVING +DINING ROOM

AREA TYPES

- 1 BED
- 2 BED
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- COMMUNAL AMENITY
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- CRECHE
- BIKE
- NEIGHBOURHOOD CENTRE

Rev	Date	Description	Issued By
P04	03/03/2022	ISSUED FOR PLANNING	EB
P03	08/10/2021	ISSUED FOR PRE-PLANNING	EB
P02	27/09/2021	ISSUED FOR REVIEW	EB
P01	10/09/2021	ISSUED FOR PRE-PLANNING	EB

Project Stage

PLANNING

Client:

Tiznow Property Company Limited
(Comer Group Ireland)

Project:

Residential Development
The Former Tedcastles Site,
Centre Park Road, Cork

Drawing Title:

PLAN - BLOCK B - LEVEL 00

Drawn	Checked	Paper Size	Scale	Date
VF	EB	A1	1 : 200 @A1	06/25/21

Project No.	Drawing No.	Classification	Revision
PE21055	2140		P04

File Name

PE21055-CWO-02-00-DR-A-2140

Status:

S2 - Suitable for Information

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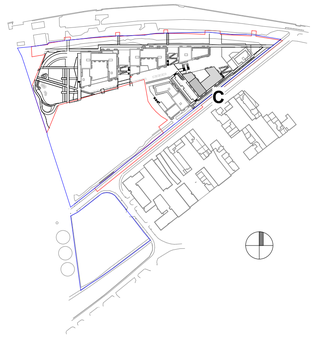
NOTES:

1 PLAN - BLOCK C - LEVEL LG
1 : 200



SITE OUTLINE RED

LANDS IN APPLICANT'S OWNERSHIP

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Rev	Date	Description	Issued By
P04	03/03/2022	ISSUED FOR PLANNING	EB
P03	08/10/2021	ISSUED FOR PRE-PLANNING	EB
P02	27/09/2021	ISSUED FOR REVIEW	EB
P01	10/09/2021	ISSUED FOR PRE-PLANNING	EB

Project Stage

PLANNING

Client:

Tiznow Property Company Limited
(Comer Group Ireland)

Project:

Residential Development
The Former Tedcastles Site,
Centre Park Road, Cork

Drawing Title:

PLAN - BLOCK C - LEVEL LG

Drawn	Checked	Paper Size	Scale	Date
VF	EB	A1	1 : 200 @A1	08/05/21

Project No.	Drawing No.	Classification	Revision
PE21055	2169		P04

File Name

PE21055-CWO-03-LG-DR-A-2169

Status:

S2 - Suitable for Information

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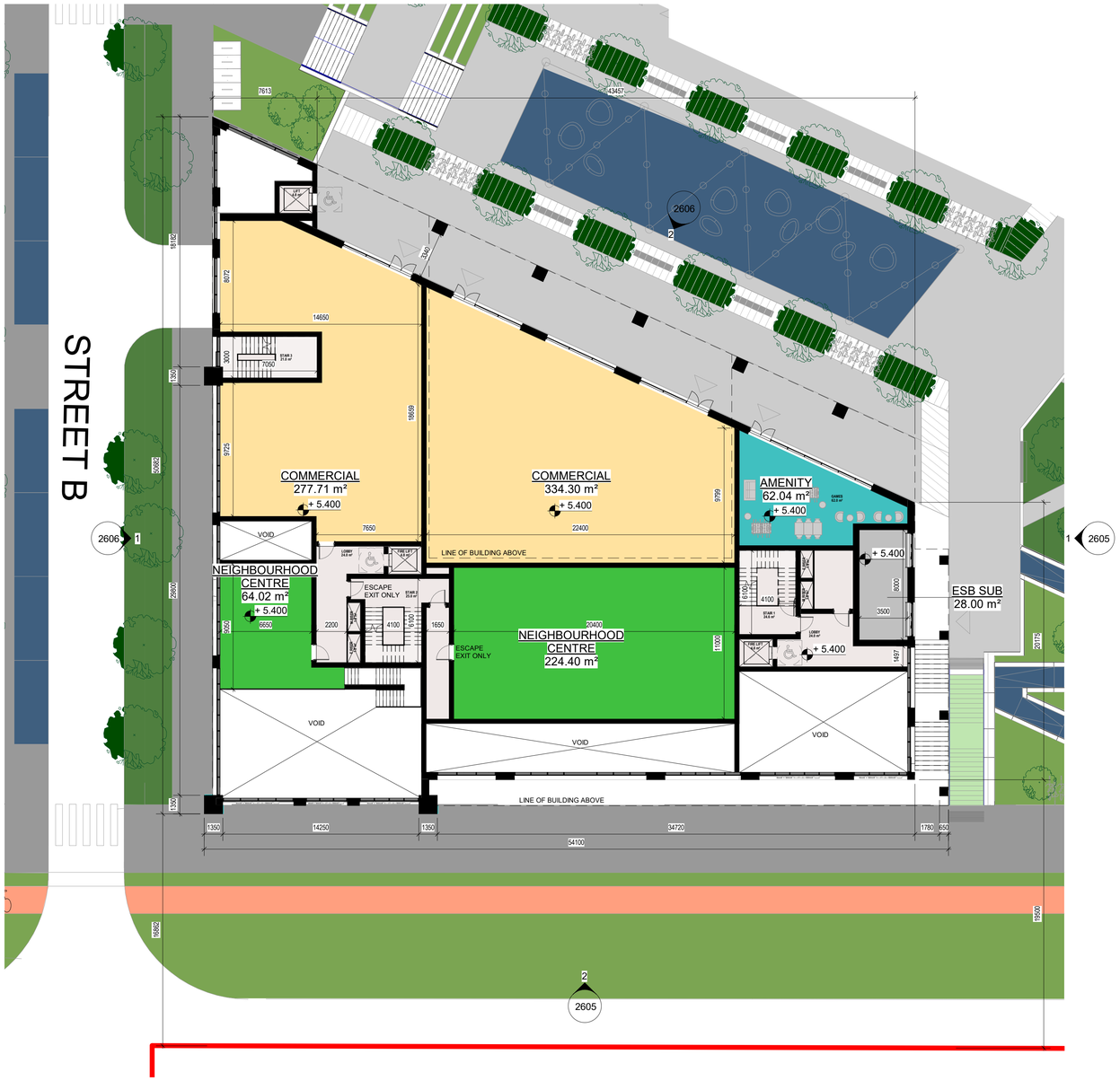

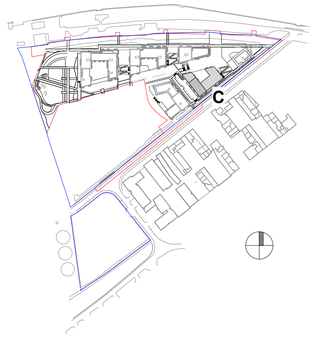

SITE OUTLINE RED

LANDS IN APPLICANT'S OWNERSHIP

FLOOR PLAN KEY :

EH - ENTRANCE HALL
ST - STORAGE
HP- HOT PRESS
KIT/LIV/DIN - KITCHEN + LIVING +DINING ROOM

AREA TYPES

- 1 BED
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- SERVICES
- CIRCULATION
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- COMMUNAL AMENITY
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- CRECHE
- BIKE
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Rev	Date	Description	Issued By
P04	03/03/2022	ISSUED FOR PLANNING	EB
P03	08/10/2021	ISSUED FOR PRE-PLANNING	EB
P02	27/09/2021	ISSUED FOR REVIEW	EB
P01	10/09/2021	ISSUED FOR PRE-PLANNING	EB

Project Stage

PLANNING

Client:

Tiznow Property Company Limited
(Comer Group Ireland)

Project:

Residential Development
The Former Tedcastles Site,
Centre Park Road, Cork

Drawing Title:

PLAN - BLOCK C - LEVEL 00

Drawn	Checked	Paper Size	Scale	Date
VF	EB	A1	1 : 200 @A1	06/25/21

Project No.	Drawing No.	Classification	Revision
PE21055	2170		P04

File Name

PE21055-CWO-03-00-DR-A-2170

Status:

S2 - Suitable for Information

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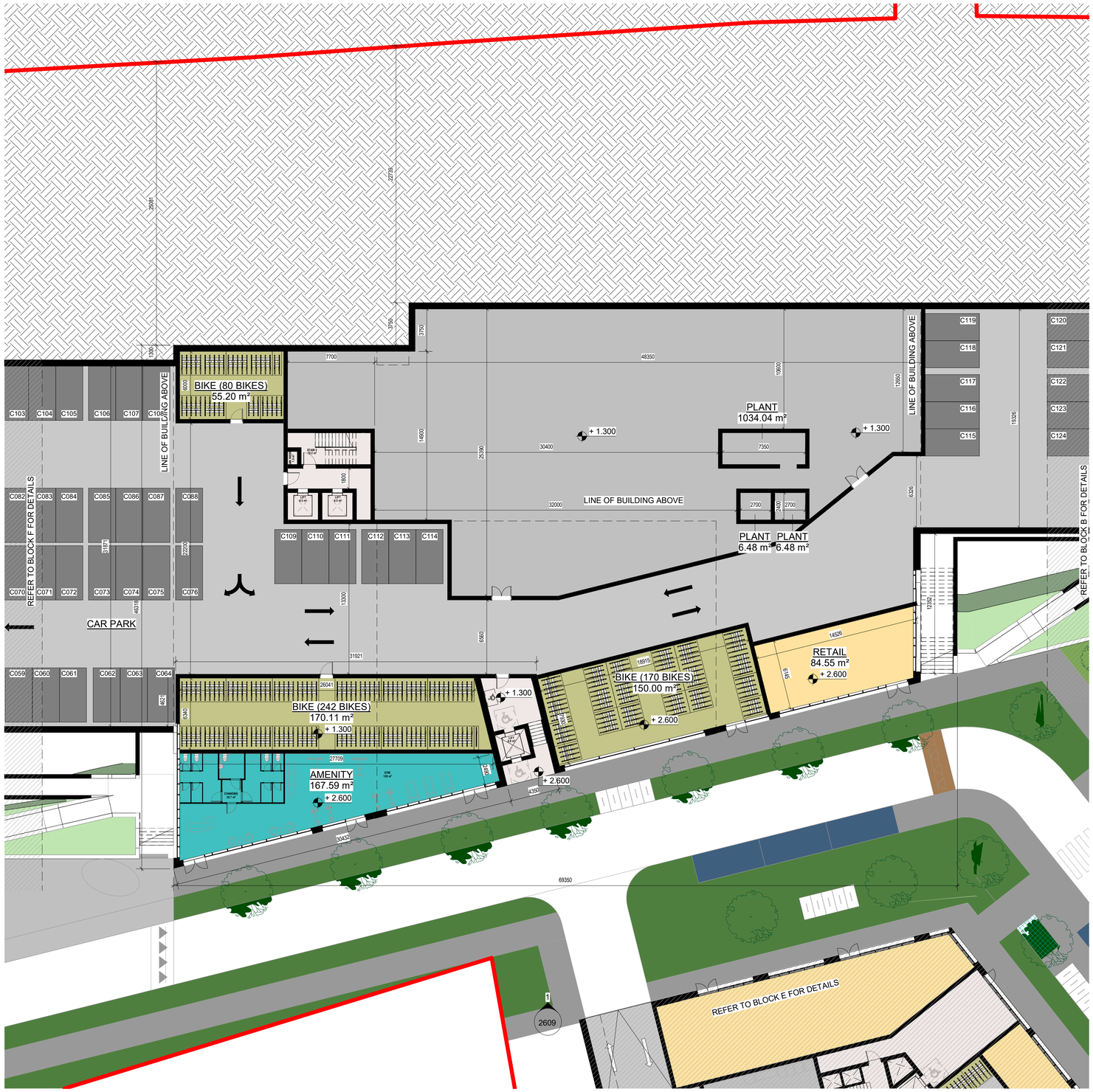
1 PLAN - BLOCK C - LEVEL 00
1 : 200



1 PLAN - BLOCK D - LEVEL LG

1 : 200

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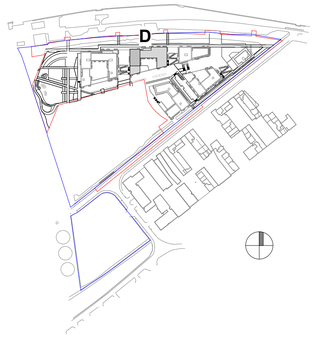

SITE OUTLINE RED

LANDS IN APPLICANT'S OWNERSHIP

FLOOR PLAN KEY :

EH - ENTRANCE HALL
ST - STORAGE
HP- HOT PRESS
KIT/LIV/DIN - KITCHEN + LIVING +DINING ROOM

AREA TYPES

- 1 BED
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Rev	Date	Description	Issued By
P04	03/03/2022	ISSUED FOR PLANNING	EB
P03	08/10/2021	ISSUED FOR PRE-PLANNING	EB
P02	27/09/2021	ISSUED FOR REVIEW	EB
P01	10/09/2021	ISSUED FOR PRE-PLANNING	EB

Project Stage

PLANNING

Client:

Tiznow Property Company Limited
(Comer Group Ireland)

Project:

Residential Development
The Former Tedcastles Site,
Centre Park Road, Cork

Drawing Title:

PLAN - BLOCK D - LEVEL LG

Drawn	Checked	Paper Size	Scale	Date
VF	EB	A1	1 : 200 @A1	07/01/21

Project No.	Drawing No.	Classification	Revision
PE21055	2189		P04

File Name

PE21055-CWO-04-LG-DR-A-2189

Status:

S2 - Suitable for Information

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1 PLAN - BLOCK D - LEVEL 00

1 : 200

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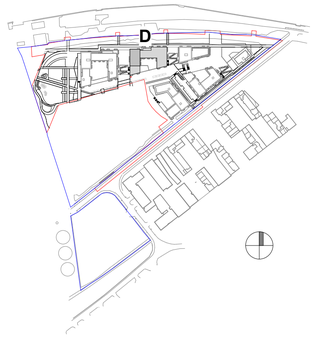
NOTES:

North



SITE OUTLINE RED

LANDS IN APPLICANT'S OWNERSHIP

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Rev	Date	Description	Issued By
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P02	27/09/2021	ISSUED FOR REVIEW	EB
P01	10/09/2021	ISSUED FOR PRE-PLANNING	EB

Project Stage

PLANNING

Client:

Tiznow Property Company Limited
(Comer Group Ireland)

Project:

Residential Development
The Former Tedcastles Site,
Centre Park Road, Cork

Drawing Title:

PLAN - BLOCK D - LEVEL 00

Drawn	Checked	Paper Size	Scale	Date
VF	EB	A1	1 : 200 @A1	06/25/21

Project No.	Drawing No.	Classification	Revision
PE21055	2190		P04

File Name

PE21055-CWO-04-00-DR-A-2190

Status:

S2 - Suitable for Information

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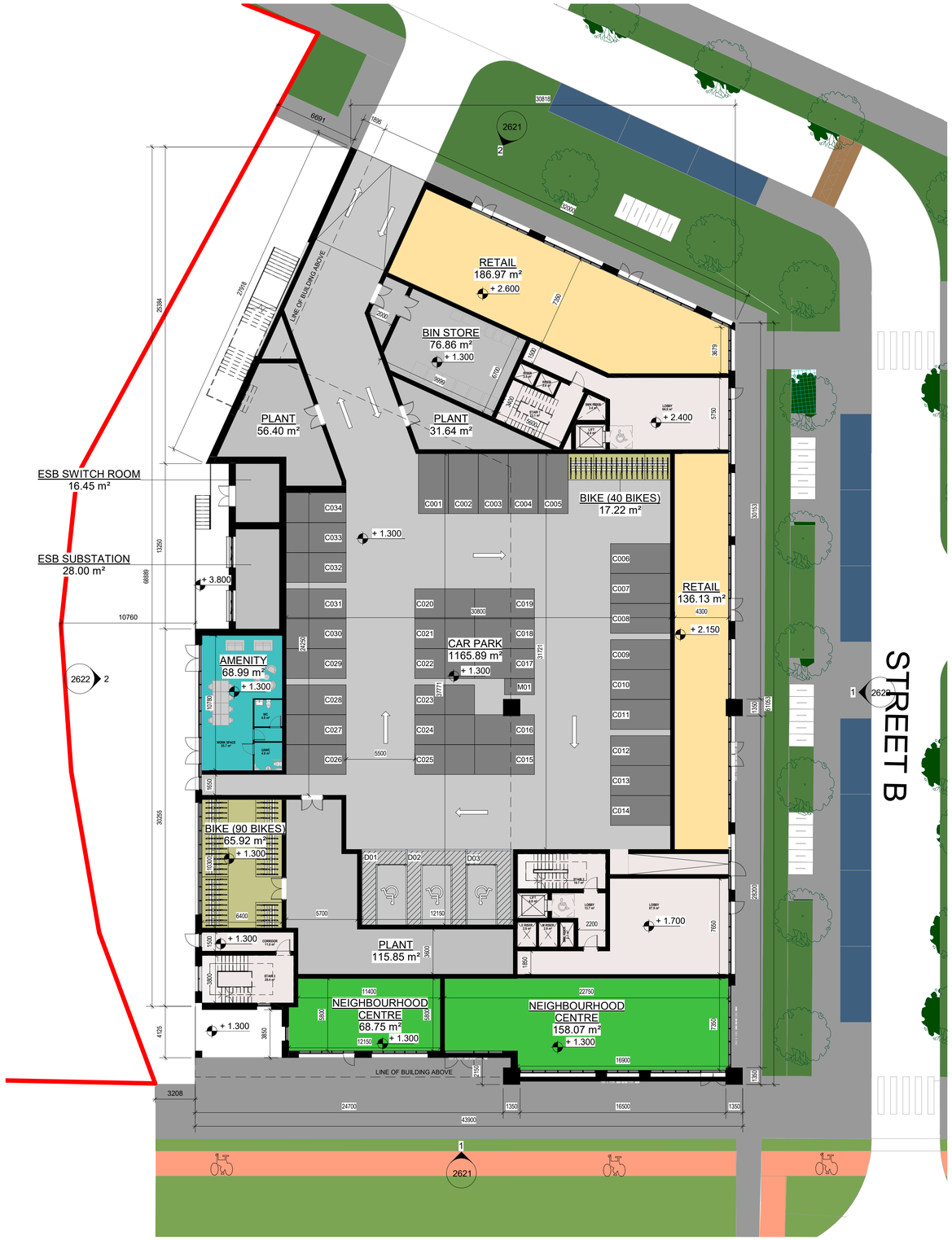

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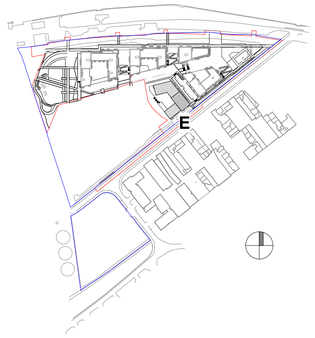

SITE OUTLINE RED

LANDS IN APPLICANT'S OWNERSHIP

FLOOR PLAN KEY :

EH - ENTRANCE HALL
ST - STORAGE
HP- HOT PRESS
KIT/LIV/DIN - KITCHEN + LIVING +DINING ROOM

AREA TYPES

- 1 BED
- 2 BED
- 3 BED
- 3 BED - DUPLEX
- CAR PARK
- SERVICES
- CIRCULATION
- COMMERCIAL
- COMMUNAL AMENITY
- BAR/ CAFE
- CRECHE
- BIKE
- NEIGHBOURHOOD CENTRE

Rev	Date	Description	Issued By
P01	03/03/2022	ISSUED FOR PLANNING	EB

Project Stage

PLANNING

Client:

Tiznow Property Company Limited
(Comer Group Ireland)

Project:

Residential Development
The Former Tedcastles Site,
Centre Park Road, Cork

Drawing Title:

PLAN - BLOCK E - LEVEL 00

Drawn	Checked	Paper Size	Scale	Date
VF	EB	A1	1 : 200 @A1	06/25/21

Project No.	Drawing No.	Classification	Revision
PE21055	2220		P01

File Name

PE21055-CWO-BE-00-DR-A-2220

Status:

S2 - Suitable for Information

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1 PLAN - BLOCK E - LEVEL 00
1 : 200

1 PLAN - BLOCK F - LEVEL LG

1 : 200

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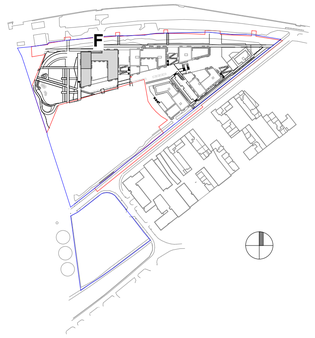

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Rev	Date	Description	Issued By
P04	03/03/2022	ISSUED FOR PLANNING	EB
P03	08/10/2021	ISSUED FOR PRE-PLANNING	EB
P02	27/09/2021	ISSUED FOR REVIEW	EB
P01	10/09/2021	ISSUED FOR PRE-PLANNING	EB

Project Stage

PLANNING

Client:

Tiznow Property Company Limited
(Comer Group Ireland)

Project:

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The Former Tedcastles Site,
Centre Park Road, Cork

Drawing Title:

PLAN - BLOCK F - LEVEL LG

Drawn	Checked	Paper Size	Scale	Date
VF	EB	A1	1 : 200 @A1	07/01/21

Project No.	Drawing No.	Classification	Revision
PE21055	2249		P04

File Name

PE21055-CWO-06-LG-DR-A-2249

Status:

S2 - Suitable for Information

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1 PLAN - BLOCK F - LEVEL 00

1 : 200

North

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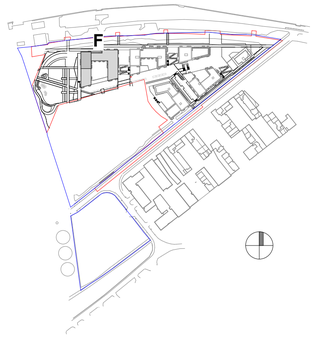

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- COMMERCIAL
- COMMUNAL AMENITY
- BAR/ CAFE
- CRECHE
- BIKE
- NEIGHBOURHOOD CENTRE

Accommodation Schedule-BLOCK F_L00

Name	Area Type	Area
F-0001	2 BED	81 m²
F-0002	1 BED	67 m²
F-0003	2 BED	65 m²
F-0004	1 BED	49 m²
F-0005	1 BED	46 m²
F-0006	2 BED	86 m²
F-0007	2 BED	86 m²
F-0008	1 BED	49 m²
F-0009	2 BED	81 m²

Rev	Date	Description	Issued By
P04	03/03/2022	ISSUED FOR PLANNING	EB
P03	08/10/2021	ISSUED FOR PRE-PLANNING	EB
P02	27/09/2021	ISSUED FOR REVIEW	EB
P01	10/09/2021	ISSUED FOR PRE-PLANNING	EB

Project Stage

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Tiznow Property Company Limited
(Comer Group Ireland)

Project:

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Centre Park Road, Cork

Drawing Title:

PLAN - BLOCK F - LEVEL 00

Drawn	Checked	Paper Size	Scale	Date
VF	EB	A1	1 : 200 @A1	06/25/21

Project No.	Drawing No.	Classification	Revision
PE21055	2250		P04

File Name

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Status:

S2 - Suitable for Information

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Appendix B

Waste Management Legislation, Policy and Best Practices Review

B.1 European Legislation

Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives

Directive 2008/98/EC, known as the "Waste Framework Directive" came into force on 12th December 2008. It provides for a general framework of waste management requirements and sets the basic waste management definitions for the EU.

The Directive lays down the five-step hierarchy of waste management options, with waste prevention as the preferred option, followed by re-use, recycling, recovery and safe disposal, in descending order. In addition, the Directive deals with the issue of 'end of waste' and clarifies the definitions of recovery, disposal and by-product. The directive states that, "The recovery of waste and the use of recovered material as raw materials should be encouraged in order to conserve natural resources."

Directive (EU) 2018/851 of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98/EC on waste

This Directive amends Directive 2008/98/EC. It provides a number of updated waste management definitions. The Directive allows Member States to use economic instruments including taxes and levies as an incentive for the application of the waste hierarchy. The Directive was transposed into Irish law in August 2020 by S.I. No. 322 of 2020.

The Directive sets targets for the preparing for re-use and the recycling of municipal waste as follows:

- By 2025, at a minimum 55% (by weight) will be prepared for re-use or recycling;
- By 2030, at a minimum 60% (by weight) will be prepared for re-use or recycling;
- By 2035, at a minimum 65% (by weight) will be prepared for re-use or recycling.

With regard to construction and demolition waste, Member States must take measures to promote selective demolition in order to enable removal and safe handling of hazardous substances, facilitate re-use and high-quality recycling. The Directive obliges Member States to take measures to prevent waste generation including reduction of waste generation in processes related to construction and demolition, taking into account best available techniques.

Commission Decision of 18 December 2014, amending Decision 2000/532/EC on the list of waste pursuant to Directive 2008/98/EC of the European parliament and of the Council (2014/955/EEC) and Commission Regulation (EU) No 1357/2014 of 18 December 2014, replacing Annex III to Directive 2008/98/EC of the European Parliament and of the Council on waste and repealing certain Directives.

This decision (referred to as 'the List of Waste' (LoW)) and regulation consolidate the legislation relating to waste classification and allow the generators of waste to classify the waste as hazardous or non-hazardous and in the process assign the correct List of Waste entry codes. Each list of waste entry is a six digit code which is closely linked to the list of the main characteristics which render waste hazardous contained in Annex III to the Waste Framework Directive. It is noted that Council Regulation (EU) 2017/997 of 8 June 2017 amending Annex 111 to Directive 2008/98//EC of the European parliament and of the Council as regards the hazardous property HP 14 'Ecotoxic' provides additional criteria in relation to determining whether the ecotoxicity of wastes would result in a hazardous classification.

B.2 National Legislation

Circular Economy Bill 2021

The draft Whole-of-Government Circular Economy Strategy provides a national policy framework for Ireland's transition to a circular economy. The Circular Economy Bill 2021, when enacted, aims to place that Strategy, and the commitment to a circular economy, on a clear statutory footing.

The Circular Economy Bill is a key step in the successful transition of Ireland's economy to a circular economy and is evidence of Government's commitment to the achievement of that goal.

Note: This Bill has not yet been enacted and the Circular Economy Strategy is still at draft stage. This is provided for informational purposes only.

Waste Management Acts, 1996 as amended and Regulations Made under the Acts

The Waste Management Act, 1996 sets out the responsibilities and functions of various persons in relation to waste. The 1996 Act has been amended by a number of subsequent acts including the Waste Management (Amendment) Act 2001 and the Protection of the Environment Act 2003. The Act:

- Prohibits any person from holding, transporting, recovering or disposing of waste in a manner which causes or is likely to cause environmental pollution.
- Requires any person who carries on activities of an agricultural, commercial or industrial nature to take all such reasonable steps as are necessary to prevent or minimise the production of waste.
- Prohibits the transfer of waste to any person other than an authorised person (i.e. a holder of a waste collection permit or a local authority).
- Requires the Environmental Protection Agency (EPA) to make a national plan in relation to hazardous waste.
- Requires local authorities to make waste management plans in relation to non-hazardous waste.
- Imposes certain obligations on local authorities to ensure that a service is provided for collection of household waste and to provide facilities for the recovery and disposal of such waste.
- Enables the Minister for Environment, Climate and Communications to make regulations for various purposes to promote better waste management.
- Provides for substantial penalties for offences including fines, imprisonment and/or liability for clean-up measures.

Waste Management (Collection Permit) Regulations, 2007, S.I. No 820 of 2007, as amended

A waste collection permit is required by anyone collecting waste on a commercial basis to ensure that the waste is gathered, sorted and transported correctly. Waste collection permits are granted in accordance with the Waste Management (Collection Permit) Regulations, 2007 as amended. All Waste Collection Permits are issued by the National Waste Collection Permit Office (NWCPO).

Waste Management (Shipments of Waste) Regulations 2007, S.I. No. 419 of 2007

Where waste is exported from Ireland for recovery or disposal the National Transfrontier Shipment (TFS) Office within Dublin City Council must be notified. Certain financial guarantees must be in place and a certificate issued by the National TFS Office prior to the waste movement taking place.

European Communities (Waste Directive) Regulations 2011, S.I. 126 of 2011

These regulations significantly changed the provisions of the Waste Management Acts, 1996 to 2008. The Regulations define "waste disposal" and "waste recovery", as well as setting out tests which must be complied with in order for material to be described as a "by-product" or achieve "end of waste" status.

The Regulations formally set out the following waste hierarchy which must be applied as a priority order in waste prevention and management legislation and policy:

(a) prevention;

(b) preparation for re-use;

(c) recycling;

(d) other recovery (including energy recovery); and

(e) disposal

The Regulations require that all waste management plans and hazardous waste management plans in existence at the commencement of the Regulations to be evaluated by 31 December 2012 and where appropriate, be revised to be brought into line with Directive 2006/12/EC on Waste.

The Regulations also require the Environment Agency to establish a waste prevention programme by December 2013.

European Union (Waste Directive) Regulations 2020 S.I. No. 323 of 2020

These regulations give effect to Directive 2018/851/EC of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98/EC on waste. Directive 2018/851/EC provides new definitions for a number of key terms including "waste" and "non-hazardous waste", "bio-waste", "waste management", "waste prevention", "backfilling" and "construction and demolition waste".

The Regulations give partial effect to the following: Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators as amended by Directive (EU) 2018/849, Directive 2000/53/EC on end-of-life vehicles as amended by Directive (EU) 2018/849, Directive 2012/19/EU on waste electrical and electronic equipment as amended by Directive (EU) 2018/849, Directive (EU) 2018/852 amending Directive 94/62/EC on packaging and packaging waste and Directive (EU) 2018/850 amending Directive 1999/31/EC on the landfill of waste. The Regulations set out additional measures to protect the environment and human health by preventing or reducing the generation of waste, the adverse impacts of the generation and management of waste and by reducing overall impacts of resource use and improving the efficiency of such use, which are crucial for the transition to a circular economy and long-term competitiveness.

B.3 Bye-Laws

Cork City Council (Segregation, Storage and Presentation of Household and Commercial Waste) Bye-Laws, 2019

Cork City Council has put in place waste bye-laws to govern the storage, presentation and collection of household and commercial waste.

These bye-laws seek to ensure that waste within the functional area of Cork City Council is adequately managed so as to prevent and control environmental pollution.

The main provisions of the bye-laws are:

- To ensure all citizens dispose of their waste by using an authorised waste contractor or by taking it to an authorised waste facility or by sharing bins by written agreement;
- To maximise the use of wheeled bins and limit (by designation from Cork City Council) the areas where bags can be presented;
- To define how wheeled bins are to be presented;
- To ensure segregation of waste (food waste, recyclable waste and residual waste) at source;
- Where wheeled bins or branded bags, purchased from authorised waste collectors, are not used that documentation/receipts are kept to demonstrate appropriate collection and recovery or disposal of waste; and
- To restrict the storage of wheeled bins on public roads or footpaths.

B.4 European Policy

7th Environmental Action Programme, European Commission (2014)

The 7th Environmental Action Programme came into force in January 2014 and will guide European environment policy until 2020. A key objective of the programme is to turn the Union into a resource-efficient, green and competitive low carbon economy. There is a special focus on turning waste into a resource, with more prevention, re-use and recycling, and phasing out wasteful and damaging practices like landfilling. By 2020 the European Union and member states are to ensure that:

- The environment and human health are protected by preventing or reducing the adverse impacts of the generation and management of waste.
- Per capita waste generation and waste generation in absolute terms are reducing.
- Landfilling is phased out for recyclables and recoverable wastes and limiting energy recovery to non-recyclable materials.

The European Commission published a proposal for an 8th Environmental Action Programme on 14th October 2020. The proposal supports the environment and climate action objectives of the European Green Deal and will form the EU's basis for achieving the United Nation's 2030 Agenda and its Sustainable Development Goals. It is expected that the 8th Environmental Action Programme will be adopted in 2021 – however, a date is yet to be confirmed.

European Commission Circular Economy Strategy (2015; 2018; 2020)

In December 2015 the European Commission adopted an ambitious Circular Economy Package, which includes revised legislative proposals on waste to stimulate Europe's transition towards a circular economy.

The Circular Economy Package consists of an EU Action Plan for the Circular Economy that establishes a programme of action, with measures covering the whole cycle: from production and consumption to waste management and the market for secondary raw materials. The annex to the action plan sets out the timeline when the actions will be completed.

The proposed actions will contribute to "closing the loop" of product lifecycles through greater recycling and re-use and bring benefits for both the environment and the economy.

The revised legislative proposals on waste set clear targets for reduction of waste and establish an ambitious and credible long-term path for waste management and recycling. Key elements of the revised waste proposal include:

- An EU target for recycling 65% of municipal waste by 2030;
- An EU target for recycling 75% of packaging waste by 2030;
- A target to reduce landfill to maximum of 10% of all waste by 2030;
- A ban on landfilling of separately collected waste;
- Promotion of economic instruments to discourage landfilling;
- Simplified, improved definitions and harmonised calculation methods for recycling rates throughout the EU;
- Concrete measures to promote re-use and stimulate industrial symbiosis - turning one industry's by-product into another industry's raw material;

- Economic incentives for producers to put greener products on the market and support recovery and recycling schemes (e.g. for packaging, batteries, electric and electronic equipment, vehicles).

The Circular Economy Package was updated in 2018 to comprise a new set of measures including:

- A Europe-wide EU Strategy for Plastics in the Circular Economy;
- A Communication on options to address the interface between chemical, product and waste legislation;
- A Monitoring Framework on progress towards a circular economy at EU and national level; and
- A Report on Critical Raw Materials and the circular economy.

Key legislative measures adopted to date under the plan include:

- Directive (EU) 2018/851 amending Directive 2008/98/EC on waste;
- Directive (EU) 2018/850 amending Directive 1999/31/EC on the landfill of waste;
- Directive (EU) 2018/852 amending Directive 94/62/EC on packaging and packaging waste; and
- Directive (EU) 2018/849 amending Directives 2000/53/EC on end-of-life vehicles, Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators, and Directive 2012/19/EU on waste electrical and electronic equipment.

European Commission, 2020. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – A new Circular Economy Action Plan For a cleaner and more competitive Europe. COM (2020).

The European Commission has adopted a new Circular Economy Action Plan, which is one of the main blocks of the European Green Deal, Europe's new agenda for sustainable growth.

The new Action Plan announces initiatives along the entire life cycle of products, targeting for example their design, promoting circular economy processes, fostering sustainable consumption, and aiming to ensure that the resources used are kept in the EU economy for as long as possible.

The new Action Plan introduces legislative and non-legislative measures targeting areas where action at the EU level brings real added value.

The new Circular Economy Action Plan presents measures to:

- Make sustainable products the norm in the EU;
- Empower consumers and public buyers;
- Focus on the sectors that use most resources and where the potential for circularity is high such as: electronics and ICT; batteries and vehicles; packaging; plastics; textiles; construction and buildings; food; water and nutrients;
- Ensure less waste;
- Make circularity work for people, regions and cities; and
- Lead global efforts on circular economy.

European Commission (2019) European Green Deal

The European Green Deal, published by the European Commission in December 2019, provides an action plan to boost the efficient use of resources by moving to a clean, circular economy while cutting pollution and restoring biodiversity.

The plan outlines investments needed and financing tools available. It explains how to ensure a just and inclusive transition.

B.5 National Policy

Introduction

The first national waste policy statement was published by the Department of Environment and Local Government in 1998. A number of statements have been published since, each of which builds on the objectives of the previous policy statements to improve how waste is managed in Ireland and move waste away from landfill and towards a more sustainable option. The statements published in the past include:

- Department of the Environment and Local Government (1998). 'Waste Management - Changing Our Ways' – A Policy Statement.
- Department of the Environment and Local Government (2002). Preventing and Recycling Waste – Delivering Change – A Policy Statement.
- Department of the Environment, Heritage and Local Government (2004). Waste Management - Taking Stock and Moving Forward.
- Department of the Environment, Heritage and Local Government (2006). National Strategy on Biodegradable Waste Management.
- Department of the Environment, Heritage and Local Government (2012). A Resource Opportunity- Waste Management Policy in Ireland.

More recent policy documents and reports are summarised below.

EPA National Waste Statistics and Bulletins

The EPA publishes national statistics and bulletins relating to waste generation, management and disposal in Ireland. The published data provide information on key statistics and trends in waste as well as information on Ireland's progress in meeting EU waste collection, recovery and disposal targets. Key topics include municipal waste generation and management, packaging waste, waste electronic and electrical equipment, end of life vehicles, tyres, hazardous waste, construction and demolition waste and waste infrastructure. The data are available on the EPA website at *http://www.epa.ie/nationalwastestatistics/.*

Environmental Protection Agency (2014). National Hazardous Waste Management Plan, 2014-2020

The Third National Hazardous Waste Management Plan was published by the Environmental Protection Agency in 2014.

This Plan set out priority actions to be taken over the six-year life of the plan in relation to:

- Prevention of hazardous waste.
- Improved collection rates for certain categories of hazardous waste.
- Steps required to improve Ireland's self-sufficiency in hazardous waste management.
- Identification and management of certain legacy hazardous wastes such as historic unregulated waste disposal sites and contaminated soil.

The plan included eight key environmental objectives, as follows:

1. To protect water quality (rivers, lakes, marine and groundwater) from hazardous waste;
2. To protect air quality from hazardous waste and/or reduce air pollution or limit to levels that do not damage the natural environment or human health;

3. To minimise greenhouse gas emissions associated with hazardous waste management (including transport);
4. To safeguard soil quality and quantity from hazardous waste and reduce soil contamination;
5. To maximise use of material assets including the built environment, energy and raw materials;
6. To minimise the export of hazardous waste for treatment and/or disposal and reduce emissions due to transportation;
7. To conserve and enhance biodiversity, including flora and fauna, and integrate biodiversity considerations into actions relating to or arising out of any of the recommendations in the National Hazardous Waste Management Plan; and
8. To protect human health from hazardous waste.

EPA (2019) Waste Classification – List of Waste and Determining if Waste is hazardous or Non-Hazardous.

Waste classification is based on:

- Commission Decision of 18 December 2014, amending Decision 2000/532/EC on the list of waste pursuant to Directive 2008/98/EC of the European parliament and of the Council (2014/955/EEC);
- Commission Regulation (EU) No 1357/2014 of 18 December 2014, replacing Annex III to Directive 2008/98/EC of the European Parliament and of the Council on waste and repealing certain Directives; and
- Council Regulation (EU) 2017/997 of 8 June 2017 amending Annex 111 to Directive 2008/98//EC of the European parliament and of the Council as regards the hazardous property HP 14 'Ecotoxic'.

This waste classification system applies across the EU and is the basis for all national and international waste reporting obligations. This document consolidates the Decision and Regulations and provides guidance on how to follow them.

There are two main elements:

- List of Waste (LoW) (Appendix 1);
- Determining if waste is hazardous or non-hazardous (Appendix 2).

Government of Ireland (2020) A Waste Action Plan for a Circular Economy Ireland's National Waste Policy 2020-2025.

The 'Waste Action Plan for a Circular Economy' is an action focused plan that reflects the 2020 Circular Economy Action Plan 'For a cleaner and more competitive Europe' from the European Commission (see above).

The Waste Action Plan for a Circular Economy fulfils the commitment in the Programme for Government (2020) to publish and start implementing a new National Waste Action Plan. This new national waste policy will inform and give direction to waste planning and management in Ireland over the coming years.

The previous national waste policy, A Resource Opportunity – Waste management policy in Ireland, drove delivery on national targets under EU legislation, but the Irish and international waste context has changed in the years since its launch. The need to embed climate action in all strands of public policy aligns with the goals of the European Green Deal.

The policy document shifts focus away from waste disposal and moves it back up the production chain. To support the policy, regulation is already being used (Circular Economy Legislative Package) or in the pipeline (Single Use Plastics Directive). The policy document contains over 200 measures across various waste areas including Circular Economy, Municipal Waste, Consumer Protection and Citizen Engagement, Plastics and Packaging, Construction and Demolition, Textiles, Green Public Procurement and Waste Enforcement.

The overarching objectives of this action plan are to:

- Shift the focus away from waste disposal and treatment to ensure that materials and products remain in productive use for longer thereby preventing waste and supporting reuse through a policy framework that discourages the wasting of resources and rewards circularity;
- Make producers who manufacture and sell disposable goods for profit environmentally accountable for the products they place on the market;
- Ensure that measures support sustainable economic models (for example by supporting the use of recycled over virgin materials);
- Harness the reach and influence of all sectors including the voluntary sector, R&D, producers / manufacturers, regulatory bodies, civic society; and
- Support clear and robust institutional arrangements for the waste sector, including through a strengthened role for Local Authorities (LAs).

The plan identifies opportunities for the application of circular economy principles across a range of areas in Ireland including:

- Municipal waste;
- Consumer Protection;
- Food waste;
- Plastic and packaging waste;
- Construction and demolition waste;
- Textiles; and
- Procurement.

Department of the Environment, Climate and Communications (2021) Climate Action Plan

The Government published its Climate Action Plan in 2021. The Plan sets out the actions the Government intends to take to address climate breakdown across sectors such as electricity, transport, built environment, industry and agriculture.

The Plan provides that the Government will lead the transformation from waste management to circular economy practice through delivery of a new national policy. The implementation plan for actions by Government and other actors in relation to waste and the circular economy are as follows:

- Publish a Whole-of-Government Circular Economy Strategy and promote the Circular Economy;
- Enact the Circular Economy Bill 2021;
- Establish a Circular Economy Innovation Scheme;
- Strengthen the regulatory and enforcement frameworks for the waste collection and management system, to maximise circular economy principles;

- Reduce demand for virgin raw materials and support re-use, by keeping material out of waste streams through streamlined End-of-Waste and By-Product decision-making processes and national End-of-Waste decisions for specific Construction and Demolition waste streams;
- Reconfigure the current National Waste Prevention Programme as a Circular Economy Programme for Ireland to drive the transition for business, citizens and the public sector;
- Continue to drive the rollout of CirculEire, the national circular economy platform;
- The High Level National Bioeconomy Implementation Group will report to Government and develop a detailed Bioeconomy Action Plan in 2022;
- The Bioeconomy will be reflected across circular economy strategies and policies where relevant, and regulatory barriers will be examined;
- Funding mechanisms for bioeconomy innovation at demonstration level will be explored, aiming to achieve coherence across national funds;
- Opportunities to increase skills in the bioeconomy will be explored;
- Develop a policy statement on mineral exploration and mining that supports the sustainable supply of minerals required to transition to a climate neutral economy;
- Develop a Food Waste Prevention Roadmap that sets out a series of actions to deliver the reductions necessary to halve our food waste by 2030 and promote our transition to a circular economy;
- Enhance food waste segregation, collection and treatment (anaerobic digestion and composting);
- Develop and implement a new Regional Waste Management Plans that will guide our transition to a circular economy;
- Develop new and expanded environmental levies to encourage reduced resource consumption and incentivise higher levels of re-use and recycling; and
- Identify opportunities to strengthen the regulatory and enforcement frameworks and structures for the waste collection and management system, to maximise the collection of clean, segregated materials for reuse and/or recycling from all households and businesses, and to incentivise consumers to reduce, reuse and recycle.

B.6 Regional Policy

The Southern Region Waste Management Plan 2015 - 2021

For the purposes of waste management planning, Ireland is now divided into three regions: Southern, Eastern-Midlands, Connacht-Ulster. The Southern Region Includes Cork City Council.

The Southern Region Waste Management Plan 2015 - 2021 was launched in 2015. The strategic approach of the plan places a stronger emphasis on preventing wastes and material reuse activities. Three strategic targets have been set in the plan which include:

- 1% reduction per annum in the quantity of household waste generated per capita over the period of the plan;
- Achieve a recycling rate of 50% of managed municipal waste by 2020; and
- Reduce to 0% the direct disposal of unprocessed residual municipal waste to landfill in favour of higher value pre-treatment processes and indigenous recovery practices.

The plan looks to 2030 and includes a goal of reaching a recycling rate of 60%.

Cork City Development Plan 2015-2021

The Cork City Development Plan 2015-2021 sets out Cork City Council's policies and objectives for the development of the city over the Plan period.

The Council identifies a strategic environmental infrastructure objective to follow a waste hierarchy that starts with prevention, preparing for re-use, recycling, other recovery (e.g. energy recovery) and finally disposal (including landfill).

A draft Plan was also recently published which sets out the priorities for the city for a 6-year period from 2022 to 2028 (Cork City Council, 2021). The draft Plan seeks to ensure that measures will be adopted to ensure sustainable waste management while it also aims to support provisional initiatives that will develop the circular economy through implementation of the Regional Waste Management Plan for the Southern Region 2015-2021 and its successor.

RPS (2020) Construction and Demolition Waste Soil and Stone Recovery/Disposal Capacity Eastern Midlands Region / Connacht Ulster Region / Southern Region Waste Management Plans 2015 – 2021.

This report was undertaken on behalf of the Irish regional waste management offices to analyse the national waste capacity market for safe treatment of waste soils. A review was undertaken of soil waste generation and available capacity to accept soil waste in authorised facilities within the three waste regions.

The report identifies that the future authorised capacity available to recover soil and stones is an issue in each waste region in the context of likely strong construction activity. Possible options recommended include expanding capacities at existing sites and the use of Article 27 By-Product notifications.

B.7 Guidance

Department of the Environment, Community and Local Government (2018) Sustainable Urban Housing: Design Standards for New Apartments

These planning guidelines were published by the Department of Environment, Community and Local Government (DoECLG) in March 2018. They provide guidance on the storage and collection of waste materials in apartment schemes, while they also provide a number of general design considerations, which should be taken into account in the provision of refuse storage facilities.

EPA (2008) Organic Waste Management in Apartments

The Environmental Protection Agency published a desk study into best practice regarding organic waste management in apartments in 2008. Based on the research carried out for the study a number of conclusions were reached in relation to storage of organic waste from apartments. Conclusions were presented on topics including waste storage areas, access, health and safety, and collection frequency.

Appendix C

Wheeled Bins and Waste Equipment

Container/ Equipment Type	Length (mm)	Width (mm)	Height (mm)	Clearance Required	
1,100 litre bin (residual waste and dry mixed recyclables) (note 1)	1070	1370	1450	150mm	1100 Litre Wheeled Bin (www.ecostore.ie)
360 litre bin (organic waste) (note 2)	880	590	1100	150mm	360 litre wheeled bin (www.ecostore.ie)
240 litre bin (glass waste) (note 2)	740	590	1100	150mm	240 Litre Wheeled Bin (www.ecostore.ie)

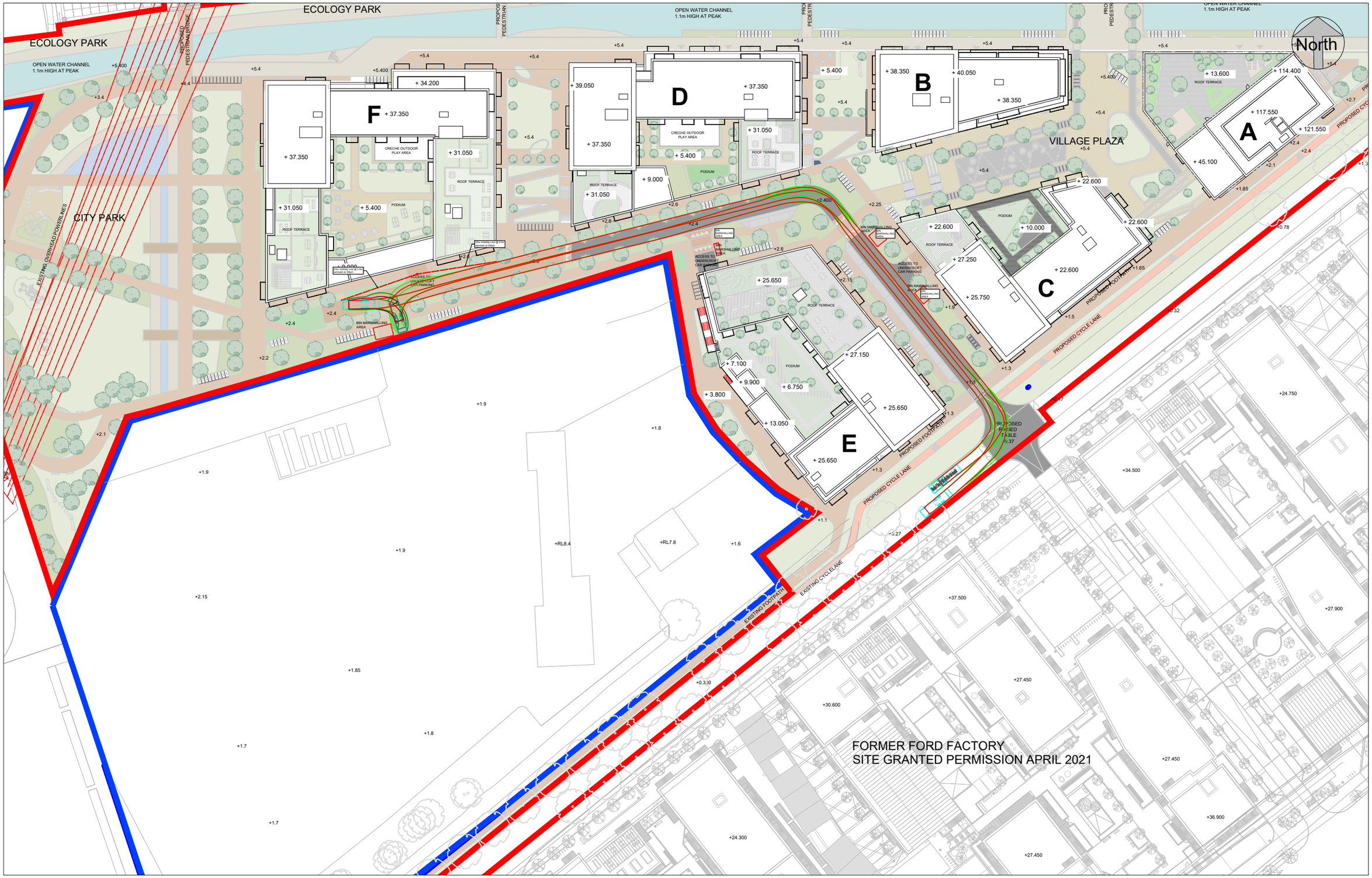
Container/ Equipment Type	Length (mm)	Width (mm)	Height (mm)	Clearance Required		
Tow tractor indicative dimensions – 8,000 kg tow load capacity (required for parking. Wall mounted charger required for some models)	795	530			 Electric Towing Unit www.bradshawev.com	 Stand on Tow Tractor http://www.toyotaforklifts.ie

Notes:

1. These are wheeled bins with four wheels and should conform to CEN standard IS EN 840 (Parts 1-6). They have a fixed lid, which can be supplied with a lock if required.
2. These are plastic wheeled bins with two wheels which should conform to CEN standard IS EN 840 (Parts 1-6).

Appendix D

Vehicle Swept Path Drawing



Phoenix 2 Bus (P2-12W with Elite 6x4 chassis)
Overall Length 12.000m
Overall Width 2.500m
Overall Body Height 3.500m
On Body Ground Clearance 0.000m
Track Width 2.500m
Lock-to-lock time 4.000s
Curb to Curb Turning Radius 7.000m

Issue	Date	By	Chkd	Appd
P03	29/03/22	CK	CK	TL

Client
Tiznow Property Company Limited
(Comer Group Ireland)

Job Title
City Park Development at
The Former Tedcastles Site

Scale at A1 1:500 @ A1

Discipline Transport Planning

ARUP

One Albert Quay
Cork, T12 X8N6
Tel +353(0)21 427 7670 Fax +353(0)21 427 2345
www.arup.ie

Drawing Title
Swept Path Analysis -
Refuse Vehicle Access

Drawing Status
S2 - Suitable for Information

Job No	Drawing No	Issue
267365-00	267365-ARUP-ZZ-ZZ-DR-C-1005	P03

Do not scale

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